FINAL REPORT
July 22, 2014

Prepared for:
Rio Algom Mining LLC

Supplemental Site Assessment to Address Out-of-Compliance Status at Trend Wells RL-1 and EF-8

Lisbon Facility

Prepared by:

MONTGOMERY & ASSOCIATES
Water Resource Consultants

www.elmontgomery.com 520-881-4912 1550 East Prince Road, Tucson AZ 85719

MONTGOMERY
& ASSOCIATES
Water Resource Consultants

July 22, 2014
FINAL REPORT

SUPPLEMENTAL SITE ASSESSMENT TO ADDRESS OUT-OF-COMPLIANCE STATUS AT TREND WELLS RL-1 AND EF-8, LISBON FACILITY

Prepared for:
RIO ALGOM MINING LLC

Prepared by:
MONTGOMERY & ASSOCIATES

Timothy P. Leo
Principal Hydrogeologist

MONTGOMERY & ASSOCIATES

CONTENTS

Page

1.0 INTRODUCTION 1
1.1 BACKGROUND INFORMATION 2
1.2 REPORT CONTENT AND ORGANIZATION 3
2.0 INVESTIGATION METHODS 5
2.1 SITE SETTING 5
2.2 SITE GEOLOGY 5
2.3 MONITOR WELL INSTALLATION 7
2.3.1 Drilling Methods and Well Construction 7
2.3.2 Core Sampling 10
2.3.3 Well Survey 11
2.3.4 Well Development 11
2.3.5 Investigation Derived Waste Management 12
2.4 CHEMICAL ANALYSIS OF CORE SAMPLES 13
2.5 HYDRAULIC TESTING 13
2.5.1 Slug Testing 13
2.5.2 Core Analysis 15
2.6 VIDEO LOGGING 15
2.7 GROUNDWATER MONITORING 17
2.7.1 Groundwater Sampling Methods 18
2.7.2 General Sampling Protocols 18
2.7.3 Agency Field Audit and Split Sampling 20
3.0 SUMMARY OF DATA 21
3.1 HYDROGEOLOGIC CONDITIONS 21
3.2 HYDRAULIC TESTING RESULTS 24
3.2.1 Slug Test Results 25
3.2.2 Laboratory Test Results 27
3.3 GROUNDWATER CONDITIONS 28
3.3.1 Groundwater Elevations 28
3.3.2 Groundwater Flow Directions and Hydraulic Gradients 29
3.3.3 Vertical Gradient 32
3.3.4 Saturated Thickness of BCA 33
3.4 LABORATORY TESTING OF VADOSE ZONE CORE SAMPLES 33
3.5 GROUNDWATER QUALITY 34
3.5.1 Common Constituents 36
3.5.2 Trace Metals 38
4.0 CONCEPTUAL SITE MODEL 44

CONTENTS – continued

Page

5.0 GROUNDWATER MODELING 48
5.1 MODELING OBJECTIVES 48
5.2 MODEL DEVELOPMENT 48
5.3 MODELING APPROACH 50
5.4 RESULTS 51
6.0 PROPOSED NEW ALTERNATE CONCENTRATION LIMITS 53
6.1 DEVELOPMENT OF NEW ALTERNATE CONCENTRATION LIMITS 53
6.2 POINT-OF-COMPLIANCE WELLS 54
6.3 POINT-OF-EXPOSURE WELLS 55
6.4 TREND WELLS 56
7.0 CONCLUSIONS AND RECOMMENDATIONS 59
7.1 CONCLUSIONS 59
7.2 RECOMMENDATIONS 60
8.0 REFERENCES CITED 62

TABLES

Table

1 WELL CONSTRUCTION DETAILS

2 GROUNDWATER SAMPLING METHODS USED DURING COMPREHENSIVE MONITORING EVENTS

3 SUMMARY OF FIELD PARAMETERS DURING GROUNDWATER MONITORING EVENTS CONDUCTED FROM OCTOBER 2012 THROUGH APRIL 2014

4 CONTACT ELEVATION BETWEEN THE BURRO CANYON FORMATION AND BRUSHY BASIN MEMBER OF THE MORRISON FORMATION

CONTENTS – continued

Table

5	RESULTS OF SLUG TESTS IN EXISTING MONITOR WELLS
6	RESULTS OF HYDRAULIC CONDUCTIVITY TESTING DURING PREVIOUS INVESTIGATIONS
7	SUMMARY OF SATURATED HYDRAULIC CONDUCTIVITY DATA FROM LABORATORY ANALYSIS
8	GROUNDWATER ELEVATIONS IN EXISTING MONITOR WELLS
9	SUMMARY OF VERTICAL GRADIENTS IN COMPANION WELLS
10	SUMMARY OF SYNTHETIC PRECIPITATION LEACHING PROCEDURE RESULTS FOR CORE SAMPLES
11	SUMMARY OF MAXIMUM CONCENTRATIONS OF DISSOLVED TRACE METALS AND DISSOLVED COMMON CONSTITUENTS IN GROUNDWATER
12	PROPOSED ALTERNATE CONCENTRATION LIMITS AT POINT-OF-COMPLIANCE WELLS (in text)
13	PROPOSED URANIUM TARGET ACTION LEVELS AT TREND WELLS (in text)
14	SUMMARY OF PROPOSED COMPLIANCE WELLS AND CONCENTRATIONS (in text)

ILLUSTRATIONS

Figure

1	SITE LOCATION MAP
2	EXISTING AND DECOMMISSIONED MONITOR WELLS

CONTENTS – continued

Figure

3	GEOLOGIC MAP
4	SITE MAP
5	ESTIMATED ELEVATION OF GEOLOGIC CONTACT BETWEEN BURRO CANYON FORMATION AND BRUSHY BASIN MEMBER
6	HYDROGEOLOGIC SECTION A-A’
7	HYDROGEOLOGIC SECTION B-B’ AND C-C’
8	HYDROGEOLOGIC SECTION D-D’ AND E-E’
9	ESTIMATED HORIZONTAL HYDRAULIC CONDUCTIVITY
10	GROUNDWATER ELEVATIONS APRIL 2014
11	REGIONAL BURRO CANYON AQUIFER GROUNDWATER ELEVATIONS
12	SATURATED THICKNESS IN THE BURRO CANYON AQUIFER APRIL 2014
13	TOTAL DISSOLVED SOLIDS IN GROUNDWATER
14	SULFATE IN GROUNDWATER
15	DISSOLVED URANIUM IN GROUNDWATER
16	DISSOLVED ARSENIC IN GROUNDWATER
17	DISSOLVED SELENIUM IN GROUNDWATER
18	DISSOLVED MOLYBDENUM IN GROUNDWATER
19	CONCEPTUAL SITE MODEL MAP
20	MODEL DOMAIN

CONTENTS – continued

Figure

21	LAYER 2 MODEL BOUNDARY CONDITIONS
22	PROJECTED URANIUM PLUME GROWTH 2020 – 2215
23	PROPOSED COMPLIANCE WELLS
24	DISTRIBUTION OF PROJECTED URANIUM CONCENTRATIONS FROM ALL MODELS AT PROPOSED TREND WELL ML-1
25	DISTRIBUTION OF PROJECTED URANIUM CONCENTRATIONS FROM ALL MODELS AT PROPOSED TREND WELL MW-112
26	DISTRIBUTION OF PROJECTED URANIUM CONCENTRATIONS FROM ALL MODELS AT PROPOSED TREND WELL MW-119
27	DISTRIBUTION OF PROJECTED URANIUM CONCENTRATIONS FROM ALL MODELS AT PROPOSED TREND WELL RL-1
28	DISTRIBUTION OF PROJECTED URANIUM CONCENTRATIONS FROM ALL MODELS AT PROPOSED TREND WELL RL-3

APPENDICES

Appendix

*A	RESPONSES TO COMMENTS ON PHASE 1 REPORT
*B	SUMMARY OF WELL INSTALLATION METHODS, WELL SCHEMATICS, AND LITHOLOGIC LOGS
*C	SUMMARY OF CORE SAMPLING METHODS AND LABORATORY REPORTS
*D	INVESTIGATION DERIVED WASTE DISPOSAL MANIFESTS

CONTENTS – continued

Appendix

*E	SUMMARY OF GROUNDWATER SAMPLING METHODS, GROUNDWATER MONITORING FIELD DATA SHEETS, AND LABORATORY REPORTS
*F	SLUG TEST GRAPHS AND FIELD DATA
*G	GROUNDWATER ELEVATION AND CHEMISTRY TIME SERIES PLOTS
H	WATER QUALITY SUMMARY TABLE
*I	PIPER DIAGRAMS
J	CONCEPTUAL SITE MODEL
K	GROUNDWATER MODELING

* Enclosed on Compact Disc

LIST OF ACRONYMS

Acronym	Definition
ACL	Alternate Concentration Limit
ACZ Lab	ACZ Laboratories, Inc.
ALARA	As low as reasonably achievable
As	Arsenic
BBM	Brushy Basin Member hydrostratigraphic unit
BCA	Burro Canyon Aquifer hydrostratigraphic unit
bgs	Below ground surface
BLM	Bureau of Land Management
bmp	Below measuring point
CAP	Corrective Action Program
CEI	Confluence Environmental, Inc.
COC	Constituents of concern
CSM	Conceptual Site Model
DBSA Lab	Daniel B. Stevens & Associates, Inc.
DEQ	Utah Department of Environmental Quality
DL	Laboratory detection limit
DRC	Division of Radiation Control
Energy Lab	Energy Laboratories
ft msl	Feet above mean sea level
ft/d	Feet per day
ft/ft	Foot per foot
gpm	Gallons per minute
GWQS	Utah Ground Water Quality Standard
Jmb	Brushy Basin Member of the Morrison Formation
K	Hydraulic conductivity
Kbc	Burro Canyon Formation
Kd	Dakota Formation
LF	Lisbon Fault
LTGMP	Long Term Groundwater Monitoring Plan
LTSM	Long Term Surveillance and Maintenance
LVA	Lisbon Valley Anticline
LWC	Lewis Water Consultants, Inc.
M&A	Montgomery & Associates
mg/L	Milligrams per liter
Mo	Molybdenum
MPE	MP Environmental Services, Inc.
EWP	Exploration, Wells & Pump
NRC	U.S. Nuclear Regulatory Commission

Acronym	Definition
NSMC	Null Space Monte Carlo
POC	Point-of-Compliance
POE	Point-of-Exposure
PQ	5-inch diameter core method
QA/QC	Quality Assurance/Quality Control
RAML	Rio Algom Mining LLC
SCA	Stipulation and Consent Agreement
Se	Selenium
Site	RAML Lisbon Facility
SPLP	Synthetic Precipitation Leaching Procedure
SSA	Supplemental site assessment
TAL	Target Action Level
TDS	Total dissolved solids
TRc	Chinle Formation
U	Uranium
UCL	Uranium compliance limit
US EPA	United States Environmental Protection Agency

MONTGOMERY & ASSOCIATES

July 22, 2014
FINAL REPORT

SUPPLEMENTAL SITE ASSESSMENT TO ADDRESS OUT-OF-COMPLIANCE STATUS AT TREND WELLS RL-1 AND EF-8, LISBON FACILITY

1.0 INTRODUCTION

This report summarizes the results of the supplemental site assessment (SSA) conducted at the Rio Algom Mining LLC (RAML) Lisbon Facility (Site) located near La Sal, Utah. **Figure 1** shows the Site location and Site map. The SSA consisted of a hydrogeologic investigation conducted in two phases. The first phase included the construction of new wells on RAML property, hydraulic testing and analysis, and groundwater monitoring in new and existing wells. The second phase included the construction of additional new wells on public land, hydraulic testing and analysis, and groundwater monitoring at all new and existing wells. The first phase was completed in November 2012. The second phase was completed in November 2013.

The SSA was conducted in accordance with Stipulation and Consent Agreements (SCAs) between the Utah Department of Environmental Quality (DEQ) and RAML (DEQ, 2012 and 2013). The overall scope of the SSA was outlined in a work plan titled "Revised Final Work Plan, Supplemental Site Assessment to Address Out-of-Compliance Status at Trend Wells RL-1 and EF-8" (Montgomery & Associates [M&A], 2012). The second phase of the SSA was outlined in a second work plan titled "Phase 2 of Supplemental Site Assessment to Address Out-of-Compliance Status at Trend Wells RL-1 and EF-8" (M&A, 2013b).

1.1 BACKGROUND INFORMATION

Uranium mining and milling occurred at the Site from 1972 to 1989. Seepage from two tailings impoundments constructed during mining impacted groundwater at the Site. **Figure 1** shows the location of the tailings impoundments. Interim and formal groundwater corrective action programs (CAPs) were implemented at the Site from the early 1980s through 2003 to minimize the impact of tailings water seepage on groundwater quality. Initial corrective actions in the early 1980s included installation of a grout curtain and pumpback system, and groundwater extraction from well OW-UT-9, located immediately north of the upper tailings impoundment (**Figure 2**). Impacted groundwater from well OW-UT-9 was conveyed to evaporation ponds at the tailings. Dewatering of the aquifer limited the effectiveness of the system. The pumping capacity of well OW-UT-9 diminished over time and operation of the well ceased in the early 2000s.

A formal CAP was initiated in 1990. The CAP system comprised up to 6 extraction wells and operated at a maximum total rate of approximately 100 gallons per minute (gpm). During operation, the CAP system removed about 483 million gallons of groundwater and almost 100,000 pounds of uranium (Lewis Water Consultants, Inc. [LWC], 2001). Groundwater from the CAP was conveyed to evaporation ponds located on top of the tailings. Over time, pumping capacities of the CAP wells diminished, limiting the effectiveness of the CAP (Medlock Consulting, 1998 and LWC, 2001). The CAP was discontinued in 2003 after it was demonstrated to be ineffective. In the mid-2000s, the tailings impoundments were covered with impervious material to minimize further impacts.

Between 2001 and 2003, an application for Alternate Concentration Limits (ACLs) and response to comments on the application were prepared by RAML for the U.S. Nuclear Regulatory Commission (NRC) (LWC, 2001 and KOMEX, 2003). The NRC-approved ACL application established groundwater compliance concentrations and resulted in a long-term monitoring remedy for the Site. Groundwater monitoring in 14 wells began at the Site in 2004

in accordance with the Long Term Groundwater Monitoring Plan (LTGMP) (KOMEX, 2004). In 2004, the Utah Department of Environmental Quality, Division of Radiation Control (DRC) obtained lead regulatory authority for the Site from NRC. Subsequently, DRC lowered the compliance concentrations based on the results of groundwater modeling published in the LTGMP (DRC, 2012a). Currently, all Site activities are conducted in accordance with Utah Radioactive Materials License No. UT1900481, Amendment No. 4 (License) (DRC, 2012b). Among other specifications, the License specifies compliance concentrations, monitoring and reporting requirements, and identifies the following constituents of concern (COCs) for groundwater: uranium, molybdenum, selenium, and arsenic. The License also requires groundwater monitoring for pH, total dissolved solids (TDS), chloride, sulfate, bicarbonate, and groundwater elevation.

Wells RL-1 and EF-8 (designated as "trend wells" in the License) are currently out of compliance with the License because uranium concentrations in groundwater have exceeded Target Action Levels (TALs) for more than two consecutive sampling events. The SSA was conducted to address the out-of-compliance conditions at RL-1 and EF-8. Subsequent to initiating the SSA, well OW-UT-9 became out of compliance with the License because arsenic concentrations exceeded the ACL for this well.

1.2 REPORT CONTENT AND ORGANIZATION

Data gaps identified in the initial work plan were partially addressed by the completion of the first phase of the SSA. A limited interpretation of the Phase 1 data was presented in the report entitled, *Phase 1 Report for Supplemental Site Assessment to Address Out-Of-Compliance Status at Trend Wells RL-1 and EF-8* (M&A, 2013a). Interpretation of Phase 1 data was limited to the level required to further develop the second phase of the SSA. Following a review of the Phase 1 report, DRC provided comments in a letter dated June 26, 2013 (DRC, 2013a). In an electronic mail correspondence dated April 24, 2014

(DRC, 2014a), DRC granted RAML's request to address Phase 1 report comments in this report, in lieu of issuing a revised Phase 1 report. The comments from DRC and responses from RAML are provided in **Appendix A**. Information pertaining to these comments is also provided elsewhere in this report.

For the purposes of this report, the two phases of the field and data analysis program are considered a singular investigation. This report presents a thorough interpretation of results from the first and second phases of the SSA to fully address data gaps, refine the conceptual Site model (CSM), support development of a new groundwater model, and develop new ACLs for the Site. The report is organized as follows:

Section 1.0 – Introduction

Section 2.0 – Investigation Methods

Section 3.0 – Summary of Data

Section 4.0 – Conceptual Site Model

Section 5.0 – Groundwater Modeling

Section 6.0 – Proposed New Alternate Concentration Limits

Section 7.0 – Conclusions and Recommendations

Section 8.0 – References Cited

Supporting documentation, detailed descriptions of methods, field data, and analytical data are provided in **Appendices A through K**. Printed versions of **Appendices H, J, and K** are provided. The remaining appendix material is provided in electronic format on compact disc. The electronic appendix material is included in a complete copy of the report in a bookmarked portable document format file. The CD also includes the raw water level data from slug testing.

2.0 INVESTIGATION METHODS

The two-phased SSA field program included installation of new monitor wells, collection of core samples at selected borehole locations for physical properties and chemical analyses, conduct of hydraulic testing at new and existing monitor wells, video-logging of selected existing monitor wells, and groundwater monitoring in new and existing monitor wells. Investigation methods are described in the following sections.

2.1 SITE SETTING

The Site is located in an area of low-rolling hills separated by broad valleys ranging in elevation from 6,500 to greater than 7,000 feet above mean sea level (ft msl). The surface topography of the Site and surrounding areas is shown on **Figure 1**. The Site is located in a west-trending drainage basin, approximately one square mile in area. West Coyote Creek, an ephemeral creek, is located approximately one mile north of the Site. Currently, there are no natural perennial surface water bodies within the RAML property boundary. During mining operations, surface water bodies at the Site included the upper and lower tailings ponds, Bisco Lake, and multiple small process ponds.

2.2 SITE GEOLOGY

Extensive drilling and well installation were conducted during mining operations and during previous investigations to characterize geologic and hydrogeologic conditions at the Site. The vast majority of historic monitor wells and exploration boreholes have been decommissioned. Fourteen monitor wells installed prior to the SSA remain in use and are

shown on **Figure 2**. The locations of decommissioned wells and boreholes identified in historical reports are also shown on **Figure 2**.

The Site is underlain by sedimentary rocks of the Burro Canyon Formation (Kbc) and, to a lesser extent, Dakota Sandstone (Kd). A geologic map of the Site is shown on **Figure 3**. Rocks of the Kbc locally consist of fine- to medium-grained sandstone with minor layers of siltstone, shale, limestone, and conglomerate. In general, the Kbc is composed of two stratigraphic units: (1) an upper unit consisting of fine-grained sandstone layers interbedded with siltstone, shale, and thin beds of limestone, and (2) a lower unit consisting primarily of thickly-bedded, generally well sorted, fine- to medium-grained sandstone with minor siltstone and conglomerate lenses. The Kbc is underlain by mudstone and shale of the Brushy Basin Member (Jmb) of the Morrison Formation. The Jmb varies in thickness from between 300 to 450 feet in the vicinity of the Site (LWC, 2001).

The structural geology of the Site is dominated by two regional subsurface features, the Lisbon Fault (LF) and the Lisbon Valley Anticline (LVA). The LF is located immediately west-southwest of the Site (**Figure 1**). The LF trends northwest-southeast and bounds the Kbc to the west. The LF is a high-angle reverse fault with more than 2,000 feet of vertical displacement, exposing Jurassic-age and uranium ore-bearing Triassic-age sedimentary rocks along a distinct northwest trending ridge west of the Site (**Figure 3**). Structural displacement and faulting have resulted in extensive fracturing of the Kbc sandstone in some areas along the fault zone, including the area south of the Site.

The LVA is a northwest-trending fold that plunges to the northwest (**Figure 1**). The LVA lies directly beneath the tailings impoundments. The LVA creates a subsurface structure where the Kbc/Jmb contact is at a topographic high along the LVA axis. A less extensive syncline is located between the LVA and LF and generally parallels the two features (**Figure 1**). The Kbc varies in thickness from less than 50 feet over the axis of the LVA to greater than 250 feet in the southern and northern portions of the Site (LWC, 2001).

2.3 MONITOR WELL INSTALLATION

A total of 27 new monitor wells were installed in 2012 and 2013 during the SSA. Eight monitor wells were installed on the Site[1] during Phase 1. The remaining 19 monitor wells were installed on Bureau of Land Management (BLM) land[2], west and south of the Site during Phase 2. **Figure 4** shows the locations of the new wells. The well locations were selected based on an evaluation of historical Site data, the results of preliminary modeling, and recommendations from DRC in their Request for Information letters dated February 6, 2012 and May 1, 2012 (DRC, 2012c and d). The installation program for the new monitor wells included drilling, well construction, development, surveying of well coordinates, and management of investigation derived waste (IDW).

2.3.1 Drilling Methods and Well Construction

New monitor wells were installed during the periods from September 9 to October 31, 2012 (Phase 1) and from August 20 to October 11, 2013 (Phase 2). The wells were designed and constructed in accordance with UAC R317-6-6.3(I)(6), the Utah Division of Water Rights Standards (R655-4 UAC), and the Resource Conservation and Recovery Act guidance document entitled *Ground Water Monitoring Technical Enforcement Guidance Document* (U.S. Environmental Protection Agency, 1986). Drilling was conducted by State of Utah licensed well drillers Boart Longyear (Phase 1) and National Exploration, Wells & Pump (National EWP) (Phase 2). The monitor well boreholes were drilled using conventional or reverse-circulation air rotary drilling methods. Specific adaptations were made on a well-by-well basis to accommodate local hydrogeologic conditions.

All drilling and well construction activities were directed in the field by a qualified M&A hydrogeologist and completed under the supervision of an M&A Professional Geologist, licensed in the State of Utah. During drilling operations, the on-site M&A hydrogeologist

[1] Well installation during Phase 1 was limited to areas within the RAML property boundary.
[2] Drilling and well construction on BLM land were conducted in accordance with the August 2013 Amended Right-of-Way Grant UTU-80472.

maintained continuous lithologic logs of the subsurface materials encountered and notes regarding drilling characteristics and water encountered in each of the boreholes. Representative samples of drill cuttings were obtained at 10-foot depth intervals during drilling. Additionally, continuous core samples were obtained at seven locations. Lithologic descriptions of drill cutting samples and core samples were prepared and are provided in **Appendix B**.

Twenty-one monitor wells were completed with screens in the Burro Canyon Aquifer hydrostratigraphic unit (BCA) within the Burro Canyon Formation. In this report, Kbc is used to refer to the rocks or unsaturated portion of the Burro Canyon Formation. Wells screened in the BCA are designated as BCA wells. Five wells were completed with screens in the Brushy Basin Member of the Morrison Formation. The designation Jmb is used to refer to the rocks or unsaturated portion of the Brushy Basin Member of the Morrison Formation. The saturated portion of the Jmb is designated as the Brushy Basin Member hydrostratigraphic unit (BBM). Wells screened in the BBM are designated as BBM wells. The BBM well designation was retained to maintain the naming convention previously established for the Site. One well was installed southwest of the LF and screened in the Chinle Formation (TRc). The wells were completed as follows:

- BCA wells MW-101, MW-102, MW-104, MW-105, MW-108, MW-109, MW-114, MW-116, MW-118, MW-119, MW-120, and MW-122 were completed to fully penetrate the BCA.
- BCA wells MW-107S and MW-107D were completed as companion wells, to fully penetrate the BCA with isolated shallow and deep screens at a single location.
- BCA wells MW-100, MW-112, MW-113, MW-115S, MW-115M, MW-117S, and MW-117M were completed as companion wells to existing wells, to screen the saturated portion of the BCA not screened by the existing well.

- BBM wells MW-103, MW-106, MW-110 and MW-111 were completed in the upper 30 to 50 feet of the Jmb to characterize groundwater conditions in the upper BBM.
- BBM well MW-102DB was completed in the Jmb and was screened in the BBM beneath the BCA.
- Well MW-121 was installed to characterize groundwater conditions southwest of the LF.
- Boring B-2 was drilled south of the LF, but was dry, so it was not completed as a monitor well.

All new wells were constructed of flush-threaded, 4-inch diameter, schedule 40, PVC blank riser, machine-slotted well screen, and end caps. All new wells were completed with lockable, 8-inch diameter, steel, above-grade monuments, set into 4 by 4-foot concrete pads. Well construction details for the 27 new monitor wells are summarized in **Table 1**. A detailed summary of well installation activities, detailed lithologic descriptions of materials encountered during drilling, and schematic diagrams of the 27 monitor wells and one abandoned borehole are provided in **Appendix B**.

At the majority of drilling locations, the hydrogeologic conditions encountered during drilling were generally consistent with expected conditions and well construction activities were conducted in accordance with procedures described in the approved Phase 1 and Phase 2 work plans (M&A, 2012 and 2013). At the drilling locations adjacent to existing wells EF-3A and EF-8, difficult drilling conditions were encountered, prompting modification to proposed well designs. Distinct zones of unconsolidated sand, poorly-lithified sandstone, and fractured sandstone were encountered causing boreholes to slough significantly. Modifications to well designs were discussed and approved by DRC prior to implementation. Drilling and well design modification at these locations are described in detail in **Appendix B** and summarized below:

- At existing well EF-8, construction of a single companion well in the upper portion of the BCA was proposed in the Phase 2 work plan. In the initial borehole, sloughing conditions prevented well construction to the target depth. In an electronic mail correspondence from DRC dated August 26, 2013 (DRC, 2013b), DRC approved construction of a shallow monitor well (MW-115S) in the borehole above the sloughed zone, to screen the upper portion of the BCA, and a second intermediate well (MW-115M) to screen the interval between MW-115S and EF-8. Installation of the intermediate well was initially unsuccessful due to sloughing conditions and lost circulation. The equipment required to maintain borehole stability was not readily available and the field team demobilized from the site. The field team remobilized to the Site with specialized drilling equipment and completed intermediate well MW-115M.
- At existing well EF-3A, construction of a BBM well and an upper BCA well was originally proposed in the Phase 2 work plan. Installation of conductor casing and grout seal for the BBM well was prevented by sloughing conditions. In an email correspondence from DRC on August 30, 2013 (DRC, 2013c), DRC approved RAML to abort the BBM well. Instead, intermediate BCA well (MW-117M) was discretely screened across the zones of incompetent, weakly-lithified sandstone. A second shallow BCA well (MW-117S) was installed to screen the remaining upper saturated portion of the BCA.

2.3.2 Core Sampling

At seven drill locations, continuous core samples were obtained from a corehole prior to well construction. During Phase 1, coreholes were drilled at the MW-102DB and MW-103 locations with the air rotary rig, equipped with a 5-inch diameter (PQ) core barrel. After coring, the coreholes were reamed to accommodate well construction. During Phase 2, PQ coreholes were drilled at the MW-107D, MW-109, MW-116, MW-117M, and MW-118 locations using a dedicated coring rig. After coring, the coreholes were abandoned with

bentonite grout and a cement cap. The associated monitor well boreholes were drilled within 10 feet of the abandoned corehole at each location.

Selected core samples obtained from the MW-102DB, MW-109, MW-117M, and MW-118 coreholes were submitted for laboratory analysis of hydraulic conductivity (K). Selected samples from MW-102DB and MW-103 were submitted for chemical analysis. Core samples not submitted for analysis were placed in labeled core boxes, covered with plastic, and stored in a secured area at the Site. The depth intervals and lithologic descriptions of the core samples selected for physical and chemical analysis are summarized in **Appendix C**.

2.3.3 Well Survey

The new monitor wells were surveyed by Keogh Land Surveying, a licensed Utah land surveyor. The elevation of the tops of the PVC casings, protective steel monuments, and land surface/concrete pads were surveyed relative to the 1988 North American Vertical Datum and horizontal coordinates were surveyed relative to the 1927 North American Datum, Utah State Plane South coordinate system. The PVC well casings were marked to indicate the water level measuring point.

2.3.4 Well Development

Following installation, new wells were developed by surge and purge methods. Monitor wells installed during Phase 1 were developed by Confluence Environmental, Inc. (CEI) during the period from October 29 to October 31, 2012. Monitor wells installed during Phase 2 were developed by National EWP during the period from September 19 to September 23, 2013. Monitor well MW-115M, which was completed on October 10, 2013, was developed by CEI on October 11, 2013. Well development activities were supervised by an M&A hydrogeologist.

New wells that contained a sufficient amount of water were surged across the entire saturated screened interval with a 4-inch diameter surge block. The majority of wells were then purged using a bailer or pump until development water was free of sediment and the field parameters pH, specific conductance, and temperature had stabilized. Wells MW-104, MW-106, MW-109, MW-110, and MW-119 were surged and then purged dry after one borehole volume was removed. Development at these wells was limited by slow recovery after the initial evacuation. Monitor wells MW-111, MW-121, and MW-122 were dry at the time of development activities.

2.3.5 Investigation Derived Waste Management

All waste rock cuttings generated during drilling activities were contained in roll-off bins. After Phase 1 drilling was completed, four-point composite samples were collected from each roll-off bin and submitted to ACZ Laboratories, Inc. of Steamboat Springs, Colorado (ACZ Lab) under standard chain of custody protocols for disposal characterization analyses. Upon approval from the landfill in January 2013, the drill cuttings generated during Phase 1 were transported by MP Environmental Services, Inc. (MPE) to US Ecology (a landfill licensed to accept low-level radioactive material) in Grand View, Idaho for final disposal. Drill cuttings generated during Phase 2 were transported by MPE to US Ecology and disposed under the waste profile developed during Phase 1. Copies of the laboratory reports and disposal manifests for the cuttings are provided in **Appendix D**.

All drilling and development water from well installation activities was contained in the lined roll-off bins and transferred to 20,000-gallon secured storage tanks located on RAML property. After Phase 1 drilling was completed, a waste water sample was collected on November 7, 2012 and submitted to ACZ Lab under standard chain of custody protocols for disposal characterization analysis. Waste water generated during both phases of work was transported by MPE to US Ecology for final disposal under the waste water profile

developed during Phase 1. Copies of the disposal characterization laboratory reports and waste disposal manifests are provided in **Appendix D**.

2.4 CHEMICAL ANALYSIS OF CORE SAMPLES

As described in **Section 2.3.2**, selected core samples obtained at the MW-102DB and MW-103 locations were submitted to ACZ Lab under standard chain of custody protocols for chemical analysis. Representative samples of unbroken core, approximately 0.5 feet in length, were analyzed for uranium and other selected metals by Synthetic Precipitation Leaching Procedure (SPLP), US EPA Methods 6010B, 6020, and 7470A. The depth intervals and lithologic descriptions of the core samples selected for chemical analysis are summarized in **Appendix C**.

2.5 HYDRAULIC TESTING

Slug testing was conducted at new and existing wells to estimate formation K. In addition, core samples obtained from boreholes MW-102DB, MW-109, MW-117, and MW-118 were submitted for laboratory K analysis. Hydraulic testing was conducted in accordance with procedures described in the approved work plans.

2.5.1 Slug Testing

Slug testing was conducted at 38 wells in 2012 and 2013. The existing monitor wells and the majority of monitor wells installed during Phase 1 were slug tested during the period from August 24 to November 5, 2012. Insufficient and slow water level recovery due to low hydraulic conductivities near wells MW-104 and MW-106 prevented slug testing during

Phase 1. Because these wells would require an extended monitoring period to adequately slug test, they were slug tested during Phase 2 from August 19 to September 22, 2013.

Monitor wells installed during Phase 2 were slug tested during the period from October 1 to October 12, 2013. BCA well MW-122, BBM wells MW-110 and MW-111, and TRc well MW-121 (south of the LF) were not slug tested. At the time of the testing event, water levels in wells MW-110 and MW-111 were still recovering after installation activities. Wells MW-121 and MW-122 were dry or contained an insufficient amount of water for slug testing.

Prior to slug testing, all new wells were left undisturbed for a period of at least 7 days after development activities, with one exception. Monitor well MW-115M, which was completed and developed after all other wells had been tested (**Appendix B**), was slug tested one day after development. After development activities at MW-115M, a pressure transducer/datalogger was used to monitor water level recovery, and slug testing was conducted after water level had recovered to a static condition.

Slug testing comprised the near instantaneous introduction and withdrawal of a solid cylinder into groundwater, displacing a known volume of water in each well and measuring the imposed fluctuation of the groundwater level. A minimum of two falling-head (lowering of slug into a well) and two rising-head (removal of slug from the well) slug tests were conducted at each well to verify that the data were repeatable. Where practical and as time permitted, three sets of slug tests were conducted. Slugs of different volumes were used at each location for comparative analysis.

In-Situ® Level TROLL® non-vented, integrated pressure transducer/dataloggers were used to measure water level response during slug testing. At the majority of well locations, the dataloggers were programmed to record water level at a logging rate of one reading per second. At several well locations where recovery rates were slow, water level readings were

recorded at intervals up to 2 minutes. After the monitoring equipment was installed in a well, a slug was lowered quickly into the water. Falling head was monitored until water level in the well recovered to within approximately 98 percent of the initial static level. After water level had recovered to a static condition, the slug was quickly pulled out of the water. Monitoring of rising head continued until the water level recovered to within approximately 98 percent of the initial static water level.

2.5.2 Core Analysis

As described in **Section 2.3.2**, selected core samples obtained from the MW-102DB, MW-109, MW-117M, and MW-118 borings were submitted for laboratory estimation of horizontal and vertical K. Representative samples of unbroken core, approximately 0.5 to 1 foot in length, were submitted to Daniel B. Stevens & Associates, Inc. of Albuquerque, New Mexico (DBSA Lab) under standard chain of custody protocols. The samples were analyzed for saturated horizontal and vertical K by flexible wall falling head-rising tail method. Samples were also analyzed for porosity. The depth intervals and lithologic descriptions of the core samples selected for laboratory K analysis are summarized in **Appendix C**.

2.6 VIDEO LOGGING

Down-hole video logging was conducted at three existing monitor wells during Phase 1. Based on a review of historic information, discrepancies were noted in the construction records of existing wells ML-1 and MW-13. Video logs were obtained to clarify the construction of these wells. During Site work, a well of unknown designation was located southeast of well MW-13 (**Figure 4**). This well, assigned the designation of UW-1, was video logged to determine its condition and viability as a monitor well. Video logging

was conducted by CEI under the supervision of an M&A hydrogeologist. Findings of the video logging are described below:

ML-1: The well log for well ML-1 indicates that it was constructed with two well screen intervals separated by about 70 feet. Based on the video log, well ML-1 is not screened from 60 to 80 feet bgs as originally reported. Instead, well ML-1 has one screened interval from 135.7 to 154.7 feet bgs (137.0 to 156.0 feet below the top of PVC casing measuring point [bmp]). The well screen is constructed with horizontal, machine-slotted PVC and appears to be in good condition. The bottom of the well is at 155.7 feet bgs (157.0 feet bmp).

MW-13: Discrepancies were noted in historic documentation of the depth of MW-13 and length of the screened interval. Video logging confirmed that well MW-13 is screened from 126.7 to 203.7 feet bgs (129.0 to 206.0 feet bmp). The well screen is constructed of PVC with vertical saw-cut perforations. The perforations are approximately 1/8 inch wide, 6 inches long, and staggered across the interval with three separate perforations in the casing. Heavy orange and black staining was observed on the lower 40 feet of well screen. The bottom of the well is at 203.7 feet bgs (206.0 feet bmp).

UW-1: Based on the video log, well UW-1 is screened from 100.6 to 137.6 feet bgs (103.0 to 140.0 feet bmp). The 4-inch diameter PVC well screen is perforated with vertical saw-cut perforations, approximately 1/8 inch wide, 6 inches long, and staggered across the interval with three separate perforations in the casing. The screen appears to be in good condition. The bottom of the well is at 137.6 feet bgs (140.0 feet bmp).

2.7 GROUNDWATER MONITORING

The current groundwater monitoring program at the Site includes water level monitoring and groundwater sampling. Per the License and LTGMP, the 14 existing monitor wells (installed prior to 2012) are monitored in the fall of each year. Trend monitor wells RL-1 and EF-8 and Point-of-Compliance (POC) well OW-UT-9 are currently out of compliance with the License and are monitored more frequently. Trend wells RL-1 and EF-8 were monitored on a monthly basis through May 2014; at the request of RAML[3], DRC approved quarterly sampling in these wells (DRC, 2014b). POC well OW-UT-9 was monitored on a quarterly basis from November 2012 through June 2014, and is currently monitored on a monthly basis.

In addition to the scheduled compliance monitoring events, the SSA included comprehensive groundwater monitoring events in the fall of 2012, the spring and fall of 2013, and the spring of 2014. Each event included water level monitoring and groundwater sampling at existing wells (installed prior to 2012) and available new monitor wells (installed in 2012 and 2013). Groundwater monitoring was conducted in accordance with procedures described in the approved work plans.

During the SSA comprehensive monitoring events, groundwater samples were collected from monitor wells using multiple sample methods. Multiple methods were used to investigate and compare different sampling methods to determine the most representative and appropriate sampling methods for the Site. A detailed evaluation of sample methods and recommendations for sampling procedures will be included in the future in a revised LTGMP for the Site.

[3] Following 2 years of monthly monitoring at RL-1 and EF-8, RAML requested that the sampling frequency be reduced to a quarterly basis in the 2013 Annual Groundwater Monitoring Report (M&A, 2014).

2.7.1 Groundwater Sampling Methods

During the four SSA comprehensive monitoring events, groundwater samples were collected using HydraSleeve no-purge, modified low-flow minimal purge[4], and standard three-casing volume purge (purge) methods. In general, all three sample methods were used during the initial two monitoring events at each well location. After two sets of samples were collected at each well using all three methods, subsequent samples were collected using HydraSleeve and modified low-flow methods. The prescribed sample method program was followed at all well locations, except at those where insufficient water or slow water level recovery prompted modified sampling procedures. **Table 2** summarizes the sample methods used at each well during each monitoring event.

Groundwater samples were collected by the HydraSleeve method, followed by the modified low-flow method. When used, the purge method followed the other two methods. Sample method procedures are described in detail in the approved work plans. General procedures for each method are described in **Appendix E**. Groundwater monitoring was conducted by CEI, a qualified company specializing in groundwater sampling[5]. Sample methods, water level data, and field parameters measured during sampling were recorded on field sampling data sheets (FSDSs). Copies of the FSDSs are provided in **Appendix E**. Field parameter data are summarized in **Table 3**.

2.7.2 General Sampling Protocols

Quality Assurance/Quality Control (QA/QC) sampling included collection of duplicate samples, equipment rinsate blanks, and laboratory split samples. During each event, duplicate groundwater samples were collected at a frequency of approximately 10 percent of the total number of groundwater samples collected, and at least two duplicate

[4] At the request of DRC, the low-flow sampling method is considered "modified" because well screened intervals at the Site exceed the US EPA recommended maximum length of 10 feet (Yeskis and Zavala, 2002).
[5] DRC has conducted field audits of groundwater sampling at selected wells and approved the field sampling methods and protocols (DRC, 2014b).

samples were collected using each of the three sample methods. Up to three equipment rinsate blanks were collected during each event to assess the effectiveness of equipment decontamination procedures. Equipment blanks were prepared by pouring or pumping reagent-grade de-ionized water over or through sampling devices after decontamination procedures were conducted. During each event, split samples were collected using all three sample methods and submitted to an alternate laboratory.

Samples were placed in laboratory-supplied containers and given a unique 4-digit sample identifier. Samples collected for dissolved metals analysis were filtered in the field using disposable 0.45 micron filters and preserved with laboratory-supplied nitric acid. Sample containers were placed in iced coolers immediately after sample collection and shipped to Energy Laboratories of Casper, Wyoming (Energy Lab) under standard chain of custody protocols. The QA/QC split samples were submitted to ACZ Lab. In accordance with the LTGMP and the License, all groundwater samples were analyzed for dissolved uranium, molybdenum, selenium, and arsenic by US EPA Method 200.8, for TDS by standard method A2540 C, for chloride and sulfate by US EPA Method 300.0, for bicarbonate as HCO_3 by standard method A2320 B, and pH by standard method A4500-HB. In addition to the required analyses, samples were also analyzed for calcium, magnesium, potassium, and sodium by US EPA Method 200.7, carbonate as CO_3 by standard method A2320 B, and specific conductance by standard method A2510 B.

Purge water generated during groundwater sampling activities was contained and transported to the storage tanks located on RAML property. The purge water was transported by MPE to U.S. Ecology in Grand View, Idaho for disposal. Copies of waste disposal manifests are provided in **Appendix D**.

2.7.3 Agency Field Audit and Split Sampling

DRC representative, Mr. Tom Rushing, visited the Site during the fall monitoring events in 2012 and 2013 to collect QA/QC split samples and to audit groundwater sampling procedures. On October 30, 2012, an additional sample set was collected from well ML-1. On October 9, 2013, additional sample sets were collected from wells LW-1 and RL-5. The split samples were collected using the modified low-flow method and sampling equipment provided by CEI. DRC maintained custody control of the split samples after collection. During each visit, Mr. Rushing observed sample collection by HydraSleeve, modified low-flow, and purge methods, calibration of field meters, and decontamination of sampling equipment at multiple wells. The sampling methods and protocols were found to be acceptable by DRC during the audit (DRC, 2014b).

3.0 SUMMARY OF DATA

This section presents a summary of the hydrogeologic data, hydraulic testing results, groundwater elevation data, and analytical data obtained during Phase 1 and Phase 2 of the SSA.

3.1 HYDROGEOLOGIC CONDITIONS

The hydrogeologic conditions encountered in the 27 new wells installed during the SSA were generally consistent with expected conditions. The characteristics of the Kbc and Jmb encountered were generally consistent with lithologic information reported for previous investigations. The fine-grained upper unit of the Kbc is more prevalent in the southern and northern portions of the Site and has generally been removed by erosion over the axis of the LVA. The well sorted basal sandstone unit was consistently encountered across the Site in the lower portion of the Kbc just above the Kbc/Jmb contact. Rocks of the Jmb primarily consist of mudstone and shale, characteristically greenish blue and reddish brown in color. **Appendix B** includes lithologic logs for the new wells installed during the SSA.

The contact between the Kbc and Jmb was encountered at elevations generally consistent with previously reported elevations. **Figure 5** shows contours of estimated contact elevation between the Kbc and Jmb. The elevation contours were developed based on observed contact elevations in the new wells, reported contact elevations in the existing wells, reported contact elevations from decommissioned wells and boreholes identified in historical reports, and contact elevations reported in the previous groundwater model (EarthFax Engineering, Inc., 1984; LWC, 2001). The Kbc/Jmb contact elevation data from decommissioned wells and boreholes are not shown on **Figure 5** to improve clarity. **Table 4** summarizes the available contact elevation data for decommissioned wells and boreholes.

Five hydrogeologic sections were prepared to depict hydrogeologic conditions at the Site. Sections A-A', B-B', C-C', D-D', and E-E' are included on **Figures 6, 7, and 8**. The sections were prepared using the recent and previously developed lithologic information. The sections include the screened interval of wells, the groundwater elevation from the most recent monitoring event (April 2014), and maximum uranium concentrations reported during SSA monitoring. In general, the geologic, water level, and water quality conditions observed in these sections are consistent with expected conditions based on information available prior to the investigation.

Based on information from the new wells, the following notable hydrogeologic and water quality conditions were observed:

Section A-A' (**Figure 6**)

- A syncline exists between the LF and the LVA.
- Groundwater at MW-108 occurs under confined conditions.
- Dry conditions were observed in borehole B-2, located southwest of the LF.
- Elevated uranium concentrations exist in MW-119.
- The saturated thickness of the BCA is relatively thin (less than 5 feet) at MW-119, installed near the crest of the LVA.
- An upward hydraulic gradient was observed from the deeper BCA to the shallow BCA at companion wells MW-107S/MW-107D. Vertical gradients at companion wells are discussed further in **Section 3.3.3**.

Section B-B' (**Figure 7**)

- The elevation of the Kbc/Jmb contact along this transect varies from well to well, indicating relatively significant peaks and troughs. The peaks and troughs are likely a result of an erosion unconformity and deformation from a combination of folding and faulting.

- The contact between the Kbc and Jmb is relatively shallow between monitor wells MW-105 and companion wells MW-117S/MW-117M/EF-3A. This apparent ridge of elevated Jmb appears to restrict groundwater flow from southeast to northwest in the area between the tailings impoundments and the LF.
- Downward hydraulic gradients were observed from the shallow BCA to the deeper BCA at companion wells MW-112/ML-1, MW-115S/MW-115M/EF-8, and MW-117S/MW-117M/EF-3A (**see Section 3.3.3**).
- The saturated thickness of the BCA is greatest (up to 170 feet at EF-8) in the area southwest of the Site.
- Uranium concentrations increase with depth of well screen in companion wells MW-112/ML-1, MW-115S/MW-115M/EF-8, and MW-117S/MW-117M/EF-3A.

Section C-C' (**Figure 7**)

- The saturated thickness of the BCA is relatively thin (generally less than 25 feet) in wells along this transect northwest of the LVA axis.
- An upward hydraulic gradient was observed from the BBM to the BCA in companion wells MW-102/MW-102DB (**see Section 3.3.3**).
- The highest uranium concentrations at the Site are detected in BCA wells northwest of the LVA, with the highest detection in well MW-102. Uranium concentrations decrease in the northwest direction in wells located along the C-C' transect.

Section D-D' (**Figure 8**)

- The LVA plunges to the northwest.
- The Kbc is dry in the area near BBM wells MW-103, MW-106, MW-110, and MW-111. The Kbc is dry at BCA well MW-122.
- Groundwater was encountered in the Jmb at monitor wells MW-103, MW-110 and MW-111. Water levels in MW-110 and MW-111 have been slowly rising since well installation. During installation activities in 2012, the Kbc was also

dry at BBM well MW-106. Since that time, water level has slowly risen approximately 1.5 feet above the estimated Kbc/Jmb contact.

- Groundwater in the BBM at MW-103, located adjacent to the lower tailings impoundment, is impacted by uranium at concentrations greater than 9 milligrams per liter (mg/L).

Section E-E' (**Figure 8**)

- The Kbc is dry at the crest of the LVA (near BBM well MW-111). The lower portion of Kbc is saturated on the north and south flanks of the LVA.
- Dry conditions were observed at TRc well MW-121 for several months after installation. The most recent depth to water measurement indicates that a small amount of water has accumulated in the well (less than 1 foot). It appears that groundwater is slowly accumulating in the well.
- An upward hydraulic gradient was observed from the deeper BCA to the shallow BCA at companion wells MW-100/LW-1 and MW-113/EF-6 (**see Section 3.3.3**).
- High uranium concentrations are detected at monitor well MW-116, consistent with naturally occurring mineralized and geochemical conditions along the LF (Jacobs and Kerr, 1965).

3.2 HYDRAULIC TESTING RESULTS

Slug testing was conducted in monitor wells to estimate saturated horizontal K of the BCA and BBM. In addition, core samples from selected monitor well boreholes were submitted for laboratory analysis of horizontal and vertical K. The following sections summarize the hydraulic testing results.

3.2.1 Slug Test Results

Slug tests were conducted at 38 of the 42 existing and new monitor wells during the field program. Multiple sets of tests were conducted at each well using slugs of varying volumes to demonstrate that measurements were repeatable. Four of the new wells were not slug tested. BCA well MW-122, BBM wells MW-110 and MW-111, and TRc well MW-121 (south of the LF) were either recovering slowly after installation activities or were dry during the slug testing events.

Water level recovery data for both falling head and rising head tests were analyzed using the aquifer test analytical software AQTESOLV (HydroSOLVE, 2008). The Bouwer-Rice method (Bouwer and Rice, 1976) was used to analyze the observed water level response for all wells except MW-13, which was analyzed using the Butler Inertial method (Butler, 1998). These methods are applicable for analysis of fully and partially penetrating wells under unconfined conditions (Bouwer, 1989; Hyder and Butler, 1995). For slug tests, displacement (i.e., change in water level in the well) at time t (H_t) is normalized by the initial displacement (H_0) as follows:

$$\text{normalized head} = H_t/H_0$$

The normalized head was plotted against time and matched against "type curves" of known horizontal K. Analytical results are presented as horizontal K in units of feet per day (ft/d). For each well tested, the arithmetic mean value of estimated horizontal K values for the slug tests is given in **Table 5**. At several wells, one or more of the estimated K values were not used to calculate the arithmetic mean. Estimated K values were omitted when an anomalous water level response was observed during slug testing or when the measured data were observed to be outside the normalized head range for matching results to type curve solutions. In some cases, measured data were not analyzed because the water level response measurement was interrupted during the test, usually because the datalogger was

inadvertently moved as the slug was deployed or retrieved. Slug testing field data sheets and water level data are provided in **Appendix F**.

Graphs of observed water level response, and the selected type curve, are provided in **Appendix F**. For most tests, the selected type curve matches the observed data within the normalized head range recommended by Butler for reliably matching results to solutions (Butler, 1998). The mean horizontal K value from the slug tests at each monitor well is considered to be a representative values for the area near the well. The estimated mean horizontal K values are shown on **Figure 9**, along with available K values estimated during previous Site investigations. **Table 6** summarizes K data from historical hydrogeologic investigation reports.

The highest estimated horizontal K values were observed in BCA wells. Estimated horizontal K values for the BCA ranged from 0.02 ft/d at wells MW-5 and MW-104 to 421 ft/d at well MW-13 (**Figure 9**). At MW-105, water level recovery during slug testing was near instantaneous, preventing analysis. Horizontal K at MW-105 is inferred to be greater than 421 ft/day. The highest horizontal K values in BCA wells occur in the area south of the tailings impoundments. This area of high K corresponds to an area where drilling and lithologic logs indicated fractured Kbc. Based on slug tests conducted during the SSA, the geometric mean of the representative horizontal K values in the BCA is 1.4 ft/d. The geometric mean horizontal K value estimated from the slug tests is similar to a previously reported geometric mean K value of 2.35 ft/d (LWC, 2001).

At BBM wells MW-102DB, MW-103, and MW-106, horizontal K was estimated at values of 0.7, 0.04, and 0.0007 ft/d, respectively (**Figure 9**). The geometric mean of the representative horizontal K values in the BBM is 0.03 ft/d.

At the time of the October 2013 slug testing event, water levels at BBM wells MW-110 and MW-111 were still recovering after well installation activities; therefore, slug

testing was not conducted. Since that time, water level recovery has been monitored at these wells on a monthly basis. Water level measurements obtained in April 2014 indicate that water levels are still recovering in these wells. The very slow water level recovery in wells MW-110 and MW-111 indicates that the K of the BBM at these locations is very low.

3.2.2 Laboratory Test Results

Core samples from the MW-102DB, MW-109, MW-117M, and MW-118 boreholes were submitted to DBSA Lab for saturated horizontal and vertical K analysis. At least one core sample from the saturated portions of the Kbc (BCA) and Jmb (BBM) was selected from each of the four boreholes. **Table 7** summarizes the results of the laboratory K testing. A detailed summary of laboratory analytical results is provided in **Appendix C**.

In the Kbc core samples from the BCA, horizontal K values in the BCA ranged from 0.004 ft/d in core samples from the MW-109 and MW-118 boreholes to 2 ft/d in core samples from the MW-109 and MW-117M boreholes. Vertical K values in the BCA ranged from 0.0002 ft/d in a core sample from the MW-109 borehole to 0.3 ft/d in core samples collected from the MW-102DB and MW-117M boreholes. In the majority of BCA core samples, vertical K was reported at values at least an order of magnitude lower than horizontal K values reported in the same core sample.

In BBM core samples collected from the MW-102DB, MW-117M, and MW-118 boreholes, horizontal K and vertical K were reported at values several orders of magnitude lower than those reported in the majority of BCA core samples. Horizontal K values in the BBM ranged from 1×10^{-5} ft/d in the lower core sample from the MW-102DB borehole to 0.1 ft/d in the upper core sample from the MW-102DB borehole. Vertical K values in the BBM ranged from 1×10^{-6} ft/d in the sample from the MW-117M borehole to 0.1 ft/d in the upper sample from the MW-102DB borehole. In the majority of BBM core samples, horizontal K and vertical K were reported at similar or equal values.

3.3 GROUNDWATER CONDITIONS

This section presents information on groundwater elevations, hydraulic gradients, and saturated thickness for the BCA and BBM.

3.3.1 Groundwater Elevations

Manual depth to water measurements obtained from BCA and BBM wells during the four comprehensive monitoring events were used to calculate groundwater elevations. Depth to water measurements and groundwater elevations are summarized in **Table 8**. Groundwater elevation data from the most recent event conducted in April 2014 were used to prepare a groundwater elevation contour map (**Figure 10**). Water level hydrographs for the 14 existing wells and the 8 new Phase 1 wells are included in **Appendix G**[6].

During the April 2014 event, groundwater elevations in the BCA wells ranged from 6,449.80 ft msl at well RL-6 to 6,610.97 ft msl at well MW-104. In the BBM wells, static groundwater elevations ranged from 6,581.41 ft msl at well MW-103 to 6,625.46 ft msl at well MW-106.

Groundwater elevations in BCA wells are generally consistent with those expected based on previous monitoring data, with one exception. At BCA well MW-104, groundwater is encountered just above the Kbc/Jmb contact and appears to be a result of perched conditions. MW-104 is located along the axis of the LVA in an area where the Kbc/Jmb contact is shallow and the BCA is expected to be dry. Groundwater elevations measured in MW-104 are anomalously high, when compared to groundwater elevations in nearby BCA wells.

[6] To date, insufficient water level data have been obtained from the 19 wells installed during Phase 2 to develop time-series graphs. These graphs will be prepared in the future when additional data are available.

Based on monitoring conducted to date, water levels have not reached static conditions in 4 wells. At BBM well MW-110, a very slow rise in water level has been observed since installation. As of April 2014, approximately 4 feet of water had accumulated in the well. At BBM well MW-111, dry conditions were observed at the time of installation. Since November 2014, water level has risen steadily, and as of April 2014, approximately 34 feet of water had accumulated in the well. TRc well MW-121 was dry for several months after installation, and had accumulated approximately 1 foot of water by April 2014. Water levels in MW-110, MW-111, and MW-122 are rising and will continue to be monitored. At BCA well MW-122, dry conditions were observed for several weeks after installation. A small amount of water was observed in the well in December 2014, and in April 2014, the water level remained within the casing end cap. The small amount of water is likely an accumulation of residual drill water, and well MW-122 is considered dry until additional monitoring is conducted.

3.3.2 Groundwater Flow Directions and Hydraulic Gradients

The Site is located in the Upper Colorado-Kane Springs groundwater basin of eastern Utah. Available regional groundwater elevation data for wells identified in the Utah Division of Water Rights registry database and for Site monitor wells were used to prepare a regional groundwater elevation contour map (**Figure 11**). North-northeast of the Site within the BCA, groundwater flows generally west-southwest. A topographic divide exists immediately east of the Site; a groundwater divide may be associated with the topographic divide. Groundwater east of the divide flows south and east into the Animas groundwater basin. The BCA is recharged primarily in mountainous outcrop areas north of the Site (LWC, 2001).

Groundwater flow in the BCA in the vicinity of the Site is influenced by the LVA and the LF. Groundwater elevations indicate that the flow of groundwater is towards the LF. The LVA creates a subsurface structure where the Kbc/Jmb contact is relatively shallow

along the northwest trending LVA axis (**Figure 5**). A dry zone in the BCA exists along potions of the LVA axis (**Figure 10**).

Contours of April 2014 groundwater elevations indicate the following about groundwater flow directions and horizontal hydraulic gradients in the BCA:

- The groundwater flow direction in the area north-northwest of the LVA transitions from northwest to west. The average horizontal hydraulic gradient in this area between wells MW-5 and RL-4 is 0.008 foot per foot (ft/ft).
- In the area between monitor wells MW-101 and MW-119, the groundwater flow direction transitions from west-northwest to west-southwest. Between these wells, the LVA plunges, the Kbc is thinly saturated, and groundwater in the BCA flows to the west-southwest. The average horizontal hydraulic gradient between wells MW-101 and MW-119 is 0.012 ft/ft.
- In the northwest portion of the study area (northwest of monitor wells ML-1/MW-112), groundwater flow directions are to the west and west-southwest. Groundwater flow is toward the LF. The average horizontal hydraulic gradient in this area between wells ML-1/MW-112 and MW-118 is 0.009 ft/ft.
- In the area between the BCA dry zone along the LVA and the LF (southeast of monitor wells ML-1/MW-112), groundwater flow directions and hydraulic gradients vary. In the area between monitor wells MW-120 and MW-117S/MW-117M/EF-3A, groundwater flow direction is to the northwest, with an average horizontal hydraulic gradient of 0.011 ft/ft.
- An area of relatively flat hydraulic gradient exists between MW-120 and MW-13. Average horizontal hydraulic gradient between these wells is 0.0002 ft/ft. An area of relatively steep hydraulic gradient exists between wells MW-13 and MW-117S/MW-117M/EF-3A. Average horizontal hydraulic gradient between these wells is 0.019 ft/ft. The transition from flat to steep horizontal gradient in this area is believed to be related to the pronounced subsurface “high” in the Kbc/Jmb contact in

this area. The extent of this high contact area is not fully characterized. The high contact area appears to restrict groundwater flow into a relative narrow zone near the LF.

- In the area between MW-117S/MW-117M/EF-3A and MW-114, groundwater flow direction is to the west, toward the LF, with an average horizontal hydraulic gradient of 0.003 ft/ft.
- Groundwater elevations in the BCA in the area northeast of the LVA axis are higher than in the area southwest of the LVA axis. The groundwater elevation drop across the LVA indicates that a component of groundwater flow occurs across the LVA in the BBM. The groundwater elevation contours in the area west of the tailings impoundments are consistent with the concept that groundwater is flowing through the BBM into the BCA in this area.

Contours of April 2014 groundwater elevation indicate the following about groundwater flow directions and hydraulic gradients in the BBM:

- Groundwater elevations in the BBM in the area southeast of the tailings are higher than in the area northwest of the tailings, indicating that a component of groundwater flow to the northwest occurs between these areas. The observed groundwater elevations in the BBM are indicative of conditions in the upper 30 to 50 feet of the Jmb. Groundwater flow conditions in deeper portions of the Jmb could be different than the shallower interval characterized in the SSA.
- Groundwater elevations in the BBM in the area southeast of the tailings and south of former Bisco Lake are higher than groundwater elevations in the BCA, indicating that groundwater could be discharging from the BBM to the BCA in this area. Groundwater elevations in the BBM in this area are indicative of a residual mound in the BBM, which is likely the result of seepage of tailings and Bisco Lake water into the BBM.

- In BBM wells MW-110 and MW-111, located in the area west-northwest of the tailings, depth to groundwater in April 2014 was observed at elevations lower than groundwater elevations in the BCA. As of April 2014, water levels in these wells were still recovering from well installation activities.
- Between BBM wells MW-106 and MW-103, average horizontal hydraulic gradient in the upper 30 to 50 feet of the BBM is 0.01 ft/ft.

3.3.3 Vertical Gradient

Groundwater elevation data obtained during the fall 2013 and spring 2014 monitoring events were used to calculate vertical gradients at companion wells in the study area. Vertical gradients at companion wells are summarized in **Table 9**. The vertical gradients observed at each location during the fall 2013 event were generally consistent with those observed during the spring 2014 event.

In BCA companion wells MW-110/LW-1, MW-113/EF-6, and MW-107S/MW-107D, upward gradients were observed, ranging from -0.005 ft/ft to -0.020 ft/ft. In BCA companion wells MW-112/ML-1, MW-115S/MW-115M, EF-8, and MW-117S/MW-117M/EF-3A, downward gradients ranged from 0.001 ft/ft to 0.018 ft/ft. The average vertical gradients are similar in magnitude to the average horizontal gradients in the BCA.

Upward gradients of -0.195 and -0.196 ft/ft were observed at BCA/BBM companion well MW-102/MW-102DB in fall 2013 and spring 2014, respectively. The upward gradient across the hydrostratigraphic units is significantly greater than upward gradients observed in BCA companion wells. The strong upward gradient at this well pair is evidence that higher hydraulic heads exist in the BBM beneath the tailings. The high hydraulic head in the BBM is believed to reflect a residual groundwater mound beneath the tailings impoundments, which is the result of historical seepage from the impoundments and Bisco Lake. The

groundwater elevation observed at MW-102DB may be hydraulically connected to this groundwater mound in the BBM.

3.3.4 Saturated Thickness of BCA

Figure 12 shows the estimated saturated thickness of the BCA. Saturated thickness of the BCA varies at the Site. In general, saturated thickness is smaller in areas near the LVA and larger in areas away from the LVA. The saturated thickness in the area northwest of the tailings impoundments near well MW-119 is less than 5 feet. Southeast of this area along the LVA crest the BCA is dry. Saturated thickness in the area west-southwest of the tailings impoundments increases steeply along the flank of the LVA to a thickness greater than 170 feet at the bottom of the syncline. Saturated thickness in the area west-northwest of the tailings impoundments varies along the axis of the syncline, with a relatively steep increase toward the axis of the syncline. Saturated thickness varies along the LF and is less than along the axis of the syncline.

3.4 LABORATORY TESTING OF VADOSE ZONE CORE SAMPLES

Historical drainage of tailings water through the Kbc near the tailings could have resulted in attenuation of residual uranium (and other trace metals) in the vadose zone. SPLP tests on core samples from well MW-103 were conducted to assess the potential that residual uranium and other trace metals in the vadose zone near the tailings could be mobilized by infiltrating water and continue to impact groundwater quality. SPLP testing on one core sample from MW-102DB was requested by DRC to assess the significance of a zone of black staining observed over the depth interval from 114 to 123.5 ft bgs. **Table 10** summarizes the leachate water quality from the SPLP tests conducted on vadose zone core samples from selected depth intervals from wells MW-103 and MW-102DB.

The results of SPLP testing indicate that the uranium concentration in the leachate from all core samples from well MW-103 is low. These results indicate that the amount of leachable uranium in the vadose zone at well MW-103 is low, and uranium in the vadose zone in this area does not represent a significant source to the groundwater. Uranium was not detected in the SPLP leachate from the MW-102DB core sample. Trace metals results for core samples are summarized in **Appendix C**. A copy of the laboratory report is provided in **Appendix C**.

3.5 GROUNDWATER QUALITY

As described in **Section 2.7**, the SSA included comprehensive groundwater sampling events in the fall of 2012, the spring and fall of 2013, and the spring of 2014. In general, the first two sets of samples collected from each well during the SSA were collected using the HydraSleeve no-purge, modified low-flow minimal purge, and standard three-casing volume purge methods. After the first two sets of samples were collected, subsequent samples were collected by HydraSleeve and modified low-flow methods. This program was altered at well locations where insufficient water or slow water level recovery prompted modified sampling procedures.

Review of the groundwater quality data from the comprehensive events indicates that all three sampling methods provide comparable analytical results[7]. To be conservative, the maximum concentrations for common constituents and trace metals reported during each event were used for site characterization purposes. **Table 11** summarizes the maximum concentrations of dissolved trace metals and common constituents[8], including dissolved uranium, arsenic, selenium, molybdenum, bicarbonate, chloride, TDS, and sulfate reported in each well during the four events. **Table 11** also summarizes pH data from the sampling

[7] Additional analysis of the comparability and representativeness of water quality data from all sampling methods will be completed for the revised groundwater monitoring plan, which will be developed after new ACLs are approved by DRC.
[8] The parameters used to characterize water quality are consistent with the License.

events. Time-series hydrographs of the trace metals, common constituents, and pH in the 14 existing wells and the 8 wells installed during Phase 1 are provided in **Appendix G**[9]. Groundwater analytical results for all samples collected during the SSA are provided in **Table H-1** (**Appendix H**). **Table H-1** also includes historical sample data from existing wells, and monthly and quarterly sample results for out-of-compliance wells RL-1, EF-8, and OW-UT-9.

Analytical results from groundwater samples collected using the HydraSleeve and modified low-flow methods were comparable to results from samples collected using the traditional volume-based purge method at all wells with one exception. At BBM well MW-102DB, water quality parameters in samples collected during the initial November 2012 sampling event (shortly after well installation) using the purge method were reported at anomalously elevated concentrations when compared to samples collected by HydraSleeve and modified low-flow methods during the same event.

During the subsequent monitoring event conducted in April 2013, the purge rate was reduced from 3 gpm to 2 gpm during purge sampling at MW-102DB. Water quality data for the samples collected by all three methods were comparable, indicating that the November 2012 purge sample results were anomalous and not representative of actual BBM conditions. The cause of the elevated concentrations in the initial purge samples is unclear. Possible causes include: (1) purging at the higher rate during the November 2012 event may have caused BCA groundwater to flow into the BBM. During purge sampling in MW-102DB at 2 gpm, groundwater elevations in MW-102 did not change, indicating a lack of hydraulic connection between the two wells at that purge rate over the sampling period; and (2) the initial samples may have been affected by the residual effects of well installation and development activities. The elevated purge sample results are provided in **Table H-1**, but were not used for site characterization.

[9] To date, insufficient data have been obtained from the 19 wells installed during Phase 2 to develop time-series graphs. These graphs will be prepared in the future when additional data are available.

Water quality data obtained from the 14 existing monitor wells during the SSA are consistent with historical concentrations observed prior to 2012. Water quality data reported in new wells installed during the SSA are generally consistent with concentrations reported from previous investigations (LWC, 2001). One notable concentration was detected in the SSA. In BCA well MW-116, located adjacent to the LF, common constituents and trace metals concentrations are significantly higher than concentrations reported in nearby BCA wells located closer to the Site. Additionally, the pH of groundwater at MW-116 is between 3.5 and 4, which is the lowest pH detected near the Site. The water quality detected at MW-107S, and to a lesser degree MW-107D, is similar to that of MW-116, with elevated inorganic constituent concentrations and depressed pH (**Table 11**).

The water quality at MW-116 and MW-107S (and to a lesser degree MW-107D), are believed to reflect naturally occurring hydrochemical conditions in the LF zone[10]. Jacobs and Kerr (1965) report mineralogical evidence of hydrochemical alteration in the LF zone, including evidence of the presence of high temperature acidic water in the fault zone at times during tectonic activity in the fault zone. The observed water quality conditions at MW-116 and MW-107S, located immediately adjacent to the LF, are consistent with the reported hydrochemical conditions of the LF. The acidic mineralized groundwater detected in MW-116 and MW-107S are naturally occurring and not the result of mining at the Lisbon Facility. Results from MW-116 and MW-107S are included on water quality figures. However, water quality data from these wells were not used to characterize the extent of impacts from the Site.

3.5.1 Common Constituents

Groundwater samples collected during the SSA were analyzed for a range of common dissolved inorganic constituents and conditions (**Appendix H**). Concentration contour maps were prepared for TDS and sulfate using the maximum concentrations reported in each well

[10] LWC (2001) reports that water quality near the LF may be impacted by historical mining operations in the area. M&A evaluated this hypothesis and believes it is more likely that the unique water quality observed near the LF is the result of naturally occurring conditions.

during the SSA monitoring period **(Figures 13 and 14)**. TDS and sulfate contour maps were prepared because these constituents provide an overall summary of dissolved inorganic water quality, and are representative indicators of groundwater impacts from the former mining operations. In addition, uranium transport in groundwater appears to be correlated to the presence of elevated sulfate (LWC, 2001).

Maximum reported TDS concentrations ranged from 368 mg/L at BCA well LW-1 to 37,400 mg/L at BCA well OW-UT-9. Maximum sulfate concentrations ranged from 21 mg/L in BBM well MW-111 to 11,200 mg/L in BCA well OW-UT-9. The distribution of TDS and sulfate in groundwater generally indicates the zone of impact from the mine within the BCA. On the northeast side of the LVA axis, TDS and sulfate concentrations are highest near the tailings impoundments (i.e., the source area) and become progressively lower to the northwest. The distribution of TDS and sulfate on the northeast side of the LVA axis is consistent with the groundwater flow directions inferred in this area.

On the southwest side of the LVA axis, TDS and sulfate concentrations are highest near the lower tailings impoundment and along the LF near MW-116, and generally become progressively lower to the northwest. The high TDS and sulfate concentrations near the tailings are likely the result of historical seepage from the lower tailings impoundment. The high TDS and sulfate concentrations near the LF at MW-116 and to a lesser degree MW-107S[11] are believed to be the result of naturally occurring hydrochemical conditions in the fault zone, and not the result of historical mining operations at the Lisbon Facility. The extent of elevated TDS and sulfate concentrations from mining operations is larger on the northeast side of the LVA axis than the southwest side of the LVA axis. The CAP may have affected the extent of impacted groundwater near the mine.

[11] TDS and sulfate concentrations are also elevated at RL-6. The pH of groundwater at RL-6 is near neutral. Overall, water quality at RL-6 does not strongly reflect fault zone water quality. RL-6 is a shallow well (< 18 feet deep) with about 3 feet of water in the screened interval. The representativeness of samples from this well is uncertain. The companion well to RL-6, MW-118, provides a better representation of the groundwater quality in this area.

Piper diagrams were prepared for selected sets of BCA wells and BBM wells, using data obtained during the April 2014 monitoring event, to assess variations in inorganic water quality in the study area (**Appendix I)**. On Piper diagrams, cations are plotted on the lower left triangle, anions are plotted on the lower right triangle, and cations and anions are projected onto the upper diamond. The four quadrants of the upper diamond represent four classes of water: permanent hardness (top), saline (right), alkali carbonate (bottom), and temporary hardness (left).

Cation and anion data for BCA wells located on the northeast and southwest sides of the LVA axis are plotted on **Figures I-1 and I-2**, respectively. Groundwater in wells closest to the tailings impoundments is generally characterized as saline, indicating impacts from tailings seepage. In wells on the northeast side of the LVA axis, groundwater transitions from saline to permanent hardness to the northwest, consistent with the observed groundwater flow directions. On the southwest side of the LVA axis, groundwater transitions from saline to permanent hardness to the west-northwest towards the LF. Groundwater in BCA wells located along the LF is characterized as permanent hardness (**Figure I-3**). Groundwater in BCA wells along the north and southeast Long Term Surveillance and Maintenance (LTSM) boundary is generally characterized as permanent hardness or alkali carbonate (**Figures I-4 and I-5**).

Cation and anion data for BBM wells vary (**Figure I-6**). Groundwater from BBM wells MW-103 and MW-106 appears similar in signature to groundwater from BCA wells located near the tailings impoundments. Groundwater from wells MW-111 and MW-102DB is characterized as alkali carbonate, showing no impacts by tailings seepage.

3.5.2 Trace Metals

Groundwater samples collected during the SSA were analyzed for dissolved uranium, arsenic, selenium, and molybdenum (**Appendix H**). Concentration contour maps were

prepared for these trace metals using the maximum concentrations reported in each well during the SSA monitoring period **(Figures 15 through 18)**. Brief summaries of the dissolved trace metal concentration data are provided below.

Uranium

- In the BCA, maximum reported dissolved uranium concentrations ranged from 0.0007 mg/L at MW-107D to 148 mg/L at MW-102 (**Figure 15**). The highest concentrations were detected in BCA wells located north of the former tailings impoundments.
- On the northeast side of the LVA axis, dissolved uranium concentrations become progressively lower to the northwest, from the tailings impoundment to MW-119. This distribution of uranium is consistent with the observed groundwater flow directions and reflects historical transport in the groundwater from the time of mine startup in the early 1970s until today. Uranium concentrations decrease rapidly between MW-119 and MW-108.
- On the southwest side of the LVA axis, the highest uranium concentrations were detected at EF-3A. This high concentration is believed to reflect historical seepage from the lower tailings impoundment. In general, uranium concentrations become progressively lower to the west-northwest in this area. This distribution of uranium is consistent with the observed groundwater flow directions and reflects historical transport in the groundwater from the time of mine startup in the early 1970s until today. The CAP pumping may have affected the distribution of uranium in this area.
- At the sets of companion wells on the southwest side of the LVA axis, the highest uranium concentrations occur in the deepest screened intervals (e.g., EF-3A, EF-8, and EF-6). The deep screens at these well sets are generally screened at or near the Kbc/Jmb contact. The high uranium concentration in the deeper groundwater may be the result of groundwater density differences, the residual

effect from historical groundwater pumping during the CAP, or a combination of both conditions.

- High uranium concentrations were detected at MW-116. As previously discussed, the acidic mineralized groundwater at MW-116 is believed to be the result of naturally occurring hydrochemical conditions along the LF, and not the result of historical mining operations.
- In trend wells RL-1 and EF-8, uranium was consistently detected above respective current TALs of 42.1 and 0.3 mg/L. Uranium concentrations are increasing in both wells.
- Uranium was detected above the current TAL of 0.06 mg/L in one sample collected from trend well H-63. The detection was reported in the low-flow sample collected during the April 2013 monitoring event and is considered anomalous. In all other samples from H-63, uranium was detected at similar concentrations below the TAL.
- In POC wells EF-3A and OW-UT-9, uranium was detected at concentrations below the respective current ACLs of 96.87 and 101.59 mg/L. Uranium was detected below the current compliance limit of 0.32 mg/L in point-of-exposure (POE) wells RL-4, RL-5, and RL-6. In trend wells EF-6, ML-1, RL-3, and LW-1, uranium was detected at concentrations below respective current TALs of 3.9, 0.26, 37.3, and 0.028 mg/L. At wells EF-3A and EF-6, uranium concentrations are increasing (**Appendix G**).
- In 10 of the 20 new BCA wells, uranium was detected at concentrations above the Utah Ground Water Quality Standard (GWQS) of 0.03 mg/L.
- Uranium was detected above the GWQS in 3 of 4 of the new BBM wells sampled during the SSA. In the BBM, maximum reported uranium concentrations ranged from 0.0083 mg/L at MW-106 to 9.66 mg/L at MW-103 (**Figure 15**). MW-103 is located adjacent to the lower tailings impoundment.

Arsenic

- In the BCA, maximum reported dissolved arsenic concentrations ranged from 0.001 mg/L at MW-5 to 3.66 mg/L at OW-UT-9 (**Figure 16**). The highest arsenic concentrations were detected in BCA wells MW-102 and OW-UT-9, located north of the former tailings impoundments, and in BCA wells EF-3A and MW-117M, located south of the former impoundments. Arsenic was not detected above the laboratory detection limit (DL) of 0.001 mg/L at wells LW-1, MW-100, RL-4, and RL-5.
- Elevated arsenic concentrations were detected at MW-116. As previously discussed, the acidic mineralized groundwater at MW-116 is believed to be the result of naturally occurring hydrochemical conditions along the LF, and not the result of historical mining operations.
- The extent of arsenic in groundwater is small compared to the extent of inorganic constituents and other trace metals of interest. Arsenic is geochemically attenuated in the groundwater to a greater degree than the inorganic constituents and other trace metals.
- In POC well OW-UT-9, arsenic was detected above the current ACL of 2.63 mg/L. Historically, arsenic concentrations at OW-UT-9 have fluctuated above and below the ACL, without a consistent trend.
- Arsenic was consistently detected at concentrations below the current ACL of 3.06 mg/L in POC well EF-3A.
- In 6 of the 20 new BCA wells, arsenic was detected at concentrations above the GWQS of 0.05 mg/L.
- Arsenic was detected at concentrations below the GWQS in all BBM wells. In the BBM, maximum reported arsenic concentrations ranged from 0.003 mg/L at MW-103 and MW-106 to 0.007 mg/L at MW-111 (**Figure 16**).

Selenium

- In the BCA, maximum reported dissolved selenium concentrations ranged from 0.001 mg/L at MW-107D to 0.191 mg/L at MW-102 (**Figure 17**). The highest selenium concentrations were detected in BCA wells located north of the former tailings impoundments.
- The distribution of selenium in groundwater is generally characterized by higher concentrations near the tailings impoundments and progressively lower concentrations in the area west-northwest of the tailings. This distribution is consistent with the observed groundwater flow directions at the Site.
- Elevated selenium concentrations were detected at MW-116. As previously discussed, the acidic mineralized groundwater at MW-116 is believed to be the result of naturally occurring hydrochemical conditions along the LF, and not the result of historical mining operations.
- In POC wells OW-UT-9 and EF-3A, selenium was consistently detected at concentrations below the current respective ACLs of 0.1 and 0.93 mg/L.
- Selenium was detected at concentrations above the GWQS of 0.05 mg/L in 3 of the 20 new BCA wells.
- Selenium was detected at concentrations below the GWQS in all BBM wells. In the BBM, maximum reported selenium concentrations ranged from 0.0004 mg/L at MW-102DB to 0.03 mg/L at MW-103 (**Figure 17**).

Molybdenum

- In the BCA, maximum reported dissolved molybdenum concentrations ranged from 0.002 mg/L at RL-5 and EF-6 to 51.8 mg/L at OW-UT-9 (Figure 18). A GWQS for molybdenum does not exist. The highest molybdenum concentrations were detected in BCA wells located north of the former tailings impoundments.

Molybdenum was not detected above the laboratory DL of 0.01 mg/L at wells MW-100, MW-107S, MW-113, MW-119, and MW-120.

- The distribution of molybdenum in groundwater is generally characterized by higher concentrations near the tailings impoundments and progressively lower concentrations in the area west-northwest of the tailings. This distribution is consistent with the observed groundwater flow directions at the Site.
- Elevated molybdenum concentrations were detected at MW-116. As previously discussed, the acidic mineralized groundwater at MW-116 is believed to be the result of naturally occurring hydrochemical conditions along the LF, and not the result of historical mining operations.
- In POC wells OW-UT-9 and EF-3A, molybdenum was consistently detected at concentrations below the current respective ACLs of 23.34 and 58.43 mg/L.
- In the BBM, maximum reported molybdenum concentrations ranged from 0.02 mg/L at MW-102DB to 0.13 mg/L at MW-103 (**Figure 18**).

4.0 CONCEPTUAL SITE MODEL

This section summarizes the refined CSM. **Appendix J** includes a detailed description of the CSM. The CSM was refined based on a review of historic information and data for the Site, review of relevant information from scientific literature, and the results of the SSA. The refined CSM conceptualizes the relationship between contaminant sources and potential exposure pathways through consideration of potential or actual contaminant migration pathways. The refined CSM serves as the basis for the numerical groundwater flow model. **Figure 19** illustrates the refined CSM. The refined CSM is summarized below.

Source Area – The source area for COCs in groundwater was the tailings impoundments. Nearly all of the impacts to groundwater occurred in the BCA; meaningful impacts to groundwater in the BBM that pose a public health risk do not exist. Seepage of tailings water from the lower impoundment began in the early 1970s and impacted groundwater shortly thereafter. Seepage from the upper impoundment began around 1980 and impacted groundwater shortly thereafter. Seepage from the tailings, and also Bisco Lake, created a groundwater mound beneath these facilities and across the crest of the LVA. The mound existed from the early 1970s though the mid-1990s. During this time, groundwater flowed radially away from the tailings and Bisco Lake in the BCA. Beneath the mounds, groundwater infiltrated into the upper portion of the BBM as a result of increased vertical gradients. Impacts to groundwater in the BBM were minimal. Residual tailings and Bisco Lake water in the BBM along the crest of the LVA appears to still be draining into the BCA.

Groundwater Contamination – Groundwater in the BCA is impacted by COCs as a result of tailings seepage. The primary COC is uranium. Two distinct uranium plumes exist: (1) a *north plume*, which exists to the north-northwest of the upper tailings impoundments, and (2) a *south plume*, which exists west-southwest of the lower tailings impoundment. The plumes are separated by the dry zone in the BCA along the LVA crest. The rate and extent of plume development was affected by geologic structures, including the LVA, the syncline, fractures,

and the LF, as well as the CAP pumping. The primary transport mechanisms for uranium in groundwater at the Site are advection, dispersion, and dilution. Geochemical attenuation processes that slow uranium transport or transform uranium into other compounds do not appear to be significant at the Site.

North Plume – The north plume extends about 8,000 feet from the upper impoundment. Advective transport is dominant in the north plume. Assuming the source began about 35 years ago, the effective uranium transport rate over the period of north plume development was about 230 ft/y. The current uranium transport rate near the leading edge of the north plume is about 60 ft/y. The higher effective uranium transport rate for the north plume indicates that historic transport rates were greater, likely due to higher historical groundwater velocities near the groundwater mound.

The north plume has migrated to the northwest along the margin of the dry zone in the BCA adjacent to the LVA crest. A northwest trending fracture zone in the area northwest of the tailing impoundments may be a preferential transport pathway. The leading edge of the north plume occurs in an area of small saturated thickness in the BCA. The north plume is migrating to the west-southwest in this area toward the syncline and area of confined groundwater in the BCA. Lateral plume dispersion is believed to be low; therefore, the north plume is not expected to migrate beyond the northern LTSM boundary[12]. The flux of impacted groundwater near the plume leading edge is small. As this small flux of impacted groundwater flows to the west, it will encounter greater saturated thickness in the BCA near the syncline, where contaminant concentrations will decrease due to dilution. Despite the estimated uranium transport rates near the leading edge of the plume noted above, the plume is not expected to advance significantly to the west because of dilution. Overall, the likelihood of north plume migration beyond the LTSM boundary is believed to be low.

South Plume – The south plume extends about 2,000 feet from the lower impoundment. The south plume exists in an area of complex hydrogeologic conditions associated with the LF

[12] Monitor wells RL-4 and RL-5 are located along the northern LTSM boundary near the leading edge of the north plume. COC concentrations in these wells over the past 10 years indicate that the north plume has not impacted the area near the northern LTSM boundary.

(**Figure 19**). Complexities include: (1) intense fracturing and faulting in the BCA, (2) the syncline, (3) a pronounced subsurface "high" in the Kbc/Jmb contact, (4) a steep increase in saturated thickness along the southwest flank of the LVA, and (5) possible density gradients in groundwater resulting from elevated TDS concentrations. The net effect of these complexities, combined with the effects of CAP pumping, appears to have attenuated plume development; dilution of tailing seepage in relatively large saturated thickness in the BCA was probably a dominant attenuation factor. In addition, groundwater extraction during the CAP removed a significant mass of contaminants from the south plume. As a result of apparent density gradients, high TDS and trace metal concentrations exist in deep groundwater near the Kbc/Jmb contact, especially in deeper portions of the syncline. This denser groundwater in the deeper portion of the syncline may be relatively immobile. Migration of less dense (and better quality) groundwater may occur within a shallower groundwater zone above the denser groundwater. Groundwater flux from the southeast may be small due to the restricted flow zone between the subsurface high in the Kbc/Jmb contact and LF.

Groundwater flow directions in the area southwest of the LVA are generally to the west toward the LF. Groundwater elevation contours indicate that there is groundwater flux entering the BCA from the BBM along the southwest margin of the BCA dry zone. The south plume also appears to be migrating to the west towards the LF, although it is possible that mobile shallow groundwater makes up the majority of the groundwater flux. The likelihood of south plume migration across the LF is low[13]. Acidic highly mineralized groundwater exists along the LF. This poor quality groundwater along the LF is naturally occurring and consistent with observed hydrochemical conditions in the fault zone. If the south plume continues to migrate toward the LF, it will mix with the naturally occurring, acidic, mineralized groundwater along the fault and may drain downward in the fault zone. A groundwater flow component along the LF to the northwest may also exist.

Exposure Pathway – As indicated above, the likelihood of migration of the north or south plumes beyond the LTSM boundary is low. Groundwater use within the LTSM is restricted.

[13] Rocks on the west-southwest side of the LF are largely dry, with possible localized areas of groundwater. An extensive groundwater system was not encountered on the southwest side of the LF during historic mining operations in this area.

Groundwater wells in close proximity to the LTSM were not identified. Therefore, a complete exposure pathway to contaminated groundwater from historical RAML mining activities does not exist. Further, a complete exposure pathway is not expected to occur in the future as long as groundwater restrictions within the LTSM boundary are maintained.

5.0 GROUNDWATER MODELING

This section summarizes the numerical groundwater flow and transport modeling. The flow and transport model was developed based on the refined CSM. Model development, methods, and results are briefly summarized in the main report. A detailed description of the modeling is provided in **Appendix K**.

5.1 MODELING OBJECTIVES

The groundwater flow and transport model was developed with the following objectives:

1. Develop a numerical model representation of the refined CSM to simulate future uranium transport in groundwater.
2. Evaluate the efficacy of the long-term monitoring remedy and the risk of public exposure to uranium in groundwater associated with the Site.
3. Project changes in uranium concentrations in groundwater at potential compliance monitoring locations to develop new ACLs.

5.2 MODEL DEVELOPMENT

A numerical model of groundwater flow and uranium transport was developed using MODFLOW-USG (Panday and others, 2013). The model simulates conservative uranium transport in groundwater in the BCA; uranium attenuation in groundwater by geochemical processes was not simulated. The model includes a nominal 10-year calibration period from

2004 to 2014 and a nominal 200-year projection period from 2015 to 2215. The starting time for the calibration period corresponds to the end of CAP pumping.

The model domain and model grid are presented on **Figure 20**. The model domain is divided into 100 foot by 100 foot grid cells and is oriented north-south. The model domain extends approximately 1,000 feet north of the northern LTSM boundary and approximately 1,000 feet east of eastern LTSM boundary. To the southwest the active model boundary is along the LF. The western boundary is configured to simulate flow north and south of the LVA and associated dry zone in the BCA. The dry zone of the BCA is inactive in the model.

The model domain is divided into two layers: layer 1 represents the fine-grained interbedded upper portion of the BCA and layer 2 represents the lower basal sandstone portion of the BCA. Layer 1 is saturated in only small portions of the model where the saturated thickness of the BCA is sufficient for water to be present in layer 1. This occurs primarily along the axis of the syncline and northeast of the LVA near wells MW-100 and MW-5. The vast majority of groundwater flow and transport occurs in layer 2.

No-flow boundaries are used along the model perimeter in layer 1. **Figure 21** shows the model boundary conditions for layer 2. The northern boundary was simulated as a no-flow boundary, consistent with the observed westerly groundwater flow direction near the boundary. Constant heads were simulated along the eastern and southern boundaries of the model domain. The southwestern boundary of the model was simulated using a drain boundary, to simulate the potential for groundwater flow into the LF zone. Additionally, recharge cells were used to simulate groundwater flux entering the BCA from the BBM along the southwest flank of the LVA. The bottom of layer 2 is a no-flow boundary represented by the Kbc/Jmb contact. The average hydraulic conductivity of the BBM is low compared to the BCA; therefore, the amount of groundwater flux from the BCA to the BBM is sufficiently small enough that a no-flow boundary is considered appropriate. Groundwater flow and uranium transport was not simulated in the BBM.

5.3 MODELING APPROACH

A first phase of groundwater flow and transport modeling was conducted to identify critical uncertainties. Following the first phase of modeling, the SSA field program was conducted to investigate these uncertainties. The data collected during the SSA provided critical new information to reduce uncertainty about the effect of geologic structures, hydrogeologic properties, and the extent of uranium in the BCA at the Site. Residual uncertainties not addressed by new data were accounted for by using a probabilistic modeling approach and conservative assumptions.

Model calibration included a manual calibration phase and an automated calibration phase (**Appendix K**). The Null Space Monte Carlo (NSMC) method in the **P**arameter **Est**imation (PEST) software was used for the automated calibration phase (Tonkin and Doherty, 2009). The NSMC method was used to develop an ensemble of calibrated groundwater flow models. The underlying idea of the NSMC method is that within the bounds of hydrologic uncertainty, many calibrated models exist, each of which would result in different projections. The NSMC method is a significant improvement over the traditional Monte Carlo method, where the ensemble of models includes many uncalibrated models with unrealistic model parameters.

The NSMC method requires *calibration variables* to develop the ensemble of calibrated models. Calibration variables are variables for which uncertainty exists and which can be modified within reasonable bounds during calibration until each model is calibrated. The range of calibration variables during calibration was limited by Site data. Hydraulic conductivity, specific yield, drain conductance, and recharge (flux through the LVA) were used as calibration variables. Each of the 65 calibrated models achieved generally accepted conventions for well-calibrated models. **Appendix K** describes the calibration process in more detail.

5.4 RESULTS

Out of 170 attempted model calibrations, 65 groundwater flow models were considered acceptably calibrated compared to industry conventions. Each calibrated model in the ensemble uses a unique set of flow parameters to reproduce observed heads. Each calibrated model also results in unique projections of groundwater flow and contaminant transport. Since each of the 65 models is acceptably calibrated, each model carried equal weight when evaluating model projections and developing new ACLs.

Uranium transport in BCA groundwater was simulated using each calibrated model. Source concentrations of 160 mg/L and 60 mg/L were used for the upper and lower tailings impoundments, respectively. Source concentrations were constant over the 200-year projection period, which is a conservative model condition because concentrations at the tailings will likely diminish over time. Effective porosity of 0.14, and longitudinal and transverse dispersivity values of 150 and 15 feet, respectively, were used in the transport simulations. Uranium attenuation by geochemical processes was not simulated.

Figure 22 illustrates the growth of the "worst case plume" delineated by the 0.03 mg/L concentration contour. The projected plumes are shown for the years 2020, 2025, 2035, 2065, 2115, 2165, and 2215. To delineate the worst case plumes, the maximum concentration projected by any model in each model cell was found for each time step. The 0.03 mg/L concentration was then contoured for each worst case plume. Model projections shown on **Figure 22** indicate:

- The north plume advances minimally from its current position over time. This projection is consistent with the concept that the north plume will dilute as it migrates to the west due to increasing saturated thickness.
- The north plume does not expand beyond the northern LTSM boundary in 200 years. This projection is consistent with the concept that lateral

dispersion of the north plume is insufficient to cause plume migration beyond the LTSM boundary.

- The south plume reaches the LF and flows laterally along the LF. This projection indicates that some groundwater may discharge to the LF and some may flow along the LF. Groundwater along the LF is naturally acidic and mineralized, so encroachment of the south plume along the LF is not considered to pose a risk to public health or the environment.
- The south plume does not expand beyond the LTSM boundary in 200 years.

Model projections of future trends in uranium concentrations at existing and hypothetical monitor wells were used to develop new ACLs. Proposed new ACLs are discussed in **Section 6.0**.

6.0 PROPOSED NEW ALTERNATE CONCENTRATION LIMITS

The objectives of the SSA were to extend the Site characterization, refine the CSM, and use the refined CSM to develop a new groundwater model. The groundwater model was calibrated using advanced methods and used to project the future migration of uranium in BCA groundwater at the Site. Results of the modeling indicate that maintaining a long-term monitoring remedy, with associated compliance conditions based on ACLs, will be protective of public health and the environment for at least a 200-year period. Model projections were used to develop a new set of ACLs for the Site. This section describes the basis for the proposed new ACLs.

6.1 DEVELOPMENT OF NEW ALTERNATE CONCENTRATION LIMITS

ACLs are site-specific groundwater protection standards. In general, the term ACL is a generic designation for compliance concentration limits at compliance monitoring wells that deviate from regulatory standards. For example, at the Site, ACLs refer to concentration limits specified at POC wells only. Different concentration limit designations are specified for other types of compliance wells, as discussed below.

ACLs can be established at former uranium mill sites as a part of a compliance framework for protection of public health and the environment before the property is transferred to a governmental entity for perpetual care. Development of ACLs typically requires that: (1) the constituent of interest will not pose a substantial present or potential hazard to human health and the environment, as long as the ACL is not exceeded, and (2) they are as low as reasonably achievable (ALARA) considering practicable corrective actions (Konwinski and others, undated). Functionally, ACLs require specification of POC wells and POE wells. As outlined by Konwinski and others in the *Proposed NRC Staff Final Technical*

Position on Alternate Concentration Limits, Title II Uranium Mill Sites, POC and POE wells are defined as follows:

- POC wells are established at *the site-specific location in the uppermost groundwater where the groundwater protection standard must be met.*
- POE wells are established at *the location where humans, wildlife, or other environmental species could reasonably be exposed to hazardous constituents from the groundwater*.

In addition to POC and POE wells, the License included additional compliance locations designated as trend wells. RAML proposes new ACLs at a new network of POC, POE, and trend wells for the Site. Trend wells are not required in the ACL regulations (Konwinski and others, undated). However, RAML sees value in retaining trend wells to enhance monitoring of Site compliance. The proposed network of compliance wells and ACLs were developed to be comparable to requirements established in the current License. Specifically, RAML proposes ACLs for uranium, arsenic, selenium, and molybdenum at POC wells, uranium compliance limits (UCLs) at POE wells, and uranium TALs at trend wells. The proposed compliance concentrations and monitoring network are discussed in the following sections.

6.2 POINT-OF-COMPLIANCE WELLS

The proposed new ACLs and POC wells are presented in **Table 12** below. **Figure 23** shows the location of POC wells.

TABLE 12. PROPOSED ALTERNATE CONCENTRATION LIMITS AT POINT-OF-COMPLIANCE WELLS

POC WELL	BASIS FOR POC WELL	ACL (mg/L)	BASIS FOR ACL
MW-102	Near upper tailings impoundment in area of highest concentrations in uppermost groundwater in BCA	U = 160	Conservative value used in model for north plume source [1]
		As = 1.95	Historic maximum concentration at decommissioned well RW-1 plus safety factor [2]
		Se = 0.35	
		Mo = 97.5	
EF-3A	Near lower tailings impoundment in area of highest concentrations in uppermost groundwater in BCA	U = 60	Conservative value used in model for south plume source [1]
		As = 3	Historic maximum concentration at well EF-3A plus safety factor [3]
		Se = 0.25	
		Mo = 22.6	

Notes:
U = uranium; As = arsenic; Se = selenium; and Mo = molybdenum
[1] = Conservative and constant source concentrations were used in the model for the 200-year simulation. Model projections with conservative source configuration did not result in contamination leaving the LTSM boundary.
[2] = Historical maximum As, Se, and Mo concentrations at RW-1, located near MW-102, were 1.5, 0.27, and 75 mg/L, respectively. A 30 percent safety factor was incorporated into the proposed ACL concentrations to account for uncertainties associated with source area conditions, subsurface conditions, and sampling and laboratory analysis methods.
[3] = Historical maximum As, Se, and Mo concentrations at EF-3A were 2.3, 0.19, and 17.4 mg/L, respectively. A 30 percent safety factor was incorporated into the proposed ACL concentrations to account for uncertainties associated with source area conditions, subsurface conditions, and sampling and laboratory analysis methods.

For the north plume, new monitor well MW-102 is proposed as a POC well instead of OW-UT-9. Uranium concentrations are higher at MW-102 than OW-UT-9; therefore, this well is believed to be a more representative POC in the area north of the tailings impoundments. The proposed new ACLs for EF-3A are lower than the current ACLs for EF-3A.

6.3 POINT-OF-EXPOSURE WELLS

Figure 23 shows the location of proposed POE wells. Four POE wells are proposed: two existing wells, RL-4 and RL-5, and two new wells, designated POE-1 and POE-2. The proposed POE wells are located along the western half of the northern LTSM boundary, which represents the only portion of the LTSM boundary where the public and the environment could reasonably be exposed to impacted groundwater. The proposed UCL for

these wells is 0.03 mg/L. The proposed UCL is equivalent to the current Utah GWQS for uranium. Projected uranium concentrations were less than the proposed UCL of 0.03 mg/L in all model cells along the LTSM boundary for all of the 200-year model simulations. RAML proposes to maintain the UCL at 0.03 mg/L even if the GWQS is lowered in the future. The proposed new UCL at POE wells RL-4 and RL-5 is an order of magnitude lower than the current UCL (0.32 mg/L) at these wells.

6.4 TREND WELLS

Proposed uranium TALs and trend wells are presented in **Table 13**. **Figure 23** shows the location of proposed trend wells.

TABLE 13. PROPOSED URANIUM TARGET ACTION LEVELS AT TREND WELLS

WELL NAME	BASIS FOR PROPOSING WELL	APRIL 2014 MAXIMUM DETECTED URANIUM CONCENTRATION (mg/L)	PERCENTAGE INCREASE IN MODEL PROJECTED CONCENTRATION AFTER 200 YEARS	PROPOSED TAL (mg/L)	BASIS FOR PROPOSED TAL
MW-112	Confirm model projected transport of south plume	0.0099	1,000	0.11	Model trend [1]
ML-1	Confirm model projected transport of south plume	0.019	1,200	0.25	Model trend [1]
MW-119	Confirm model projected transport of north plume	6.6	80	12	Model trend [1]
RL-1	Confirm model projected transport of north plume	50.6	12	62	Model trend plus safety factor [2]

WELL NAME	BASIS FOR PROPOSING WELL	APRIL 2014 MAXIMUM DETECTED URANIUM CONCENTRATION (mg/L)	PERCENTAGE INCREASE IN MODEL PROJECTED CONCENTRATION AFTER 200 YEARS	PROPOSED TAL (mg/L)	BASIS FOR PROPOSED TAL
RL-3	Confirm model projected transport of north plume	35.4	Decreasing	39	Actual maximum concentration plus safety factor [3]

Notes:
[1] - Worst case calibrated model projected greater than a 25 percent increase in model concentration at trend well location. In this case, the model projected percent increase in concentration was applied to the maximum detected April 2014 uranium concentration at the proposed trend well.
[2] - Worst case calibrated model projected less than a 25 percent increase in model concentration at trend well location. In this case, the model projected percent increase in concentration plus a 10 percent safety factor was applied to the maximum detected April 2014 uranium concentration at the proposed trend well.
[3] - Worst case calibrated model projected a decrease in model concentration at trend well location. In this case, a 10 percent safety factor was applied to the maximum measured concentration.

Figures 24 through 28 show the range of model-projected concentration trends at the trend well locations. Tables presented on each graph show the minimum and maximum model concentration at the trend well location during the time period from 2015 to 2215, and the percent increase in concentration from the minimum to the maximum.

Proposed TALs are based on the projected worst case calibrated model trend to be conservative. The following rules were used to develop the uranium TALs at trend wells:

- When the worst case calibrated model projected an increase in model concentration of greater than 25 percent, the model projected percentage increase in concentration was directly applied to the most recent measured uranium concentration at the specified well[14].
- When the worst case calibrated model projected an increase in model concentration of less than 25 percent, the model projected percentage increase in concentration plus a 10 percent safety factor was directly applied to the most recent measured uranium

[14] This approach was used to account for differences between the concentration in the model at the end of flow calibration in 2014 and actual concentrations at the trend well location. Concentration differences are expected, and applying model-projected trends to the actual concentration is a common method to account for this difference.

concentration at the specified well. The safety factor was used to account for uncertainty in Site conditions.

- When the model projected a decreasing concentration trend, a 10 percent safety factor was applied to the highest measured concentration at the well to account for uncertainty in Site conditions.

The proposed new TALs at RL-1 and RL-3 are higher than the current TALs at these wells. Even with the higher TALs at RL-1 and RL-3, the long-term monitoring remedy is protective of public health and the environment because the uranium plumes are not projected to migrate beyond the LTSM boundary over the next 200 years.

RAML proposes to monitor concentrations at trend wells to identify unexpected increases in concentration before they are detected at POE wells. Early identification of unexpected increases will enable RAML to reassess the efficacy of the monitoring-only remedy, and reevaluate formulation of TALs and amend the License if appropriate. RAML believes that monitoring at trend wells is a proactive condition in the License that improves the protectiveness of established site-specific groundwater standards. In that sense, RAML proposes to work with DRC to develop compliance conditions at trend wells that are protective and have response actions for compliance issues that are reasonable and appropriate for Site conditions.

The proposed ACLs at POC wells, UCLs at POE wells, and uranium TALs at the trend wells are considered to be ALARA based on analysis of available data and the results of modeling conducted in accordance with current industry standards.

7.0 CONCLUSIONS AND RECOMMENDATIONS

The SSA was effective at extending characterization of the hydrogeologic and groundwater quality conditions at the Site. New Site data from the SSA, combined with a thorough review of historic data and information, were used to refine CSM. The refined CSM served as the basis for development of a new groundwater flow model, which was calibrated to Site groundwater conditions and used to project future uranium transport. Model results were used to develop a proposal for a new network of compliance monitor wells and associated compliance concentrations.

7.1 CONCLUSIONS

Important conclusions are summarized below.

- Data gaps and critical conceptual uncertainties identified during the planning stages of the SSA were effectively addressed through implementation of additional Site characterization, data analysis, and groundwater modeling. The CSM is well understood. Additional Site characterization work is not needed at this time. Specific critical conceptual uncertainties addressed include:

    - The LVA plunges to the northwest. The BCA is thinly saturated in the area west of trend well RL-3. Groundwater flow in this area is to the west. COCs do not appear to be migrating toward the LTSM boundary near wells RL-4 and RL-5.
    - Groundwater flow is toward the LF and is believed to be discharging into the fault zone. A component of groundwater flow along the fault may also exist. Geologic conditions along the LF are complex. Naturally occurring, acidic and highly

mineralized groundwater exists near the LF. This acidic groundwater is not the result of past mining at the Lisbon Facility. An extensive groundwater system in the area southwest of the LF does not appear to exist. The likelihood of migration of Site COCs across the LF is low. The south uranium plume is projected to reach the LF, where contamination from the mine will mix with acidic groundwater in the fault zone.

- A syncline exists between the LF and LVA. Saturated thickness in the BCA is large in the area of the syncline. Dilution in the large saturated thickness along the syncline is projected reduce uranium concentrations and attenuate the advance of north uranium plume.
- Widespread contaminant transport in the BBM that poses a risk to the public or environment outside the LTSM boundary does not occur.

- The delineated extents of the COC plumes are within the LTSM boundary. The uranium and other COC plumes are adequately delineated to support development of new compliance conditions.
- Uranium contamination in groundwater associated with the Site is not projected to migrate beyond the LTSM boundary over the next 200 years based on the results of groundwater modeling. Groundwater use is restricted inside the LTSM boundary. Therefore, there is no apparent complete exposure pathway from Site uranium contamination to the public and environment.

7.2 RECOMMENDATIONS

Based on these conclusions, the following actions are recommended:

- Establish a new network of compliance monitor wells and ACLs as proposed in **Section 6.0.** The proposed compliance monitor wells and compliance concentrations are summarized in **Table 14** and shown on **Figure 23**.

TABLE 14. SUMMARY OF PROPOSED COMPLIANCE WELLS AND CONCENTRATIONS

POINT-OF-COMPLIANCE WELLS	ALTERNATE CONCENTRATION LIMIT (mg/L)	
MW-102	Uranium	160
	Arsenic	1.95
	Selenium	0.35
	Molybdenum	97.5
EF-3A	Uranium	60
	Arsenic	3
	Selenium	0.25
	Molybdenum	22.6
POINT-OF-EXPOSURE WELLS	**URANIUM COMPLIANCE LIMIT (mg/L)**	
RL-4	0.03	
RL-5	0.03	
POE-1 (new well)	0.03	
POE-2 (new well)	0.03	
TREND WELLS	**URANIUM TARGET ACTION LEVEL (mg/L)**	
MW-112	0.11	
ML-1	0.25	
MW-119	12	
RL-1	62	
RL-3	39	

- Upon approval of the proposed compliance wells and concentration limits,
  - Install new POE wells 1 and 2 at the approximate locations shown on **Figure 23**.
  - Prepare a revised groundwater monitoring plan for review and approval by DRC.
  - Implement approved groundwater monitoring program to confirm that the proposed compliance conditions are protective of public health and the environment.

8.0 REFERENCES CITED

Bouwer, H. and R.C. Rice, 1976, **A slug test method for determining hydraulic conductivity of unconfined aquifers with completely or partially penetrating wells**: Water Resources Research, vol. 12, no. 3, pp. 423-428.

Bouwer, H., 1989, **The Bouwer and Rice slug test--an update**: Ground Water, vol. 27, no. 3, pp. 304-309, May 1989.

Butler, J.J., Jr., 1998, **The Design, Performance, and Analysis of Slug Tests**: Lewis Publishers, Boca Raton, Florida, 252 p.

Earthfax Engineering, 1984, **Remedial-Action Plan for Groundwater Contamination Control at the Lisbon Uranium Mill, Volumes 1 and 2**: prepared for Rio Algom Corporation, April 1984.

Hyder, Z. and Butler, J.J., Jr., 1995, **Slug tests in unconfined formations: an assessment of the Bouwer and Rice technique**: Ground Water, vol. 33, no. 1, pp. 16-22, January 1995.

HydroSOLVE, Inc., 2008, **AQTESOLV for Windows 95/98/NT/2000/XP/Vista:** HydroSOLVE, Inc., Reston, Virginia, version 4.50.004 – Professional.

Jacobs, M. and Kerr, P., 1965, **Hydrothermal Alteration Along the Lisbon Valley Fault Zone, San Juan County, Utah**, Geologic Society of America Bulletin, vol. 76, no. 4, 423 p., April 1965.

KOMEX, 2003, **Response to Request for Additional Information (RAI), Application for Alternate Concentration Limits Source Materials License SUA -1119, Rio Algom Mining LLC, Lisbon Facility, La Sal, Utah:** prepared for Rio Algom Mining LLC, October 13, 2003.

_____, 2004, **Long Term Groundwater Monitoring Plan, Application for Alternative Concentration Limits Source Materials License SUA-1119 RAMC Lisbon Facility, La Sal, Utah:** February 19, 2004.

Konwinski, G.R., Layton, M.C., Hamdan, L.S., and Fleigel, M.H., undated, **Proposed NRC Staff Final Technical Position Alternate Concentration Limits Title II Uranium Mill Sites:** abstract undated.

Lewis Water Consultants, Inc., 2001, **Application for Alternative Concentration Limits Source Materials License SUA-1119, RAMC Lisbon Facility, La Sal, Utah:** March 1, 2001.

Medlock Consulting, 1998, **Evaluation of the Groundwater Corrective Action Program at the RAMC Lisbon Facility:** prepared for Rio Algom Mining Corporation, November 10, 1998.

Montgomery & Associates, 2012, **Revised Final Work Plan, Supplemental Site Assessment to Address Out-Of-Compliance Status at Trend Wells RL-1 and EF-8**: August 2, 2012.

_____, 2013a, **Phase 1 Report for Supplemental Site Assessment to Address Out-Of-Compliance Status at Trend Wells RL-1 and EF-8, Lisbon Facility**: March 7, 2013.

_____, 2013b, **Work Plan, Phase 2 of Supplemental Site Assessment to Address Out-Of-Compliance Status at Trend Wells RL-1 and EF-8, Lisbon Facility**: March 7, 2013.

_____, 2014, **2013 Annual Groundwater Monitoring Report**: February 21, 2014.

Panday, Sorab, Langevin, C.D., Niswonger, R.G., Ibaraki, Motomu, and Hughes, J.D., 2013, **MODFLOW-USG version 1: An unstructured grid version of MODFLOW for simulating groundwater flow and tightly coupled processes using a control volume finite-difference formulation**: U.S. Geological Survey Techniques and Methods, book 6, chapter A45, 66 p., 2013.

Tonkin, M. and Doherty, J., 2009, **Calibration-constrained Monte Carlo Analysis of Highly-parameterized Models Using Subspace Techniques**, *Water Resources Research*, vol. 45, no. 12, W00B10, doi: 10.1029/2007WR006678, December 2009.

U. S. Environmental Protection Agency, 1986, **RCRA Ground Water Monitoring Technical Enforcement Guidance Document:** USEPA/530/SW-86/055, September 1986.

Utah Division of Radiation Control (DRC), 2012a, **Review and Audit of the Rio Algom Mining, LLC (RAML) work plan prepared by Montgomery & Associates (M&A) entitled "Supplemental Site Assessment to Address Out-of-Compliance Status at Trend Wells RL-1 and EF-8, Lisbon Facility, dated December 13, 2011:** Memorandum prepared by David Edwards dated January 9, 2012.

_____, 2012b, **Letter to Chuck Wentz, Rio Algom Mining, LLC from Rusty Lundberg, DRC, transmitting Radioactive Material License UT1900481, Amendment No. 4**: February 6, 2012.

_____, 2012c, **DRC Review of the Rio Algom Mining, LLC (RAML) work plan, prepared by Montgomery & Associates (M&A) entitled "Supplemental Site Assessment to Address Out-of-Compliance Status at Trend Wells RL-1 and EF-8, Lisbon Facility, dated December 13, 2011:** Request for Information letter sent to Billy M. Ray, BHP Billiton, February 6, 2012.

_____, 2012d, **Montgomery & Associates (2012) Final Work Plan, Supplemental Site Assessment to Address Out-of-Compliance Status at Trend Wells RL-1 and EF-8, Lisbon Facility, Prepared for Rio Algom Mining LLC, April 13, 2012:** Request for Information letter sent to Billy M. Ray, BHP Billiton, May 1, 2012.

_____, 2013a, **Montgomery & Associates (2013) Phase 1 Report for Supplemental Site Assessment to Address Out-of-Compliance Status at Trend Wells RL-1 and EF-8, Lisbon Facility, Prepared for: Rio Algom Mining LLC, March 7, 2013:** Request for Information letter sent to Billy M. Ray, BHP Billiton, June 26, 2013.

_____, 2013b, Electronic mail correspondence from Phil Goble, Division of Radiation Control, to Tim Leo, Montgomery & Associates, dated August 26, 2013.

_____, 2013c, Electronic mail correspondence from David Edwards, Division of Radiation Control, to Tim Leo, Montgomery & Associates, dated August 30, 2013.

_____, 2014a, **Subject: RAML Lisbon - approval to address Phase 1 RFI in the final report instead of preparing a revised Phase 1 report:** email correspondence from Phillip Goble, DRC, to Timothy Leo, M&A, April 24, 2014.

_____, 2014b, **DRC Review of the RAM Mining LLC, Lisbon Facility, 2013 Annual Groundwater Stability Monitoring Report: DRC notice of Enforcement Discretion; Notice of Violation, Imposed Civil Penalty and Order; Approval; and Split Sampling Inspection Close Out:** letter sent to Billy M. Ray, BHP Billiton, May 28, 2014.

Utah Department of Environmental Quality (DEQ), 2012, **Stipulation and Consent Agreement**: September 10, 2012.

_____, 2013, **Stipulation and Consent Agreement**: July 23, 2013.

Yeskis, D. and Zavala, B. 2002, **Ground-Water Sampling Guidelines for Superfund and RCRA Project Manager:** USEPA 542/S-02/001, May 2002.

TABLE 1. WELL CONSTRUCTION DETAILS
RIO ALGOM MINING LLC, LISBON FACILITY

WELL NAME	SCREENED GEOLOGIC FORMATION [a]	SCREENED HYDRO-STRATIGRAPHIC UNIT [b]	EASTING [c]	NORTHING [c]	GROUND SURFACE ELEVATION [d] (ft msl)	MEASURING POINT ELEVATION [d] (ft msl)	TOTAL DEPTH DRILLED (ft bgs)	TOP OF SCREEN ELEVATION (ft msl)	BOTTOM OF SCREEN ELEVATION (ft msl)	SCREEN INTERVAL LENGTH (feet)	CASING DIAMETER (inches)
EXISTING MONITOR WELLS (INSTALLED PRIOR TO 2012)											
EF-3A	Kbc	BCA	2,633,923	589,279	6,583.23	6,584.70	214	6,433	6,370	63	6
EF-6	Kbc	BCA	2,633,033	590,617	6,569.12	6,571.12	187	6,464	6,434	30	4
EF-8	Kbc	BCA	2,633,241	589,567	6,574.42	6,575.77	255	6,362	6,332	30	4
H-63	Kbc	BCA	2,637,682	588,202	6,684.14	6,686.49	169	6,545	6,515	30	5
LW-1	Kbc	BCA	2,636,700	594,336	6,723.61	6,725.02	238	6,521	6,491	30	4
ML-1	Kbc	BCA	2,631,486	591,502	6,531.81	6,533.12	175	6,396	6,377	19	4
MW-5	Kbc	BCA	2,639,684	593,009	6,745.82	6,746.81	196	6,580	6,550	30	6
MW-13	Kbc	BCA	2,636,128	587,830	6,642.12	6,644.46	205	6,515	6,438	77	4
OW-UT-9	Kbc	BCA	2,636,715	590,970	6,705.60	6,707.22	142	6,588	6,568	20	6
RL-1	Kbc	BCA	2,633,217	593,676	6,654.18	6,655.49	132	6,550	6,530	20	5
RL-3	Kbc	BCA	2,632,620	594,239	6,705.91	6,707.63	195	6,543	6,523	20	5
RL-4	Kbc	BCA	2,631,660	595,070	6,682.94	6,684.29	190	6,546	6,506	40	5
RL-5	Kbc	BCA	2,632,690	595,194	6,687.96	6,689.12	187	6,538	6,501	37	5
RL-6	Kbc	BCA	2,627,878	594,632	6,463.30	6,464.76	18	6,456	6,446	10	5
UW-1[e]	Kbc	BCA	2,636,621	587,297	6,653.64	6,656.04	138	6,553	6,516	37	5
PHASE 1 MONITOR WELLS (INSTALLED IN 2012)											
MW-100	Kbc	BCA	2,636,664	594,323	6,724.19	6,725.37	208	6,586	6,521	65	4
MW-101	Kbc	BCA	2,634,360	593,397	6,709.38	6,710.90	165	6,570	6,550	20	4
MW-102	Kbc	BCA	2,635,889	592,129	6,701.46	6,702.88	141	6,585	6,565	20	4
MW-102DB	Jmb	BBM	2,635,877	592,170	6,701.68	6,703.62	178	6,556	6,526	30	4
MW-103	Jmb	BBM	2,635,778	589,620	6,662.56	6,663.92	114	6,581	6,551	30	4
MW-104	Kbc	BCA	2,637,513	589,369	6,703.45	6,705.17	232	6,635	6,605	30	4
MW-105	Kbc	BCA	2,636,131	588,105	6,622.46	6,624.12	141	6,558	6,488	70	4
MW-106	Jmb	BBM	2,639,306	587,423	6,850.95	6,852.76	266	6,616	6,586	30	4

TABLE 1. WELL CONSTRUCTION DETAILS
RIO ALGOM MINING LLC, LISBON FACILITY

WELL NAME	SCREENED GEOLOGIC FORMATION [a]	SCREENED HYDRO-STRATIGRAPHIC UNIT [b]	EASTING [c]	NORTHING [c]	GROUND SURFACE ELEVATION [d] (ft msl)	MEASURING POINT ELEVATION [d] (ft msl)	TOTAL DEPTH DRILLED (ft bgs)	TOP OF SCREEN ELEVATION (ft msl)	BOTTOM OF SCREEN ELEVATION (ft msl)	SCREEN INTERVAL LENGTH (feet)	CASING DIAMETER (inches)
PHASE 2 MONITOR WELLS (INSTALLED IN 2013)											
MW-107S	Kbc	BCA	2,628,826	593,255	6,510.31	6,512.13	61	6,480	6,450	30	4
MW-107D	Kbc	BCA	2,628,807	593,267	6,510.59	6,512.30	81	6,450	6,430	20	4
MW-108	Kbc	BCA	2,629,865	593,861	6,513.14	6,514.69	174	6,425	6,345	80	4
MW-109	Kbc	BCA	2,632,527	593,552	6,671.81	6,673.51	155	6,548	6,518	30	4
MW-110	Jmb	BBM	2,632,886	592,550	6,622.05	6,623.94	141	6,522	6,482	40	4
MW-111	Jmb	BBM	2,634,470	591,997	6,643.56	6,645.47	124	6,569	6,519	50	4
MW-112	Kbc	BCA	2,631,481	591,398	6,534.56	6,536.31	143	6,499	6,394	105	4
MW-113	Kbc	BCA	2,633,010	590,647	6,565.93	6,567.42	105	6,508	6,463	45	4
MW-114	Kbc	BCA	2,632,023	590,522	6,553.00	6,554.35	204	6,505	6,355	150	4
MW-115S	Kbc	BCA	2,633,289	589,523	6,576.36	6,578.12	218	6,516	6,451	65	4
MW-115M	Kbc	BCA	2,633,240	589,529	6,576.05	6,578.05	240	6,451	6,361	90	4
MW-116	Kbc	BCA	2,632,593	589,210	6,575.97	6,577.78	123	6,474	6,454	20	4
MW-117S	Kbc	BCA	2,633,999	589,260	6,584.63	6,586.21	128	6,514	6,459	55	4
MW-117M	Kbc	BCA	2,633,975	589,240	6,585.13	6,586.60	240	6,461	6,436	25	4
MW-118	Kbc	BCA	2,627,874	594,554	6,463.98	6,465.41	69	6,454	6,399	55	4
MW-119	Kbc	BCA	2,630,986	594,211	6,588.13	6,589.67	104	6,535	6,515	20	4
MW-120	Kbc	BCA	2,637,532	586,691	6,675.34	6,677.23	260	6,560	6,430	130	4
MW-121	TRc	CHINLE	2,632,204	588,291	6,593.27	6,595.12	203	6,422	6,392	30	4
MW-122	Kbc	BCA	2,641,533	585,157	6,926.58	6,928.33	203	6,771	6,731	40	4
B-2 [f]	---	---	2,628,237	592,662	6,509.15	---	200	---	---	---	---

Notes:
ft msl = Feet above mean sea level
ft bgs = Feet below ground surface
--- = Not applicable

[a] Geologic Formation
- Kbc = Burro Canyon Formation
- Jmb = Brushy Basin Member of the Morrison Formation
- TRc = Chinle Formation

[b] Hydrostratigraphic Unit
- BCA = Burro Canyon Aquifer
- BBM = Brushy Basin Member of the Morrison Formation
- CHINLE = Chinle Formation

[c] North American Datum 1927, Utah State Plane, South

[d] 1988 North American Vertical Datum

[e] Well was found during the Phase 1 field investigation. The well was video-logged and sampled. Monitoring records prior to 2012 are not available.

[f] Borehole dry and not completed as a monitor well; borehole abandoned

TABLE 2. GROUNDWATER SAMPLING METHODS USED DURING COMPREHENSIVE MONITORING EVENTS
RIO ALGOM MINING LLC, LISBON FACILITY

	FALL 2012					SPRING 2013				FALL 2013					SPRING 2014				
WELL NAME	Pre-Development Grab Sample	HydraSleeve	Modified Low-Flow[a]	Standard Purge[b]	Modified Purge[c]	HydraSleeve	Modified Low-Flow[a]	Standard Purge[b]	Modified Purge[c]	HydraSleeve	Modified Low-Flow[a]	Standard Purge[b]	Modified Purge[c]	Pre-Development Grab Sample	HydraSleeve	Modified Low-Flow[a]	Standard Purge[b]	Modified Purge[c]	Pre-Development Grab Sample
EF-3A		X	X	X		X	X	X		X	X				X	X			
EF-6		X	X	X		X	X	X		X	X				X	X			
EF-8		X	X	X		X	X	X		X	X					X			
H-63		X	X	X		X	X	X		X	X				X	X			
LW-1		X	X	X		X	X	X		X	X				X	X			
ML-1		X	X	X		X	X	X		X	X				X	X			
MW-5		X	X	X		X	X	X		X	X				X	X			
MW-13		X	X	X		X	X	X		X	X				X	X			
OW-UT-9		X	X	X		X	X	X		X	X				X	X			
RL-1		X	X	X		X	X	X		X	X					X			
RL-3		X	X	X		X	X	X		X	X				X	X			
RL-4		X	X	X		X	X	X		X	X				X	X			
RL-5		X	X	X		X	X	X		X	X				X	X			
RL-6		X	X	X		X	X	X		X	X				X	X			
UW-1		X	X	X		X	X	X		X	X				X	X			
MW-100	X	X	X	X		X	X	X		X	X				X	X			
MW-101	X	X	X	X		X	X	X		X	X				X	X			
MW-102	X	X	X	X		X	X	X		X	X				X	X			
MW-102DB	X	X	X	X		X	X	X		X	X				X	X			
MW-103	X	X	X	X		X	X	X		X	X				X	X			
MW-104	X				X				X				X					X	
MW-105	X	X	X	X		X	X	X		X	X				X	X			
MW-106	X				X				X	X			X					X	
MW-107S	---					---				X	X	X			X	X	X		
MW-107D	---					---				X	X	X			X	X	X		
MW-108	---					---				X	X	X			X	X	X		
MW-109	---					---				X	X	X			X	X	X		
MW-110	---					---				Insufficient Volume					Insufficient Volume				
MW-111	---					---								X					X
MW-112	---					---				X	X	X			X	X	X		
MW-113	---					---				X	X	X			X	X	X		
MW-114	---					---				X	X	X			X	X	X		
MW-115S	---					---				X	X	X			X	X	X		
MW-115M	---					---				X	X	X			X	X	X		
MW-116	---					---				X	X	X			X	X	X		
MW-117S	---					---				X	X	X			X	X	X		
MW-117M	---					---				X	X	X			X	X	X		
MW-118	---					---				X	X	X			X	X	X		
MW-119	---					---						X			X		X		
MW-120	---					---				X	X	X			X	X	X		
MW-121	---					---				Dry					Insufficient Volume				
MW-122	---					---				Dry					Insufficient Volume				

Notes:

--- = Well not yet installed

[a] The low-flow sampling method is considered "modified" because well screened intervals at the Site exceed the US EPA recommended maximum length of 10 feet

[b] Prior to sampling, at least three casing volumes were removed or well was evacuated completely and sampled within 24 hours after well had recovered 80 percent.

[c] Well was evacuated completely and allowed to recover for several days to accumulate sufficient sample volume. Sample was collected at the end of the monitoring event, regardless of percent recovery.

MONTGOMERY & ASSOCIATES

TABLE 3. SUMMARY OF FIELD PARAMETERS DURING GROUNDWATER MONITORING EVENTS CONDUCTED FROM OCTOBER 2012 THROUGH APRIL 2014
RIO ALGOM MINING LLC, LISBON FACILITY

			HYDRASLEEVE METHOD (NO-PURGE)							MODIFIED LOW-FLOW METHOD (MINIMAL PURGE) [b]							PURGE METHOD (VOLUME-BASED PURGE)						
WELL NAME	HSU [a]	SAMPLE DATE	Vol (L)	Temp (˚C)	pH (s.u.)	EC (µS/cm)	Turb (NTU)	DO (mg/L)	ORP (mV)	Vol (L)	Temp (˚C)	pH (s.u.)	EC (µS/cm)	Turb (NTU)	DO (mg/L)	ORP (mV)	Vol (gal)	Temp (˚C)	pH (s.u.)	EC (µS/cm)	Turb (NTU)	DO (mg/L)	ORP (mV)
EF-3A	BCA	11/1/2012	1	10.8	7.3	7,091	7	0.9	-165	18	12.5	7.0	9,995	4	1.8	12	585	12.7	7.2	8,000	5	1.6	-265
		4/5/2013	1	12.4	6.6	5,795	7	1.0	9	17	11.7	6.4	6,164	3	3.3	44	585	12.4	6.8	5,775	3	2.2	46
		10/13/2013	1	12.8	7.3	6,870	42	1.2	258	13	12.2	7.0	8,495	2	0.8	143	---	---	---	---	---	---	---
		4/5/2014	1	11.7	7.3	6,407	3	2.5	191	12	11.4	7.0	8,472	3	0.7	181	---	---	---	---	---	---	---
EF-6	BCA	10/30/2012	1	14.8	7.1	2,970	14	6.7	2	10	13.4	7.0	2,692	6	9.0	40	129	12.7	7.0	2,587	5	7.5	79
		4/2/2013	1	12.9	7.0	4,201	2	11.8	82	6	11.8	7.1	3,187	2	13.2	91	128	12.3	7.0	3,227	2	11.3	97
		10/11/2013	1	13.2	7.1	3,470	31	8.7	151	6	12.0	7.1	3,444	27	9.9	129	---	---	---	---	---	---	---
		4/5/2014	1	11.0	7.1	3,128	3	9.8	173	8	11.6	7.0	3,310	3	13.1	184	---	---	---	---	---	---	---
EF-8	BCA	10/31/2012	1	12.3	7.6	3,041	9	4.4	-179	10	12.2	7.4	2,066	5	8.0	-128	330	12.7	7.4	2,069	3	7.6	-54
		11/28/2012	---	---	---	---	---	---	---	4	10.3	7.7	1,775	4	7.9	151	---	---	---	---	---	---	---
		12/20/2012	---	---	---	---	---	---	---	6	7.7	7.2	1,909	2	7.2	253	---	---	---	---	---	---	---
		1/28/2013	---	---	---	---	---	---	---	5	9.2	7.4	1,940	2	7.3	218	---	---	---	---	---	---	---
		2/26/2013	---	---	---	---	---	---	---	6	7.6	7.6	2,299	3	7.9	170	---	---	---	---	---	---	---
		3/31/2013	---	---	---	---	---	---	---	6	12.6	7.4	1,506	5	7.5	145	---	---	---	---	---	---	---
		4/1/2013	1	12.0	7.5	1,943	3	7.4	9	---	---	---	---	---	---	---	331	12.7	7.6	1,421	3	7.4	56
		4/5/2013	---	---	---	---	---	---	---	6	12.0	7.2	1,567	2	10.1	59	---	---	---	---	---	---	---
		5/13/2013	---	---	---	---	---	---	---	3	15.6	7.1	1,980	2	7.0	101	---	---	---	---	---	---	---
		6/9/2013	---	---	---	---	---	---	---	7	14.7	7.9	2,322	0.1	7.0	29	---	---	---	---	---	---	---
		7/20/2013	---	---	---	---	---	---	---	4	15.0	7.2	2,036	1	6.3	553	---	---	---	---	---	---	---
		8/15/2013	---	---	---	---	---	---	---	4	16.2	7.4	1,845	1	7.1	131	---	---	---	---	---	---	---
		9/30/2013	---	---	---	---	---	---	---	4	12.0	7.5	2,343	4	6.0	170	---	---	---	---	---	---	---
		10/14/2013	1	9.9	7.5	2,578	123	7.7	114	7	10.6	7.4	2,293	6	9.0	143	---	---	---	---	---	---	---
		11/16/2013	---	---	---	---	---	---	---	5	10.3	7.4	2,110	1	7.0	-192	---	---	---	---	---	---	---
		12/14/2013	---	---	---	---	---	---	---	4	9.2	7.6	2,224	20	7.0	132	---	---	---	---	---	---	---
		1/25/2014	---	---	---	---	---	---	---	4	10.1	7.4	2,208	1	7.4	187	---	---	---	---	---	---	---
		2/22/2014	---	---	---	---	---	---	---	5	10.6	7.4	2,550	1	7.3	103	---	---	---	---	---	---	---
		3/31/2014	---	---	---	---	---	---	---	4	11.1	8.3	2,254	1	5.9	178	---	---	---	---	---	---	---
		4/6/2014	---	---	---	---	---	---	---	6	10.7	7.6	2,274	3	9.5	212	---	---	---	---	---	---	---
H-63	BCA	11/3/2012	1	9.4	8.3	1,202	6	5.5	132	6	11.1	8.3	1,203	5	4.4	33	111	12.3	7.9	1,101	9	7.5	-138
		4/3/2013	1	13.5	8.2	1,406	3	4.3	-76	12	12.0	8.6	1,042	3	4.6	-43	110	12.3	8.0	986	10	6.8	11
		10/12/2013	1	9.7	8.0	1,002	11	4.4	237	12	12.5	8.0	1,052	11	4.3	166	---	---	---	---	---	---	---
		4/2/2014	1	11.9	8.5	1,042	8	4.4	121	9	14.4	8.1	1,046	5	4.3	122	---	---	---	---	---	---	---
LW-1	BCA	11/2/2012	1	10.4	7.5	672	7	3.8	213	12	12.6	7.4	648	5	4.2	166	170	12.4	7.3	639	5	3.7	-23
		4/4/2013	1	11.7	7.1	490	3	4.8	116	12	12.6	7.0	428	2	4.7	106	170	12.4	6.9	472	2	4.8	98
		10/9/2013	1	11.5	7.7	602	13	3.5	178	14	13.5	7.5	620	19	3.6	114	---	---	---	---	---	---	---
		4/3/2014	1	11.1	7.9	778	8	3.0	125	6	11.1	7.5	577	10	3.1	145	---	---	---	---	---	---	---
ML-1	BCA	10/30/2012	1	9.4	7.4	1,138	21	4.7	248	5	11.0	7.4	1,176	7	5.3	235	225	11.8	7.4	1,250	14	10.5	-144
		4/2/2013	1	11.6	7.8	1,897	2	4.7	91	8	11.0	7.5	1,441	2	5.5	53	225	11.7	7.4	1,512	2	14.5	51
		10/11/2013	1	10.8	7.3	1,332	29	3.8	160	6	11.2	7.2	1,452	21	3.4	126	---	---	---	---	---	---	---
		4/4/2014	1	12.4	7.8	1,430	4	4.5	226	15	11.0	8.3	1,391	12	2.4	103	---	---	---	---	---	---	---

TABLE 3. SUMMARY OF FIELD PARAMETERS DURING GROUNDWATER MONITORING EVENTS CONDUCTED FROM OCTOBER 2012 THROUGH APRIL 2014
RIO ALGOM MINING LLC, LISBON FACILITY

			HYDRASLEEVE METHOD (NO-PURGE)							MODIFIED LOW-FLOW METHOD (MINIMAL PURGE) [b]							PURGE METHOD (VOLUME-BASED PURGE)						
WELL NAME	HSU [a]	SAMPLE DATE	Vol (L)	Temp (°C)	pH (s.u.)	EC (µS/cm)	Turb (NTU)	DO (mg/L)	ORP (mV)	Vol (L)	Temp (°C)	pH (s.u.)	EC (µS/cm)	Turb (NTU)	DO (mg/L)	ORP (mV)	Vol (gal)	Temp (°C)	pH (s.u.)	EC (µS/cm)	Turb (NTU)	DO (mg/L)	ORP (mV)
MW-5	BCA	11/2/2012	1	12.9	6.9	2,992	8	1.4	104	21	14.0	6.9	3,002	4	1.1	92	---	---	---	---	---	---	---
		11/3/2012	---	---	---	---	---	---	---	---	---	---	---	---	---	---	105	13.2	7.2	2,780	10	2.7	201
		4/3/2013	1	13.6	6.7	1,441	2	0.8	78	10	12.4	6.4	1,797	2	0.7	87	---	---	---	---	---	---	---
		4/4/2013	---	---	---	---	---	---	---	---	---	---	---	---	---	---	70	11.6	6.9	1,295	2	2.6	84
		10/10/2013	1	11.0	6.9	986	7	1.2	207	6	8.8	6.9	1,828	7	0.4	142	---	---	---	---	---	---	---
		4/4/2014	1	8.7	7.1	1,749	8	0.9	181	5	10.6	6.9	1,855	6	0.6	156	---	---	---	---	---	---	---
MW-13	BCA	11/3/2012	1	9.6	7.3	1,002	6	2.0	216	17	11.8	7.2	1,025	4	1.0	130	219	12.2	7.2	1,019	3	1.0	105
		4/3/2013	1	12.2	6.8	723	2	1.1	30	17	12.1	6.7	720	2	0.7	31	219	12.1	6.7	703	2	0.7	39
		10/12/2013	1	11.3	7.9	463	24	4.4	155	7	11.9	7.2	935	2	1.1	113	---	---	---	---	---	---	---
		4/2/2014	1	13.1	7.4	939	11	1.2	127	11	12.4	7.3	902	7	0.6	121	---	---	---	---	---	---	---
OW-UT-9	BCA	11/3/2012	1	14.6	9.9	40,145	NR	1.7	-238	6	14.2	9.9	46,724	4	0.4	-397	85	13.3	9.9	45,007	4	0.4	-268
		3/31/2013	---	---	---	---	---	---	---	13	14.5	10.2	26,750	4	0.2	32	---	---	---	---	---	---	---
		4/1/2013	1	13.2	9.1	18,950	7	1.5	57	---	---	---	---	---	---	---	85	13.0	10.1	26,937	4	0.2	18
		6/9/2013	---	---	---	---	---	---	---	8	14.0	10.4	28,127	2	0.4	-90	---	---	---	---	---	---	---
		10/13/2013	1	15.4	9.7	40,747	52	0.6	107	10	15.1	9.7	41,492	55	0.1	-227	---	---	---	---	---	---	---
		12/14/2013	---	---	---	---	---	---	---	4	6.9	9.8	40,861	57	1.4	83	---	---	---	---	---	---	---
		3/31/2014	---	---	---	---	---	---	---	7	12.2	10.7	39,686	3	0.3	114	---	---	---	---	---	---	---
		4/4/2014	1	11.5	9.8	33,537	15	1.2	2	---	---	---	---	---	---	---	---	---	---	---	---	---	---
RL-1	BCA	10/31/2012	1	10.1	7.0	14,597	11	3.7	164	6	12.4	6.9	11,585	15	3.1	117	24	14.9	7.1	12,117	69	6.7	104
		11/28/2012	---	---	---	---	---	---	---	4	10.0	7.4	10,127	12	6.7	215	---	---	---	---	---	---	---
		12/20/2012	---	---	---	---	---	---	---	6	8.9	6.8	10,449	2	6.7	297	---	---	---	---	---	---	---
		1/28/2013	---	---	---	---	---	---	---	6	10.6	7.0	10,536	3	5.7	209	---	---	---	---	---	---	---
		2/26/2013	---	---	---	---	---	---	---	6	9.0	7.1	12,229	3	5.9	188	---	---	---	---	---	---	---
		3/31/2013	---	---	---	---	---	---	---	5	12.6	7.1	7,996	6	5.0	160	---	---	---	---	---	---	---
		4/2/2013	1	10.0	6.9	2,082	4	5.0	83	---	---	---	---	---	---	---	26	14.6	7.2	10,817	13	5.1	56
		4/5/2013	---	---	---	---	---	---	---	4	13.6	6.7	8,142	2	8.4	90	---	---	---	---	---	---	---
		5/13/2013	---	---	---	---	---	---	---	4	15.3	6.9	10,354	1	6.6	90	---	---	---	---	---	---	---
		6/9/2013	---	---	---	---	---	---	---	6	14.2	7.5	9,283	0.2	7.6	74	---	---	---	---	---	---	---
		7/20/2013	---	---	---	---	---	---	---	3	14.9	7.1	10,470	1	5.9	55	---	---	---	---	---	---	---
		8/15/2013	---	---	---	---	---	---	---	4	15.3	7.0	9,380	1	5.1	118	---	---	---	---	---	---	---
		9/30/2013	---	---	---	---	---	---	---	5	11.7	7.1	11,703	5	5.0	253	---	---	---	---	---	---	---
		10/14/2013	1	10.6	7.2	10,413	21	5.0	176	5	11.7	7.0	11,094	2	5.0	166	---	---	---	---	---	---	---
		11/16/2013	---	---	---	---	---	---	---	6	11.0	6.9	10,547	1	4.3	-168	---	---	---	---	---	---	---
		12/14/2013	---	---	---	---	---	---	---	4	8.7	7.1	11,440	3	4.3	65	---	---	---	---	---	---	---
		1/25/2014	---	---	---	---	---	---	---	4	10.8	7.1	10,901	3	3.9	161	---	---	---	---	---	---	---
		2/22/2014	---	---	---	---	---	---	---	4	11.6	7.0	12,625	1	4.5	89	---	---	---	---	---	---	---
		3/31/2014	---	---	---	---	---	---	---	4	12.5	7.7	11,039	1	3.1	200	---	---	---	---	---	---	---
		4/6/2014	---	---	---	---	---	---	---	4	11.9	7.1	11,063	3	5.3	219	---	---	---	---	---	---	---
RL-3	BCA	11/5/2012	1	12.4	7.1	8,087	6	4.3	221	8	15.0	6.9	11,987	7	3.9	8	39	13.9	7.0	10,671	7	5.5	93
		4/2/2013	1	13.9	7.2	8,493	4	6.5	112	14	14.5	7.0	9,346	2	5.9	96	40	13.5	7.1	10,941	3	7.1	105
		10/14/2013	1	10.8	7.1	6,938	7	6.4	219	16	17.8	7.0	10,535	4	5.4	107	---	---	---	---	---	---	---
		4/3/2014	1	11.6	7.0	9,671	11	4.1	191	8	13.6	7.0	10,287	6	4.1	175	---	---	---	---	---	---	---

TABLE 3. SUMMARY OF FIELD PARAMETERS DURING GROUNDWATER MONITORING EVENTS CONDUCTED FROM OCTOBER 2012 THROUGH APRIL 2014
RIO ALGOM MINING LLC, LISBON FACILITY

			HYDRASLEEVE METHOD (NO-PURGE)							MODIFIED LOW-FLOW METHOD (MINIMAL PURGE) [b]							PURGE METHOD (VOLUME-BASED PURGE)						
WELL NAME	HSU [a]	SAMPLE DATE	Vol (L)	Temp (°C)	pH (s.u.)	EC (µS/cm)	Turb (NTU)	DO (mg/L)	ORP (mV)	Vol (L)	Temp (°C)	pH (s.u.)	EC (µS/cm)	Turb (NTU)	DO (mg/L)	ORP (mV)	Vol (gal)	Temp (°C)	pH (s.u.)	EC (µS/cm)	Turb (NTU)	DO (mg/L)	ORP (mV)
RL-4	BCA	11/1/2012	1	13.6	7.7	957	5	7.1	80	9	16.1	7.6	940	7	9.1	12	66	13.0	7.6	932	25	8.1	12
		4/4/2013	1	10.2	6.7	626	4	10.3	132	8	11.0	6.9	641	2	12.4	112	65	12.8	7.0	655	2	10.4	111
		10/10/2013	1	9.9	7.6	894	7	8.0	95	9	10.8	7.5	896	11	7.6	84	---	---	---	---	---	---	---
		4/3/2014	1	11.2	7.0	951	8	8.0	188	6	12.2	7.4	867	5	8.5	160	---	---	---	---	---	---	---
RL-5	BCA	11/2/2012	1	16.4	7.7	688	4	5.0	38	7	12.5	7.6	719	9	9.2	56	105	12.6	7.6	713	5	11.2	68
		4/4/2013	1	12.2	7.2	511	4	9.8	78	8	12.7	7.1	481	2	13.3	8	105	12.5	7.0	474	2	14.2	85
		10/9/2013	1	12.0	7.8	621	13	8.7	128	9	12.5	7.6	675	9	12.0	116	---	---	---	---	---	---	---
		4/3/2014	1	9.6	7.7	602	8	8.2	224	10	13.4	7.5	628	5	9.4	167	---	---	---	---	---	---	---
RL-6	BCA	11/1/2012	1	12.9	7.0	7,081	NR	1.9	-51	3	13.0	7.1	2,077	20	1.3	-41	9	12.0	7.1	2,074	7	1.3	-36
		4/4/2013	1	7.2	7.1	1,832	6	2.0	224	5	10.0	6.8	1,905	19	0.6	87	17	8.6	6.9	1,892	14	0.7	88
		10/8/2013	1	13.8	7.2	2,363	123	2.6	237	7	14.0	7.2	2,130	41	2.0	83	---	---	---	---	---	---	---
		4/3/2014	1	8.2	7.0	1,921	121	2.4	173	5	10.3	7.0	2,097	121	1.8	149	---	---	---	---	---	---	---
UW-1	BCA	11/3/2012	1	13.1	7.1	1,835	12	6.0	107	8	15.1	7.1	1,217	30	2.9	88	107	12.8	7.2	1,747	33	5.4	50
		4/3/2013	1	10.0	7.2	938	4	5.3	112	8	11.5	6.7	842	2	1.7	85	105	12.1	6.5	806	2	4.3	60
		10/12/2013	1	12.2	7.1	1,095	17	2.7	136	12	14.5	7.1	1,089	4	2.5	79	---	---	---	---	---	---	---
		4/2/2014	1	10.0	7.2	1,013	9	4.1	187	10	11.3	7.4	997	10	4.3	85	---	---	---	---	---	---	---
MW-100	BCA	11/7/2012	1	10.6	7.3	932	8	1.7	131	6	11.2	7.3	1,395	6	1.5	129	113	12.3	7.3	1,391	11	1.0	118
		4/4/2013	1	10.9	7.1	878	3	1.6	127	11	13.0	7.0	825	1	1.4	51	109	12.5	7.1	812	1	1.5	72
		10/10/2013	1	10.5	7.3	896	13	2.0	126	16	11.7	7.2	871	9	1.5	49	---	---	---	---	---	---	---
		4/3/2014	1	10.4	7.3	863	10	2.1	203	6	11.5	7.2	849	7	1.5	165	---	---	---	---	---	---	---
MW-101	BCA	11/6/2012	1	12.8	7.2	20,031	23	5.3	-258	10	18.0	7.0	21,708	724	4.4	75	19	14.0	7.0	19,845	71,000	4.3	71
		4/4/2013	1	16.2	6.9	16,370	11	3.9	117	7	17.8	8.0	16,758	5	3.7	33	15	16.1	7.9	16,745	37	4.2	58
		10/13/2013	1	13.6	7.1	16,418	22	3.6	115	9	14.5	7.0	17,424	14	3.8	82	---	---	---	---	---	---	---
		4/4/2014	1	12.3	7.1	16,589	31	3.5	95	9	13.1	7.0	16,762	151	3.7	99	---	---	---	---	---	---	---
MW-102	BCA	11/6/2012	1	7.5	9.0	20,818	6	1.7	-220	10	14.5	8.9	21,623	9	1.1	-377	24	13.5	8.8	21,875	>1000	1.2	-399
		4/3/2013	1	9.0	8.0	18,033	23	0.2	-131	10	15.5	8.2	18,731	28	0.3	-262	21	13.0	8.3	18,814	28	0.0	-199
		10/9/2013	1	11.3	8.5	18,293	72	0.5	61	16	16.2	8.4	19,250	73	0.1	-105	---	---	---	---	---	---	---
		4/4/2014	1	10.2	8.6	18,333	121	0.8	185	10	15.0	8.5	18,742	54	0.3	156	---	---	---	---	---	---	---
MW-102DB	BBM	11/6/2012	1	8.6	8.0	888	17	3.0	223	18	13.4	8.1	1,329	20	0.2	-87	109	12.2	8.1	990	12	0.1	-80
		4/2/2013	1	12.9	8.4	923	4	0.7	-123	14	11.1	8.7	874	4	0.1	-176	105	12.4	8.6	8	5	0.4	-166
		10/9/2013	1	13.3	8.1	1,165	7	0.5	-138	16	14.4	7.9	957	8	0.2	-175	---	---	---	---	---	---	---
		4/4/2014	1	11.6	8.3	1,525	29	0.7	101	11	12.7	8.1	913	6	0.2	-43	---	---	---	---	---	---	---
MW-103	BBM	11/7/2012	1	9.7	7.0	6,620	4	5.2	63	7	8.0	7.0	7,300	9	5.0	83	55	12.7	7.0	7,181	13	3.3	25
		4/5/2013	1	16.1	6.5	3,904	7	1.1	129	10	10.8	7.0	6,429	15	0.1	-34	50	11.6	7.0	6,764	23	3.6	NR
		10/13/2013	1	13.7	7.0	6,715	15	0.4	170	9	13.9	7.0	6,827	2	0.3	99	---	---	---	---	---	---	---
		4/4/2014	1	11.0	7.2	6,586	10	0.8	167	5	10.9	7.1	6,953	35	0.9	-120	---	---	---	---	---	---	---

TABLE 3. SUMMARY OF FIELD PARAMETERS DURING GROUNDWATER MONITORING EVENTS CONDUCTED FROM OCTOBER 2012 THROUGH APRIL 2014
RIO ALGOM MINING LLC, LISBON FACILITY

			HYDRASLEEVE METHOD (NO-PURGE)							MODIFIED LOW-FLOW METHOD (MINIMAL PURGE) [b]							PURGE METHOD (VOLUME-BASED PURGE)						
WELL NAME	HSU [a]	SAMPLE DATE	Vol (L)	Temp (°C)	pH (s.u.)	EC (µS/cm)	Turb (NTU)	DO (mg/L)	ORP (mV)	Vol (L)	Temp (°C)	pH (s.u.)	EC (µS/cm)	Turb (NTU)	DO (mg/L)	ORP (mV)	Vol (gal)	Temp (°C)	pH (s.u.)	EC (µS/cm)	Turb (NTU)	DO (mg/L)	ORP (mV)
MW-104	BCA	11/7/2012	---	---	---	---	---	---	---	---	---	---	---	---	---	---	15	11.1	7.3	1,521	6	NR	NR
		11/28/2012	---	---	---	---	---	---	---	---	---	---	---	---	---	---	15	10.6	7.8	836	4	4.3	122
		4/5/2013	---	---	---	---	---	---	---	---	---	---	---	---	---	---	15	12.6	7.9	1,261	21	7.6	63
		10/14/2013	---	---	---	---	---	---	---	---	---	---	---	---	---	---	19	10.9	6.6	1,395	23	7.2	173
		11/17/2013	---	---	---	---	---	---	---	---	---	---	---	---	---	---	19	9.3	7.4	1,227	43	5.7	-41
		4/6/2014	---	---	---	---	---	---	---	---	---	---	---	---	---	---	15	10.3	7.7	1,301	10	7.0	183
MW-105	BCA	11/7/2012	1	9.9	7.4	1,282	8	1.4	220	17	12.1	7.2	1,600	14	0.3	102	123	12.0	7.3	1,262	10	1.3	120
		4/3/2013	1	11.4	6.7	968	2	0.6	56	11	12.3	6.6	1,322	2	0.2	56	120	11.9	6.7	916	2	1.5	51
		10/12/2013	1	11.5	7.3	1,084	20	0.6	158	12	12.5	7.1	1,714	7	1.6	99	---	---	---	---	---	---	---
		4/4/2014	1	11.8	7.6	1,222	35	2.4	194	10	12.8	7.3	1,705	15	2.9	121	---	---	---	---	---	---	---
MW-106	BBM	11/7/2012	---	---	---	---	---	---	---	---	---	---	---	---	---	---	40	11.7	7.0	3,067	10	NR	86
		11/28/2012	---	---	---	---	---	---	---	---	---	---	---	---	---	---	40	11.3	7.7	2,865	5	2.6	263
		4/5/2013	---	---	---	---	---	---	---	---	---	---	---	---	---	---	49	12.5	7.3	2,677	19	6.4	77
		10/9/2013	1	12.2	7.8	3,209	11	1.3	109	---	---	---	---	---	---	---	---	---	---	---	---	---	---
		10/14/2013	---	---	---	---	---	---	---	---	---	---	---	---	---	---	40	11.6	5.9	3,105	29	2.4	225
		11/17/2013	---	---	---	---	---	---	---	---	---	---	---	---	---	---	40	9.2	7.1	2,815	93	2.2	-38
		4/6/2014	---	---	---	---	---	---	---	---	---	---	---	---	---	---	70	10.1	7.8	2,782	8	1.9	186
MW-107S	BCA	10/8/2013	1	13.6	4.7	2,239	17	5.8	296	9	15.0	4.5	2,232	31	5.7	332	23	12.0	4.3	2,215	25	6.0	360
		4/3/2014	1	10.7	4.8	2,111	40	3.0	213	7	13.2	4.5	2,162	9	2.2	185	22	11.9	4.4	2,184	8	2.5	193
MW-107D	BCA	10/8/2013	1	15.1	7.1	1,197	15	1.8	55	10	14.9	6.5	1,128	14	1.2	109	60	12.1	6.4	1,118	12	1.6	126
		4/3/2014	---	---	---	---	---	---	---	12	12.2	8.0	1,007	46	1.4	50	60	11.8	6.8	993	3	1.8	-19
MW-108	BCA	10/12/2013	1	11.4	7.4	1,115	21	8.4	168	11	11.8	7.3	1,126	9	13.5	132	280	12.4	7.3	1,136	7	10.2	142
		4/3/2014	1	10.8	7.7	1,085	10	9.1	137	7	10.8	7.5	1,075	6	10.4	83	291	12.3	7.5	1,093	2	11.5	119
MW-109	BCA	10/9/2013	1	13.1	7.5	3,250	9	7.1	139	10	14.5	7.4	3,249	8	8.1	111	40	13.3	7.6	3,515	10	7.4	100
		4/3/2014	1	11.2	7.4	3,231	4	3.9	83	6	11.4	8.6	3,804	45	3.8	45	39	10.4	8.9	3,040	10	4.3	205
MW-110	BBM	Not Sampled	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
MW-111	BBM	11/17/2013	0.5 (Bailer)	9.9	6.5	865	22	8.0	-57	---	---	---	---	---	---	---	---	---	---	---	---	---	---
		4/1/2014	0.5 (Bailer)	11.2	7.3	971	13	5.1	235	---	---	---	---	---	---	---	---	---	---	---	---	---	---
MW-112	BCA	10/11/2013	1	13.0	7.5	1,108	41	9.4	135	10	12.2	7.4	1,150	16	9.6	138	189	11.8	7.4	1,236	19	10.1	129
		4/4/2014	1	10.1	8.7	1,208	9	12.4	134	7	10.0	8.3	1,100	28	10.0	194	189	11.8	8.0	1,166	5	10.3	191
MW-113	BCA	10/11/2013	1	12.5	7.3	2,173	13	7.3	143	14	14.0	7.1	3,566	7	9.2	108	71	12.1	7.2	3,502	6	9.1	115
		4/5/2014	1	11.1	7.9	3,203	4	9.5	146	9	12.4	7.9	3,366	3	9.9	99	71	10.0	8.8	3,115	3	9.9	87
MW-114	BCA	10/13/2013	1	11.8	7.2	779	273	9.2	301	9	12.2	6.8	851	35	10.0	76	276	12.1	7.5	783	18	14.3	140
		4/4/2014	1	11.7	8.3	797	10	9.0	188	12	11.7	7.6	790	34	8.2	128	276	12.2	7.7	787	6	8.7	159

TABLE 3. SUMMARY OF FIELD PARAMETERS DURING GROUNDWATER MONITORING EVENTS CONDUCTED FROM OCTOBER 2012 THROUGH APRIL 2014
RIO ALGOM MINING LLC, LISBON FACILITY

			HYDRASLEEVE METHOD (NO-PURGE)							MODIFIED LOW-FLOW METHOD (MINIMAL PURGE) [b]							PURGE METHOD (VOLUME-BASED PURGE)						
WELL NAME	HSU [a]	SAMPLE DATE	Vol (L)	Temp (˚C)	pH (s.u.)	EC (µS/cm)	Turb (NTU)	DO (mg/L)	ORP (mV)	Vol (L)	Temp (˚C)	pH (s.u.)	EC (µS/cm)	Turb (NTU)	DO (mg/L)	ORP (mV)	Vol (gal)	Temp (˚C)	pH (s.u.)	EC (µS/cm)	Turb (NTU)	DO (mg/L)	ORP (mV)
MW-115S	BCA	10/13/2013	1	11.7	7.5	1,211	31	12.8	148	11	13.7	7.6	1,223	16	15.6	147	98	12.4	7.6	1,220	87	19.6	150
		4/5/2014	1	11.7	8.1	1,125	10	9.3	237	11	14.6	7.9	1,136	5	9.9	191	101	12.0	7.6	1,237	5	12.5	195
MW-115M	BCA	10/14/2013	1	11.8	9.7	1,378	13	11.2	104	12	14.4	7.6	1,263	13	17.6	118	324	12.3	7.7	1,701	11	12.2	137
		11/16/2013	1	9.4	7.6	1,202	11	12.5	-158	4	10.6	7.4	1,191	13	17.2	-174	---	---	---	---	---	---	---
		4/5/2014	1	11.9	8.0	1,430	3	13.1	211	14	13.0	9.1	1,251	4	16.2	77	276	12.4	9.0	1,776	4	14.0	120
MW-116	BCA	10/12/2013	1	21.1	3.7	11,458	42	2.1	273	8	15.8	3.7	11,352	720	2.0	281	81	13.0	3.5	12,884	90	2.6	316
		4/5/2014	1	11.6	5.8	11,962	12	1.6	263	8	13.1	5.1	12,521	5	0.7	91	77	12.5	5.1	12,737	7	1.0	261
MW-117S	BCA	10/12/2013	1	12.1	7.9	1,250	944	8.2	142	14	14.6	7.6	1,397	838	8.4	98	87	12.5	7.6	1,571	31	12.8	93
		4/5/2014	1	12.1	8.5	1,200	4	6.9	113	12	13.7	8.5	1,545	4	11.5	53	87	12.6	8.5	1,609	3	11.4	80
MW-117M	BCA	10/14/2013	1	11.0	12.5	3,214	22	2.5	172	9	12.2	12.6	3,476	18	3.6	125	132	12.8	11.6	2,976	48	3.1	103
		4/5/2014	1	11.0	10.3	2,671	3	1.3	72	9	11.9	10.3	2,976	5	0.5	61	135	12.6	10.3	2,789	5	2.2	75
MW-118	BCA	10/8/2013	1	12.6	7.7	1,319	>1,000	1.1	205	8	14.0	7.2	998	>1,000	0.6	1	100	11.0	7.2	1,071	42	3.3	47
		4/3/2014	1	10.4	8.7	848	603	1.2	202	10	9.2	8.3	879	105	0.6	31	100	10.4	9.1	934	33	3.0	889
MW-119	BCA	10/13/2013	---	---	---	---	---	---	---	---	---	---	---	---	---	---	19	12.8	7.2	5,199	3	6.9	116
		4/3/2014	1	11.5	7.6	4,552	2	6.4	135	---	---	---	---	---	---	---	---	---	---	---	---	---	---
		4/4/2014	---	---	---	---	---	---	---	---	---	---	---	---	---	---	15	9.8	7.6	4,890	4	10.4	214
MW-120	BCA	10/13/2013	1	12.2	7.9	878	148	6.4	156	11	14.3	7.6	840	75	6.5	173	237	12.8	7.6	786	34	7.5	154
		4/2/2014	1	10.8	7.2	1,527	13	8.4	13	10	11.0	8.5	1,446	37	8.0	68	237	12.5	7.3	990	9	8.1	103
MW-121	CHINLE	Not Sampled	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
MW-122	BCA	Not Sampled	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---

Notes:

[a] Hydrostratigraphic Unit
BCA = Burro Canyon Aquifer
BBM = Brushy Basin Member of the Morrison Formation
CHINLE = Chinle Formation

[b] The low-flow sampling method is considered "modified" because well screened intervals at the Site exceed the USEPA recommended maximum length of 10 feet.

--- = Not applicable for sampling method
NR = Not reported on field sampling data sheet

Vol (L) = Volume in liters
Temp (˚C) = Temperature in degrees celsius
pH (s.u.) = pH in standard units
EC (µS/cm) = Electrical conductivity in microsiemens per centimeter
Turb (NTU) = Turbidity in nephelometric turbiditiy units
DO (mg/L) = Dissolved oxygen concentration in milligrams per liter
ORP (mV) = Oxidation-reduction potential in millivolts
Vol (gal) = Volume in gallons

TABLE 4. CONTACT ELEVATION BETWEEN THE BURRO CANYON FORMATION AND BRUSHY BASIN MEMBER OF THE MORRISON FORMATION
RIO ALGOM MINING LLC, LISBON FACILITY

WELL/ BOREHOLE NAME	CURRENT STATUS	EASTING [a]	NORTHING [a]	Kbc/Jmb CONTACT ELEVATION [b,c] (ft msl)
WELLS INSTALLED DURING SUPPLEMENTAL SITE ASSESSMENT (2012-2103)				
MW-101	Existing	2,634,360	593,397	6,549
MW-102	Existing	2,635,889	592,129	6,566
MW-102DB	Existing	2,635,877	592,170	6,565
MW-103	Existing	2,635,778	589,620	6,590
MW-104	Existing	2,637,513	589,369	6,604
MW-105	Existing	2,636,131	588,105	6,487
MW-106	Existing	2,639,306	587,423	6,624
MW-107D	Existing	2,628,807	593,267	6,432
MW-108	Existing	2,629,865	593,861	6,347
MW-109	Existing	2,632,527	593,552	6,520
MW-110	Existing	2,632,886	592,550	6,555
MW-111	Existing	2,634,470	591,997	6,583
MW-114	Existing	2,632,023	590,522	6,356
MW-117M	Existing	2,633,975	589,240	6,386
MW-118	Existing	2,627,874	594,554	6,400
MW-119	Existing	2,630,986	594,211	6,517
MW-120	Existing	2,637,532	586,691	6,431
MW-122	Existing	2,641,533	585,157	6,733
WELLS/BOREHOLES INSTALLED PRIOR TO 2012				
EF-3A	Existing	2,633,923	589,279	6,370
EF-6	Existing	2,633,033	590,617	6,434
EF-8	Existing	2,633,241	589,567	6,332
H-63	Existing	2,637,682	588,202	6,515
LW-1	Existing	2,636,700	594,336	6,491
ML-1	Existing	2,631,486	591,502	6,364
MW-13	Existing	2,636,128	587,830	6,439
OW-UT-9	Existing	2,636,715	590,970	6,570
RL-1	Existing	2,633,217	593,676	6,530
RL-3	Existing	2,632,620	594,239	6,513
RL-4	Existing	2,631,660	595,070	6,508
RL-5	Existing	2,632,690	595,194	6,518
D-10	Decommissioned	2,634,612	589,819	6,488
DM80-1	Decommissioned	2,633,556	592,595	6,551
DM80-2	Decommissioned	2,635,382	588,345	6,543
DM80-3	Decommissioned	2,632,617	589,752	6,473
DM80-4	Decommissioned	2,632,474	589,607	6,477
EF-1	Decommissioned	2,632,921	589,964	6,310
EF-16	Decommissioned	2,637,892	590,105	6,588
EF-17	Decommissioned	2,638,655	590,062	6,548
EF-2	Decommissioned	2,633,660	589,115	6,328
EF-20	Decommissioned	2,633,644	595,026	6,495
EF-21	Decommissioned	2,634,866	595,026	6,485
EF-22	Decommissioned	2,634,961	593,819	6,520
EF-23	Decommissioned	2,635,840	593,408	6,515
EF-25	Decommissioned	2,634,535	593,311	6,545

TABLE 4. CONTACT ELEVATION BETWEEN THE BURRO CANYON FORMATION AND BRUSHY BASIN MEMBER OF THE MORRISON FORMATION RIO ALGOM MINING LLC, LISBON FACILITY

WELL/ BOREHOLE NAME	CURRENT STATUS	EASTING [a]	NORTHING [a]	Kbc/Jmb CONTACT ELEVATION [b,c] (ft msl)
EF-26	Decommissioned	2,633,839	593,596	6,585
EF-4	Decommissioned	2,634,261	588,936	6,440
EF-5	Decommissioned	2,633,910	590,133	6,430
FT-1	Decommissioned	2,633,288	591,158	6,481
FT-4	Decommissioned	2,636,335	588,414	6,511
GW-17	Decommissioned	2,636,360	591,294	6,561
GW-19	Decommissioned	2,635,911	591,288	6,571
GW-20	Decommissioned	2,636,742	591,286	6,552
H-38	Decommissioned	2,638,801	589,532	6,571
H-47	Decommissioned	2,638,180	591,092	6,550
H-48	Decommissioned	2,637,410	591,305	6,538
H-49	Decommissioned	2,636,629	588,849	6,536
H-53	Decommissioned	2,635,979	590,076	6,583
H-56	Decommissioned	2,635,226	591,805	6,580
H-56	Decommissioned	2,635,226	591,805	6,580
H-57	Decommissioned	2,635,342	591,261	6,580
H-57	Decommissioned	2,635,342	591,261	6,583
H-58	Decommissioned	2,635,721	590,592	6,570
H-67	Decommissioned	2,637,020	588,930	6,575
H-71	Decommissioned	2,634,034	591,202	6,576
H-72	Decommissioned	2,634,514	591,950	6,580
H-73	Decommissioned	2,633,967	590,672	6,495
H-77	Decommissioned	2,636,785	591,690	6,568
H-78	Decommissioned	2,638,524	591,811	6,510
H-80	Decommissioned	2,636,062	593,503	6,520
LT-1	Decommissioned	2,635,208	590,680	6,592
LT-10	Decommissioned	2,635,728	589,610	6,582
LT-11	Decommissioned	2,636,115	590,483	6,601
LT-12	Decommissioned	2,636,356	590,179	6,602
LT-13	Decommissioned	2,636,490	590,016	6,601
LT-14	Decommissioned	2,636,605	589,851	6,618
LT-15	Decommissioned	2,636,725	589,662	6,609
LT-17	Decommissioned	2,635,959	589,821	6,598
LT-2	Decommissioned	2,635,492	591,021	6,597
LT-3	Decommissioned	2,635,509	590,815	6,586
LT-4	Decommissioned	2,636,074	590,847	6,566
LT-5	Decommissioned	2,636,238	590,641	6,567
LT-6	Decommissioned	2,636,193	590,613	6,580
LT-7	Decommissioned	2,636,145	590,587	6,578
LT-8	Decommissioned	2,636,093	590,580	6,581
LT-9	Decommissioned	2,636,045	590,569	6,578
MW-1	Decommissioned	2,634,388	589,733	6,496
MW-10	Decommissioned	2,637,831	592,746	6,497
MW-11	Decommissioned	2,634,225	589,429	6,476
MW-12	Decommissioned	2,634,814	588,885	6,507
MW-2	Decommissioned	2,634,722	589,440	6,500

TABLE 4. CONTACT ELEVATION BETWEEN THE BURRO CANYON FORMATION AND BRUSHY BASIN MEMBER OF THE MORRISON FORMATION RIO ALGOM MINING LLC, LISBON FACILITY

WELL/ BOREHOLE NAME	CURRENT STATUS	EASTING [a]	NORTHING [a]	Kbc/Jmb CONTACT ELEVATION [b,c] (ft msl)
MW-6A	Decommissioned	2,633,781	589,952	6,464
MW-7	Decommissioned	2,634,808	592,715	6,562
MW-8	Decommissioned	2,635,824	592,715	6,543
MW-9	Decommissioned	2,636,824	592,720	6,532
RW-10	Decommissioned	2,635,009	592,556	6,569
RW-11	Decommissioned	2,634,780	592,450	6,571
RW-14	Decommissioned	2,635,103	592,603	6,567
RW-2	Decommissioned	2,637,232	591,535	6,551
RW-6	Decommissioned	2,634,923	592,528	6,570
RW-7	Decommissioned	2,634,871	592,497	6,572
RW-8	Decommissioned	2,634,967	592,543	6,567
UT-1	Decommissioned	2,636,288	590,691	6,583
UT-2	Decommissioned	2,636,369	590,745	6,584
UT-4	Decommissioned	2,636,553	590,986	6,569
UT-5	Decommissioned	2,636,699	591,064	6,571
UT-6	Decommissioned	2,636,896	591,034	6,564
UT-7	Decommissioned	2,636,994	591,001	6,557
UT-8	Decommissioned	2,637,154	590,936	6,560
UT-9	Decommissioned	2,636,761	590,960	6,566
UDWR Well [d]	Unknown	2,639,653	596,820	6,372

Notes:

ft msl = feet above mean sea level

[a] North American Datum 1927, Utah State Plane, South

[b] Contact elevation between the Burro Canyon Formation (Kbc) and the Brushy Basin Member (Jmb) of the Morrison Formation.

[c] Contact elevation data for wells/boreholes installed prior to 2012 were provided in *'Remedial-Action Plan for Groundwater Contamination Control at the Lisbon Uranium Mill*' (EarthFax Engineering, Inc. 1984).

[d] Well location and drilling information obtained from Utah Division of Water Rights registry database.

TABLE 5. RESULTS OF SLUG TESTS IN EXISTING MONITOR WELLS
RIO ALGOM MINING LLC, LISBON FACILITY

WELL NAME	HSU [a]	DATE OF SLUG TESTING	CASING RADIUS (feet)	WELL RADIUS (feet)	ANALYSIS METHOD	TEST IDENTIFIER	INITIAL WATER LEVEL DISPLACEMENT (feet)	ESTIMATED HYDRAULIC CONDUCTIVITY (feet per day)	MEAN OF ESTIMATED HYDRAULIC CONDUCTIVITY VALUES (feet per day)
BURRO CANYON AQUIFER (BCA) WELLS									
MW-13	BCA	8/26/2012	0.17	0.33 (assumed)	Butler Inertial [b]	Slug A Falling Head	0.44	236	421
						Slug A Rising Head	0.44	337	
						Slug B1 Falling Head	0.44	289	
						Slug B1 Rising Head	0.42	294	
						Slug B2 Falling Head	0.57	563	
						Slug B2 Rising Head	0.45	806	
MW-115M	BCA	10/11/2013	0.17	0.42	Butler Inertial	Slug L Falling Head	1.05	153	167
						Slug L Rising Head	0.75	191	
						Slug C Falling Head	0.89	143	
						Slug C Rising Head	0.56	182	
						Slug F Falling Head	0.66	152	
						Slug F Rising Head	0.49	182	
EF-3A	BCA	8/28/2012	0.25	0.46 (assumed)	Bouwer-Rice	Slug C Falling Head	0.39	38	37
						Slug C Rising Head	0.48	29	
						Slug E Falling Head	1.48	42	
						Slug E Rising Head	1.38	24	
						Slug B Falling Head	0.38	47	
						Slug B Rising Head	0.36	42	
RL-6	BCA	8/25/2012	0.21	0.36	Bouwer-Rice	Slug A Falling Head	0.06	11	13.7
						Slug A Rising Head	0.12	26	
						Slug B Falling Head	0.08	8.5	
						Slug B Rising Head	0.35	9.2	
MW-117S	BCA	10/12/2013	0.17	0.42	Bouwer-Rice	Slug K Falling Head	1.20	Not Used [c]	9.4
						Slug K Rising Head	0.93	12	
						Slug L Falling Head	1.14	8.4	
						Slug L Rising Head	0.87	8.2	
						Slug D Falling Head	0.89	6.2	
						Slug D Rising Head	1.08	12	
MW-120	BCA	10/3/2013	0.17	0.33	Bouwer-Rice	Slug C Falling Head	1.05	Not Used [c]	6.4
						Slug C Rising Head	0.77	7.4	
						Slug F Falling Head	0.89	Not Used [c]	
						Slug F Rising Head	0.54	6.3	
						Slug L Falling Head	1.10	Not Used [c]	
						Slug L Rising Head	0.97	5.6	
MW-118	BCA	10/1/2013	0.17	0.33	Bouwer-Rice	Slug F Falling Head	0.89	4.7	4.5
						Slug F Rising Head	0.89	5.3	
						Slug C Falling Head	0.67	2.8	
						Slug C Rising Head	0.76	3.5	
						Slug I Falling Head	0.83	4.6	
						Slug I Rising Head	0.97	6.2	
MW-115S	BCA	10/2/2013	0.17	0.33	Bouwer-Rice	Slug J Falling Head	0.26	4.2	4.2
						Slug J Rising Head	0.20	2.4	
						Slug L Falling Head	0.43	4.6	
						Slug L Rising Head	Interrupted [d]	---	
						Slug K Falling Head	0.60	5.7	
						Slug K Rising Head	Interrupted [d]	---	
RL-5	BCA	8/25/2012	0.21	0.36	Bouwer-Rice	Slug B Falling Head	0.71	3.5	3.3
						Slug B Rising Head	0.59	3.7	
						Slug C Falling Head	0.50	2.8	
						Slug C Rising Head	0.68	3.6	
						Slug D Falling Head	0.91	3.3	
						Slug D Rising Head	0.81	3.2	
LW-1	BCA	8/27/2012	0.16	0.33	Bouwer-Rice	Slug B Falling Head	1.15	3.1	2.8
						Slug B Rising Head	0.77	2.6	
						Slug C Falling Head	1.63	3.2	
						Slug C Rising Head	0.96	2.6	
						Slug D Falling Head	1.14	2.5	
						Slug D Rising Head	1.24	2.8	

TABLE 5. RESULTS OF SLUG TESTS IN EXISTING MONITOR WELLS
RIO ALGOM MINING LLC, LISBON FACILITY

WELL NAME	HSU [a]	DATE OF SLUG TESTING	CASING RADIUS (feet)	WELL RADIUS (feet)	ANALYSIS METHOD	TEST IDENTIFIER	INITIAL WATER LEVEL DISPLACEMENT (feet)	ESTIMATED HYDRAULIC CONDUCTIVITY (feet per day)	MEAN OF ESTIMATED HYDRAULIC CONDUCTIVITY VALUES (feet per day)
MW-107S	BCA	10/1/2013	0.17	0.33	Bouwer-Rice	Slug F Falling Head	0.60	2	2.5
						Slug F Rising Head	0.89	2.7	
						Slug B Falling Head	0.79	2.6	
						Slug B Rising Head	0.78	2.8	
						Slug A Falling Head	0.37	1.9	
						Slug A Rising Head	0.51	3.1	
MW-117M	BCA	10/3/2013	0.17	0.42	Bouwer-Rice	Slug K Falling Head	1.51	1.9	2.3
						Slug K Rising Head	Interrupted [d]	---	
						Slug D Falling Head	1.84	1.8	
						Slug D Rising Head	1.55	2.7	
						Slug J Falling Head	1.74	2	
						Slug J Rising Head	1.72	2.9	
MW-113	BCA	10/2/2013	0.17	0.33	Bouwer-Rice	Slug C Falling Head	0.87	1.9	1.9
						Slug C Rising Head	1.05	1.8	
						Slug F Falling Head	0.89	1.9	
						Slug F Rising Head	0.89	2	
						Slug I Falling Head	0.70	1.8	
						Slug I Rising Head	0.89	2.2	
ML-1	BCA	8/26/2012	0.17	0.33	Bouwer-Rice	Slug C Falling Head	1.31	1.8	1.8
						Slug C Rising Head	1.18	1.8	
						Slug B Falling Head	1.29	1.7	
						Slug B Rising Head	0.89	1.8	
						Slug D Falling Head	1.76	1.8	
						Slug D Rising Head	1.71	1.7	
H-63	BCA	8/26/2012	0.17	0.33	Bouwer-Rice	Slug B Falling Head	1.11	1.6	1.6
						Slug B Rising Head	0.63	1.7	
						Slug C Falling Head	0.87	1.5	
						Slug C Rising Head	0.79	1.6	
						Slug D Falling Head	1.24	1.6	
						Slug D Rising Head	1.04	1.6	
EF-8	BCA	8/27/2012	0.17	0.33	Bouwer-Rice	Slug A Falling Head	0.86	1.5	1.4
						Slug A Rising Head	0.61	1.6	
						Slug D Falling Head	2.20	1.3	
						Slug D Rising Head	0.86	1.4	
						Slug B Falling Head	1.02	1.4	
						Slug B Rising Head	0.98	1.4	
MW-107D	BCA	10/1/2013	0.17	0.33	Bouwer-Rice	Slug B Falling Head	0.78	1.7	1.4
						Slug B Rising Head	0.78	1.3	
						Slug F Falling Head	0.89	1.4	
						Slug F Rising Head	0.89	1.4	
						Slug C Falling Head	0.91	1.3	
						Slug C Rising Head	0.98	1.4	
MW-108	BCA	10/1/2013	0.17	0.33	Bouwer-Rice	Slug B Falling Head	0.78	1.3	1.3
						Slug B Rising Head	0.78	1.5	
						Slug D Falling Head	1.41	1.3	
						Slug D Rising Head	Interrupted [d]	---	
						Slug J Falling Head	1.16	1.3	
						Slug J Rising Head	1.03	1.3	
OW-UT-9	BCA	8/29/2012	0.25	0.41	Bouwer-Rice	Slug C Falling Head	0.98	0.8	1.2
						Slug C Rising Head	0.47	1.5	
						Slug B Falling Head	0.22	1.0	
						Slug B Rising Head	0.38	1.1	
						Slug D Falling Head	0.38	1.1	
						Slug D Rising Head	0.67	1.3	
RL-3	BCA	11/2/2012	0.21	0.36	Bouwer-Rice	Slug A Falling Head	0.41	1.3	1.2
						Slug A Rising Head	0.36	1.1	
						Slug B Falling Head	0.49	1.2	
						Slug B Rising Head	0.57	1.4	
						Slug G Falling Head	0.31	1.2	
						Slug G Rising Head	0.42	1.3	

TABLE 5. RESULTS OF SLUG TESTS IN EXISTING MONITOR WELLS
RIO ALGOM MINING LLC, LISBON FACILITY

WELL NAME	HSU [a]	DATE OF SLUG TESTING	CASING RADIUS (feet)	WELL RADIUS (feet)	ANALYSIS METHOD	TEST IDENTIFIER	INITIAL WATER LEVEL DISPLACEMENT (feet)	ESTIMATED HYDRAULIC CONDUCTIVITY (feet per day)	MEAN OF ESTIMATED HYDRAULIC CONDUCTIVITY VALUES (feet per day)
MW-101	BCA	11/4/2012	0.17	0.33	Bouwer-Rice	Slug A Falling Head	0.32	0.6	0.8
						Slug A Rising Head	0.54	1.0	
						Slug G Falling Head	0.49	0.7	
						Slug G Rising Head	0.75	0.9	
MW-100	BCA	11/3/2012	0.17	0.33	Bouwer-Rice	Slug F Falling Head	0.34	0.6	0.7
						Slug F Rising Head	2.03	Not Used [c]	
						Slug C Falling Head	0.42	0.6	
						Slug C Rising Head	1.65	Not Used [c]	
						Slug B Falling Head	0.49	0.8	
						Slug B Rising Head	1.00	Not Used [c]	
RL-1	BCA	8/28/2012	0.21	0.37	Bouwer-Rice	Slug A Falling Head	0.21	0.7	0.6
						Slug A Rising Head	0.32	0.6	
						Slug B Falling Head	0.36	0.5	
						Slug B Rising Head	0.52	0.6	
RL-4	BCA	8/26/2012	0.21	0.36	Bouwer-Rice	Slug C Falling Head	1.42	0.7	0.6
						Slug C Rising Head	0.70	0.7	
						Slug D Falling Head	0.70	0.7	
						Slug D Rising Head	0.79	0.6	
						Slug B Falling Head	0.32	0.5	
						Slug B Rising Head	0.82	0.7	
EF-6	BCA	8/27/2012	0.17	0.33	Bouwer-Rice	Slug A Falling Head	0.57	0.5	0.5
						Slug A Rising Head	0.61	0.5	
						Slug B Falling Head	0.98	0.5	
						Slug B Rising Head	0.96	0.6	
						Slug C Falling Head	1.32	0.5	
						Slug C Rising Head	1.15	0.5	
UW-1	BCA	11/4/2012	0.17	0.33	Bouwer-Rice	Slug C Falling Head	0.70	0.5	0.4
						Slug C Rising Head	0.72	0.5	
						Slug G Falling Head	0.47	0.5	
						Slug G Rising Head	0.38	0.4	
						Slug C&G Falling Head	1.18	0.4	
						Slug C&G Rising Head	1.15	0.4	
MW-116	BCA	10/2/2013 to 10/3/2013	0.17	0.33	Bouwer-Rice	Slug I Falling Head	0.83	0.4	0.4
						Slug I Rising Head	0.97	0.4	
						Slug A Falling Head	0.51	0.4	
						Slug A Rising Head	0.51	0.4	
						Slug G Falling Head	0.62	0.4	
						Slug G Rising Head	0.71	0.4	
MW-112	BCA	10/2/2013	0.17	0.33	Bouwer-Rice	Slug K Falling Head	0.97	0.3	0.4
						Slug K Rising Head	1.24	0.4	
						Slug C Falling Head	0.82	0.3	
						Slug C Rising Head	1.05	0.4	
						Slug F Falling Head	0.72	0.3	
						Slug F Rising Head	0.89	0.4	
MW-114	BCA	10/2/2013	0.17	0.33	Bouwer-Rice	Slug J Falling Head	0.60	0.4	0.3
						Slug J Rising Head	0.25	0.3	
						Slug L Falling Head	0.37	0.3	
						Slug L Rising Head	0.39	0.4	
						Slug D Falling Head	0.49	0.3	
						Slug D Rising Head	Interrupted [d]	---	
MW-102	BCA	11/3/2012	0.17	0.33	Bouwer-Rice	Slug F Falling Head	1.37	0.3	0.3
						Slug F Rising Head	1.79	0.3	
						Slug A Falling Head	0.79	0.3	
						Slug A Rising Head	0.85	0.4	
MW-119	BCA	10/2/2013 to 10/3/2013	0.17	0.33	Bouwer-Rice	Slug G Falling Head	0.66	0.1	0.1
						Slug G Rising Head	1.02	0.1	
						Slug H Falling Head	0.37	0.2	
						Slug H Rising Head	0.33	0.1	

TABLE 5. RESULTS OF SLUG TESTS IN EXISTING MONITOR WELLS
RIO ALGOM MINING LLC, LISBON FACILITY

WELL NAME	HSU [a]	DATE OF SLUG TESTING	CASING RADIUS (feet)	WELL RADIUS (feet)	ANALYSIS METHOD	TEST IDENTIFIER	INITIAL WATER LEVEL DISPLACEMENT (feet)	ESTIMATED HYDRAULIC CONDUCTIVITY (feet per day)	MEAN OF ESTIMATED HYDRAULIC CONDUCTIVITY VALUES (feet per day)
MW-109	BCA	10/1/2013	0.17	0.33	Bouwer-Rice	Slug A Falling Head	0.51	0.06	0.06
						Slug A Rising Head	0.51	0.05	
						Slug G Falling Head	0.62	0.06	
						Slug G Rising Head	0.62	0.08	
						Slug H Falling Head	0.33	Not Used [c]	
MW-5	BCA	8/27/2012	0.17	0.33 (assumed)	Bouwer-Rice	Slug E Falling Head	3.48	0.02	0.02
						Slug E Rising Head	1.69	0.02	
						Slug D Falling Head	1.47	0.02	
						Slug D Rising Head	0.71	0.02	
MW-104	BCA	8/27/2013 to 9/14/2013	0.17	0.33	Bouwer-Rice	Slug B Falling Head	0.44	0.03	0.02
						Slug B Rising Head	0.59	0.01	
						Slug A Falling Head	0.31	0.01	
						Slug A Rising Head	0.30	0.02	
MW-105	BCA	11/4/2012	0.17	0.33	---	Slug C Falling Head	0.66	Not Analyzed [e]	---
						Slug C Rising Head	0.19	Not Analyzed [e]	
						Slug F&C Falling Head	0.42	Not Analyzed [e]	
						Slug F&C Rising Head	1.04	Not Analyzed [e]	
MW-122	BCA	---	0.17	0.33	Well dry; no testing conducted				
MORRISON FORMATION, BRUSHY BASIN MEMBER (BBM) WELLS									
MW-102DB	BBM	11/3/2012	0.17	0.33	Bouwer-Rice	Slug A Falling Head	0.72	0.6	0.7
						Slug A Rising Head	0.64	0.6	
						Slug B Falling Head	1.16	0.8	
						Slug B Rising Head	1.00	0.6	
						Slug G Falling Head	0.71	0.6	
						Slug G Rising Head	1.26	0.9	
MW-103	BBM	11/4/2012	0.17	0.33	Bouwer-Rice	Slug A Falling Head	0.61	0.05	0.04
						Slug A Rising Head	0.63	0.05	
						Slug F Falling Head	0.52	0.02	
						Slug F Rising Head	1.56	0.05	
MW-106	BBM	8/19/2013 to 9/13/2013	0.17	0.33	Bouwer-Rice	Slug F Falling Head	0.84	0.0010	0.0007
						Slug F Rising Head	0.83	0.0007	
						Slug H Falling Head	0.33	0.0005	
						Slug H Rising Head	Interrupted [d]	---	
MW-110	BBM	---	0.17	0.33	Well recovering after installation activities; no testing conducted				
MW-111	BBM	---	0.17	0.33	Well recovering after installation activities; no testing conducted				
CHINLE FORMATION WELL									
MW-121	CHINLE	---	0.17	0.33	Well dry; no testing conducted				

Notes:
--- = Not applicable

[a] Hydrostratigraphic Unit
BCA = Burro Canyon Aquifer
BBM = Brushy Basin Member of the Morrison Formation
CHINLE = Chinle Formation

[b] Slug testing data re-analyzed during second phase of work.

[c] Anomalous water level response observed, or data is outside of the normalized head range for matching results to type curve solutions.

[d] Water level measurement was interrupted during test and data not analyzed; transducer was inadvertently moved during slug deployment or retrieval.

[e] Water level recovery to static condition near instantaneous; response is too fast to analyze.

MONTGOMERY & ASSOCIATES

TABLE 6. RESULTS OF HYDRAULIC CONDUCTIVITY TESTING DURING PREVIOUS INVESTIGATIONS
RIO ALGOM MINING LLC, LISBON FACILITY

WELL NAME	CURRENT STATUS	HSU [a]	ESTIMATED HYDRAULIC CONDUCTIVITY [b] (feet per day)	
			SLUG TEST	PUMPING TEST
EF-3A	Existing	BCA	7.4	---
EF-6	Existing	BCA	0.6	---
EF-8	Existing	BCA	2.4	---
MW-5	Existing	BCA	---	0.58
OW-UT-9	Existing	BCA	---	10.1
DM80-1	Decommisioned	BCA	0.02	---
DM80-3	Decommisioned	BCA	3.5	---
DM80-4	Decommisioned	BCA	5.1	---
EF-16	Decommisioned	BCA	8.7	---
EF-17	Decommisioned	BCA	0.1	---
EF-19	Decommisioned	BCA	4.8	---
EF-2	Decommisioned	BCA	2.9	---
EF-20	Decommisioned	BCA	2.7	---
EF-22	Decommisioned	BCA	1.5	---
EF-23	Decommisioned	BCA	5.6	---
EF-24	Decommisioned	BCA	13	---
EF-25	Decommisioned	BCA	0.7	---
EF-26	Decommisioned	BCA	0.3	---
EF-4	Decommisioned	BCA	8.7	---
EF-5	Decommisioned	BCA	7.1	---
H-48	Decommisioned	BCA	1.3	0.04
H-55	Decommisioned	BCA	0.08	---
H-56	Decommisioned	BCA	0.24	---
H-72	Decommisioned	BBM	0.96	0.01
MW-1	Decommisioned	BCA	---	798
MW-10	Decommisioned	BCA	5.1	---
MW-11	Decommisioned	BCA	106	---
MW-11A	Decommisioned	BCA	70	---
MW-12	Decommisioned	BCA	79	---
MW-2	Decommisioned	BCA	---	133
MW-4	Decommisioned	BCA	---	0.01
MW-6A	Decommisioned	BCA	61	---
MW-7	Decommisioned	BCA	---	0.5
MW-8A	Decommisioned	BCA	6.8	---
MW-9	Decommisioned	BCA	34	---
RW-1	Decommisioned	BCA	1	---
RW-2	Decommisioned	BCA	0.35	---

Notes:
--- = Not applicable

[a] Hydrostratigraphic Unit
BCA = Burro Canyon Aquifer
BBM = Brushy Basin Member of the Morrison Formation

[b] Hydraulic conductivity estimated during previous investigations (Lewis Water Consultants, Inc., 2001).

TABLE 7. SUMMARY OF SATURATED HYDRAULIC CONDUCTIVITY DATA FROM LABORATORY ANALYSIS
RIO ALGOM MINING LLC, LISBON FACILITY

WELL/ BOREHOLE	SAMPLE IDENTIFIER	DEPTH INTERVAL (ft bgs)	LITHOLOGIC DESCRIPTION	LABORATORY ANALYSIS						SLUG TEST ANALYSIS
				HORIZONTAL K_{SAT} IN CORE SAMPLE		MEAN OF HORIZONTAL K_{SAT}	VERTICAL K_{SAT} IN CORE SAMPLE		MEAN OF VERTICAL K_{SAT}	ESTIMATED HORIZONTAL K IN WELL
				(cm/sec)	(ft/d)	(ft/d)	(cm/sec)	(ft/d)	(ft/d)	(ft/d)
BURRO CANYON FORMATION / BURRO CANYON AQUIFER										
MW-109	MW-109 (138 - 138.5)	138 - 138.5	SANDSTONE; medium to coarse grained, poorly sorted, well lithified	1.35E-06	0.004	0.98	6.36E-08	0.0002	0.0004	0.06
	MW-109 (147 - 147.5)	147 - 147.5	CONGLOMERATE; subrounded gravel clasts in a siltstone matrix; well lithified	6.93E-04	2		2.43E-07	0.001		
MW-117M	MW-117 (95.5 - 96)	95.5 - 96	SANDSTONE; fine grained, well sorted, moderately lithified	3.82E-04	1	1.1	1.88E-05	0.05	0.2	2.3
	MW-117 (118 - 118.5)	118 - 118.5	SANDSTONE; fine grained, well sorted, well lithified	1.19E-04	0.3		1.10E-04	0.3		
	MW-117 (169 - 169.5)	169 - 169.5	SANDSTONE; medium to coarse grained, poorly sorted, well lithified	6.83E-04	2		1.12E-04	0.3		
MW-118	MW-118 (46.5 - 47)	46.5 - 47	SANDSTONE; fine grained, well sorted, well lithified	1.53E-06	0.004	NA	7.20E-06	0.02	NA	4.5
MW-102DB	102DB-130-131	130 - 131	SANDSTONE; fine grained, well sorted, well lithified	2.18E-04	0.6	NA	0.000123	0.3	NA	---
MORRISON FORMATION; BRUSHY BASIN MEMBER / BRUSHY BASIN MEMBER AQUIFER										
MW-102DB	102DB-145-146	145 - 146	MUDSTONE/SHALE; well lithified	3.09E-05	0.1	0.04	0.0000215	0.1	0.03	0.7
	102DB-156-156.9	156 - 156.9	SANDSTONE; very fine grained, well sorted, very hard, well lithified	3.60E-09	0.00001		7.93E-09	0.00002		
MW-109	MW-109 (158 - 158.7)	158 - 158.7	MUDSTONE/SHALE; well lithified	7.98E-07	0.002	NA	6.94E-06	0.02	NA	---
MW-117M	MW-117 (211 - 211.6)	211 - 211.6	MUDSTONE/SHALE; well lithified	9.60E-09	0.00003	NA	3.58E-10	0.000001	NA	---
MW-118	MW-118 (75 - 76.5)	75 - 76.5	MUDSTONE/SHALE; well lithified	2.28E-07	0.0006	NA	5.96E-08	0.0002	NA	---

Notes:
ft bgs = feet below ground surface
K_{SAT} = Saturated hydraulic conductivity
cm/sec = centimeters per second
ft/d = feet per day
NA = Not applicable
--- = Well not screened in corresponding formation

TABLE 8. GROUNDWATER ELEVATIONS IN EXISTING MONITOR WELLS
RIO ALGOM MINING LLC, LISBON FACILITY

WELL NAME	HSU [a]	DATE OF MEASUREMENT	MEASURING POINT ELEVATION (ft msl)	DEPTH TO WATER (ft bmp)	GROUNDWATER ELEVATION (ft msl)	CHANGE IN GROUNDWATER ELEVATION (feet)
EF-3A	BCA	10/29/2012	6,584.70	82.37	6,502.33	---
		3/31/2013		82.31	6,502.39	0.06
		10/7/2013		81.80	6,502.90	0.51
		11/16/2013		81.52	6,503.18	0.28
		4/1/2014		81.27	6,503.43	0.25
EF-6	BCA	10/29/2012	6,571.12	71.40	6,499.72	---
		3/31/2013		71.53	6,499.59	-0.13
		10/7/2013		71.51	6,499.61	0.02
		11/16/2013		71.13	6,499.99	0.38
		4/1/2014		70.99	6,500.13	0.14
EF-8	BCA	10/29/2012	6,575.77	74.38	6,501.39	---
		3/31/2013		74.26	6,501.51	0.12
		10/7/2013		74.03	6,501.74	0.23
		11/16/2013		73.48	6,502.29	0.55
		4/1/2014		73.50	6,502.27	-0.02
H-63	BCA	10/29/2012	6,686.49	135.84	6,550.65	---
		3/31/2013		136.00	6,550.49	-0.16
		10/7/2013		135.90	6,550.59	0.10
		11/16/2013		135.67	6,550.82	0.23
		4/1/2014		133.30	6,553.19	2.37
LW-1	BCA	10/29/2012	6,725.02	146.15	6,578.87	---
		3/31/2013		146.09	6,578.93	0.06
		10/7/2013		146.54	6,578.48	-0.45
		11/16/2013		146.02	6,579.00	0.52
		4/1/2014		146.10	6,578.92	-0.08
ML-1	BCA	10/29/2012	6,533.12	41.31	6,491.81	---
		3/31/2013		42.55	6,490.57	-1.24
		10/7/2013		43.46	6,489.66	-0.91
		11/16/2013		43.28	6,489.84	0.18
		4/1/2014		42.55	6,490.57	0.73
MW-5	BCA	10/29/2012	6,746.81	153.36	6,593.45	---
		3/31/2013		153.46	6,593.35	-0.10
		10/7/2013		154.03	6,592.78	-0.57
		11/16/2013		153.37	6,593.44	0.66
		4/1/2014		153.51	6,593.30	-0.14
MW-13	BCA	10/29/2012	6,644.46	93.92	6,550.54	---
		3/31/2013		94.06	6,550.40	-0.14
		10/7/2013		93.92	6,550.54	0.14
		11/16/2013		93.69	6,550.77	0.23
		4/1/2014		93.49	6,550.97	0.20
OW-UT-9	BCA	10/29/2012	6,707.22	122.90	6,584.32	---
		3/31/2013		122.78	6,584.44	0.12
		10/7/2013		123.35	6,583.87	-0.57
		11/16/2013		122.69	6,584.53	0.66
		4/1/2014		122.85	6,584.37	-0.16
RL-1	BCA	10/29/2012	6,655.49	116.05	6,539.44	---
		3/31/2013		115.79	6,539.70	0.26
		10/7/2013		115.80	6,539.69	-0.01
		11/16/2013		115.77	6,539.72	0.03
		4/1/2014		115.96	6,539.53	-0.19

TABLE 8. GROUNDWATER ELEVATIONS IN EXISTING MONITOR WELLS
RIO ALGOM MINING LLC, LISBON FACILITY

WELL NAME	HSU [a]	DATE OF MEASUREMENT	MEASURING POINT ELEVATION (ft msl)	DEPTH TO WATER (ft bmp)	GROUNDWATER ELEVATION (ft msl)	CHANGE IN GROUNDWATER ELEVATION (feet)
RL-3	BCA	10/29/2012	6,707.63	170.09	6,537.54	---
		3/31/2013		170.03	6,537.60	0.06
		10/7/2013		170.07	6,537.56	-0.04
		11/16/2013		169.92	6,537.71	0.15
		4/1/2014		169.91	6,537.72	0.01
RL-4	BCA	10/29/2012	6,684.29	156.40	6,527.89	---
		3/31/2013		156.37	6,527.92	0.03
		10/7/2013		156.34	6,527.95	0.03
		11/16/2013		156.19	6,528.10	0.15
		4/1/2014		156.20	6,528.09	-0.01
RL-5	BCA	10/29/2012	6,689.12	151.83	6,537.29	---
		3/31/2013		151.77	6,537.35	0.06
		10/7/2013		151.78	6,537.34	-0.01
		11/16/2013		151.55	6,537.57	0.23
		4/1/2014		151.62	6,537.50	-0.07
RL-6	BCA	10/29/2012	6,464.76	15.37	6,449.39	---
		3/31/2013		14.45	6,450.31	0.92
		10/7/2013		15.70	6,449.06	-1.25
		11/16/2013		15.38	6,449.38	0.32
		4/1/2014		14.96	6,449.80	0.42
UW-1	BCA	10/29/2012	6,656.04	105.30	6,550.74	---
		3/31/2013		105.45	6,550.59	-0.15
		10/7/2013		105.40	6,550.64	0.05
		11/16/2013		105.13	6,550.91	0.27
		4/1/2014		104.93	6,551.11	0.20
MW-100	BCA	10/29/2012	6,725.37	146.96	6,578.41	---
		3/31/2013		146.90	6,578.47	0.06
		10/7/2013		147.35	6,578.02	-0.45
		11/16/2013		146.80	6,578.57	0.55
		4/1/2014		146.92	6,578.45	-0.12
MW-101	BCA	10/29/2012	6,710.90	150.65	6,560.25	---
		3/31/2013		150.70	6,560.20	-0.05
		10/7/2013		150.90	6,560.00	-0.20
		11/16/2013		150.80	6,560.10	0.10
		4/1/2014		150.86	6,560.04	-0.06
MW-102	BCA	10/29/2012	6,702.88	125.28	6,577.60	---
		3/31/2013		125.19	6,577.69	0.09
		10/7/2013		125.25	6,577.63	-0.06
		11/16/2013		125.06	6,577.82	0.19
		4/1/2014		125.04	6,577.84	0.02
MW-102DB	BBM	10/29/2012	6,703.62	122.08	6,581.54	---
		3/31/2013		120.48	6,583.14	1.60
		10/7/2013		120.07	6,583.55	0.41
		11/16/2013		119.89	6,583.73	0.18
		4/1/2014		119.8	6,583.82	0.09
MW-103	BBM	10/29/2012	6,663.92	83.44	6,580.48	---
		3/31/2013		83.05	6,580.87	0.39
		10/7/2013		83.12	6,580.80	-0.07
		11/16/2013		82.63	6,581.29	0.49
		4/1/2014		82.51	6,581.41	0.12

TABLE 8. GROUNDWATER ELEVATIONS IN EXISTING MONITOR WELLS
RIO ALGOM MINING LLC, LISBON FACILITY

WELL NAME	HSU [a]	DATE OF MEASUREMENT	MEASURING POINT ELEVATION (ft msl)	DEPTH TO WATER (ft bmp)	GROUNDWATER ELEVATION (ft msl)	CHANGE IN GROUNDWATER ELEVATION (feet)
MW-104	BCA	10/29/2012	6,705.17	97.64	6,607.53	---
		3/31/2013		93.96	6,611.21	3.68
		10/7/2013		94.29	6,610.88	-0.33
		11/16/2013		96.30	6,608.87	-2.01
		4/1/2014		94.20	6,610.97	2.10
MW-105	BCA	10/29/2012	6,624.12	73.53	6,550.59	---
		3/31/2013		73.61	6,550.51	-0.08
		10/7/2013		73.48	6,550.64	0.13
		11/16/2013		73.24	6,550.88	0.24
		4/1/2014		73.04	6,551.08	0.20
MW-106	BBM	10/29/2012	6,852.76	247.11	6,605.65	---
		3/31/2013		227.02	6,625.74	20.09
		10/7/2013		227.00	6,625.76	0.02
		11/16/2013		236.85	6,615.91	-9.85
		4/1/2014		227.3	6,625.46	9.55
MW-107S	BCA	10/7/2013	6,512.13	50.95	6,461.18	---
		11/16/2013		50.78	6,461.35	0.17
		4/1/2014		50.85	6,461.28	-0.07
MW-107D	BCA	10/7/2013	6,512.30	51.05	6,461.25	---
		11/16/2013		50.90	6,461.40	0.15
		4/1/2014		50.94	6,461.36	-0.04
MW-108	BCA	10/7/2013	6,514.69	27.11	6,487.58	---
		11/16/2013		26.98	6,487.71	0.13
		4/1/2014		24.78	6,489.91	2.20
MW-109	BCA	10/7/2013	6,673.51	136.20	6,537.31	---
		11/16/2013		135.94	6,537.57	0.26
		4/1/2014		135.99	6,537.52	-0.05
MW-110	BBM	10/7/2013	6,623.94	141.02	6,482.92	---
		11/16/2013		141.82	6,482.12	-0.80
		12/14/2013		141.04	6,482.90	0.78
		1/25/2014		139.74	6,484.20	1.30
		2/22/2014		138.87	6,485.07	0.87
		4/1/2014		137.75	6,486.19	1.12
MW-111	BBM	10/7/2013	6,645.47	Dry (126.05) [b]	---	---
		11/16/2013		119.15	6,526.32	6.90
		12/14/2013		113.85	6,531.62	5.30
		1/25/2014		105.03	6,540.44	8.82
		2/22/2014		98.76	6,546.71	6.27
		4/1/2014		91.99	6,553.48	6.77
MW-112	BCA	10/7/2013	6,536.31	45.63	6,490.68	---
		11/16/2013		45.35	6,490.96	0.28
		4/1/2014		44.79	6,491.52	0.56
MW-113	BCA	10/7/2013	6,567.42	68.43	6,498.99	---
		11/16/2013		68.01	6,499.41	0.42
		4/1/2014		67.94	6,499.48	0.07
MW-114	BCA	10/7/2013	6,554.35	58.03	6,496.32	---
		11/16/2013		57.63	6,496.72	0.40
		4/1/2014		57.49	6,496.86	0.14

TABLE 8. GROUNDWATER ELEVATIONS IN EXISTING MONITOR WELLS
RIO ALGOM MINING LLC, LISBON FACILITY

WELL NAME	HSU [a]	DATE OF MEASUREMENT	MEASURING POINT ELEVATION (ft msl)	DEPTH TO WATER (ft bmp)	GROUNDWATER ELEVATION (ft msl)	CHANGE IN GROUNDWATER ELEVATION (feet)
MW-115S	BCA	10/7/2013	6,578.12	75.73	6,502.39	---
		11/16/2013		75.34	6,502.78	0.39
		4/1/2014		75.31	6,502.81	0.03
MW-115M	BCA	10/7/2013	6,578.05	75.70	6,502.35	---
		11/16/2013		75.32	6,502.73	0.38
		4/1/2014		75.37	6,502.68	-0.05
MW-116	BCA	10/7/2013	6,577.78	85.35	6,492.43	---
		11/16/2013		84.92	6,492.86	0.43
		4/1/2014		84.80	6,492.98	0.12
MW-117S	BCA	10/7/2013	6,586.21	82.82	6,503.39	---
		11/16/2013		82.55	6,503.66	0.27
		4/1/2014		82.25	6,503.96	0.30
MW-117M	BCA	10/7/2013	6,586.60	83.30	6,503.30	---
		11/16/2013		82.97	6,503.63	0.33
		4/1/2014		82.65	6,503.95	0.32
MW-118	BCA	10/7/2013	6,465.41	15.73	6,449.68	---
		11/16/2013		15.49	6,449.92	0.24
		4/1/2014		15.02	6,450.39	0.47
MW-119	BCA	10/7/2013	6,589.67	70.24	6,519.43	---
		11/16/2013		70.19	6,519.48	0.05
		4/1/2014		70.19	6,519.48	0.00
MW-120	BCA	10/7/2013	6,677.23	126.32	6,550.91	---
		11/16/2013		125.95	6,551.28	0.37
		4/1/2014		125.83	6,551.40	0.12
MW-121	CHINLE	10/7/2013	6,595.12	Dry (202.91) [b]	---	---
		11/16/2013		Dry (202.93) [b]	---	---
		12/14/2013		Dry (202.93) [b]	---	---
		4/1/2014		201.97	6,393.15	0.96
MW-122	BCA	10/7/2013	6,928.33	Dry (197.76) [b]	---	---
		11/16/2013		Dry (197.77) [b]	---	---
		12/14/2013		197.52 [c]	---	0.25
		1/25/2014		197.40 [c]	---	0.12
		4/1/2014		197.30 [c]	---	0.10

Notes:
ft msl = feet above mean sea level; 1988 North American Vertical Datum
ft bmp = feet below measure point elevation
--- = Not applicable

[a] Hydrostratigraphic Unit
BCA = Burro Canyon Aquifer
BBM = Brushy Basin Member of the Morrison Formation
CHINLE = Chinle Formation

[b] For wells reported dry, measured total well depth is given in parentheses.

[c] Water level was measured within the casing end cap (below screened interval), and not considered representative of water table conditions.

TABLE 9. SUMMARY OF VERTICAL GRADIENTS IN COMPANION WELLS
RIO ALGOM MINING LLC, LISBON FACILITY

WELL NAME	HSU [a]	TOP OF SCREEN ELEVATION (ft msl)	BOTTOM OF SCREEN ELEVATION (ft msl)	OCTOBER 2013 GROUNDWATER ELEVATION (ft msl)	APRIL 2014 GROUNDWATER ELEVATION (ft msl)	OCTOBER 2013 VERTICAL GRADIENT [b,c] (ft/ft)	APRIL 2014 VERTICAL GRADIENT [b,c] (ft/ft)
BURRO CANYON AQUIFER (BCA) COMPANION WELLS							
MW-100	BCA	6,586	6,521	6,578.02	6,578.45		
LW-1	BCA	6,521	6,491	6,578.48	6,578.92	↑ -0.010	↑ -0.011
MW-113	BCA	6,508	6,463	6,498.99	6,499.48		
EF-6	BCA	6,464	6,434	6,499.61	6,500.13	↑ -0.019	↑ -0.020
MW-107S	BCA	6,480	6,450	6,461.18	6,461.28		
MW-107D	BCA	6,450	6,430	6,461.25	6,461.36	↑ -0.005	↑ -0.006
MW-112	BCA	6,499	6,394	6,490.68	6,491.52		
ML-1	BCA	6,396	6,377	6,489.66	6,490.57	↓ 0.018	↓ 0.017
MW-115S	BCA	6,516	6,451	6,502.39	6,502.81		
MW-115M	BCA	6,451	6,361	6,502.35	6,502.68	↓ 0.001	↓ 0.002
EF-8	BCA	6,362	6,332	6,501.74	6,502.27	↓ 0.007	↓ 0.007
MW-117S	BCA	6,514	6,459	6,503.39	6,503.96		
MW-117M	BCA	6,461	6,436	6,503.30	6,503.95	↓ 0.003	→ 0.000
EF-3A	BCA	6,433	6,370	6,502.90	6,503.43	↓ 0.015	↓ 0.011
BURRO CANYON AQUIFER (BCA)/ BRUSHY BASIN MEMBER (BBM) COMPANION WELLS							
MW-102	BCA	6,585	6,565	6,577.63	6,577.84		
MW-102DB	BBM	6,556	6,526	6,583.55	6,583.82	↑ -0.195	↑ -0.196

Notes:

ft msl = Feet above mean sea level

ft/ft = Feet per foot

[a] Hydrostratigraphic Unit

BCA = Burro Canyon Aquifer

BBM = Brushy Basin Member of the Morrison Formation

[b] Vertical gradient was calculated by dividing the difference in hydraulic heads measured in companion wells by the vertical distance between the midpoints of saturated portions of the screened intervals.

[c] Positive value (accompanied by a red arrow) denotes downward vertical hydraulic gradient.
Negative value (accompanied by a green arrow) denotes upward vertical hydraulic gradient.
Null value (accompanied by a yellow arrow) denotes no measurable vertical hydraulic gradient.

TABLE 10. SUMMARY OF SYNTHETIC PRECIPITATION LEACHING PROCEDURE RESULTS FOR CORE SAMPLES
RIO ALGOM MINING LLC, LISBON FACILITY

WELL NAME	MW-102DB	MW-103	MW-103	MW-103	MW-103	MW-103	MW-103
SAMPLE IDENTIFIER	102DB-123-123.5	103-22-22.8	103-35.3-36	103-44-44.8	103-56-56.8	103-69.2-70	103-74-74.8
SAMPLE DEPTH INTERVAL (ft bgs)	123 to 123.5	22 to 22.8	35.3 to 36	44 to 44.8	56 to 56.8	69.2 to 70	74 to 74.8
GEOLOGIC FORMATION	Burro Canyon Formation	Burro Canyon Formation	Burro Canyon Formation	Burro Canyon Formation	Burro Canyon Formation	Burro Canyon Formation	Brushy Basin Member of the Morrison Formation
CORE DESCRIPTION	SANDSTONE; fine grained, well sorted, well lithified; abundant fracturing with black "sooty" staining on fracture surfaces	SANDSTONE; fine grained, well sorted, well lithified	CONGLOMERATE; well lithified, poorly sorted, matrix supported, fine grained matrix with rounded to subrounded clasts	CONGLOMERATE; moderately to well lithified, poorly sorted, matrix supported, fine grained matrix with rounded to subrounded clasts	SANDSTONE; fine grained, well sorted, well lithified; fracturing with iron oxide staining on fracture surfaces	SANDSTONE; medium to coarse grained, poorly sorted, well lithified	MUDSTONE/SHALE; moderately to well lithified
SYNTHETIC PRECIPITATION LEACHING PROCEDURE - LEACHATE CONCENTRATION (mg/L)							
Arsenic	0.0213	0.0065	0.0090	0.0088	0.0515	0.1158	0.0052
Barium	0.031	0.397	0.008 B	0.119	0.097	<0.02	<0.02
Cadmium	0.0001 B	0.0004 B	<0.0005	<0.0005	0.0002 B	<0.0005	0.0001 B
Chromium	0.0014 B	0.0006 B	0.0007 B	0.0015 B	0.0016 B	0.0032	0.0014 B
Lead	0.0009	0.0015	0.0002 B	0.0006	0.0195	0.0210	0.0009
Mercury	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Molybdenum	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Selenium	0.0003 B	<0.0003	<0.0003	<0.0003	<0.0003	0.0001 B	0.0003 B
Silver	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03
Uranium	<0.0005	<0.0005	<0.0005	0.0002 B	0.0003 B	0.0039	<0.0005

Notes:
ft bgs = feet below ground surface
mg/L = milligrams per liter
< = Not detected at or above the method detection limit
B = Estimated; analyte concentration detected at value between method detection limit and practical quantitation limit

TABLE 11. SUMMARY OF MAXIMUM CONCENTRATIONS OF DISSOLVED TRACE METALS AND DISSOLVED COMMON CONSTITUENTS IN GROUNDWATER
RIO ALGOM MINING LLC, LISBON FACILITY

			PARAMETERS[b]		DISSOLVED TRACE METALS (mg/L)[c]				DISSOLVED COMMON CONSTITUENTS (mg/L)[d]								
WELL NAME	HSU [a]	SAMPLE DATE	pH (s.u.)	EC (µmhos/cm)	As	Mo	Se	U	Ca	Mg	Na	K	Cl	CO_3	HCO_3	SO_4	TDS
EF-3A	BCA	11/1/2012	7.49	7,300	0.192	2.72	0.033	22	235	117	1,780	13	740	<5	1,340	2,210	5,060
		4/5/2013	7.47	7,820	0.206	2.81	0.037	24	316	156	1,660	15	825	<5	1,350	2,510	5,700
		10/13/2013	7.53	7,930	0.185	2.54	0.042	25.6	313	155	1,530	14	853	<5	1,240	2,560	5,900
		4/5/2014	7.53	8,070	0.184	2.45	0.041	27.5	298	147	1,440	14	859	<5	1,280	2,630	6,440
Maximum Reported Concentration			7.47 - 7.53	8,070	0.206	2.81	0.042	27.5	316	156	1,780	15	859	ND	1,350	2,630	6,440
EF-6	BCA	10/30/2012	7.3	3,140	0.014	0.002	0.013	2.05	218	58	459	6	401	<5	487	795	2,180
		4/2/2013	7.25	3,370	0.015	<0.01	0.014	2.36	244	65	465	6	413	<5	486	862	2,240
		10/11/2013	7.29	3,200	0.015	<0.01	0.016	2.19	211	54	484	6	400	<5	505	783	2,240
		4/5/2014	7.47	3,200	0.016	<0.01	0.016	2.38	189	49	437	5	384	<5	496	786	2,260
Maximum Reported Concentration			7.25 - 7.47	3,370	0.016	0.002	0.016	2.38	244	65	484	6	413	ND	505	862	2,260
EF-8	BCA	10/31/2012	7.61	1,840	0.036	0.011	0.011	**0.537**	209	56	146	6	191	<5	374	416	1,310
		11/28/2012	7.7	1,860	0.031	0.015	0.011	**0.592**	205	54	150	5	195	<5	384	428	1,330
		12/20/2012	7.64	1,920	0.033	0.010	0.011	**0.556**	206	55	147	5	203	<5	387	455	1,330
		1/28/2013	7.6	1,950	0.037	0.01	0.013	**0.598**	223	58	166	6	201	<5	393	444	1,350
		2/26/2013	7.62	1,940	0.041	<0.01	0.018	**0.600**	206	54	151	5	205	<5	383	451	1,380
		3/31/2013 4/1/2013	7.65	2,090	0.037	0.01	0.012	**0.666**	206	54	153	5	214	<5	391	471	1,390
		4/5/2013	7.61	2,010	0.040	0.01	0.013	**0.645**	209	55	155	5	211	<5	396	479	1,400
		5/13/2013	7.62	2,030	0.038	<0.01	0.013	**0.660**	213	56	162	5	202	<5	396	444	1,400
		6/9/2013	7.57	1,980	0.040	<0.01	0.014	**0.687**	218	57	167	5	213	<5	406	473	1,400
		7/20/2013	7.65	2,060	0.035	0.01	0.011	**0.680**	222	58	169	5	212	<5	402	475	1,480
		8/15/2013	7.64	2,040	0.036	<0.01	0.013	**0.686**	215	57	163	5	218	<5	413	483	1,450
		9/30/2013	7.62	2,100	0.038	<0.01	0.012	**0.756**	225	59	174	5	222	<5	418	500	1,460
		10/14/2013	7.62	2,130	0.025	0.05	0.017	**0.788**	225	59	179	5	225	<5	420	499	1,500
		11/16/2013	7.62	2,100	0.034	<0.01	0.012	**0.739**	223	58	185	6	231	<5	408	491	1,460
		12/14/2013	7.62	2,110	0.033	0.02	0.012	**0.762**	228	56	166	6	218	<5	409	490	1,470
		1/25/2014	7.62	2,140	0.034	<0.01	0.012	**0.791**	220	58	176	5	221	<5	414	485	1,480
		2/22/2014	7.76	2,170	0.036	<0.01	0.014	**0.804**	232	60	196	6	226	<5	416	500	1,520
		3/31/2014	7.71	2,260	0.034	<0.01	0.014	**0.841**	204	54	166	5	227	<5	424	509	1,520
		4/6/2014	7.65	2,190	0.037	<0.01	0.013	**0.859**	220	57	176	5	230	<5	427	525	1,570
Maximum Reported Concentration			7.57 - 7.76	2,260	0.041	0.05	0.018	**0.859**	232	60	196	6	231	ND	427	525	1,570
H-63	BCA	11/3/2012	8.11	1,000	0.065	0.008	0.008	0.0099	75	15	212	4	67	<5	263	188	640
		4/3/2013	8.20	1,060	0.046	0.04	0.007	0.01	62	12	176	3	68	<5	262	192	635
		10/12/2013	8.09	970	0.046	<0.01	0.008	0.0113	36	7	179	3	67	<5	260	184	610
		4/2/2014	8.22	985	0.049	<0.01	0.008	0.0109	29	6	174	3	64	<5	247	176	617
Maximum Reported Concentration			8.09 - 8.22	1,060	0.065	0.04	0.008	0.0113	75	15	212	4	68	ND	263	192	640
LW-1	BCA	11/2/2012	7.60	555	<0.001	0.014	0.002	0.0053	73	19	31	3	10	<5	225	113	362
		4/4/2013	7.59	593	<0.001	<0.01	0.003	0.0018	66	16	32	3	10	<5	221	112	368
		10/9/2013	7.58	559	<0.001	<0.01	0.003	0.0019	64	16	31	3	10	<5	208	113	352
		4/3/2014	7.79	592	<0.001	<0.01	0.002	0.0021	60	15	29	3	10	<5	205	113	361
Maximum Reported Concentration			7.58 - 7.79	593	ND	0.014	0.003	0.0053	73	19	32	3	10	ND	225	113	368
ML-1	BCA	10/30/2012	7.59	1,480	0.021	0.01	0.009	0.0181	176	47	95	7	156	<5	256	345	1,010
		4/2/2013	7.52	1,570	0.022	0.01	0.01	0.0193	161	44	92	6	164	<5	255	350	1,020
		10/11/2013	7.49	1,350	0.007	<0.01	0.01	0.0163	148	41	94	6	144	<5	242	302	911
		4/4/2014	7.60	1,380	0.005	<0.01	0.008	0.0151	136	36	79	6	141	<5	236	300	868
Maximum Reported Concentration			7.49 - 7.60	1,570	0.022	0.01	0.01	0.0193	176	47	95	7	164	ND	256	350	1,020

TABLE 11. SUMMARY OF MAXIMUM CONCENTRATIONS OF DISSOLVED TRACE METALS AND DISSOLVED COMMON CONSTITUENTS IN GROUNDWATER
RIO ALGOM MINING LLC, LISBON FACILITY

			PARAMETERS[b]		DISSOLVED TRACE METALS (mg/L)[c]				DISSOLVED COMMON CONSTITUENTS (mg/L)[d]								
WELL NAME	HSU [a]	SAMPLE DATE	pH (s.u.)	EC (µmhos/cm)	As	Mo	Se	U	Ca	Mg	Na	K	Cl	CO_3	HCO_3	SO_4	TDS
MW-13	BCA	11/3/2012	7.48	861	0.029	0.012	0.009	0.0119	89	33	63	4	51	<5	243	174	565
		4/3/2013	7.53	918	0.03	0.02	0.01	0.0115	77	29	56	4	53	<5	255	177	580
		10/12/2013	7.54	864	0.028	0.02	**0.011**	0.0153	84	31	62	4	60	<5	257	167	549
		4/2/2014	7.53	860	0.026	<0.01	0.01	0.0115	79	30	54	4	51	<5	243	168	546
Maximum Reported Concentration			7.48 - 7.54	918	0.03	0.02	**0.011**	0.0153	89	33	63	4	60	ND	257	177	580
MW-5	BCA	11/2/2012 11/3/2012	7.15	1,680	<0.001	0.001	**0.066**	0.0087	300	92	18	4	13	<5	321	780	1,490
		4/3/2013 4/4/2013	7.19	1,820	<0.001	0.01	**0.064**	0.0078	295	88	20	5	12	<5	320	808	1,520
		10/10/2013	7.11	1,700	<0.001	<0.01	**0.068**	**0.0132**	278	86	19	4	12	<5	332	798	1,470
		4/4/2014	7.37	1,870	0.001	<0.01	**0.06**	0.0071	285	86	18	4	12	<5	318	856	1,540
Maximum Reported Concentration			7.11 - 7.37	1,870	0.001	0.01	**0.068**	**0.0132**	300	92	20	5	13	ND	332	856	1,540
OW-UT-9	BCA	11/3/2012	9.49	37,200	**3.66**	51.7	0.055	93.6	5	22	15,100	18	1,420	6,720	8,530	10,700	37,000
		3/31/2013 4/1/2013	9.55	39,700	**2.68**	46.5	0.03	86.8	7	24	13,300	19	1,440	6,120	9,020	10,900	37,400
		6/9/2013	9.59	36,900	**2.68**	47.6	0.021	83.3	3	23	13,600	16	1,420	6,000	8,900	10,900	36,000
		10/13/2013	9.49	38,400	**2.74**	47.3	0.037	87.4	4	24	13,200	15	1,440	6,000	9,140	10,500	37,100
		12/14/2013	9.52	37,800	**2.82**	51.8	0.072	98.8	4	21	14,400	19	1,410	6,120	8,530	10,700	37,300
		3/31/2014 4/4/2014	9.49	39,500	2.30	46.5	0.036	84	4	22	14,700	14	1,590	6,360	8,470	11,200	37,200
Maximum Reported Concentration			9.49 - 9.59	39,700	**3.66**	51.8	0.072	98.8	7	24	15,100	19	1,590	6,720	9,140	11,200	37,400
RL-1	BCA	10/31/2012	7.35	10,100	0.004	11.6	0.077	**43.0**	596	209	2,080	22	685	<5	1,270	4,640	8,820
		11/28/2012	7.38	9,960	0.003	10.2	0.074	41.2	565	182	2,280	20	673	<5	1,240	4,550	9,100
		12/20/2012	7.29	10,100	<0.001	11.4	0.075	**47.0**	622	210	2,280	21	704	<5	1,250	4,820	9,150
		1/28/2013	7.16	10,400	0.003	11.6	0.08	**49.8**	587	215	2,280	21	679	<5	1,210	4,720	8,520
		2/26/2013	7.23	10,200	0.005	11.8	0.094	**47.5**	606	204	2,150	21	679	<5	1,220	4,660	9,110
		3/31/2013 4/2/2013	7.31	11,500	0.006	12.4	0.092	**48.8**	575	198	2,210	19	730	<5	1,390	4,960	9,360
		4/5/2013	7.38	10,400	0.003	11.0	0.075	**45.5**	551	179	2,040	17	705	<5	1,280	4,790	8,620
		5/13/2013	7.35	10,500	0.002	12.1	0.080	**49.1**	590	190	2,160	20	678	<5	1,290	4,490	9,120
		6/9/2013	7.25	10,400	0.005	11.4	0.070	**44.0**	584	197	2,170	20	689	<5	1,280	4,740	8,620
		7/20/2013	7.26	10,700	0.004	10.9	0.071	**44.0**	578	196	2,070	19	699	<5	1,260	4,790	9,350
		8/15/2013	7.27	10,300	0.003	11.4	0.072	**47.1**	575	198	2,100	19	700	<5	1,280	4,780	9,300
		9/30/2013	7.21	10,500	0.005	11.2	0.074	**48.4**	575	197	2,120	20	691	<5	1,260	4,750	9,050
		10/14/2013	7.21	10,400	0.004	11.6	0.079	**46.4**	547	189	2,050	19	668	<5	1,210	4,550	8,720
		11/16/2013	7.22	10,500	0.005	11.0	0.077	**45.0**	558	201	2,400	22	725	<5	1,270	4,860	9,160
		12/14/2013	7.20	10,600	0.005	12.1	0.072	**48.5**	586	201	2,400	21	674	<5	1,270	4,640	9,430
		1/25/2014	7.22	10,600	0.005	11.5	0.073	**48.3**	540	196	2,090	20	672	<5	1,260	4,640	9,060
		2/22/2014	7.27	10,700	0.004	12.3	0.076	**46.9**	570	202	2,430	21	681	<5	1,270	4,680	9,320
		3/31/2014	7.18	10,800	0.003	10.9	0.081	**48.0**	513	187	1,980	18	684	<5	1,280	4,680	9,230
		4/6/2014	7.17	10,600	0.006	11.7	0.078	**50.6**	542	191	2,060	19	708	<5	1,290	4,890	9,460
Maximum Reported Concentration			7.16 - 7.38	11,500	0.006	12.4	0.094	**50.6**	622	215	2,430	22	730	ND	1,390	4,960	9,460

TABLE 11. SUMMARY OF MAXIMUM CONCENTRATIONS OF DISSOLVED TRACE METALS AND DISSOLVED COMMON CONSTITUENTS IN GROUNDWATER
RIO ALGOM MINING LLC, LISBON FACILITY

			PARAMETERS[b]		DISSOLVED TRACE METALS (mg/L)[c]				DISSOLVED COMMON CONSTITUENTS (mg/L)[d]								
WELL NAME	HSU [a]	SAMPLE DATE	pH (s.u.)	EC (µmhos/cm)	As	Mo	Se	U	Ca	Mg	Na	K	Cl	CO_3	HCO_3	SO_4	TDS
RL-3	BCA	11/5/2012	7.31	9,600	0.005	6.21	0.08	34.8	581	249	2,000	20	695	<5	1,300	4,140	8,280
		4/2/2013	7.29	9,550	0.002	4.64	0.066	26	492	209	1,660	17	672	<5	1,200	3,820	7,620
		10/14/2013	7.25	9,680	0.005	5.56	0.066	28.9	504	221	1,910	17	683	<5	1,340	4,000	8,310
		4/3/2014	7.46	10,400	0.005	7.46	0.069	35.4	552	244	1,820	18	699	<5	1,360	4,200	8,530
Maximum Reported Concentration			7.25 - 7.46	10,400	0.005	7.46	0.08	35.4	581	249	2,000	20	699	ND	1,360	4,200	8,530
RL-4	BCA	11/1/2012	7.75	819	<0.001	0.003	0.005	0.0031	91	32	50	4	48	<5	225	175	547
		4/4/2013	7.73	884	<0.001	<0.01	0.006	0.0031	86	29	49	3	48	<5	228	176	562
		10/10/2013	8.20	831	<0.001	0.0043	0.006	0.007	86	29	48	3	52	<5	229	185	552
		4/3/2014	7.81	881	<0.001	<0.01	0.005	0.0029	84	28	46	3	49	<5	226	184	548
Maximum Reported Concentration			7.73 - 8.20	884	ND	0.0043	0.006	0.007	91	32	50	4	52	ND	229	185	562
RL-5	BCA	11/2/2012	7.69	599	<0.001	0.002	0.003	0.0021	73	18	43	3	15	<5	251	104	379
		4/4/2013	7.71	647	<0.001	<0.01	0.003	0.0022	68	17	44	3	15	<5	240	106	387
		10/9/2013	7.70	608	<0.001	<0.01	0.003	0.0022	65	16	42	3	15	<5	254	105	372
		4/3/2014	7.85	626	<0.001	<0.01	0.003	0.0022	67	16	40	3	15	<5	238	105	379
Maximum Reported Concentration			7.69 - 7.85	647	ND	0.002	0.003	0.0022	73	18	44	3	15	ND	254	106	387
RL-6	BCA	11/1/2012	7.78	1,850	0.002	0.018	0.003	0.0172	282	101	49	2	40	<5	341	788	1,570
		4/4/2013	7.36	1,950	0.002	0.02	0.004	0.0173	270	90	48	2	40	<5	342	832	1,590
		10/8/2013	7.24	1,970	0.002	0.02	0.007	0.017	301	102	45	2	36	<5	344	925	1,700
		4/3/2014	7.54	2,100	0.003	0.01	0.009	0.0176	306	100	45	2	37	<5	324	915	1,750
Maximum Reported Concentration			7.24 - 7.78	2,100	0.003	0.02	0.009	0.0176	306	102	49	2	40	ND	344	925	1,750
UW-1	BCA	11/3/2012	7.38	1,010	0.003	0.006	0.013	0.0364	120	71	30	4	20	<5	401	228	707
		4/3/2013	7.42	1,070	0.004	0.02	0.011	0.0256	105	62	29	4	20	<5	395	240	711
		10/12/2013	7.35	1,010	0.002	<0.01	0.011	0.0228	112	62	31	4	20	<5	387	240	700
		4/2/2014	7.40	1,020	0.002	<0.01	0.01	0.0257	105	61	30	4	20	<5	391	243	708
Maximum Reported Concentration			7.35 - 7.42	1,070	0.004	0.02	0.013	0.0364	120	71	31	4	20	ND	401	243	711
MW-100	BCA	11/7/2012	7.54	787	<0.001	<0.01	0.007	0.0058	80	58	11	3	11	<5	357	150	505
		4/4/2013	7.53	843	<0.001	<0.01	0.006	0.0041	76	57	12	3	10	<5	363	150	511
		10/10/2013	7.43	809	<0.001	<0.01	0.008	0.0043	81	59	12	3	11	<5	364	158	525
		4/3/2014	7.72	869	<0.001	<0.01	0.007	0.0037	89	60	12	3	10	<5	374	166	526
Maximum Reported Concentration			7.43 - 7.72	869	ND	ND	0.008	0.0058	89	60	12	3	11	ND	374	166	526
MW-101	BCA	11/6/2012	7.34	16,100	0.004	28.1	**0.089**	**78**	463	159	4,280	13	1,130	<5	2,940	7,260	14,100
		4/4/2013	8.10	17,000	0.009	29.7	**0.0774**	**77.2**	420	152	4,150	12	1,140	<5	2,960	6,900	14,200
		10/13/2013	7.24	16,100	0.007	25.3	**0.082**	**74.8**	387	144	4,120	11	1,180	<5	2,960	7,020	14,000
		4/4/2014	7.26	16,800	0.007	30.6	**0.096**	**69**	365	128	4,290	12	1,160	<5	2,940	6,610	13,900
Maximum Reported Concentration			7.24 - 8.10	17,000	0.009	30.6	**0.096**	**78**	463	159	4,290	13	1,180	ND	2,960	7,260	14,200
MW-102	BCA	11/6/2012	**8.67**	17,800	**0.212**	28.4	**0.191**	**148**	48	57	5,360	10	1,320	360	4,630	6,620	15,000
		4/3/2013	**8.63**	19,100	**0.144**	24.9	**0.119**	**144**	62	66	5,110	10	1,260	600	4,940	6,160	15,300
		10/9/2013	**8.52**	17,600	**0.16**	20.8	**0.117**	**123**	46	66	5,000	9	1,190	151	3,960	5,750	14,600
		4/4/2014	**8.55**	18,900	**0.177**	23.8	**0.158**	**136**	46	65	5,080	11	1,310	240	4,390	6,200	14,900
Maximum Reported Concentration			**8.52 - 8.67**	19,100	**0.212**	28.4	**0.191**	**148**	62	66	5,360	11	1,320	600	4,940	6,620	15,300
MW-102DB	BBM	11/6/2012 [e]	8.40	749	0.0051	0.017	0.0004	**0.0814**	14.2	5.2	159	4	43	5	355	64	490
		4/2/2013	8.11	924	0.003	0.02	<0.001	0.0282	26	9	172	4	43	<5	391	89	538
		10/9/2013	8.10	906	0.004	0.02	<0.001	0.0241	30	11	183	4	41	<5	428	80	563
		4/4/2014	8.26	1,020	0.003	0.02	<0.001	0.022	31	11	176	4	43	7	456	85	596
Maximum Reported Concentration			8.10 - 8.40	1,020	0.0051	0.02	0.0004	**0.0814**	31	11	183	4	43	7	456	89	596

TABLE 11. SUMMARY OF MAXIMUM CONCENTRATIONS OF DISSOLVED TRACE METALS AND DISSOLVED COMMON CONSTITUENTS IN GROUNDWATER
RIO ALGOM MINING LLC, LISBON FACILITY

			PARAMETERS[b]		DISSOLVED TRACE METALS (mg/L)[c]				DISSOLVED COMMON CONSTITUENTS (mg/L)[d]								
WELL NAME	HSU [a]	SAMPLE DATE	pH (s.u.)	EC (µmhos/cm)	As	Mo	Se	U	Ca	Mg	Na	K	Cl	CO_3	HCO_3	SO_4	TDS
MW-103	BBM	11/7/2012	7.13	5,970	<0.001	0.036	0.025	**9.66**	676	222	537	18	1,210	<5	471	1,580	4,440
		4/5/2013	7.26	6,570	0.002	0.13	0.03	**9.61**	685	224	660	18	1,270	<5	501	1,550	4,680
		10/13/2013	7.17	6,330	0.003	0.02	0.015	**8.82**	567	185	704	19	1,270	<5	476	1,430	4,540
		4/4/2014	7.23	6,400	0.003	0.01	0.01	**8.28**	510	177	741	20	1,270	<5	496	1,470	4,550
Maximum Reported Concentration			7.13 - 7.26	6,570	0.003	0.13	0.03	**9.66**	685	224	741	20	1,270	ND	501	1,580	4,680
MW-104	BCA	11/7/2012 11/28/2012	7.76	1,490	0.002	0.119	0.004	**0.215**	88	23	250	5	113	<5	474	247	968
		4/5/2013	7.68	1,340	0.005	0.11	0.004	**0.157**	103	23	173	4	95	<5	459	171	852
		10/14/2013 11/17/2013	7.68	1,250	0.005	0.09	0.004	**0.17**	109	25	136	4	101	<5	418	181	795
		4/6/2014	7.72	1,230	0.004	0.07	0.003	**0.136**	106	23	137	4	93	<5	439	171	775
Maximum Reported Concentration			7.68 - 7.76	1,490	0.005	0.119	0.004	**0.215**	109	25	250	5	113	ND	474	247	968
MW-105	BCA	11/7/2012	7.48	1,340	0.016	0.007	0.012	0.0248	146	38	91	5	126	<5	260	204	862
		4/3/2013	7.48	1,660	0.019	0.01	0.012	0.0217	156	42	93	4	156	<5	248	212	1,050
		10/12/2013	7.43	1,590	0.017	<0.01	0.016	0.0218	175	44	103	5	157	<5	242	209	1,070
		4/4/2014	7.62	1,600	0.019	<0.01	0.014	0.0215	171	43	95	4	143	<5	239	215	1,080
Maximum Reported Concentration			7.43 - 7.62	1,660	0.019	0.01	0.016	0.0248	175	44	103	5	157	ND	260	215	1,080
MW-106	BBM	11/7/2012 11/28/2013	7.85	2,840	0.001	0.007	<0.001	0.0043	125	60	498	17	77	<5	243	1,290	2,220
		4/5/2013	7.77	2,910	0.001	0.03	<0.001	0.0043	127	62	456	16	75	<5	248	1,290	2,180
		10/9/2013 10/14/2013 11/172013	7.64	2,900	0.003	<0.01	0.002	0.0083	146	69	519	19	79	<5	275	1,320	2,220
		4/6/2014	7.58	2,900	0.001	<0.01	<0.001	0.0054	124	61	425	15	76	<5	257	1,370	2,190
Maximum Reported Concentration			7.58 - 7.85	2,910	0.003	0.03	0.002	0.0083	146	69	519	19	79	ND	275	1,370	2,220
MW-107S	BCA	10/8/2013	**4.49**	2,060	0.005	<0.01	0.005	0.0017	269	126	37	8	19	<5	<5	1,340	1,950
		4/3/2014	**4.43**	2,190	0.006	<0.01	0.004	0.0019	270	129	40	9	19	<5	<5	1,300	1,960
Maximum Reported Concentration			**4.43 - 4.49**	2,190	0.006	ND	0.005	0.0019	270	129	40	9	19	ND	<5	1,340	1,960
MW-107D	BCA	10/8/2013	**6.45**	1,020	0.002	0.01	0.001	0.0005	118	52	34	6	19	<5	127	428	774
		4/3/2014	6.56	1,080	0.004	<0.01	<0.001	0.0007	117	48	31	6	20	<5	143	450	783
Maximum Reported Concentration			**6.45 - 6.56**	1,080	0.004	0.01	0.001	0.0007	118	52	34	6	20	ND	143	450	783
MW-108	BCA	10/12/2013	7.45	1,070	0.013	0.01	0.006	0.0105	125	36	58	4	63	<5	266	267	738
		4/3/2014	7.55	1,150	0.014	0.01	0.005	0.0095	132	35	55	4	70	<5	256	293	758
Maximum Reported Concentration			7.45 - 7.55	1,150	0.014	0.01	0.006	0.0105	132	36	58	4	70	ND	266	293	758
MW-109	BCA	10/9/2013	7.55	3,160	0.001	0.01	0.032	**1.53**	304	89	362	13	255	<5	297	1,230	2,440
		4/4/2014	7.47	3,970	0.002	0.02	0.031	**2.85**	323	95	422	14	303	<5	354	1,530	3,060
Maximum Reported Concentration			7.47 - 7.55	3,970	0.002	0.02	0.032	**2.85**	323	95	422	14	303	ND	354	1,530	3,060
MW-111	BBM	11/17/2013	**8.58**	768	0.007	0.03	0.002	**0.0316**	7	2	192	5	31	13	391	21	492
		4/1/2014	8.39	792	0.004	0.01	0.001	0.0153	7	2	171	4	15	10	458	9	518
Maximum Reported Concentration			**8.39 - 8.58**	792	0.007	0.03	0.002	**0.0316**	7	2	192	5	31	13	458	21	518

TABLE 11. SUMMARY OF MAXIMUM CONCENTRATIONS OF DISSOLVED TRACE METALS AND DISSOLVED COMMON CONSTITUENTS IN GROUNDWATER
RIO ALGOM MINING LLC, LISBON FACILITY

			PARAMETERS[b]		DISSOLVED TRACE METALS (mg/L)[c]				DISSOLVED COMMON CONSTITUENTS (mg/L)[d]								
WELL NAME	HSU [a]	SAMPLE DATE	pH (s.u.)	EC (µmhos/cm)	As	Mo	Se	U	Ca	Mg	Na	K	Cl	CO_3	HCO_3	SO_4	TDS
MW-112	BCA	10/11/2013	8.20	1,080	0.021	0.0109	0.01	0.0099	122	34	52	4	88	<5	226	253	726
		4/4/2014	7.74	1,130	0.021	<0.01	0.008	0.0095	124	35	54	4	91	<5	222	253	716
Maximum Reported Concentration			7.74 - 8.20	1,130	0.021	0.0109	0.01	0.0099	124	35	54	4	91	ND	226	253	726
MW-113	BCA	10/11/2013	7.32	3,120	0.015	<0.01	0.016	**1.55**	215	55	441	6	428	<5	442	785	2,180
		4/5/2014	7.42	3,140	0.016	<0.01	0.015	**1.59**	203	51	409	5	400	<5	437	749	2,230
Maximum Reported Concentration			7.32 - 7.42	3,140	0.016	ND	0.016	**1.59**	215	55	441	6	428	ND	442	785	2,230
MW-114	BCA	10/13/2013	7.55	766	0.022	0.01	0.009	0.0139	88	27	34	3	48	<5	220	155	500
		4/4/2014	7.74	781	0.023	0.01	0.008	0.0072	85	24	32	3	47	<5	219	145	471
Maximum Reported Concentration			7.55 - 7.74	781	0.023	0.01	0.009	0.0139	88	27	34	3	48	ND	220	155	500
MW-115S	BCA	10/13/2013	7.64	1,150	0.026	0.02	0.009	0.0176	120	37	66	3	153	<5	214	180	751
		4/5/2014	7.68	1,190	0.021	<0.01	0.01	0.0192	118	37	61	4	153	<5	222	189	729
Maximum Reported Concentration			7.64 - 7.68	1,190	0.026	0.02	0.01	0.0192	120	37	66	4	153	ND	222	189	751
MW-115M	BCA	10/14/2013	7.65	1,600	0.015	0.02	0.011	**0.315**	173	45	128	5	182	<5	317	332	1,080
		4/5/2014	8.20	1,680	0.027	0.0116	0.01	**0.382**	168	44.5	129	4	210	<5	319	348	1,090
Maximum Reported Concentration			7.65 - 8.20	1,680	0.027	0.02	0.011	**0.382**	173	45	129	5	210	ND	319	348	1,090
MW-116	BCA	10/12/2013	**3.76**	12,600	**0.134**	1.25	**0.13**	**19.1**	479	855	94	17	130	<5	<5	18,900	26,600
		4/5/2014	**3.47**	12,300	**0.105**	0.95	**0.144**	**20.8**	418	829	91	19	112	<5	<5	21,200	26,400
Maximum Reported Concentration			**3.47 - 3.76**	12,600	**0.134**	1.25	**0.144**	**20.8**	479	855	94	19	130	ND	<5	21,200	26,600
MW-117S	BCA	10/12/2013	7.69	1,480	0.035	0.23	0.012	**1.24**	115	31	191	4	150	<5	347	257	945
		4/5/2014	7.72	1,520	0.04	0.25	0.011	**1.4**	105	31	202	3	150	<5	356	269	986
Maximum Reported Concentration			7.69 - 7.72	1,520	0.04	0.25	0.012	**1.4**	115	31	202	4	150	ND	356	269	986
MW-117M	BCA	10/14/2013	**11.6**	3,260	**0.245**	1.18	0.033	**3.24**	63	18	586	23	346	144	70	512	1,670
		4/5/2014	**9.67**	2,780	**0.228**	0.61	0.013	**3.68**	65	23	572	11	357	76	247	559	1,730
Maximum Reported Concentration			**9.67 - 11.6**	3,260	**0.245**	1.18	0.033	**3.68**	65	23	586	23	357	144	247	559	1,730
MW-118	BCA	10/8/2013	7.37	988	0.008	0.04	0.002	0.0125	120	45	33	4	26	<5	247	306	703
		4/3/2014	7.48	979	0.003	0.09	0.001	0.0136	113	39	31	4	28	<5	243	285	669
Maximum Reported Concentration			7.37 - 7.48	988	0.008	0.09	0.002	0.0136	120	45	33	4	28	ND	247	306	703
MW-119	BCA	10/13/2013	7.4	4,700	0.002	<0.01	0.05	**6.12**	570	163	439	8	443	<5	405	2,250	4,110
		4/3/2014 4/4/2014	7.37	4,930	0.004	<0.01	0.049	**6.6**	566	153	414	8	424	<5	395	2,120	4,120
Maximum Reported Concentration			7.37 - 7.40	4,930	0.004	ND	0.05	**6.6**	570	163	439	8	443	ND	405	2,250	4,120
MW-120	BCA	10/13/2013	7.55	814	0.03	<0.01	0.011	0.0106	92	23	48	4	73	<5	237	143	521
		4/2/2014	7.53	1,460	0.029	<0.01	0.013	0.0075	180	45	39	4	243	<5	222	209	1,000
Maximum Reported Concentration			7.53 - 7.55	1,460	0.03	ND	0.013	0.0106	180	45	48	4	243	ND	237	209	1,000

TABLE 11. SUMMARY OF MAXIMUM CONCENTRATIONS OF DISSOLVED TRACE METALS AND DISSOLVED COMMON CONSTITUENTS IN GROUNDWATER
RIO ALGOM MINING LLC, LISBON FACILITY

			PARAMETERS[b]		DISSOLVED TRACE METALS (mg/L)[c]				DISSOLVED COMMON CONSTITUENTS (mg/L)[d]								
WELL NAME	HSU [a]	SAMPLE DATE	pH (s.u.)	EC (µmhos/cm)	As	Mo	Se	U	Ca	Mg	Na	K	Cl	CO_3	HCO_3	SO_4	TDS
MW-110	BBM	Not Sampled	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
MW-121	CHINLE	Not Sampled	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
MW-122	BCA	Not Sampled	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
REGULATORY CONCENTRATION LIMITS (mg/L)																	
			pH	**EC**	**As**	**Mo**	**Se**	**U**	**Ca**	**Mg**	**Na**	**K**	**Cl**	**CO_3**	**HCO_3**	**SO_4**	**TDS**
Alternate Concentration Limit for POC Well EF-3A			---	---	3.06	23.34	0.93	96.87	---	---	---	---	---	---	---	---	---
Alternate Concentration Limit for POC Well OW-UT-9			---	---	2.63	58.43	0.10	101.58	---	---	---	---	---	---	---	---	---
Compliance Limit for POE Wells RL-4, RL-5, and RL-6			---	---	---	---	---	0.32	---	---	---	---	---	---	---	---	---
Target Action Level for Trend Well EF-6			---	---	---	---	---	3.9	---	---	---	---	---	---	---	---	---
Target Action Level for Trend Well EF-8			---	---	---	---	---	0.30	---	---	---	---	---	---	---	---	---
Target Action Level for Trend Well ML-1			---	---	---	---	---	0.26	---	---	---	---	---	---	---	---	---
Target Action Level for Trend Well RL-1			---	---	---	---	---	42.1	---	---	---	---	---	---	---	---	---
Target Action Level for Trend Well RL-3			---	---	---	---	---	37.3	---	---	---	---	---	---	---	---	---
Target Action Level for Trend Well H-63			---	---	---	---	---	0.06	---	---	---	---	---	---	---	---	---
Target Action Level for Trend Well LW-1			---	---	---	---	---	0.028	---	---	---	---	---	---	---	---	---
Background Concentration Limit for Well MW-5			---	---	0.05	0.07	0.01	0.01	---	---	---	---	---	---	---	---	---
Background Concentration Limit for Well MW-13			---	---	0.066	0.05	0.01	0.02	---	---	---	---	---	---	---	---	---
Utah Groundwater Quality Standard Applied to New Wells			6.5 - 8.5	---	0.05	---	0.05	0.03	---	---	---	---	---	---	---	---	---

Notes:

During comprehensive monitoring events, multiple samples were collected from wells by various sample methods. The values given for each analyte represent the maximum concentration detected in any sample collected during an event. For pH, the reported value farthest from neutral is given.

In most cases, the multiple samples were collected from wells on the same day. Multiple dates are given when two or more samples were collected on different days, within the same event.

Values shaded gray and in bold font exceed current compliance concentrations as stipulated in the License.

Values in new wells shaded blue and in bold font exceed Utah Groundwater Quality Standards.

mg/L = Milligrams per liter
< = Not detected at or above the reporting limit
ND = Not detected during assessment monitoring
--- = Not applicable

[a] HYDROSTRATIGRAPHIC UNIT
BCA = Burro Canyon Aquifer
BBM = Brushy Basin Member of the Morrison Formation
CHINLE = Chinle Formation

[b] ROUTINE PARAMETERS
pH (s.u.) = pH in standard units
EC (µmhos/cm) = Electrical conductivity in micromhos per centimeter

[c] TRACE METALS (mg/L)
As = Arsenic
Mo = Molybdenum
Se = Selenium
U = Uranium

[d] COMMON CONSTITUENTS (mg/L)
Ca = Calcium
Mg = Magnesium
Na = Sodium
K = Potassium
Cl = Chloride
CO_3 = Carbonate
HCO_3 = Bicarbonate
SO_4 = Sulfate
TDS = Total Dissolved Solids

[e] The November 2012 purge sample results from MW-102DB are not representative of groundwater conditions and were not included.

109°20'0"W 109°19'0"W 109°18'0"W 109°17'0"W R. 24 E. 109°16'0"W 109°15'0"W 109°14'0"W

38°18'0"N
38°17'0"N
T. 29 S.
38°16'0"N
38°15'0"N

La Sal

LISBON FAULT

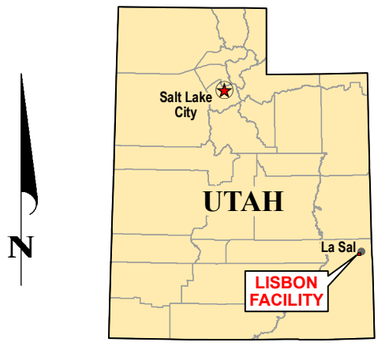
VALLEY ANTICLINE

Lisbon Mine
Former Bisco Lake
Lower Tailings
Upper Tailings
Production Shaft
Ventilation Shaft
Alice Mine
Homestake Mine
Big Indian Mine

Image Source: NAIP 2011

EXPLANATION

- Active mine
- Inactive/former mine
- Former mine shaft
- 6,800 — Topography contour, in feet above mean sea level (feet msl); contour interval 20 feet
- Lisbon Fault
- Anticline fold axis; arrow shows direction of plunge
- Syncline fold axis; arrow shows direction of plunge
- Long Term Surveillance and Maintenance Boundary
- Rio Algom Mining LLC property boundary
- Road



0 1,000 2,000 3,000 4,000
Feet

RIO ALGOM MINING LLC
LISBON FACILITY

SITE LOCATION MAP

MONTGOMERY & ASSOCIATES
Water Resource Consultants

2014

FIGURE 1

GIS\1350.22\Phase2_Report\RegionalSite_LocMap.mxd\15July2014 NAD27_SP_Utah_So.

109°19'0"W 109°18'0"W R. 24 E. 109°17'0"W 109°16'0"W

38°17'0"N

38°16'0"N

T. 29 S.

RL-4 RL-5 EF-20 EF-21 RL-6 MW-118 MW-119 RL-3 MW-100 LW-1 EF-19 MW-108 EF-22 EF-26 RL-1 MW-109 MW-101 EF-25 RW-8 H-80 MW-107D MW-107S RW-10 EF-23 MW-7 RW-6 RW-12 RW-7 RW-14 MW-8 MW-5 RW-9 MW-7A MW-8A MW-9 MW-10 RW-9A MW-110 DM80-1 RW-11 EF-24 RW-13 RW-17 MW-102DB EF-13 RW-12 RW-4 MW-111 MW-102 H-72 RW-3 H-78 H-24 RW-5 RW-1 GW-16 H-56 H-55 H-77 RW-16 RW-2 GW-18 ML-1 MW-112 GW-15 H-48 FT-1 H-71 EF-14 H-47 GW-14 GW-13 H-10 MW-114 MW-113 H-73 H-26 EF-6 GW-11 H-79 GW-10 LT-24 EF-18 EF-5 LT-23 LT-21 EF-16 EF-17 H-15 EF-1 D-3 H-69 DM80-3 MW-6A MW-1 H-7 H-11 DM80-5 D-10 DM80-4 MW-11 H-14A H-38 ML-2 DH-10 MW-104 EF-8 MW-11A MW-2 H-39 LT-16 MW-116 EF-3A LT-19 LT-43 H-14 H-37 LT-39 EF-2 LT-42 H-66 H-5 H-6 MW-115M EF-4 LT-20 H-49A MW-4 H-8 MW-115S MW-12 H-49 H-67 H-40 H-31 MW-117S H-17 H-33 MW-117M H-25 H-64 H-50 MW-121 H-76 H-59 FT-4 H-4 DM80-2 H-19 H-9 H-63 MW-105 H-32 FT-2 H-35 H-43 H-12 MW-13 H-85 FT-3 H-60 MW-106 H-61 H-13 H-41 UW-1 H-51 H-42 H-2 MW-120 H-62 H-70 H-52 H-74 H-3 MW-122

GW-6CK GW-22 GW-6 GW-8 H-30 GW-19 H-57 GW-17 GW-20 GW-5 GW-2 GW-20A GW-9 GW-7 GW-1 H-54 GW-12A GW-4 GW-12 GW-21 UT-5 UT-6 UT-4 UT-7 LT-2 OW-UT-9 UT-9 H-28 UT-8 LT-4 LT-3 LT-3 UT-2 UT-3 LT-6 LT-1 LT-7 UT-1 LT-8 LT-5 H-58 H-18 LT-9 LT-11 LT-12 H-68 H-53 LT-13 LT-22 LT-14 LT-17 MW-103 LT-28 LT-27 H-45 LT-26 LT-37 LT-15 LT-10 LT-30 H-44 LT-32 MW-3 LT-35

Image Source: NAIP 2011

EXPLANATION

- MW-5 — Existing well and identifier
- MW-10 — Decommissioned well or borehole and identifier
- Long Term Surveillance and Maintenance Boundary
- Rio Algom Mining LLC property boundary
- Lisbon Fault

N

0 500 1,000 1,500 2,000 Feet

RIO ALGOM MINING LLC
LISBON FACILITY

EXISTING AND DECOMMISSIONED MONITOR WELLS

MONTGOMERY & ASSOCIATES
Water Resource Consultants

2014

FIGURE 2

GIS\1350.22\Phase2_Report\Existing_DecommissionedMonWells.mxd\15July2014 NAD27_SP_Utah_So.

109°19'0"W 109°18'0"W R. 24 E. 109°17'0"W 109°16'0"W

38°17'0"N

T. 29 S.

38°16'0"N

RL-4 RL-5 RL-6 MW-118 MW-119 RL-3 MW-108 RL-1 MW-109 MW-107D MW-107S MW-110 MW-111 MW-102DB MW-102 ML-1 MW-112 MW-114 MW-113 EF-6 EF-8 MW-115M MW-115S EF-3A MW-117S MW-117M MW-116 MW-121 MW-100 LW-1 MW-101 MW-5 OW-UT-9 Lower Tailings Upper Tailings Former Bisco Lake MW-103 MW-104 MW-105 H-63 MW-13 UW-1 MW-106 MW-120 MW-122

Image Source: NAIP 2011

109°19'0"W 109°18'0"W R. 24 E. 109°17'0"W 109°16'0"W

EXPLANATION

- LW-1 — Well screened in Burro Canyon Aquifer (BCA)
- MW-103 — Well screened in Brushy Basin Member of the Morrison Formation (BBM)
- MW-121 — Well screened in the Chinle Formation
- Long Term Surveillance and Maintenance Boundary
- Rio Algom Mining LLC property boundary
- Lisbon Fault

GEOLOGIC UNITS

- Qea — Quaternary eolian and alluvial deposits
- Kd — Dakota Sandstone
- Kbc — Burro Canyon Formation
- Ject — Slick Rock Member of Entrada Sandstone and Moab Member of Curtis Formation
- Jn — Navajo Sandstone
- Jk — Kayenta Formation
- Jw — Wingate Sandstone
- TRc — Chinle Formation

0 500 1,000 1,500 2,000
Feet

N

RIO ALGOM MINING LLC
LISBON FACILITY

GEOLOGIC MAP

MONTGOMERY & ASSOCIATES
Water Resource Consultants

2014

FIGURE 3

GIS\1350.22\Phase2_Report\Geologic_Map.mxd\15July2014 NAD27_SP_Utah_So.

109°19'0"W 109°18'0"W R. 24 E. 109°17'0"W 109°16'0"W

38°17'0"N

T. 29 S.

38°16'0"N

RL-4 RL-5 RL-6 MW-118 RL-3 RL-1 MW-119 MW-108 MW-109 MW-107D MW-107S B-2 MW-110 MW-111 MW-101 MW-100 LW-1 MW-5 MW-102DB MW-102 ML-1 MW-112 OW-UT-9 MW-113 MW-114 EF-6 Lower Tailings Upper Tailings Former Bisco Lake EF-8 MW-115M MW-115S EF-3A MW-117S MW-117M MW-116 MW-103 MW-104 MW-121 MW-105 H-63 MW-13 UW-1 MW-106 MW-120 MW-122

LISBON VALLEY ANTICLINE

LISBON FAULT

6,500 6,600 6,700 6,800 6,900 7,000 6,400

Image Source: NAIP 2011

EXPLANATION

- MW-100 — New well screened in Burro Canyon Aquifer (BCA); installed during 2012-2014 assessment
- MW-111 — New well screened in Brushy Basin Member of the Morrison Formation (BBM); installed during 2012-2014 assessment
- MW-121 — New well screened in the Chinle Formation; installed during 2012-2014 assessment
- B-2 — Boring drilled during 2012-2014 assessment; not completed as monitor well
- LW-1 — Existing well screened in BCA; installed prior to 2012-2014 assessment
- 6,800 — Topography contour, in feet above mean sea level (feet msl); contour interval 20 feet
- Lisbon Fault
- Anticline fold axis; arrow shows direction of plunge
- Syncline fold axis; arrow shows direction of plunge
- Long Term Surveillance and Maintenance Boundary
- Rio Algom Mining LLC property boundary

N

0 500 1,000 1,500 2,000

Feet

RIO ALGOM MINING LLC

LISBON FACILITY

SITE MAP

MONTGOMERY & ASSOCIATES

Water Resource Consultants

2014

FIGURE 4

GIS\1350.22\Phase2_Report\SiteMap.mxd\18July2014 NAD27_SP_Utah_So.

109°19'0"W 109°18'0"W 109°17'0"W 109°16'0"W

38°17'0"N

38°16'0"N

6,350 6,375 6,400 6,425 6,450 6,475 6,500 6,525 6,550 6,575 6,600 6,625 6,650 6,675 6,700

6,372

RL-4 6,508
RL-5 6,518
MW-118 6,400
MW-119 6,517
RL-3 6,513
LW-1 6,491
MW-108 6,347
RL-1 6,530
MW-109 6,520
MW-101 6,549
MW-107D 6,432
MW-110 6,555
MW-102DB 6,565
MW-111 6,583
MW-102 6,566
ML-1 6,364
MW-114 6,356
EF-6 6,434
OW-UT-9 6,570
Lower Tailings
Upper Tailings
EF-8 6,332
EF-3A 6,370
MW-117M 6,386
MW-103 6,590
MW-104 6,604
MW-105 6,487
H-63 6,515
MW-13 6,439
MW-106 6,624
MW-120 6,431
MW-122 6,733

NOTES:

For clarity, shallow wells installed above the the Kbc/Jmb contact and wells where the contact was not encountered are not included.

The Kbc/Jmb contact elevations for decommisioned wells are based on historic lithologic log data provided in the April 1984 report titled "Remedial-Action Plan for Groundwater Contamination Control at the Lisbon Uranium Mill" prepared by EarthFax Engineering, Inc.

Image Source: NAIP 2011

EXPLANATION

- MW-101 6,549 — Existing monitor well where contact between the Burro Canyon Formation (Kbc) and Brushy Basin Member of the Morrison Formation (Jmb) was encountered during drilling
- Approximate Kbc/Jmb contact elevation, in feet above mean sea level (feet msl)
- Decommissioned monitor well; Kbc/Jmb contact elevation based on historic well logs
- Well location and drilling information obtained from Utah Division of Water Rights registry database
- 6,500 — Approximate Kbc/Jmb contact elevation (feet msl); dashed were inferred
- Anticline fold axis; arrow shows direction of plunge
- Syncline fold axis; arrow shows direction of plunge
- Long Term Surveillance and Maintenance Boundary
- Rio Algom Mining LLC property boundary
- Lisbon Fault

N

0 500 1,000 1,500 2,000
Feet

RIO ALGOM MINING LLC
LISBON FACILITY

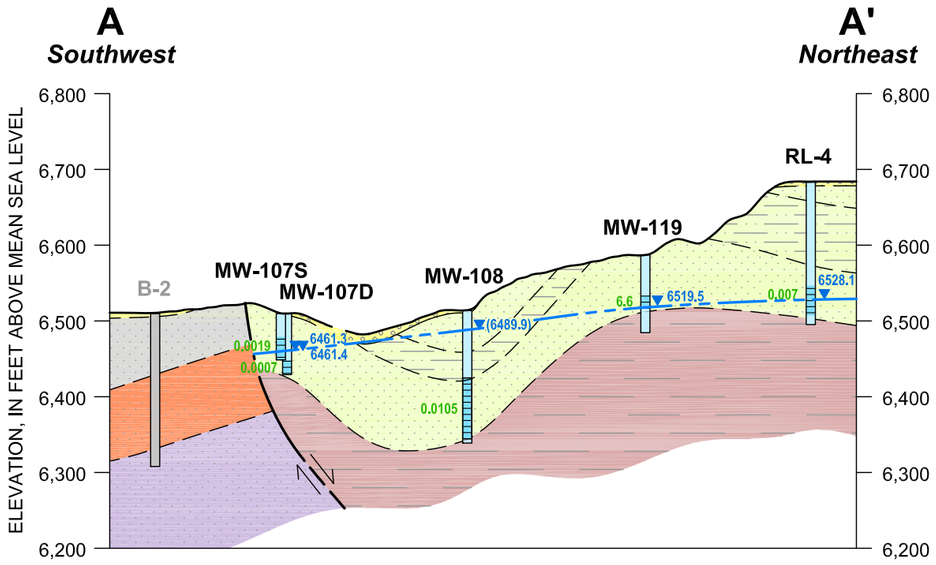
ESTIMATED ELEVATION OF GEOLOGIC CONTACT BETWEEN BURRO CANYON FORMATION AND BRUSHY BASIN MEMBER

MONTGOMERY & ASSOCIATES
Water Resource Consultants

2014

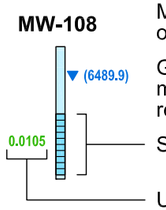
FIGURE 5

GIS\1350.22\Phase2_Report\StructureContour.mxd\15July2014 NAD27_SP_Utah_So.



EXPLANATION

- Groundwater elevation, in feet above mean sea level
- Qea — Quaternary eolian and alluvial deposits
- Kbc — Burro Canyon Formation
- Jmb — Morrison Formation, Brushy Basin Member
- Jn — Navajo Sandstone
- Jk — Kayenta Formation
- Jw — Wingate Sandstone
- Unconsolidated sediments
- Sandstone; most commonly well sorted, fine to medium grained; may include minor interbedded layers of conglomerate or siltstone
- Siltstone, mudstone, or shale; may include interbedded layers of sandstone and lesser interbedded layers of limestone
- Shale or mudstone; may include minor interbedded layers of sandstone



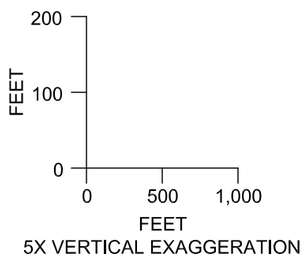
Monitor well and identifier; gray if decommissioned or borehole not completed as a well

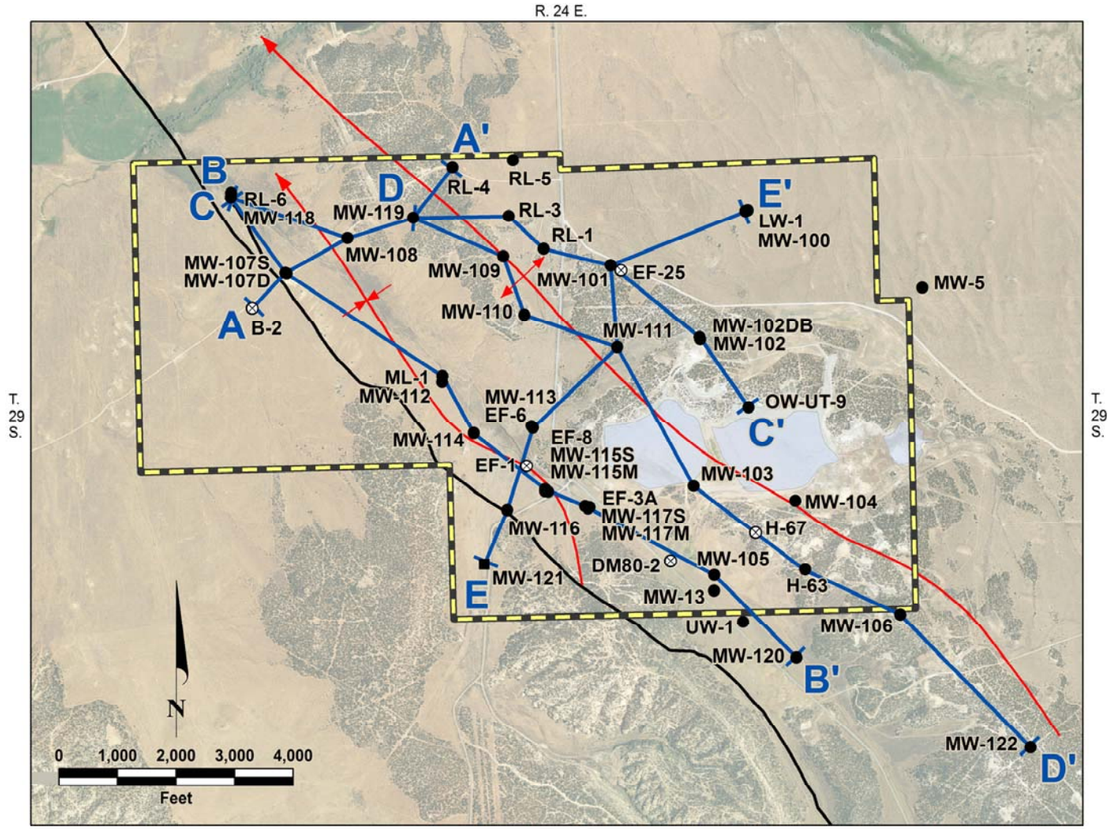
Groundwater elevation, in feet above mean sea level, measured on April 1, 2014. Water level in parentheses represents confined head

Screened Interval

Uranium concentration, milligrams per liter

NOTE: The contact elevation between the Burro Canyon Formation and Brushy Basin Member is based on existing lithologic logs from previously drilled wells, lithologic logs from the new wells, and inferred elevations from Plate 1 of the April 1984 report titled "Remedial-Action Plan for Groundwater Contamination Control at the Lisbon Uranium Mill" prepared by EarthFax Engineering, Inc.





R. 24 E.

LOCATION MAP

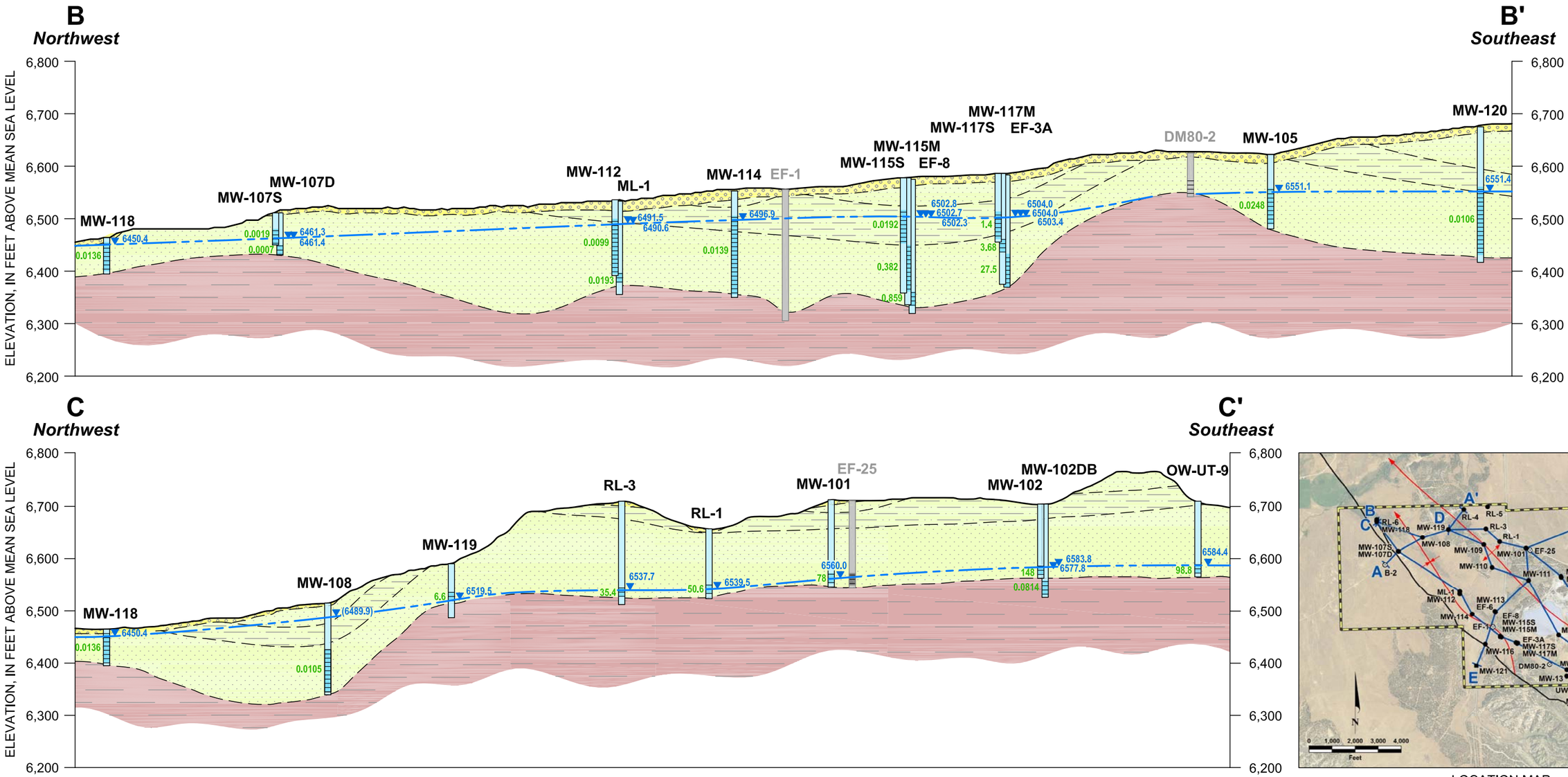
EXPLANATION

- LW-1 — Monitor well and identifier
- Decommissioned well or abandoned borehole
- Well screened in the Chinle Formation
- A—A' — Hydrogeologic cross section
- Anticline fold axis; arrow shows direction of plunge
- Syncline fold axis; arrow shows direction of plunge
- Lisbon Fault

FIGURE 6. HYDROGEOLOGIC SECTION A-A', RIO ALGOM MINING LLC, LISBON FACILITY

DRAFTING\1350.22\XSecA_Ledger\15July2014

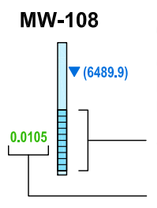
MONTGOMERY & ASSOCIATES



LOCATION MAP

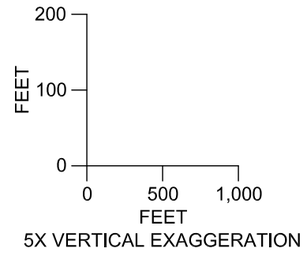
EXPLANATION

- Groundwater elevation, in feet above mean sea level
- Qea — Quaternary eolian and alluvial deposits
- Kbc — Burro Canyon Formation
- Jmb — Morrison Formation, Brushy Basin Member
- Unconsolidated sediments
- Sandstone; most commonly well sorted, fine to medium grained; may include minor interbedded layers of conglomerate or siltstone
- Siltstone, mudstone, or shale; may include interbedded layers of sandstone and lesser interbedded layers of limestone
- Shale or mudstone; may include minor interbedded layers of sandstone



- Monitor well and identifier; gray if decommissioned or borehole not completed as a well
- Groundwater elevation, in feet above mean sea level, measured on April 1, 2014. Water level in parentheses represents confined head
- Screened interval
- Uranium concentration, milligrams per liter

NOTE: The contact elevation between the Burro Canyon Formation and Brushy Basin Member is based on existing lithologic logs from previously drilled wells, lithologic logs from the new wells, and inferred elevations from Plate 1 of the April 1984 report titled "Remedial-Action Plan for Groundwater Contamination Control at the Lisbon Uranium Mill" prepared by EarthFax Engineering, Inc.

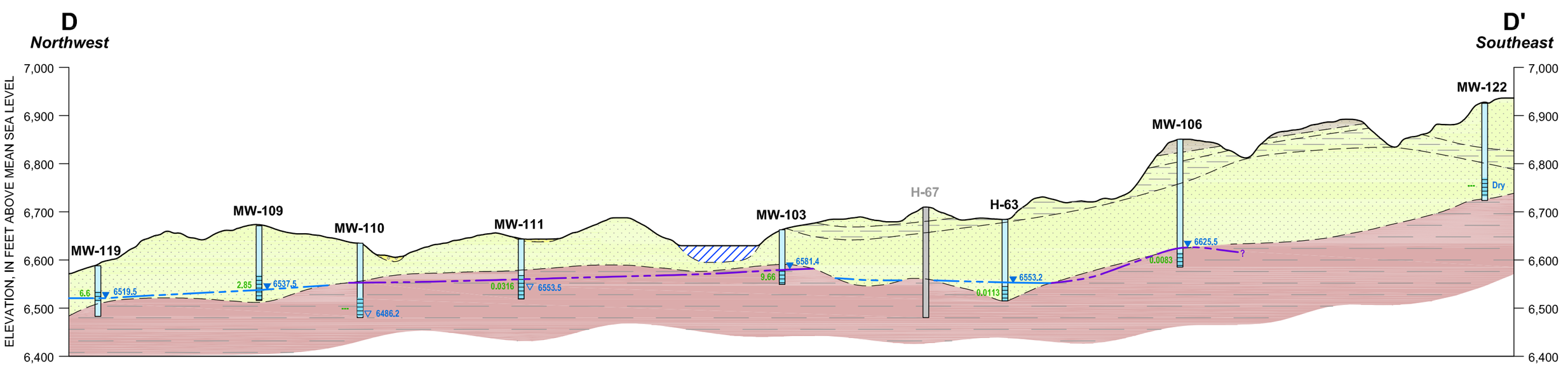


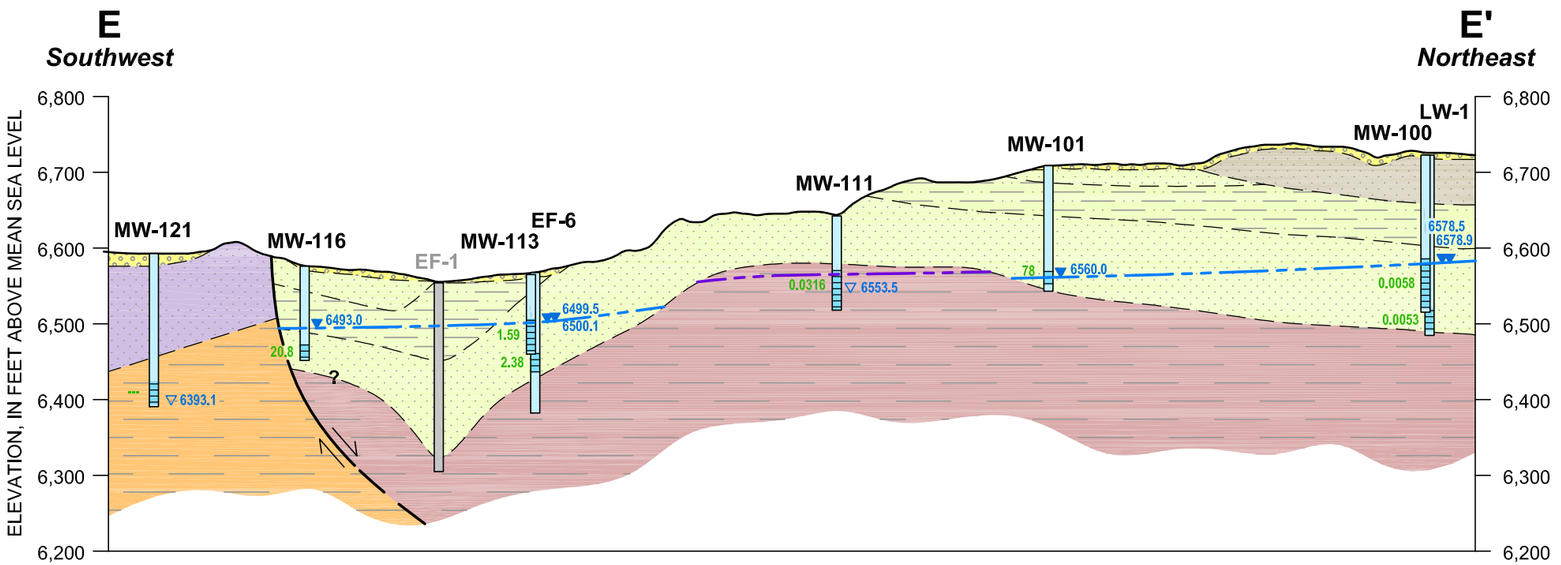
5X VERTICAL EXAGGERATION

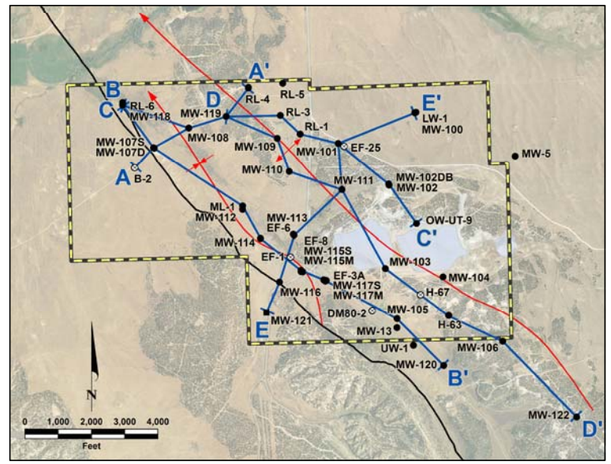
FIGURE 7. HYDROGEOLOGIC SECTION B-B' AND C-C', RIO ALGOM MINING LLC, LISBON FACILITY

DRAFTING\1350.22\XSecB_C\15July2014

MONTGOMERY & ASSOCIATES



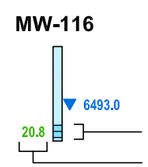




LOCATION MAP

EXPLANATION

- Groundwater elevation in Burro Canyon Aquifer, in feet above mean sea level
- Groundwater elevation in Brushy Basin Member, in feet above mean sea level
- Qea — Quaternary eolian and alluvial deposits
- Tailings — Covered mill tailings
- Kd — Dakota Sandstone
- Kbc — Burro Canyon Formation
- Jmb — Morrison Formation, Brushy Basin Member
- Jw — Wingate Sandstone
- TRc — Chinle Formation
- Unconsolidated sediments
- Sandstone; most commonly well sorted, fine to medium grained; may include minor interbedded layers of conglomerate or siltstone
- Siltstone, mudstone, or shale; may include interbedded layers of sandstone and lesser interbedded layers of limestone
- Shale or mudstone; may include minor interbedded layers of sandstone



- Monitor well and identifier; gray if decommissioned or borehole not completed as a well
- Groundwater elevation, in feet above mean sea level, measured on April 1, 2014; open symbol if water level is transient
- Screened interval
- Uranium concentration, milligrams per liter

NOTE: The contact elevation between the Burro Canyon Formation and Brushy Basin Member is based on existing lithologic logs from previously drilled wells, lithologic logs from the new wells, and inferred elevations from Plate 1 of the April 1984 report titled "Remedial-Action Plan for Groundwater Contamination Control at the Lisbon Uranium Mill" prepared by EarthFax Engineering, Inc.

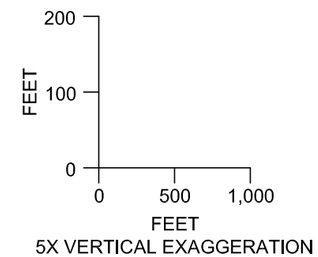


FIGURE 8. HYDROGEOLOGIC SECTION D-D' AND E-E', RIO ALGOM MINING LLC, LISBON FACILITY

DRAFTING\1350.22\XSec_D_E\17July2014

MONTGOMERY & ASSOCIATES

109°19'0"W 109°18'0"W R. 24 E. 109°17'0"W 109°16'0"W

38°17'0"N

38°16'0"N

T. 29 S.

RL-4 0.6
RL-5 3.3
EF-20 2.7
RL-6 13.7
MW-118 4.5
MW-119 0.1
RL-3 1.2
EF-19 4.8
MW-100 0.7
LW-1 2.8
MW-108 1.3
EF-22 1.5
MW-109 0.06
RL-1 0.6
EF-26 0.3
MW-101 0.8
EF-23 5.6
MW-107D 1.4
MW-107S 2.5
EF-25 0.7
MW-5 0.02 (0.58)
MW-110 ---
MW-8A 6.8
EF-24 13
DM80-1 0.02
MW-7 (0.5)
MW-9 34
MW-10 5.1
MW-102DB 0.7
MW-111 ---
H-72 0.96 (0.01)
MW-102 0.3
ML-1 1.8
MW-112 0.4
H-56 0.24
H-55 0.08
RW-1 1
RW-2 0.35
H-48 1.3 (0.04)
OW-UT-9 1.2 (10.1)
MW-114 0.3
MW-113 1.9
EF-6 0.5 0.6
EF-5 7.1
Lower Tailings
Upper Tailings
EF-16 8.7
EF-17 0.1
DM80-3 3.5
MW-6A 61
MW-1 (798)
MW-11A 70
MW-11 106
DM80-4 5.1
EF-8 1.4 2.4
EF-3A 37 7.4
MW-103 0.04
MW-104 0.02
MW-116 0.4
EF-2 2.9
MW-2 (133)
MW-117S 9.4
MW-4 (0.01)
MW-12 79
MW-115M 167
MW-115S 4.2
EF-4 8.7
MW-121 ---
MW-117M 2.3
MW-105 >421
H-63 1.6
MW-13 421
UW-1 0.4
MW-106 0.0007
MW-120 6.4
MW-122 ---

Image Source: NAIP 2011

109°19'0"W 109°18'0"W R. 24 E. 109°17'0"W 109°16'0"W

GIS\1350.22\Phase2_Report\HydraulicConductivity.mxd\17July2014 NAD27_SP_Utah_So.

EXPLANATION

- LW-1 — Existing well screened in Burro Canyon Aquifer (BCA)
- MW-103 — Existing well screened in Brushy Basin Member of the Morrison Formation (BBM)
- MW-121 — Existing well screened in the Chinle Formation
- EF-22 — Decommissioned well formerly screened in BCA (hydraulic conductivity testing data available)
- 2.8 — Horizontal hydraulic conductivity estimated by slug testing during 2012-2014 assessment, feet per day (ft/day)
- --- — Existing well not tested during 2012-2014 assessment
- 1.5 — Historic testing data; horizontal hydraulic conductivity estimated by slug testing, ft/day
- (10.1) — Historic testing data; horizontal hydraulic conductivity estimated by pumping test, ft/day
- Long Term Surveillance and Maintenance Boundary
- Rio Algom Mining LLC property boundary
- Lisbon Fault

N

0 500 1,000 1,500 2,000
Feet

RIO ALGOM MINING LLC
LISBON FACILITY

ESTIMATED HORIZONTAL HYDRAULIC CONDUCTIVITY

MONTGOMERY & ASSOCIATES
Water Resource Consultants

2014

FIGURE 9

109°19'0"W 109°18'0"W R. 24 E. 109°17'0"W 109°16'0"W

38°17'0"N

38°16'0"N

T. 29 S.

RL-6 6,449.80
MW-118 6,450.39
MW-119 6,519.48
MW-108 6,489.91
MW-107D 6,461.36
MW-107S 6,461.27
RL-4 6,528.09
RL-5 6,537.50
RL-3 6,537.72
MW-109 6,537.52
RL-1 6,539.53
MW-110 (6486.19)
MW-101 6,560.04
MW-100 6,578.45
LW-1 6,578.92
MW-5 6,593.3
MW-102DB 6,583.82
MW-102 6,577.84
MW-111 (6,553.48)
ML-1 6,490.57
MW-112 6,491.52
MW-113 6,499.48
EF-6 6,500.13
MW-114 6,496.86
EF-8 6,502.27
MW-115M 6,502.68
MW-115S 6,502.81
MW-117S 6,503.96
EF-3A 6,503.43
MW-116 6,492.98
MW-117M 6,503.95
MW-121 (6,393.21)
OW-UT-9 6,584.37
Lower Tailings
Upper Tailings
MW-103 6,581.41
MW-104 [6,610.97]
MW-13 6,550.97
MW-105 6,551.08
H-63 6,553.19
UW-1 6,551.11
MW-106 6,625.46
MW-120 6,551.40
MW-122 DRY

6,450 6,455 6,460 6,465 6,470 6,475 6,480 6,485 6,490 6,495 6,500 6,505 6,510 6,515 6,520 6,525 6,530 6,535 6,540 6,545 6,550 6,555 6,560 6,565 6,570 6,575 6,580 6,585 6,590 6,595 6,600 6,610 6,620

NOTES:

Water level elevation data in parentheses not used for contouring. Water level not stabilized at the time of the monitoring event and considered transient.

Water level elevation data in brackets indicates groundwater is perched in the Burro Canyon Formation and was not used for contouring.

The extent of the Burro Canyon Dry Zone was estimated using contoured groundwater elevation data and contact elevation data for the Burro Canyon Formation and underlying Brushy Basin Member. The Burro Canyon Dry Zone occurs where the elevation of the contact is greater than the contoured groundwater elevation. The contact elevation between the Burro Canyon Formation and Brushy Basin Member is based on existing lithologic logs from previously drilled wells, lithologic logs from new wells, and inferred elevations from Plate 1 of the April 1984 report titled "Remedial-Action Plan for Groundwater Contamination Control at the Lisbon Uranium Mill" prepared by EarthFax Engineering, Inc.

Image Source: NAIP 2011

109°19'0"W 109°18'0"W R. 24 E. 109°17'0"W 109°16'0"W

38°17'0"N

38°16'0"N

EXPLANATION

- MW-100 6,578.45 — Well screened in Burro Canyon Aquifer (BCA); Water level elevation, in feet above mean sea level (feet msl); measured in April 2014
- MW-103 — Well screened in Brushy Basin Member of the Morrison Formation (BBM)
- MW-121 — Well screened in the Chinle Formation
- 6,500 — Water level elevation in the BCA (feet msl); dashed where inferred
- 6,600 — Water level elevation in the BBM (feet msl); dashed where inferred
- Burro Canyon dry zone
- Long Term Surveillance and Maintenance Boundary
- Rio Algom Mining LLC property boundary
- Lisbon Fault

N

0 500 1,000 1,500 2,000
Feet

RIO ALGOM MINING LLC
LISBON FACILITY

GROUNDWATER ELEVATIONS APRIL 2014

MONTGOMERY & ASSOCIATES
Water Resource Consultants

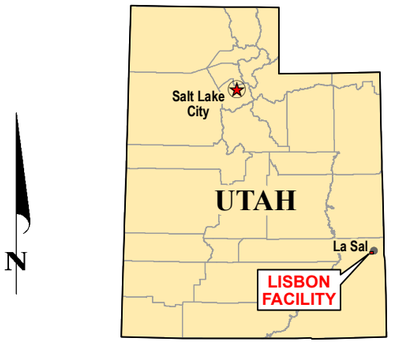
2014

FIGURE 10

GIS\1350.22\Phase2_Report\Water_Level_Current.mxd\21July2014 NAD27_SP_Utah_So.

EXPLANATION

- MW-5 / 6,593.3 — Rio Algom Mining monitor well screened in the Burro Canyon Aquifer (BCA); Water level elevation in feet above mean sea level (ft msl); measured in April 2014
- BCA well location and water level elevation obtained from Utah Division of Water Rights (UDWR) registry database
- BCA well water level elevation data from UDWR database not used; measured prior to 2000 or conflicted with surrounding data
- 6,500 — Water level elevation in the BCA (feet msl); dashed where inferred
- Burro Canyon dry zone
- LongTerm Surveillance and Maintenance Boundary
- Rio Algom Mining LLC property boundary
- Lisbon Fault



0 2,000 4,000 6,000
Feet

RIO ALGOM MINING LLC
LISBON FACILITY

REGIONAL BURRO CANYON AQUIFER GROUNDWATER ELEVATIONS

MONTGOMERY & ASSOCIATES
Water Resource Consultants

2014

FIGURE 11

GIS\1350.22\Phase2_Report|Water Levels\GW_Elevation_RECON.mxd\15July2014 NAD27_SP_Utah_So.

109°19'0"W 109°18'0"W R. 24 E. 109°17'0"W 109°16'0"W

38°17'0"N

38°16'0"N

38°15'0"N

T. 29 S.

MW-118 50
RL-4 20
RL-5 20
MW-119 3
RL-3 25
LW-1 88
(MW-108) 68
RL-1 10
MW-109 18
MW-107D 29
MW-101 11
MW-102DB 19
MW-102 12
ML-1 127
OW-UT-9 14
EF-6 66
MW-114 141
EF-8 170
EF-3A 133
MW-117M 118
MW-105 64
H-63 38
MW-13 112
MW-120 120

NOTES:

The saturated thickness contours were estimated using contoured groundwater elevation data and contact elevation data for the Burro Canyon Formation and underlying Brushy Basin Member. Saturated Burro Canyon Aquifer occurs where the elevation of the contact is less than the contoured groundwater elevation. The contact elevation between the Burro Canyon Formation and Brushy Basin Member is based on existing lithologic logs from previously drilled wells, lithologic logs from new wells, and inferred elevations from Plate 1 of the April 1984 report titled "Remedial-Action Plan for Groundwater Contamination Control at the Lisbon Uranium Mill" prepared by EarthFax Engineering, Inc.

EXPLANATION

- MW-102 / 12 — Well screened in Burro Canyon Aquifer (BCA)
- Well identifier in parentheses **(MW-108)** indicates: Well screened in confined Burro Canyon Aquifer
- Saturated thickness (feet) based on water levels measured in April 2014
- 160 — Saturated thickness in the BCA (feet)
- Inferred zone of confinement
- Burro Canyon dry zone
- Long Term Surveillance and Maintenance Boundary
- Rio Algom Mining LLC property boundary
- Lisbon Fault

N

0 500 1,000 1,500 2,000
Feet

RIO ALGOM MINING LLC
LISBON FACILITY

SATURATED THICKNESS IN THE BURRO CANYON AQUIFER APRIL 2014

MONTGOMERY & ASSOCIATES
Water Resource Consultants

2014

FIGURE 12

GIS\1350.22\Phase2_Report\SaturatedThickness.mxd\18July2014 NAD27_SP_Utah_So.

109°19'0"W 109°18'0"W R. 24 E. 109°17'0"W 109°16'0"W

38°17'0"N

T. 29 S.

38°16'0"N

RL-4 562
RL-5 387
RL-6 1,750
MW-118 703
MW-119 4,120
RL-3 8,530
MW-100 526
LW-1 368
MW-108 758
RL-1 9,460
MW-109 3,060
MW-101 14,200
MW-107D 783
MW-107S 1,960
MW-5 1,540
MW-102DB 596
MW-111 (518)
MW-102 15,300
ML-1 1,020
MW-112 726
MW-114 500
MW-113 2,230
EF-6 2,260
OW-UT-9 37,400
Lower Tailings
Upper Tailings
EF-8 1,570
MW-117S 986
MW-103 (4,680)
MW-104 (968)
MW-115S 751
MW-115M 1,090
MW-116 26,600
EF-3A 6,440
MW-105 1,080
H-63 640
MW-117M 1,730
MW-13 580
UW-1 711
MW-106 (2,220)
MW-120 1,000

1,000
2,000
5,000
10,000
15,000
20,000

NOTES:

At companion wells, the highest concentration was used for contouring.

Concentration data in parentheses not used for contouring.

The extent of the Burro Canyon Dry Zone was estimated using contoured groundwater elevation data and contact elevation data for the Burro Canyon Formation and underlying Brushy Basin Member. The Burro Canyon Dry Zone occurs where the elevation of the contact is greater than the contoured groundwater elevation. The contact elevation between the Burro Canyon Formation and Brushy Basin Member is based on existing lithologic logs from previously drilled wells, lithologic logs from new wells, and inferred elevations from Plate 1 of the April 1984 report titled "Remedial-Action Plan for Groundwater Contamination Control at the Lisbon Uranium Mill" prepared by EarthFax

Image Source: NAIP 2011

EXPLANATION

- MW-5 / 1,540 — Well screened in Burro Canyon Aquifer (BCA); Maximum total dissolved solids concentration reported during 2012-2014 assessment; milligrams per liter (mg/L)
- MW-111 — Well screened in Brushy Basin Member of the Morrison Formation (BBM)
- 1,000 — Line of equal total dissolved solids concentration (mg/L); dashed where inferred
- Burro Canyon dry zone
- Long Term Surveillance and Maintenance Boundary
- Rio Algom Mining LLC property boundary
- Lisbon Fault

N

0 500 1,000 1,500 2,000
Feet

RIO ALGOM MINING LLC
LISBON FACILITY

TOTAL DISSOLVED SOLIDS IN GROUNDWATER

MONTGOMERY & ASSOCIATES
Water Resource Consultants

2014

FIGURE 13

GIS\1350.22\Phase2_Report\Water_Quality_MaxTDS.mxd\15July2014 NAD27_SP_Utah_So.

109°19'0"W 109°18'0"W R. 24 E. 109°17'0"W 109°16'0"W

38°17'0"N

T. 29 S.

38°16'0"N

RL-4 185
RL-5 106
RL-6 925
MW-118 306
MW-119 2,250
RL-3 4,200
MW-108 293
RL-1 4,960
MW-109 1,530
MW-101 7,260
MW-100 166
LW-1 113
MW-5 856
MW-107D 450
MW-107S 1,340
1,000
5,000
2,000
MW-102DB 89
MW-111 (21)
MW-102 6,620
ML-1 350
MW-112 253
10,000
OW-UT-9 11,200
MW-113 785
EF-6 862
MW-114 155
Lower Tailings
Upper Tailings
EF-3A 2,630
2,000
5,000
10,000
EF-8 525
MW-117S 269
MW-103 (1,580)
MW-104 (247)
MW-116 21,200
MW-115M 348
MW-115S 189
1,000
MW-117M 559
MW-105 215
H-63 192
MW-13 177
UW-1 243
MW-106 (1,370)
MW-120 209

NOTES:

At companion wells, the highest concentration was used for contouring.

Concentration data in parentheses not used for contouring.

The extent of the Burro Canyon Dry Zone was estimated using contoured groundwater elevation data and contact elevation data for the Burro Canyon Formation and underlying Brushy Basin Member. The Burro Canyon Dry Zone occurs where the elevation of the contact is greater than the contoured groundwater elevation. The contact elevation between the Burro Canyon Formation and Brushy Basin Member is based on existing lithologic logs from previously drilled wells, lithologic logs from new wells, and inferred elevations from Plate 1 of the April 1984 report titled "Remedial-Action Plan for Groundwater Contamination Control at the Lisbon Uranium Mill" prepared by EarthFax Engineering, Inc.

Image Source: NAIP 2011

109°19'0"W R. 24 E. 109°17'0"W 109°16'0"W

EXPLANATION

- MW-5 / 856 — Well screened in Burro Canyon Aquifer (BCA); Maximum sulfate concentration reported during 2012-2014 assessment; milligrams per liter (mg/L)
- MW-111 — Well screened in Brushy Basin Member of the Morrison Formation (BBM)
- 2,000 - - — Line of equal sulfate concentration (mg/L); dashed where inferred
- Burro Canyon dry zone
- Long Term Surveillance and Maintenance Boundary
- Rio Algom Mining LLC property boundary
- Lisbon Fault

N

0 500 1,000 1,500 2,000

Feet

RIO ALGOM MINING LLC
LISBON FACILITY

SULFATE IN GROUNDWATER

MONTGOMERY & ASSOCIATES
Water Resource Consultants

2014

FIGURE 14

GIS\1350.22\Phase2_Report\Water_Quality_MaxSulfate.mxd\21July2014 NAD27_SP_Utah_So.

109°19'0"W 109°18'0"W R. 24 E. 109°17'0"W 109°16'0"W

38°17'0"N

T. 29 S.

38°16'0"N

RL-4 0.007
RL-5 0.0022
RL-6 0.0176
MW-118 0.0136
MW-119 6.6
RL-3 35.4
MW-108 0.0105
MW-109 2.85
RL-1 50.6
MW-101 78
MW-100 0.0058
LW-1 0.0053
MW-5 0.0132
MW-107D 0.0007
MW-107S 0.0019
MW-102DB 0.0814
MW-111 (0.0316)
MW-102 148
ML-1 0.0193
MW-112 0.0099
MW-113 1.59
MW-114 0.0139
EF-6 2.38
OW-UT-9 98.8
Lower Tailings
Upper Tailings
EF-3A 27.5
EF-8 0.859
MW-117S 1.4
MW-115M 0.382
MW-116 20.8
MW-103 (9.66)
MW-104 (0.215)
MW-115S 0.0192
MW-105 0.0248
H-63 0.0113
MW-117M 3.68
MW-13 0.0153
MW-106 (0.0083)
UW-1 0.0364
MW-120 0.0106

0.03
0.1
1
10
100

NOTES:

At companion wells, the highest concentration was used for contouring.

Concentration data in parentheses not used for contouring.

The extent of the Burro Canyon Dry Zone was estimated using contoured groundwater elevation data and contact elevation data for the Burro Canyon Formation and underlying Brushy Basin Member. The Burro Canyon Dry Zone occurs where the elevation of the contact is greater than the contoured groundwater elevation. The contact elevation between the Burro Canyon Formation and Brushy Basin Member is based on existing lithologic logs from previously drilled wells, lithologic logs from new wells, and inferred elevations from Plate 1 of the April 1984 report titled "Remedial-Action Plan for Groundwater Contamination Control at the Lisbon Uranium Mill" prepared by EarthFax Engineering, Inc.

Image Source: NAIP 2011

EXPLANATION

- MW-5 0.0132 — Well screened in Burro Canyon Aquifer (BCA); Maximum uranium concentration reported during 2012-2014 assessment; milligrams per liter (mg/L)
- MW-111 — Well screened in Brushy Basin Member of the Morrison Formation (BBM)
- 0.1 — Line of equal uranium concentration (mg/L); dashed where inferred
- 0.03 — Utah Groundwater Quality Standard for uranium = 0.03 mg/L; dashed where inferred
- Burro Canyon dry zone
- Long Term Surveillance and Maintenance Boundary
- Rio Algom Mining LLC property boundary
- Lisbon Fault

N

0 500 1,000 1,500 2,000
Feet

RIO ALGOM MINING LLC
LISBON FACILITY

DISSOLVED URANIUM IN GROUNDWATER

MONTGOMERY & ASSOCIATES
Water Resource Consultants

2014

FIGURE 15

GIS\1350.22\Phase2_Report\Water_Quality_MaxUranium.mxd\17July2014 NAD27_SP_Utah_So.

109°19'0"W 109°18'0"W R. 24 E. 109°17'0"W 109°16'0"W

38°17'0"N

T. 29 S.

38°16'0"N

RL-4 <0.001
RL-5 <0.001
RL-6 0.003
MW-118 0.008
MW-119 0.004
RL-3 0.005
MW-108 0.014
MW-109 0.002
RL-1 0.006
MW-107D 0.004
MW-107S 0.006
MW-101 0.009
MW-100 <0.001
LW-1 <0.001
MW-5 0.001
MW-102DB 0.0051
MW-111 (0.007)
MW-102 0.212
ML-1 0.022
MW-112 0.021
OW-UT-9 3.66
MW-113 0.016
EF-6 0.016
MW-114 0.023
Lower Tailings
Upper Tailings
EF-8 0.041
MW-117S 0.04
MW-115M 0.027
MW-116 0.134
MW-103 (0.003)
MW-104 (0.005)
MW-115S 0.026
MW-117M 0.245
EF-3A 0.206
H-63 0.065
MW-105 0.019
MW-13 0.03
UW-1 0.004
MW-106 (0.003)
MW-120 0.03

0.05
0.1

NOTES:

At companion wells, the highest concentration was used for contouring.

Concentration data in parentheses not used for contouring.

The extent of the Burro Canyon Dry Zone was estimated using contoured groundwater elevation data and contact elevation data for the Burro Canyon Formation and underlying Brushy Basin Member. The Burro Canyon Dry Zone occurs where the elevation of the contact is greater than the contoured groundwater elevation. The contact elevation between the Burro Canyon Formation and Brushy Basin Member is based on existing lithologic logs from previously drilled wells, lithologic logs from new wells, and inferred elevations from Plate 1 of the April 1984 report titled "Remedial-Action Plan for Groundwater Contamination Control at the Lisbon Uranium Mill" prepared by EarthFax Engineering, Inc.

Image Source: NAIP 2011

EXPLANATION

- MW-5 0.001 — Well screened in Burro Canyon Aquifer (BCA); Maximum arsenic concentration reported during 2012-2014 assessment; milligrams per liter (mg/L)
- MW-111 — Well screened in Brushy Basin Member of the Morrison Formation (BBM)
- 0.1 — Line of equal arsenic concentration (mg/L); dashed where inferred
- 0.05 — Utah Groundwater Quality Standard for arsenic = 0.05 mg/L; dashed where inferred
- Burro Canyon dry zone
- Long Term Surveillance and Maintenance Boundary
- Rio Algom Mining LLC property boundary
- Lisbon Fault

N

0 500 1,000 1,500 2,000
Feet

RIO ALGOM MINING LLC
LISBON FACILITY

DISSOLVED ARSENIC IN GROUNDWATER

MONTGOMERY & ASSOCIATES
Water Resource Consultants

2014

FIGURE 16

GIS\1350.22\Phase2_Report\Water_Quality_MaxArsenic.mxd\15July2014 NAD27_SP_Utah_So.

109°19'0"W 109°18'0"W R. 24 E. 109°17'0"W 109°16'0"W

38°17'0"N

T. 29 S.

38°16'0"N

RL-4 0.006
RL-5 0.003
RL-6 0.009
MW-118 0.002
MW-119 0.05
RL-3 0.08
MW-100 0.008
LW-1 0.003
MW-108 0.006
RL-1 0.094
MW-109 0.032
MW-101 0.096
MW-107S 0.005
MW-107D 0.001
MW-5 0.068
0.05
0.1
MW-102DB 0.0004
MW-111 (0.002)
MW-102 0.191
ML-1 0.01
MW-112 0.01
OW-UT-9 0.072
MW-113 0.016
EF-6 0.016
MW-114 0.009
Lower Tailings
Upper Tailings
MW-115M 0.011
EF-8 0.018
EF-3A 0.042
MW-115S 0.01
MW-117S 0.012
MW-103 (0.03)
MW-104 (0.004)
MW-116 0.144
MW-117M 0.033
0.1
0.05
MW-105 0.016
H-63 0.008
MW-13 0.011
UW-1 0.013
MW-106 (0.002)
MW-120 0.013

NOTES:

At companion wells, the highest concentration was used for contouring.

Concentration data in parentheses not used for contouring.

The extent of the Burro Canyon Dry Zone was estimated using contoured groundwater elevation data and contact elevation data for the Burro Canyon Formation and underlying Brushy Basin Member. The Burro Canyon Dry Zone occurs where the elevation of the contact is greater than the contoured groundwater elevation. The contact elevation between the Burro Canyon Formation and Brushy Basin Member is based on existing lithologic logs from previously drilled wells, lithologic logs from new wells, and inferred elevations from Plate 1 of the April 1984 report titled "Remedial-Action Plan for Groundwater Contamination Control at the Lisbon Uranium Mill" prepared by EarthFax Engineering, Inc.

Image Source: NAIP 2011

EXPLANATION

- MW-5 0.068 — Well screened in Burro Canyon Aquifer (BCA); Maximum selenium concentration reported during 2012-2014 assessment; milligrams per liter (mg/L)
- MW-111 — Well screened in Brushy Basin Member of the Morrison Formation (BBM)
- 0.1 — Line of equal selenium concentration (mg/L); dashed where inferred
- 0.05 — Utah Groundwater Quality Standard for selenium = 0.05 mg/L; dashed where inferred
- Burro Canyon dry zone
- Long Term Surveillance and Maintenance Boundary
- Rio Algom Mining LLC property boundary
- Lisbon Fault

N

0 500 1,000 1,500 2,000
Feet

RIO ALGOM MINING LLC
LISBON FACILITY

DISSOLVED SELENIUM IN GROUNDWATER

MONTGOMERY & ASSOCIATES
Water Resource Consultants

2014

FIGURE 17

GIS\1350.22\Phase2_Report\Water_Quality_MaxSelenium.mxd\15July2014 NAD27_SP_Utah_So.

109°19'0"W 109°18'0"W R. 24 E. 109°17'0"W 109°16'0"W

38°17'0"N

38°16'0"N

T. 29 S.

RL-4 0.0043
RL-5 0.002
RL-6 0.02
MW-118 0.09
MW-119 < 0.01
RL-3 7.46
MW-100 < 0.01
LW-1 0.014
MW-108 0.01
RL-1 12.4
MW-109 0.02
MW-101 30.6
MW-107D 0.01
MW-107S < 0.01
MW-5 0.01
MW-102DB 0.02
MW-111 (0.03)
MW-102 28.4
ML-1 0.01
MW-112 0.0109
OW-UT-9 51.8
MW-113 < 0.01
EF-6 0.002
MW-114 0.01
Lower Tailings
Upper Tailings
EF-8 0.05
EF-3A 2.81
MW-103 (0.13)
MW-104 (0.119)
MW-116 1.25
MW-117S 0.25
MW-115M 0.02
MW-117M 1.18
MW-115S 0.02
MW-105 0.01
H-63 0.04
MW-13 0.02
MW-106 (0.03)
UW-1 0.02
MW-120 < 0.01

10 1 0.1 0.1 1

NOTES:

At companion wells, the highest concentration was used for contouring.

Concentration data in parentheses not used for contouring.

The extent of the Burro Canyon Dry Zone was estimated using contoured groundwater elevation data and contact elevation data for the Burro Canyon Formation and underlying Brushy Basin Member. The Burro Canyon Dry Zone occurs where the elevation of the contact is greater than the contoured groundwater elevation. The contact elevation between the Burro Canyon Formation and Brushy Basin Member is based on existing lithologic logs from previously drilled wells, lithologic logs from new wells, and inferred elevations from Plate 1 of the April 1984 report titled "Remedial-Action Plan for Groundwater Contamination Control at the Lisbon Uranium Mill" prepared by EarthFax Engineering, Inc.

Image Source: NAIP 2011

EXPLANATION

- MW-5 / 0.01 — Well screened in Burro Canyon Aquifer (BCA); Maximum molybdenum concentration reported during 2012-2014 assessment; milligrams per liter (mg/L)
- MW-111 — Well screened in Brushy Basin Member of the Morrison Formation (BBM)
- 0.01 — Line of equal molybdenum concentration (mg/L); dashed where inferred
- Burro Canyon dry zone
- Long Term Surveillance and Maintenance Boundary
- Rio Algom Mining LLC property boundary
- Lisbon Fault

N

0 500 1,000 1,500 2,000
Feet

RIO ALGOM MINING LLC
LISBON FACILITY

DISSOLVED MOLYBDENUM IN GROUNDWATER

2014

MONTGOMERY & ASSOCIATES
Water Resource Consultants

FIGURE 18

GIS\1350.22\Phase2_Report\Water_Quality_MaxMolybdenum.mxd\15July2014 NAD27_SP_Utah_So.

109°19'0"W 109°18'0"W R. 24 E. 109°17'0"W 109°16'0"W

38°17'0"N

T. 29 S.

38°16'0"N

LISBON VALLEY ANTICLINE

LISBON FAULT

D U

0.03

Lower Tailings

Upper Tailings

Former Bisco Lake

Image Source: NAIP 2011

EXPLANATION

- 0.03 — Utah groundwater quality standard for uranium = 0.03 milligrams per liter
- Burro Canyon dry zone
- Long Term Surveillance and Maintenance Boundary
- Anticline fold axis; arrow shows direction of plunge
- Syncline fold axis; arrow shows direction of plunge
- Direction of groundwater flow in BCA
- Unimpacted groundwater discharge from BBM to BCA
- Impacted groundwater discharge near tailings impoundment
- Zone of naturally occurring acidic mineralized groundwater associated with Lisbon Fault
- Area of highly fractured rock in BCA
- Extent of uranium concentration above 0.03 mg/L
- U/D — Fault displacement; U = upthrown; D = downthrown

N

0 500 1,000 1,500 2,000

Feet

RIO ALGOM MINING LLC

LISBON FACILITY

CONCEPTUAL SITE MODEL MAP

MONTGOMERY & ASSOCIATES
Water Resource Consultants

2014

FIGURE 19

GIS\1350.22\Phase2_Report\ConceptSiteModel.mxd\15July2014 NAD27_SP_Utah_So.

109°19'0"W
109°18'0"W
R. 24 E.
109°17'0"W
109°16'0"W
38°17'0"N
38°16'0"N
38°15'0"N
T. 29 S.

RL-4
RL-5
RL-6
MW-118
MW-119
RL-3
MW-100
LW-1
MW-108
RL-1
MW-109
MW-101
MW-107D
MW-107S
MW-5
MW-102DB
MW-102
ML-1
MW-112
OW-UT-9
MW-114
MW-113
EF-6
EF-8
MW-115S
MW-115M
MW-117S
EF-3A
MW-116
MW-117M

Image Source: NAIP 2011

EXPLANATION

- MW-5 — Well and identifier
- Long Term Surveillance and Maintenance Boundary
- Burro Canyon dry zone
- Tailings
- Model grid boundary
- Model cells
- Inactive model cells

N

0 500 1,000 1,500 2,000
Feet

RIO ALGOM MINING LLC
LISBON FACILITY

MODEL DOMAIN

MONTGOMERY & ASSOCIATES
Water Resource Consultants

2014

FIGURE 20

GIS\1350.22\Report\Fig_22_Model_Domain.mxd\15July2014 NAD27_SP_Utah_So.

109°19'0"W 109°18'0"W R. 24 E. 109°17'0"W 109°16'0"W

38°17'0"N

38°16'0"N

T. 29 S.

RL-4 RL-5 RL-6 MW-118 MW-119 RL-3 MW-100 LW-1 MW-108 RL-1 MW-109 MW-101 MW-107D MW-107S MW-5 MW-102DB MW-102 ML-1 MW-112 OW-UT-9 MW-114 MW-113 EF-6 EF-8 MW-115S MW-115M MW-117S EF-3A MW-117M MW-116

Image Source: NAIP 2011

38°15'0"N

109°19'0"W 109°18'0"W R. 24 E. 109°17'0"W 109°16'0"W

EXPLANATION

- MW-5 — Well and identifier
- Long Term Surveillance and Maintenance Boundary
- Burro Canyon dry zone
- Tailings
- Model grid boundary
- Model cells

BOUNDARY CONDITIONS

- Constant concentration
- Constant head
- Drain
- No flow

PROPERTIES

- Recharge

N

0 500 1,000 1,500 2,000

Feet

RIO ALGOM MINING LLC
LISBON FACILITY

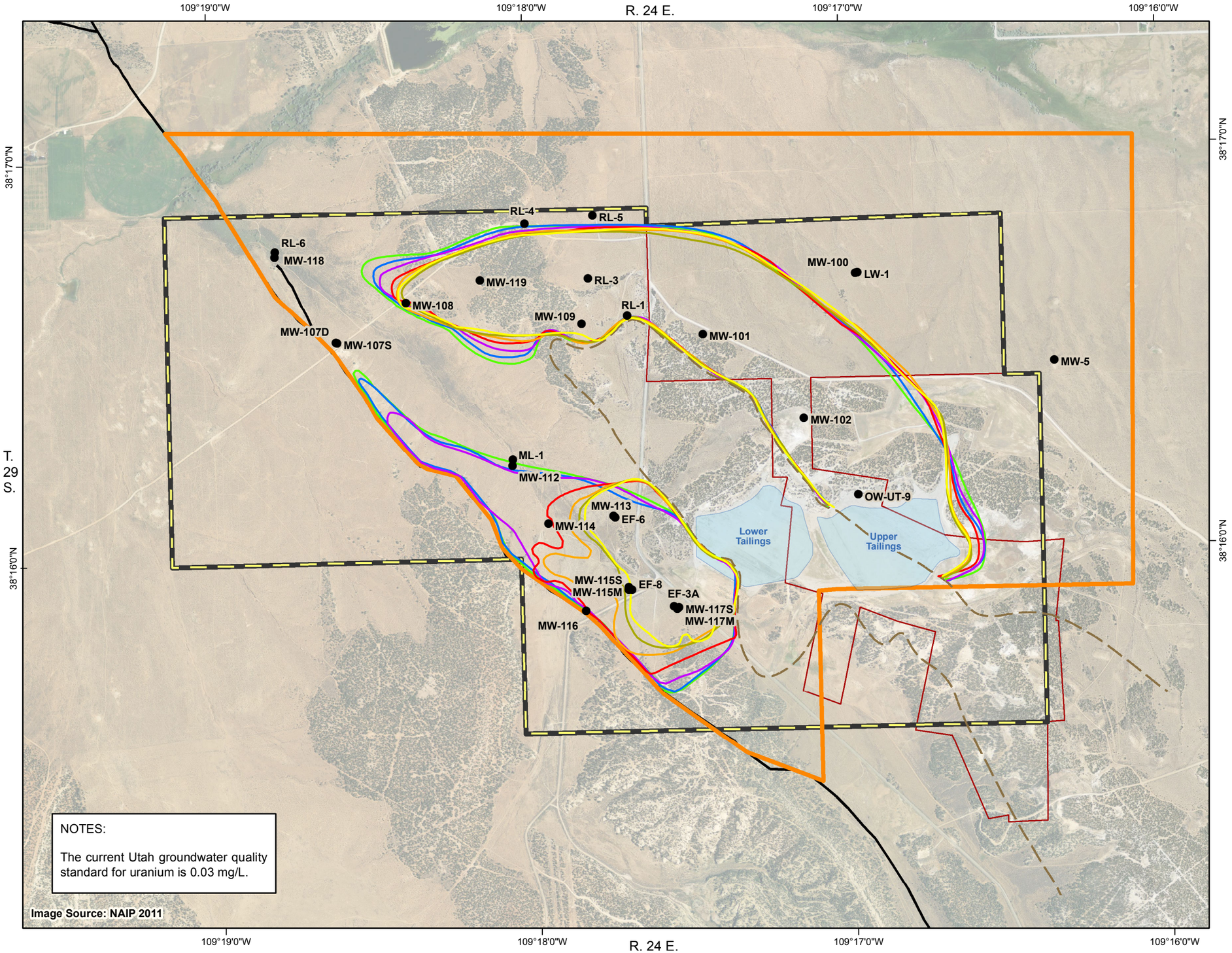
LAYER 2 MODEL BOUNDARY CONDITIONS

MONTGOMERY & ASSOCIATES
Water Resource Consultants

2014

FIGURE 21

GIS\1350.23\Fig21_boundary_conditions.mxd\15July2014 NAD27_SP_Utah_So.



EXPLANATION

- MW-5 — Well location and identifier

Maximum extent of 0.03 milligrams per liter (mg/L) uranium plume

Year

- 2020
- 2025
- 2035
- 2065
- 2115
- 2165
- 2215

- Model extent
- Burro Canyon dry zone
- Long Term Surveillance and Maintenance Boundary
- Lisbon Fault

N

0 500 1,000 1,500 2,000

Feet

RIO ALGOM MINING LLC
LISBON FACILITY

PROJECTED URANIUM PLUME GROWTH 2020 - 2215

MONTGOMERY & ASSOCIATES
Water Resource Consultants

2014

FIGURE 22

GIS\1350.23\ModelMaps\PlumeGrowth.mxd\21July2014 NAD27_SP_Utah_So.

109°19'0"W 109°18'0"W R. 24 E. 109°17'0"W 109°16'0"W

38°17'0"N

38°16'0"N

T. 29 S.

POE-2 0.03
POE-1 0.03
RL-4 0.03
RL-5 0.03
MW-119 12
RL-3 39
RL-1 62
MW-102 160
RW-1
MW-112 0.11
ML-1 0.25
Lower Tailings
Upper Tailings
EF-3A 60

109°19'0"W 109°18'0"W R. 24 E. 109°17'0"W 109°16'0"W

EXPLANATION

- MW-102 160 — Well location and identifier; Proposed uranium compliance concentration milligrams per liter (mg/L)
- Proposed point of compliance (POC) well
- Proposed point of exposure well
- Proposed point of exposure well not yet drilled
- Proposed trend well
- Historic well used to define MW-102 POC concentrations
- Long Term Surveillance and Maintenance Boundary
- Rio Algom Mining LLC property boundary
- Lisbon Fault

N

0 500 1,000 1,500 2,000
Feet

RIO ALGOM MINING LLC
LISBON FACILITY

PROPOSED COMPLIANCE WELLS

MONTGOMERY & ASSOCIATES
Water Resource Consultants

2014

FIGURE 23

GIS\1350.23\ModelMaps\Prop_Compliance_Wells.mxd\18July2014 NAD27_SP_Utah_So.

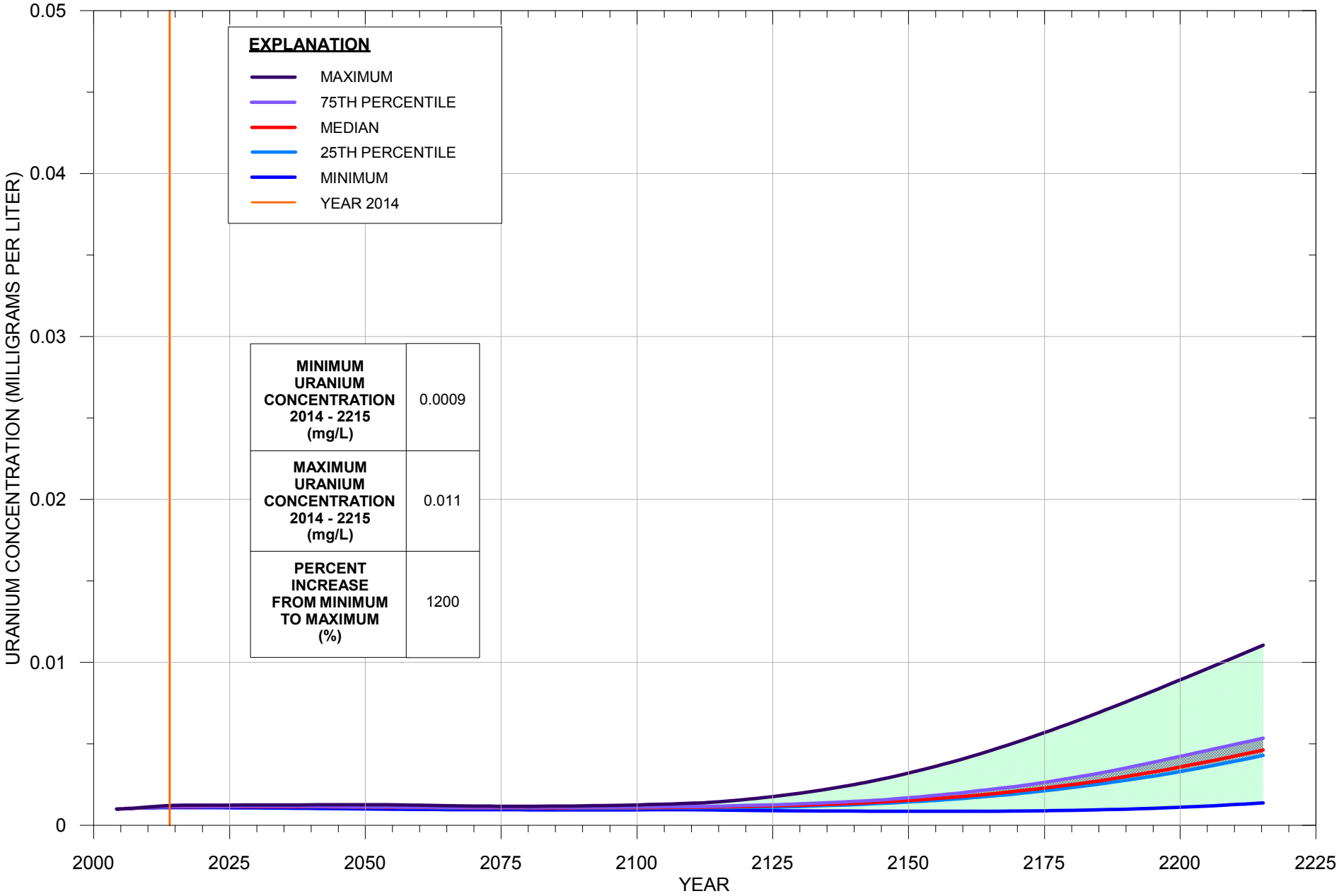


FIGURE 24. DISTRIBUTION OF PROJECTED URANIUM CONCENTRATIONS FROM ALL MODELS AT PROPOSED TREND WELL ML-1 RIO ALGOM MINING LLC, LISBON FACILITY

1350 - Rio Algom\Modeling\Phase2Modeling\Graphs\ML-1_Percent_Increase.grf

MONTGOMERY & ASSOCIATES

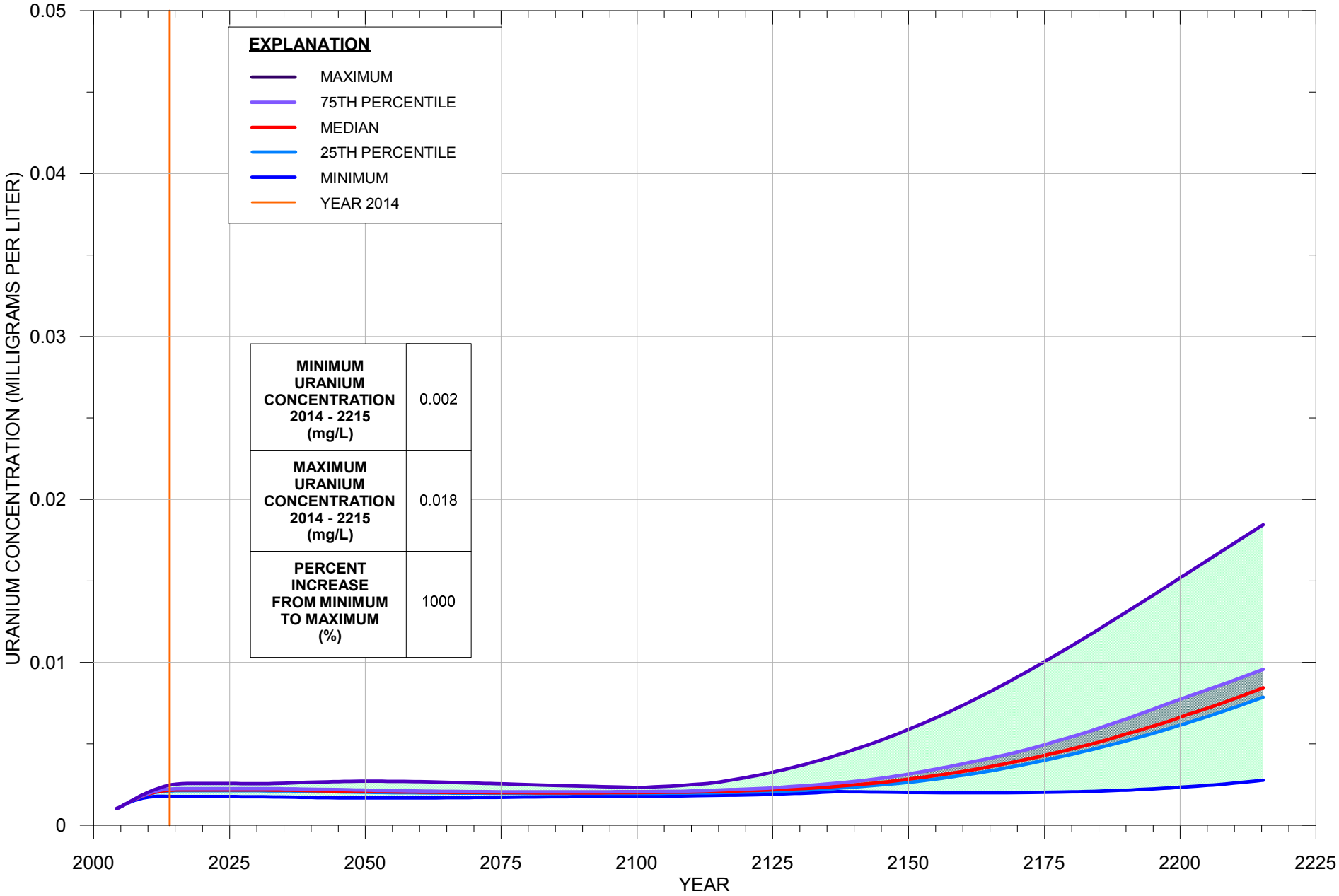


FIGURE 25. DISTRIBUTION OF PROJECTED URANIUM CONCENTRATIONS FROM ALL MODELS AT PROPOSED TREND WELL MW-112 RIO ALGOM MINING LLC, LISBON FACILITY

1350 - Rio Algom\Modeling\Phase2Modeling\Graphs\MW-112_Percent Increase.grf

MONTGOMERY & ASSOCIATES

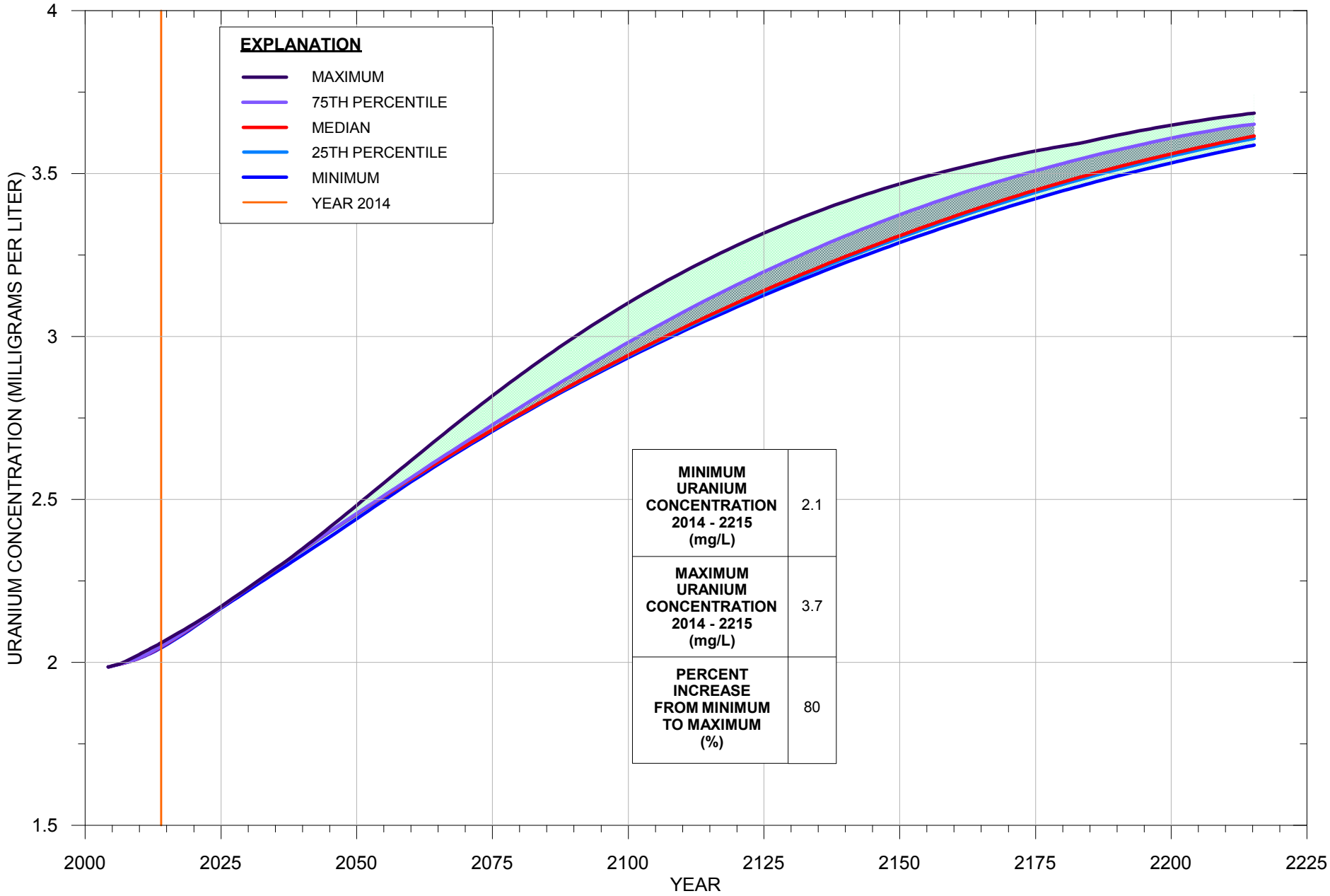


FIGURE 26. DISTRIBUTION OF PROJECTED URANIUM CONCENTRATIONS FROM ALL MODELS AT PROPOSED TREND WELL MW-119 RIO ALGOM MINING LLC, LISBON FACILITY

1350 - Rio Algom\Modeling\Phase2Modeling\Graphs\MW-119_Percent_Increase.grf

MONTGOMERY & ASSOCIATES

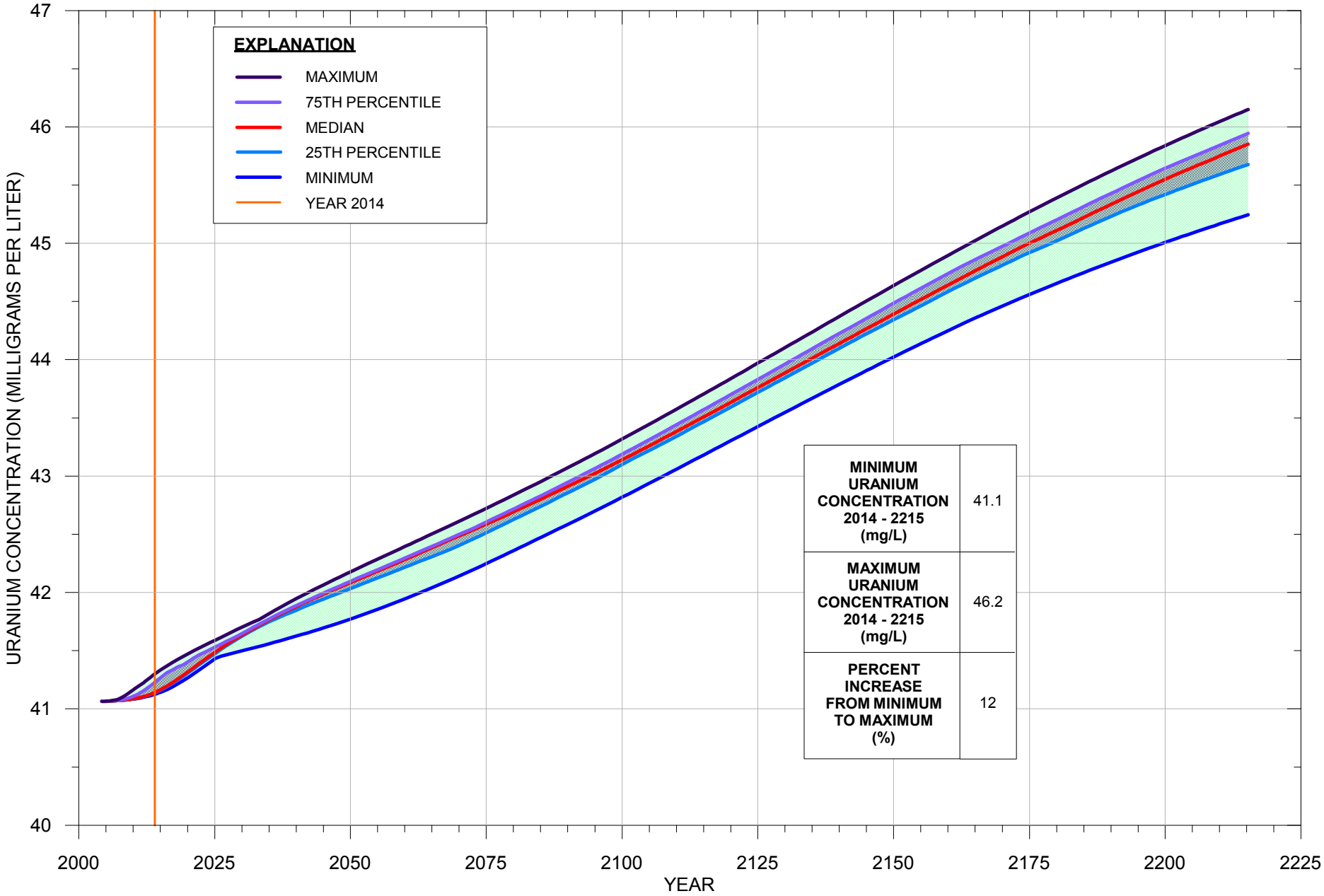


FIGURE 27. DISTRIBUTION OF PROJECTED URANIUM CONCENTRATIONS FROM ALL MODELS AT PROPOSED TREND WELL RL-1 RIO ALGOM MINING LLC, LISBON FACILITY

1350 - Rio Algom\Modeling\Phase2Modeling\Graphs\RL-1_Percent_Increase.grf

MONTGOMERY & ASSOCIATES

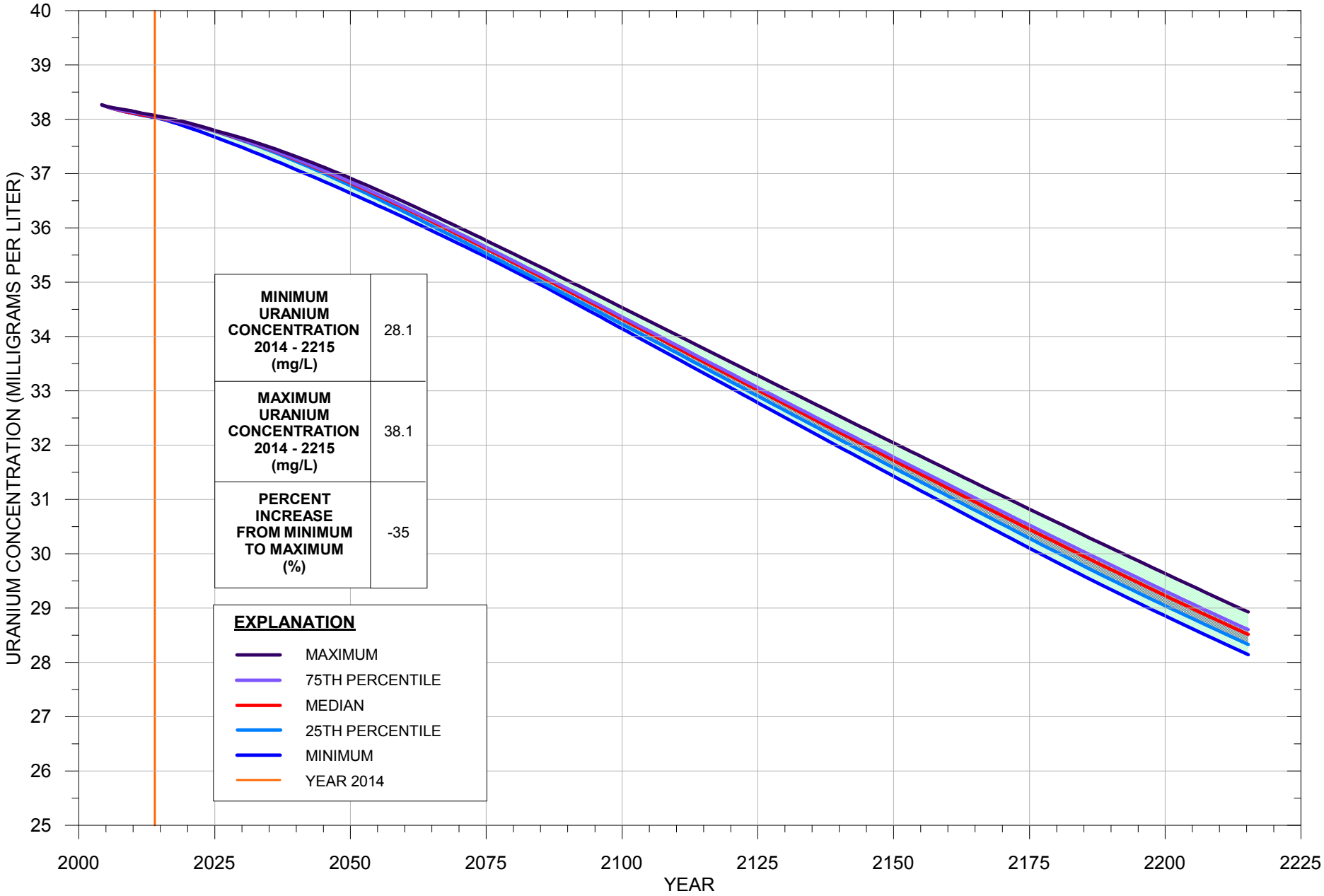


FIGURE 28. DISTRIBUTION OF PROJECTED URANIUM CONCENTRATIONS FROM ALL MODELS AT PROPOSED TREND WELL RL-3 RIO ALGOM MINING LLC, LISBON FACILITY

1350 - Rio Algom\Modeling\Phase2Modeling\Graphs\RL-3_Percent_Increase.grf

MONTGOMERY & ASSOCIATES

MONTGOMERY & ASSOCIATES

APPENDICES

*A	RESPONSES TO COMMENTS ON PHASE 1 REPORT
*B	SUMMARY OF WELL INSTALLATION METHODS, WELL SCHEMATICS, AND LITHOLOGIC LOGS
*C	SUMMARY OF CORE SAMPLING METHODS AND LABORATORY REPORTS
*D	INVESTIGATION DERIVED WASTE DISPOSAL MANIFESTS
*E	SUMMARY OF GROUNDWATER SAMPLING METHODS, GROUNDWATER MONITORING FIELD DATA SHEETS, AND LABORATORY REPORTS
*F	SLUG TEST GRAPHS AND FIELD DATA
*G	GROUNDWATER ELEVATION AND CHEMISTRY TIME SERIES PLOTS
H	WATER QUALITY SUMMARY TABLE
*I	PIPER DIAGRAMS
J	CONCEPTUAL SITE MODEL
K	GROUNDWATER MODELING

* Enclosed on CD

APPENDIX A

RESPONSES TO COMMENTS ON PHASE 1 REPORT

MONTGOMERY & ASSOCIATES

APPENDIX A

RESPONSES TO COMMENTS ON PHASE 1 REPORT FOR SUPPLEMENTAL SITE ASSESSMENT TO ADDRESS OUT-OF-COMPLIANCE STATUS AT TREND WELLS RL-1 AND EF-8 RIO ALGOM MINING LLC, LISBON FACILITY

A limited interpretation of the data obtained during Phase 1 of the Supplemental Site Assessment (SSA) was presented in the report entitled, *Phase 1 Report for Supplemental Site Assessment to Address Out-Of-Compliance Status at Trend Wells RL-1 and EF-8* (M&A, 2013) (Phase 1 report). Following a review of the Phase 1 report, Utah Department of Environmental Quality, Division of Radiation Control (DRC) provided comments in a letter dated June 26, 2013 (DRC, 2013). In an email correspondence dated April 24, 2014 (DRC, 2014), DRC granted RAML's request to address all comments in the final report, in lieu of issuing a revised Phase 1 report. Responses to DRC's comments are provided below. Additional information pertaining to comments is also provided elsewhere in this report. The report section, table, or figure is referenced where applicable.

COMMENT 1

RAML Statement (Phase 1 Report, pg. 6):
"BBM wells MW-103 and MW-106 were completed in the Jmb as water table wells; BBM well MW-102DB was screened in the Jmb beneath the BCA."

DRC Comment:
Please emphasize that MW-102DB was completed as a well in the Brushy Basin Member (BBM) portion of the aquifer. It is said in the statement above that two other wells, MW103 and MW-106, were completed as BBM water table wells. However, MW-102DB is not mentioned specifically in the statement as having been completed as a "well" in the BBM, although it is noted as having been "screened in the Jmb beneath the BCA".

The rock screened by this well, the upper portion of the BBM, has both relatively high hydraulic conductivity and relatively high hydraulic head. The hydraulic conductivity of the Jmb proximate to MW-102DB (as assessed from the results of slug testing) is shown in Appendix A to range from 0.31 to 0.88 ft/day. The hydraulic conductivity of the overlying BCF in Well MW-103, by contrast, is given only as 0.019 to 0.051 ft/day, an order of magnitude less than that for MW-102DB. Figure 6 shows that groundwater is present in the Jmb in the screened interval ofMW-102DB and that the hydraulic head of that groundwater is greater

than the hydraulic head of the groundwater in the overlying Burro Canyon Formation (BCF) portion of the aquifer.

Please add that MW-102DB is a BBM well "completed in the Jmb." It may be appropriate to mention that the head of groundwater found in the screened interval of that well extends above the top of the BBM/BCA contact.

RAML Response to Comment 1:
RAML agrees that well MW-102DB is a well "completed in the Jmb". The head of the groundwater in well MW-102DB extends well above the Kbc/Jmb (BCA/BBM) contact. Text has been updated accordingly (**Section 2.3.1**).

COMMENT 2

RAML Statement (Phase 1 Report, pg. 9):
"Freezing temperatures at the Site have delayed transport of the waste water to the landfill. The waste water will be transported by MPE to US Ecology in Grand View, Idaho for disposal as soon as weather conditions allow."

DRC Comment:
"Now that several months have passed, summer is here, and freezing conditions no longer prevail, please indicate in a revised version of the Report the history of the disposal of the waste water, giving pertinent details."

RAML Response to Comment 2:
All waste water generated during Phase 1 was transported by MP Environmental to US Ecology in Grand View, Idaho on May 8 and 9, 2013 (**Section 2.3.5**). Approximately 10,200 gallons of waste water was disposed. Copies of the disposal manifests are included in **Appendix D**.

COMMENT 3

RAML Statement (Phase 1 Report, pg. 10):
"After the monitoring equipment was installed in a well, a slug was lowered quickly into the water. Falling head was monitored until water level in the well recovered to within 90 percent of the initial static level. After water level had recovered to a static condition, the slug was quickly pulled out of the water. Monitoring of rising head continued until the water level recovered to within 90 percent of the initial static water level."

DRC Comment:
"The DRC accepts the results of the falling-head tests performed as described. However, it cannot accept the results of the rising-head tests if they were performed immediately after

conducting the falling-head tests, or even at a later time but prior to a return to essentially pre-test water levels. It is not yet clear in the Report how a return of the groundwater in the wells being tested to essentially pre-test water levels was determined.

It is appropriate for a falling-head test to be conducted by placing a solid slug into the well nearly instantaneously and measuring the head of the water as it falls over time until 90% recovery is made. However, before a rising-head test can be conducted, the water in the well must essentially fully recover (not just to 90% recovery) before the slug is nearly instantaneously removed. Otherwise, the rising-head test data would be corrupted. The law of superposition indicates that the water level must fully recover, or else there will still be the response of the water level tending to fall over a distance equal to approximately one tenth of the initial displacement from the stimulus of the first test, which will be superimposed on the response of the water level rising from the stimulus of the second test. The resulting water-level response would definitely not be consistent with established slug-test theory, and any interpretation would be difficult and most likely erroneous.

It is said in the report that the rising-head tests were conducted "after water level had recovered to a static condition." However, details are not provided.

Please specify whether this means:

(1) The rising-head tests were conducted after an indeterminate time when it appeared visually or otherwise that the water levels were not changing very much, or

(2) The rising-head tests were conducted after the water levels in the wells returned to their pre-test levels (plus or minus some small distance or percentage - and, if applicable, please specify what this distance or percentage is, and how it was determined.)

Please provide original slug test data along with your response."

RAML Response to Comment 3:

The Phase 1 field program used 90% recovery as a minimum of level of recovery from static water level conditions for falling head slug tests. In practice, 100% recovery was targeted before initiation of the rising head slug test. A secondary standard was considered to be 95% recovery when 100% was not achievable (due to changes in barometric pressure, timing constraints, or measurement error). This level was chosen because according to Butler (1997), "in virtually all cases of practical significance, very little error will be introduced into parameter estimates by performing repeat tests when the residual deviation is less than 5%" of initial displacement. In total, 54 rising head tests were conducted following falling head tests. A total of 38 of the 54 tests achieved 100% recovery. An additional 14 tests achieved over 95% recovery. These tests averaged 98.3% recovery. Only 2 tests achieved less than 95% recovery. One of the two falling head tests conducted on MW-103 achieved only 85% recovery, however, the estimated hydraulic conductivity from that test matched the estimated hydraulic conductivity of the other rising head test conducted in MW-103. One of the two falling head tests conducted on MW-101 achieved only 92% recovery, however, the estimated

hydraulic conductivity from the proceeding rising head tests were comparable to within 5%. Thus, while recovery was not 100% in all cases, the high level of reproducibility in estimated hydraulic conductivity indicates that the tests are valid and sufficiently representative of Site conditions to achieve the objectives of the project.

Field data sheets and water level response data recorded during each slug test are provided in **Appendix F**.

COMMENT 4

RAML Statement (Phase 1 Report, pg. 10):

"Slug testing was not conducted at new wells MW-104 and MW-106 during Phase 1. These wells were evacuated completely during well development and water levels had not recovered sufficiently to conduct slug testing at the time of the November testing event. Following development, pressure transducer/dataloggers were used to monitor water level recovery at each location. The water level recovery monitoring conducted at MW-104 and MW-106 after development indicated that recovery rates were very slow and any future slug testing at these wells will require an extended monitoring period for each test. Wells MW-104 and MW-106 will be slug tested during Phase 2."

DRC Comment:

"The DRC accepts the plan to slug test the aquifer around wells MW-104 and MW-106 during Phase 2. However, because of the low hydraulic conductivity of the formation near these wells, it is recommended that a single falling-head test be conducted by placing a solid slug into the well, measuring the head of the water as it falls as a function of time until 90% recovery is made, and then allowing the water to essentially fully recover (not just to 90% recovery) before a rising-head test is performed by removing the slug nearly instantaneously. The law of superposition indicates that failure to allow the water level to fully recover prior to performing a rising-head test will corrupt the data of the second test."

RAML Response to Comment 4

Wells MW-104 and MW-106 were slug tested during Phase 2, from August 19 to September 22, 2013 (Section 2.5.1). The wells were allowed to fully recover following the first falling head slug test, before further testing was conducted.

COMMENT 5

RAML Statement (Phase 1 Report, pg. 11):

"Based on the video log, well ML-1 has one screened interval from 135.7 to 154.7 feet bgs (137.0 to 156.0 feet below the top of PVC casing measuring point [bmp])."

DRC Comment:
The DRC commends RAML and its consultant, Montgomery & Associates, for videotaping this well and determining its screened interval, since the well log provides conflicting screen-depth information, but the videotape resolves this. Based on Figure 7 of the report (in the Illustrations section), the screened interval is located near the base of the well, with a top near an elevation of 6390 ft (+/- 5 ft) amsl, whereas the top of water in the unconfined BCF is at 6491.81, approximately 100 feet higher. For this reason, it is needful, as is currently proposed in the Phase 2 Plans, to install a companion well (i.e. MW-112) next to ML-1 that is screened from approximately 6392 ft to 6492 ft. This will ensure full coverage of the currently saturated zone of the BCF in this area.

In addition to the statement that "well ML-1 has one screened interval from 135.7 to 154.7 feet bgs", the DRC would also like to see, for emphasis, an additional statement that a supposedly screened interval for this Well, which was previously reported in a Lewis Water Consultants log for this well, to exist from 60 to 80 feet bgs, does not appear to actually exist.

RAML Response to Comment 5
Section 2.6 of this report states that ML-1 is not screened from 60 to 80 feet bgs. During Phase 2, well MW-112 was installed as a companion well to ML-1 to screen the upper portion of the saturated BCA, not screened by ML-1. Construction details for MW-112 are provided in **Appendix B**.

COMMENT 6

RAML Statement (Phase 1 Report, pg. 11):
"Based on the video log, well UW-1 is screened from 100.6 to 137.6 feet bgs."

DRC Comment:
The DRC commends RAML and its consultant, Montgomery & Associates, for discovering and notifying the DRC of the presence of this well and videotaping it to find its screen interval.

RAML Response to Comment 6
No response required.

COMMENT 7

RAML Statement (Phase 1 Report, pg. 13):
"Groundwater samples were collected using low-flow sampling techniques in accordance with the US EPA *Low-Flow (Minimal Drawdown) Ground-Water Monitoring Procedures* (Puls and Barcelona, 1996)."

DRC Comment:
"While the Licensee describes one of the methods used in the field at Lisbon as low-flow sampling, the method actually used in the field at Lisbon should, in the revised version of this Report, be referred to instead as "modified low-flow sampling". The U.S. EPA prescribes that low-flow sampling "should not be used with well screen lengths greater than 1O feet (3 meters)" (Yeskis and Zavala, 2002)." Even shorter lengths maybe recommended in some settings for narrower plumes (Puls and Barcelona, 1996). While it is acknowledged that the EPA approach has been criticized by some industry personnel, it is still, as far as the DRC can determine, the official EPA policy. Therefore, because larger well screen lengths are being used at the Lisbon facility, the technique used in the field at Lisbon is not considered by the DRC to be low-flow sampling, per se. Please use the term "modified low-flow sampling" and describe how the method is modified."

RAML Response to Comment 7
The term "modified low-flow" was used in this report in reference to the minimal-purge sampling method used at the Site during the SSA. (**Section 2.7.1 and Appendix E**).

COMMENT 8

RAML Statement (Phase 1 Report, pg. 17):
Under the Section A-A' heading, the RAML report refers to "the following notable conditions" and includes as one of them, "The upward hydraulic gradient from the BBM to the BCA in well pair MW-102/MW-102DB."

DRC Comment:
Please provide additional detail. It appears, based on use of Figure A-4, that the distance between midpoints of screens on Wells MW-102 and MW-102DB is approximately 30 feet. The Licensee can provide an exact value. The head associated with the deep well appears, from Figure 5 (Hydrogeologic Section A-A', Phase 1 Report), to be approximately 3.94 feet higher than the head associated with the shallow well (6581.54 ft amsl- 6577.60 ft amsl = 3.94 feet). This results in a very large calculated vertical component of hydraulic gradient, approximately, -0.13 ft/ft (in the upward direction). By contrast, Montgomery & Associates (2012) provides a groundwater level contour map (Figure 4, Phase 1 Report) that indicates that the horizontal component of hydraulic gradient in the area is approximately -0.01 ((6530 ft amsl- 6,550 ft amsl)/1000 ft = -0.01 ft/ft). Thus, the vertical

component of hydraulic gradient in the area has approximately 13 times the numerical value of the horizontal component of hydraulic gradient. This is highly significant.

In Appendix D, calculated hydraulic conductivity values for wells based on slug tests are provided. For MW-102DB, screened in the Jmb, the range of estimated values given for the local hydraulic conductivity of the Jmb is 0.5835-0.8773 ft/day. By contrast, the range of values given for hydraulic conductivity of the Burro Canyon Formation (BCF) in Well MW-102 is only 0.2671-0.3529 ft/day. While the BCF is usually considered to be the aquifer, in this case, the upper layer of the underlying Jmb, which is normally considered to function as part of the aquitard, actually has the greater hydraulic conductivity.

Please (1) calculate a relatively precise value for the vertical component of hydraulic gradient near the Well pair in the revised Report, based on elevations of midpoints of screens, and (2) discuss, in the Report for Phase 2 activities (to be submitted later), the significance of this relatively large vertical component of hydraulic gradient in combination with the finding that the hydraulic conductivity in the Jmb in this area is greater than the hydraulic conductivity of the overlying BCF.

RAML Response to Comment 8

Cross sections were revised with the installation of additional monitor wells during Phase 2. In this report, the MW-102/MW-102DB well pair is included on Section C-C' (**Figure 7**). The descriptions of features noted on the cross sections in **Section 3.1** are general in nature. Specific details regarding lithology, well construction, water quality, groundwater elevation, hydraulic gradients, and BCA saturated thickness are presented elsewhere in the report.

The vertical hydraulic gradients in the MW-102/MW-102DB well pair, based on the most recent groundwater monitoring data, are summarized in **Section 3.3.3** and **Table 9**.

COMMENT 9

RAML Statement (Phase 1 Report, pg. 17):

Also under the Section A-A' heading, after the RAML report refers to "the following notable conditions", the report refers to the "The slight upward hydraulic gradient from the deep BCA to the shallow BCA in well pair MW-100/LW-1."

DRC Comment:

Figure 5 (Phase 1 Report) indicates that the difference in hydraulic head between the two wells is -0.46 feet (6578.41 ft amsl - 6578.87 ft amsl = -0.46 ft). The distance between the midpoints of the two screens is approximately 46 feet. The Licensee can provide an exact value. The calculated vertical component of hydraulic gradient is thus about -0.01 ft/ft upwards.

Although the licensee refers to this as a "slight" upward gradient, its value is equivalent to the horizontal component of hydraulic gradient in the area, shown earlier to be -0.01 ft/ft. Thus, it is questionable as to whether this value should be considered to be "slight."

Please (1) calculate a relatively precise value for the vertical component of hydraulic gradient near the Well pair in the revised Report, based on elevations of midpoints of screens, and (2) discuss, in the Report for Phase 2 activities (to be submitted later), the significance of this vertical component of hydraulic gradient.

RAML Response to Comment 9

Cross sections were revised with the installation of additional monitor wells during Phase 2. In this report, the MW-100/LW-1 well pair is included on Section E-E' (**Figure 8**). The descriptions of features noted on the cross sections in **Section 3.1** are general in nature. Specific details regarding lithology, well construction, water quality, groundwater elevation, hydraulic gradients, and BCA saturated thickness are presented elsewhere in the report.

The vertical hydraulic gradients in the MW-100/LW-1 well pair, based on the most recent groundwater monitoring data, are summarized in **Section 3.3.3** and **Table 9**.

COMMENT 10

RAML Statement (Phase 1 Report, pg. 17):

Under the Section A-A' heading, after the RAML report refers to "the following notable conditions", the report refers to "The detections of uranium at 9.66 milligrams per liter (mg/L) and 11.4 mg/L in wells MW-103 and MW-102DB, respectively.

DRC Comment:

Although the Licensee refers to "detections of uranium at 9.66 milligrams per liter (mg/L) and 11.4 mg/L in BBM wells MW-103 and MW-102DB, respectively," the referenced concentration of uranium in Well MW-102DB, which was obtained using a Traditional Purge-Based Sampling approach, is not necessarily reflective of the average uranium concentration actually present in groundwater proximate to the well at the depths of the well's screened interval. This is made evident when noting concentrations found using the HydraSleeve and Low-Flow Sampling approaches and comparing these with concentrations found using the Traditional Purge-Based Sampling approach.

For Well MW-102DB, the following table shows reported concentrations for uranium and several other parameters using the different sampling approaches:

Approach	Uranium (mg/L)	Sulfate (mg/L)	Conductivity (umhos/cm)
HydraSleeve	0.0814	84	749
Low-Flow	0.0416	60	740
Low-Flow (dual)	0.0416	60	739
Purge	11.4	1,230	4,470
Ratio of Purge to Low-Flow	**274**	**21**	**6.04**

Values for parameters obtained through the two methods that allow for measurement of concentrations of a parameter in groundwater that has been residing in the borehole for some time (i.e., HydraSleeve and Low-Flow) are reasonably consistent with each other, but they differ greatly from values obtained using the Purge method. In the case of uranium concentrations, the difference is two to three orders of magnitude.

Well MW-102DB is screened in highly fractured Jmb, which, under ambient conditions, as shown previously, has a very high vertical component of hydraulic gradient tending to move groundwater upwards. Using sampling methods that do not pull in additional groundwater into the wellbore, measured concentrations of uranium, sulfate and conductivity in groundwater from that highly fractured Jmb rock are relatively low, as shown by laboratory data for HydraSleeve and Low-Flow Sampling methods, which are referenced above.

However, when the well is purged of water equal in quantity to three casing volumes, in the Traditional Purge-Based Sampling method, then measured concentrations of uranium, sulfate and conductivity of sampled groundwater are found to be relatively high. Uranium, for example, is found at a concentration 274 times that found using the other two methods. This is a huge discrepancy and calls for a valid explanation.

MW-102DB is screened just below a portion of the BCF containing a large uranium plume characterized by relatively high uranium concentrations (e.g., up to 148 mg/L). Because the source of the uranium is process water from uranium mining, other mineral constituents in the water (e.g., sulfate, and total dissolved solids, which contributes to conductivity) are also high. When MW-102DB is purged, water is removed from the casing, which locally drops the head, and potentially reverses the vertical component of the hydraulic gradient. Water then flows into the well from just outside the well, creating a cone of drawdown. Because the Jmb is highly fractured locally, and it therefore is likely in hydraulic connection with the overlying BCF, it is possible that as groundwater enters the well, some of that groundwater comes from the BCF, which contains highly contaminated groundwater. This may account for the much higher concentrations of some constituents in groundwater sampled from MW-102DB after the well is purged of three casing volumes of groundwater compared to sampling and analysis results when the well is not first traditionally purged.

Please differentiate in this section between measured concentrations of uranium found in groundwater sampled from Well MW-102DB using the three different sampling approaches. It is noted that the Licensee does perform this kind of analysis, from a somewhat different perspective, in Appendix F, Phase 1 Report. However, no mention is made in the text on Page 17 of the much, much lower uranium concentrations found in groundwater sampled from the same well when the groundwater is sampled using Low-Flow or HydraSleeve Sampling and then analyzed.

RAML Response to Comment 10

Well MW-102DB was sampled in April 2013 by the same three methods used during the November 2012 event (**Section 3.5**). During the April 2013 event, the purge rate was reduced from 3 gpm to 2 gpm during purge sampling. In these samples, dissolved constituents in the purge samples were detected at concentrations similar to, and in some cases less than, concentrations detected in samples collected using HydraSleeve and modified low-flow methods (**Table H-1, Appendix H**). Further, MW-102DB was sampled in October 2013 and April 2014 using HydraSleeve and modified low-flow methods. Results from these monitoring events were similar to the results from April 2013. Water quality data obtained during and after the April 2013 monitoring event confirmed that the November 2012 purge sample results were not representative of actual BBM conditions at MW-102DB.

COMMENT 11

RAML Statement (Phase 1 Report, pg. 17):

Under the Section C-C' heading, the RAML report states that "the Kbc is dry at well MW-106."

DRC Comment:

While this is true, please also state that groundwater is present in the underlying Jmb at an elevation within the well's screened interval.

RAML Response to Comment 11

Cross sections were revised with the installation of additional monitor wells during Phase 2. In this report, BBM well MW-106 is included on Section D-D' (**Figure 8**). During installation activities in 2012, the Kbc was dry at MW-106. Since that time, water level has slowly risen and stabilized at 6,625.5 feet msl, approximately 1.5 feet above the estimated Kbc/Jmb contact.

COMMENT 12

RAML Statement (Phase 1 Report, pg. 18):

It is stated in Section 3.2.1 that wells MW-104 and MW-106 were not slug-tested since recoveries were very slow, and the wells had not yet recovered fully from their development. However, they will be slug-tested in the Phase 2 program.

DRC Comment:

The DRC accepts the postponement of slug testing for these two wells until the Phase 2 field program is implemented.

RAML Response to Comment 12

Wells MW-104 and MW-106 were slug tested during Phase 2, from August 19 to September 22, 2013 (**Section 2.5.1**).

COMMENT 13

RAML Statement (Phase 1 Report, pg. 18):

Section 3.2.1 speaks of "arithmetic mean values of estimated horizontal K values" and states that "estimated horizontal K values considered anomalous were not included in the mean value."

DRC Comment:

Please provide examples of anomalous K values not having been included in calculations of the mean values and justify their lack of inclusion.

RAML Response to Comment 13

At several wells, one or more of the estimated K values were not used to calculate the arithmetic mean. Estimated K was omitted when an anomalous water level response was observed during slug testing or when the measured data was observed to be outside of the normalized head range for matching results to type curve solutions (**Table 5**). In some cases, measured data were not analyzed because the water level response measurement was interrupted during the test; the datalogger was inadvertently moved as the slug was deployed or retrieved. Overall, the results of the slug test program provided sufficiently representative hydraulic conductivity data to achieve the SSA objectives.

COMMENT 14

RAML Statement (Phase 1 Report, pg. 19):

It is stated in Section 3.2.1 that "Estimated horizontal K values from the slug tests for the BCA ranged from 0.02 ft/d at well MW-5 to 360 ft/d at well MW-13 (**Figure 8,** Phase 1 report)."

DRC Comment:
There is good reason to believe that the K value of the aquifer proximate to Well MW-105 is greater than that indicated in the range given in the statement above. As indicated in Table 3 (Phase 1 Report), slug-test data for Well MW-13 were able to be evaluated so as to provide a hydraulic conductivity value (i.e., 360 ft/d), so apparently the water level response in that well was not "too fast to analyze". However, it is said of the slug-test data for Well MW-105 that these data were not evaluated since the water level response in that well is said to have been "too fast to analyze." This implies that the hydraulic conductivity of the aquifer proximate to Well MW-105 was likely greater than 360 ft/d, the hydraulic conductivity of the aquifer proximate to Well MW-13. Please discuss this when presenting a range of hydraulic conductivity values.

RAML Response to Comment 14
Slug testing data from well MW-13 were re-analyzed and horizontal K was estimated at a value of 421 ft/day (**Section 3.2.1, Table 5**). The range of values reported in **Section 3.2.1** represents only the values derived from slug testing analysis. Based on the near instantaneous water level recovery during slug testing, it is likely that horizontal K proximate to MW-105 is greater than 421 ft/day.

COMMENT 15

RAML Statement (Phase 1 Report, pg. 25):
It is stated under the heading Trace Metals that "the character of the shale in the Jmb encountered near the bottom of the MW-103 borehole is similar to that encountered at MW-102DB, which had a very low estimated horizontal and vertical K based on laboratory tests (on the order of 10^{-5} ft/d)."

DRC Comment:
Please revise and clarify the statement above to indicate the heterogeneity in the Jmb at this location. Only a small portion of the Jmb encountered at MW-102DB had low vertical and horizontal hydraulic conductivity (K) values measured on the order of 10^{-5} ft/d. The rest of the Jmb tested had, by comparison, relatively high measured K values. The statement above, however, fails to make this important distinction.

Use of the phrase "that encountered at MW-102DB" does not clarify the meaning of the statement, since it is unclear as to whether the term "that" refers simply to "shale", or to "shale in the Jmb encountered near the bottom of the MW-103 borehole." If the reference is to Jmb shale, or shale in general, then the statement quoted above is potentially misleading, since some of the Jmb shale in the core from MW-102DB had laboratory-measured hydraulic conductivities four orders of magnitude greater than 10^{-5} ft/d.

If, on the other hand, the reference is to "shale in the Jmb encountered near the bottom of the MW-103 borehole", then that comparison is irrelevant. This is because Jmb shale at the bottom of different boreholes in the area could arbitrarily be at different depths and could consist of different types of rock layers having different hydraulic characteristics. The rock in the Jmb is highly heterogeneous in places. The depths of boreholes in Jmb in the local area are somewhat arbitrary, and the character of the rock at the bottom of one particular borehole may have little or nothing to do with the character of rock at the base of another Jmb borehole in the area. Thus, there is no basis for hydraulic comparison among different boreholes or wells related to "shale in the Jmb encountered near the bottom of the" borehole.

As demonstrated by slug testing (see Table 3 and Figure 9, Phase 1 Report), the screened portion of the Jmb encountered at MW-102DB (located at a different elevation interval than that associated with the sample tested in the laboratory as referenced in the statement) had an average hydraulic conductivity of 0.7 ft/day. This is about five orders of magnitude greater than the low K value for shale proximate to MW-102DB that is reported in the statement quoted above. This is vital to understand, since such a relatively high K value in the Jmb could and would potentially permit on a local basis both vertical and lateral components of flow in rock beneath or into the conventionally identified aquifer. For areas north, west or northwest of MW-102DB, the DRC has concerns that groundwater may potentially be flowing through and crossing past the BCF "dry zone" of the anticline through the underlying Jmb.

Thus, there is the potential for a casual reader to be misled when reading the statement in the report, since, without appropriate context, the statement seems to imply that the Jmb shale "encountered at MW-102DB had a very low estimated horizontal and vertical K," whereas, in reality, the upper portion of the Jmb appears to have a relatively high horizontal K values, i.e., four to five orders of magnitude greater that referenced in the quoted statement above. This K value is similar to or even greater than that of the overlying aquifer. Since an understanding of the nature and character of the fractured Jmb shale in this well may be critical to understanding contaminant fate and transport in this area, it is important to clarify the meaning of the statement above, and to place it in proper context, for the technical or regulatory reader. Please do that.

RAML Response to Comment 15

During Phase 2 of the SSA, additional core samples were collected from the Jmb and submitted for laboratory analysis to further characterize lithologic and hydraulic properties of the Jmb across the Site (**Section 3.2.2, Table 7, and Appendix C**). Wells MW-110 and MW-11 were also installed to further characterize water quality and hydraulic conductivities in the BBM beneath the BCA dry zone. An evaluation of the additional BBM characterization is presented in the CSM (**Appendix J**).

COMMENT 16

RAML Statement (Phase 1 Report, pg. 27):

Visual inspection of the Phase 1 groundwater quality data included in Table 7 (Phase 1 Report) indicates that all three sampling methods provide comparable analytical results. These results indicate that the no purge method using the HydraSleeve and minimal purge low-flow method resulted in groundwater quality data comparable to groundwater samples collected using the traditional volume-based purge method. These results suggest that all three sampling methods would be adequate for compliance monitoring.

DRC Comment:

The DRC agrees that analytical results from the three different sampling methods as shown in Table 7 (Phase 1 Report) generally appear to be relatively consistent in the case of dissolved metal constituents. An exception occurs in the case of sampling groundwater from the Jmb Well MW-102DB, as is discussed elsewhere in this review, and as is discussed in several places in the [Phase 1] Report. The anomalous results appear likely to be the consequence of pulling down groundwater from the overlying plume in connection with traditional Purge-Based Sampling. This sampling approach appears to have resulted in reported uranium concentrations, for example, being 274 times the values obtained using Low-Flow Sampling or HydraSleeve Sampling.

On the other hand, analytical results for site wells differ greatly, and do not appear to be consistent, for the field parameters turbidity, dissolved oxygen (DO), and oxidation-reduction potential (ORP). This is shown in the attached Figures 1, 2 and 3 (for HydraSleeve Sampling) and Figures 4, 5 and 6 (for Low-Flow Sampling) in this review. This finding, by itself, does not support the contentions expressed as generalities in the current version of the Report that all three sampling approaches yield "comparable analytical results" and that "these results suggest that all three sampling methods would be adequate for compliance monitoring."

The discrepancies found for these field parameters, on the other hand, are likely functions of impacts of purging on concentrations of either particles or dissolved gases in the wells, and also of differences in elevation of measured parameters when different sampling approaches were used during field sampling. ***It*** *is not clear from these studies that the Traditional Purge-Based Sampling method necessarily provides the most representative samples of groundwater in the aquifer, although that might indeed be the case. With HydraSleeve and Low-Flow Sampling, samples during field testing are said to have been obtained at a mid-screen depth, whereas samples collected using the Traditional Purge-Based Sampling appear to have been obtained from near the top of the water column (within 3-5 feet; see the Phase 1 Plan). This difference in vertical location of sampling in the different approaches may give different results, particularly for long saturated portions of screens (e.g., 30 to 70 feet long).*

Notwithstanding the DRC concerns about the field parameters, the dissolved metals values seem to be consistent and comparable between different types of sampling approaches. An example is shown in this review's Figure 7. ***It*** *shows uranium concentrations for samples obtained via Low-Flow Sampling plotted against concentrations for samples from the same wells obtained via Traditional Purge-Based Sampling. Similar results are obtained when comparing HydraSleeve Sampling with Traditional Purge-Based Sampling.*

Please justify the Report's characterization of this project's sample results using different sampling methods as being consistent and comparable, when, in the case of turbidity, DO and ORP, the sample results appear to be inconsistent and incomparable.

RAML Response to Comment 16

To be conservative, the maximum concentrations for common constituents and trace metals reported in wells by any method from any of the four comprehensive events were used for site characterization purposes (**Table 11, Figures 13 through 18**).

Review of the groundwater quality data from the comprehensive events indicates that all three sampling methods provide generally comparable laboratory analytical results. Additional analyses of the comparability and representativeness of field and laboratory water quality data from all sampling methods will be completed for the revised groundwater monitoring plan, which will be developed after new ACLs are approved by DRC. It is important to view the groundwater quality data in the context of the investigation objectives. The primary objectives of the investigation are to sufficiently delineate the extent of contaminants of concern (COCs) in groundwater, and to sufficiently characterize the fate and transport of COCs in groundwater in the vicinity of the Site, in order to refine the CSM, develop a new groundwater model, and develop new compliance concentrations. The primary COC is uranium. Given the objectives, the primary goal of assessing a variety of groundwater sampling methods is to identify methods that provide representative concentrations of uranium (and other COCs) in groundwater. The laboratory results for uranium for all sampling methods are sufficiently comparable on a practicable level to presume that all of the results are equally representative of groundwater quality conditions at the Site, and therefore, all of the results are adequate and useful to meet project objectives.

State of Utah
GARY R. HERBERT
Governor

GREG BELL
Lieutenant Governor

Department of
Environmental Quality

Amanda Smith
Executive Director

DIVISION OF RADIATION CONTROL
Rusty Lundberg
Director

June 26, 2013

CERTIFIED MAIL
(Return Receipt Requested)

Billy M. Ray
Manager Closure Execution
Ambrosia Lake Site Manager
Reclamation & Closed Mines
BHP Billiton
8950 N. Oracle Road, Suite 150
Tucson, AZ 85704 USA

Subject: Montgomery & Associates (2013) Phase 1 Report for Supplemental Site Assessment to Address Out-of-Compliance Status at Trend Wells RL-1 and EF-8, Lisbon Facility, Prepared for: Rio Algom Mining LLC, March 7, 2013**: DRC Request for Information**

Dear Mr. Ray:

The Utah Division of Radiation Control (DRC) has recently reviewed a copy of Montgomery & Associates (2013) Phase 1 Report for Supplemental Site Assessment to Address Out-of-Compliance Status at Trend Wells RL-1 and EF-8, Lisbon Facility, Prepared for: Rio Algom Mining LLC, March 7, 2013. This Request for Information (RFI) deals with specific questions or concerns that the DRC has with regard to either the contents or presentation of this report.

These specific questions or concerns are listed below, with page numbers or other identifiers listed on the left, and RAML statements, and DRC responses listed subsequently.

P6 RAML Statement:

"BBM wells MW-103 and MW-106 were completed in the Jmb as water table wells; BBM well MW-102DB was screened in the Jmb beneath the BCA."

DRC Comment:

Please emphasize that MW-102DB was completed as a well in the Brushy Basin Member (BBM) portion of the aquifer. It is said in the statement above that two other wells, MW-103 and MW-106, were completed as BBM water table wells. However, MW-102DB is

not mentioned specifically in the statement as having been completed as a "well" in the BBM, although it is noted as having been "screened in the Jmb beneath the BCA".

The rock screened by this well, the upper portion of the BBM, has both relatively high hydraulic conductivity and relatively high hydraulic head. The hydraulic conductivity of the Jmb proximate to MW-102DB (as assessed from the results of slug testing) is shown in Appendix A to range from 0.31 to 0.88 ft/day. The hydraulic conductivity of the overlying BCF in Well MW-103, by contrast, is given only as 0.019 to 0.051 ft/day, an order of magnitude less than that for MW-102DB. Figure 6 shows that groundwater is present in the Jmb in the screened interval of MW-102DB and that the hydraulic head of that groundwater is greater than the hydraulic head of the groundwater in the overlying Burro Canyon Formation (BCF) portion of the aquifer.

Please add that MW-102DB is a BBM well "completed in the Jmb." It may be appropriate to mention that the head of groundwater found in the screened interval of that well extends above the top of the BBM/BCA contact.

P9 RAML Statement:

At the time of the report, it is said that "Freezing temperatures at the Site have delayed transport of the waste water to the landfill. The waste water will be transported by MPE to US Ecology in Grand View, Idaho for disposal as soon as weather conditions allow."

DRC Comment:

Now that several months have passed, summer is here, and freezing conditions no longer prevail, please indicate in a revised version of the Report the history of the disposal of the waste water, giving pertinent details.

P10 RAML Statement:

"After the monitoring equipment was installed in a well, a slug was lowered quickly into the water. Falling head was monitored until water level in the well recovered to within 90 percent of the initial static level. After water level had recovered to a static condition, the slug was quickly pulled out of the water. Monitoring of rising head continued until the water level recovered to within 90 percent of the initial static water level."

DRC Comment:

The DRC accepts the results of the *falling-head tests* performed as described. However, it cannot accept the results of the *rising-head tests* if they were performed immediately after conducting the falling-head tests, or even at a later time but prior to a return to essentially pre-test water levels. It is not yet clear in the Report how a return of the groundwater in the wells being tested to essentially pre-test water levels was determined.

It is appropriate for a falling-head test to be conducted by placing a solid slug into the well nearly instantaneously and measuring the head of the water as it falls over time until 90%

recovery is made. However, before a rising-head test can be conducted, the water in the well must essentially *fully recover* (not just to 90% recovery) before the slug is nearly instantaneously removed. Otherwise, the rising-head test data would be corrupted. The law of superposition indicates that the water level must fully recover, or else there will still be the response of the water level tending to fall over a distance equal to approximately one tenth of the initial displacement from the stimulus of the first test, which will be superimposed on the response of the water level rising from the stimulus of the second test. The resulting water-level response would definitely not be consistent with established slug-test theory, and any interpretation would be difficult and most likely erroneous.

It is said in the report that the rising-head tests were conducted "after water level had recovered to a static condition." However, details are not provided.

Please specify whether this means

(1) the rising-head tests were conducted after an indeterminate time when it appeared visually or otherwise that the water levels were not changing very much, or

(2) the rising-head tests were conducted after the water levels in the wells returned to their pre-test levels (plus or minus some small distance or percentage – and, if applicable, please specify what this distance or percentage is, and how it was determined.)

Please provide original slug test data along with your response.

P10 RAML Statement:

"Slug testing was not conducted at new wells MW-104 and MW-106 during Phase 1. These wells were evacuated completely during well development and water levels had not recovered sufficiently to conduct slug testing at the time of the November testing event. Following development, pressure transducer/dataloggers were used to monitor water level recovery at each location. The water level recovery monitoring conducted at MW-104 and MW-106 after development indicated that recovery rates were very slow and any future slug testing at these wells will require an extended monitoring period for each test. Wells MW-104 and MW-106 will be slug tested during Phase 2."

DRC Comment:

The DRC accepts the plan to slug test the aquifer around wells MW-104 and MW-106 during Phase 2. However, because of the low hydraulic conductivity of the formation near these wells, it is recommended that a single falling-head test be conducted by placing a solid slug into the well, measuring the head of the water as it falls as a function of time until 90% recovery is made, and then allowing the water to essentially *fully recover* (not just to 90% recovery) before a rising-head test is performed by removing the slug nearly instantaneously. The law of superposition indicates that failure to allow the water level to fully recover prior to performing a rising-head test will corrupt the data of the second test.

P11 RAML Statement:

"Based on the video log, well ML-1 has one screened interval from 135.7 to 154.7 feet bgs (137.0 to 156.0 feet below the top of PVC casing measuring point [bmp])."

DRC Comment:

The DRC commends RAML and its consultant, Montgomery & Associates, for videotaping this well and determining its screened interval, since the well log provides conflicting screen-depth information, but the videotape resolves this. Based on Figure 7 of the report (in the Illustrations section), the screened interval is located near the base of the well, with a top near an elevation of 6390 ft (+/- 5 ft) amsl, whereas the top of water in the unconfined BCF is at 6491.81, approximately 100 feet higher. For this reason, it is needful, as is currently proposed in the Phase 2 Plans, to install a companion well (i.e., MW-112) next to ML-1 that is screened from approximately 6392 ft to 6492 ft. This will ensure full coverage of the currently saturated zone of the BCF in this area.

In addition to the statement that "well ML-1 has one screened interval from 135.7 to 154.7 feet bgs", the DRC would also like to see, for emphasis, an additional statement that a supposedly screened interval for this Well, which was previously reported in a Lewis Water Consultants log for this well, to exist from 60 to 80 feet bgs, does not appear to actually exist.

P11 RAML Statement:

"Based on the video log, well UW-1 is screened from 100.6 to 137.6 feet bgs."

DRC Comment:

The DRC commends RAML and its consultant, Montgomery & Associates, for discovering and notifying the DRC of the presence of this well and videotaping it to find its screen interval.

P13 RAML Statement:

In the description for the low-flow (minimal purge) sampling method, Page 13 states that "Groundwater samples were collected using low-flow sampling techniques in accordance with the US EPA *Low-Flow (Minimal Drawdown) Ground-Water Monitoring Procedures* (Puls and Barcelona, 1996)."

DRC Comment:

While the Licensee describes one of the methods used in the field at Lisbon as low-flow sampling, the method actually used in the field at Lisbon should, in the revised version of this Report, be referred to instead as "modified low-flow sampling". The U.S. EPA prescribes that low-flow sampling "*should not be used with well screen lengths greater*

than 10 feet (3 meters)" (Yeskis and Zavala, 2002)." Even shorter lengths may be recommended in some settings for narrower plumes (Puls and Barcelona, 1996). While it is acknowledged that the EPA approach has been criticized by some industry personnel, it is still, as far as the DRC can determine, the official EPA policy. Therefore, because larger well screen lengths are being used at the Lisbon facility, the technique used in the field at Lisbon is not considered by the DRC to be low-flow sampling, per se. Please use the term "modified low-flow sampling" and describe how the method is modified.

P17 RAML Statement:

Under the Section A-A' heading, the RAML report refers to "the following notable conditions" and includes as one of them, "The upward hydraulic gradient from the BBM to the BCA in well pair MW-102/MW-102DB."

DRC Comment:

Please provide additional detail. It appears, based on use of Figure A.4, that the distance between midpoints of screens on Wells MW-102 and MW-102DB is approximately 30 feet. The Licensee can provide an exact value. The head associated with the deep well appears, from Figure 5 (Hydrogeologic Section A-A'), to be approximately 3.94 feet higher than the head associated with the shallow well (6581.54 ft amsl – 6577.60 ft amsl = 3.94 feet). This results in a very large calculated vertical component of hydraulic gradient, approximately, -0.13 ft/ft (in the upward direction). By contrast, Montgomery & Associates (2012) provides a groundwater level contour map (Figure 4) that indicates that the horizontal component of hydraulic gradient in the area is approximately -0.01 ((6530 ft amsl - 6,550 ft amsl)/1000 ft = -0.01 ft/ft). Thus, the vertical component of hydraulic gradient in the area has approximately 13 times the numerical value of the horizontal component of hydraulic gradient. This is highly significant.

In Appendix D, calculated hydraulic conductivity values for wells based on slug tests are provided. For MW-102DB, screened in the Jmb, the range of estimated values given for the local hydraulic conductivity of the Jmb is 0.5835-0.8773 ft/day. By contrast, the range of values given for hydraulic conductivity of the Burro Canyon Formation (BCF) in Well MW-102 is only 0.2671-0.3529 ft/day. While the BCF is usually considered to be the aquifer, in this case, the upper layer of the underlying Jmb, which is normally considered to function as part of the aquitard, actually has the greater hydraulic conductivity.

Please (1) calculate a relatively precise value for the vertical component of hydraulic gradient near the Well pair in the revised Report, based on elevations of midpoints of screens, and (2) discuss, in the Report for Phase 2 activities (to be submitted later), the significance of this relatively large vertical component of hydraulic gradient in combination with the finding that the hydraulic conductivity in the Jmb in this area is greater than the hydraulic conductivity of the overlying BCF.

P17 RAML Statement:

Also under the Section A-A' heading, after the RAML report refers to "the following notable conditions", the report refers to the "The slight upward hydraulic gradient from the deep BCA to the shallow BCA in well pair MW-100/LW-1."

DRC Comment:

Figure 5 indicates that the difference in hydraulic head between the two wells is -0.46 feet (6578.41 ft amsl – 6578.87 ft amsl = -0.46 ft). The distance between the midpoints of the two screens is approximately 46 feet. The Licensee can provide an exact value. The calculated vertical component of hydraulic gradient is thus about -0.01 ft/ft upwards. Although the licensee refers to this as a "slight" upward gradient, its value is equivalent to the horizontal component of hydraulic gradient in the area, shown earlier to be -0.01 ft/ft. Thus, it is questionable as to whether this value should be considered to be "slight."

Please (1) calculate a relatively precise value for the vertical component of hydraulic gradient near the Well pair in the revised Report, based on elevations of midpoints of screens, and (2) discuss, in the Report for Phase 2 activities (to be submitted later), the significance of this vertical component of hydraulic gradient.

P17 RAML Statement:

Under the Section A-A' heading, after the RAML report refers to "the following notable conditions", the report refers to "The detections of uranium at 9.66 milligrams per liter (mg/L) and 11.4 mg/L in wells MW-103 and MW-102DB, respectively.

DRC Comment:

Although the Licensee refers to "detections of uranium at 9.66 milligrams per liter (mg/L) and 11.4 mg/L in BBM wells MW-103 and MW-102DB, respectively," the referenced concentration of uranium in Well MW-102DB, which was obtained using a Traditional Purge-Based Sampling approach, is not necessarily reflective of the average uranium concentration actually present in groundwater proximate to the well at the depths of the well's screened interval. This is made evident when noting concentrations found using the HydraSleeve and Low-Flow Sampling approaches and comparing these with concentrations found using the Traditional Purge-Based Sampling approach.

For Well MW-102DB, the following table shows reported concentrations for uranium and several other parameters using the different sampling approaches:

Approach:	Uranium (mg/L)	Sulfate (mg/L)	Conductivity (umhos/cm)
HydraSleeve	0.0814	84	749
Low-Flow	0.0416	60	740
Low-Flow (dual)	0.0416	60	739
Purge	11.4	1230	4470
Ratio of Purge to Low-Flow Values	274	21	6.04

Values for parameters obtained through the two methods that allow for measurement of concentrations of a parameter in groundwater that has been residing in the borehole for some time (i.e., HydraSleeve and Low-Flow) are reasonably consistent with each other, but they differ greatly from values obtained using the Purge method. In the case of uranium concentrations, the difference is two to three orders of magnitude.

Well MW-102DB is screened in highly fractured Jmb, which, under ambient conditions, as shown previously, has a very high vertical component of hydraulic gradient tending to move groundwater upwards. Using sampling methods that do not pull in additional groundwater into the wellbore, measured concentrations of uranium, sulfate and conductivity in groundwater from that highly fractured Jmb rock are relatively low, as shown by laboratory data for HydraSleeve and Low-Flow Sampling methods, which are referenced above.

However, when the well is purged of water equal in quantity to three casing volumes, in the Traditional Purge-Based Sampling method, then measured concentrations of uranium, sulfate and conductivity of sampled groundwater are found to be relatively high. Uranium, for example, is found at a concentration 274 times that found using the other two methods. This is a huge discrepancy and calls for a valid explanation.

MW-102DB is screened just below a portion of the BCF containing a large uranium plume characterized by relatively high uranium concentrations (e.g., up to 148 mg/L). Because the source of the uranium is process water from uranium mining, other mineral constituents in the water (e.g., sulfate, and total dissolved solids, which contributes to conductivity) are also high. When MW-102DB is purged, water is removed from the casing, which locally drops the head, and potentially reverses the vertical component of the hydraulic gradient. Water then flows into the well from just outside the well, creating a cone of drawdown. Because the Jmb is highly fractured locally, and it therefore is likely in hydraulic connection with the overlying BCF, it is possible that as groundwater enters the well, some of that groundwater comes from the BCF, which contains highly contaminated groundwater. This may account for the much higher concentrations of some constituents in groundwater sampled from MW-102DB after the well is purged of three casing volumes of

groundwater compared to sampling and analysis results when the well is not first traditionally purged.

Please differentiate in this section between measured concentrations of uranium found in groundwater sampled from Well MW-102DB using the three different sampling approaches. It is noted that the Licensee does perform this kind of analysis, from a somewhat different perspective, in Appendix F. However, no mention is made in the text on Page 17 of the much, much lower uranium concentrations found in groundwater sampled from the same well when the groundwater is sampled using Low-Flow or HydraSleeve Sampling and then analyzed.

P17 RAML Statement:

Under the Section C-C' heading, the RAML report states that "the Kbc is dry at well MW-106."

DRC Comment:

While this is true, please also state that groundwater is present in the underlying Jmb at an elevation within the well's screened interval.

P18 RAML Statement:

It is stated in Section 3.2.1 that wells MW-104 and MW-106 were not slug-tested since recoveries were very slow, and the wells had not yet recovered fully from their development. However, they will be slug-tested in the Phase 2 program.

DRC Comment:

The DRC accepts the postponement of slug testing for these two wells until the Phase 2 field program is implemented.

P18 RAML Statement:

Section 3.2.1 speaks of "arithmetic mean values of estimated horizontal K values" and states that "estimated horizontal K values considered anomalous were not included in the mean value."

DRC Comment:

Please provide examples of anomalous K values not having been included in calculations of the mean values and justify their lack of inclusion.

P19 RAML Statement:

It is stated in Section 3.2.1 that "Estimated horizontal K values from the slug tests for the BCA ranged from 0.02 ft/d at well MW-5 to 360 ft/d at well MW-13 (**Figure 8**)."

DRC Comment:

There is good reason to believe that the K value of the aquifer proximate to Well MW-105 is greater than that indicated in the range given in the statement above. As indicated in Table 3, slug-test data for Well MW-13 were able to be evaluated so as to provide a hydraulic conductivity value (i.e., 360 ft/d), so apparently the water level response in that well was not "too fast to analyze". However, it is said of the slug-test data for Well MW-105 that these data were not evaluated since the water level response in that well is said to have been "too fast to analyze." This implies that the hydraulic conductivity of the aquifer proximate to Well MW-105 was likely greater than 360 ft/d, the hydraulic conductivity of the aquifer proximate to Well MW-13. Please discuss this when presenting a range of hydraulic conductivity values.

P25 RAML Statement:

It is stated under the heading Trace Metals that "the character of the shale in the Jmb encountered near the bottom of the MW-103 borehole is similar to that encountered at MW-102DB, which had a very low estimated horizontal and vertical K based on laboratory tests (on the order of 10^{-5} ft/d)."

DRC Comment:

Please revise and clarify the statement above to indicate the heterogeneity in the Jmb at this location. Only a small portion of the Jmb encountered at MW-102DB had low vertical and horizontal hydraulic conductivity (K) values measured on the order of 10^{-5} ft/d. The rest of the Jmb tested had, by comparison, relatively high measured K values. The statement above, however, fails to make this important distinction.

Use of the phrase "that encountered at MW-102DB" does not clarify the meaning of the statement, since it is unclear as to whether the term "that" refers simply to "shale", or to "shale in the Jmb encountered near the bottom of the MW-103 borehole." If the reference is to Jmb shale, or shale in general, then the statement quoted above is potentially misleading, since some of the Jmb shale *in the core* from MW-102DB had laboratory-measured hydraulic conductivities *four orders of magnitude greater* than 10^{-5} ft/d.

If, on the other hand, the reference is to "shale in the Jmb encountered near the bottom of the MW-103 borehole", then that comparison is irrelevant. This is because Jmb shale at the bottom of different boreholes in the area could arbitrarily be at different depths and could consist of different types of rock layers having different hydraulic characteristics. The rock in the Jmb is highly heterogeneous in places. The depths of boreholes in Jmb in the local area are somewhat arbitrary, and the character of the rock at the bottom of one particular borehole may have little or nothing to do with the character of rock at the base of another Jmb borehole in the area. Thus, there is no basis for hydraulic comparison among different boreholes or wells related to "shale in the Jmb encountered near the bottom of the" borehole.

As demonstrated by slug testing (see Table 3 and Figure 9), the screened portion of the Jmb encountered at MW-102DB (located at a different elevation interval than that associated with the sample tested in the laboratory as referenced in the statement) had an average hydraulic conductivity of 0.7 ft/day. This is about five orders of magnitude greater than the low K value for shale proximate to MW-102DB that is reported in the statement quoted above. This is vital to understand, since such a relatively high K value in the Jmb could and would potentially permit on a local basis both vertical and lateral components of flow in rock beneath or into the conventionally identified aquifer. For areas north, west or northwest of MW-102DB, the DRC has concerns that groundwater may potentially be flowing through and crossing past the BCF "dry zone" of the anticline through the underlying Jmb.

Thus, there is the potential for a casual reader to be misled when reading the statement in the Report, since, without appropriate context, the statement seems to imply that the Jmb shale "encountered at MW-102DB . . . had a very low estimated horizontal and vertical K," whereas, in reality, the upper portion of the Jmb appears to have a relatively high horizontal K values, i.e., four to five orders of magnitude greater that referenced in the quoted statement above. This K value is similar to or even greater than that of the overlying aquifer. Since an understanding of the nature and character of the fractured Jmb shale in this well may be critical to understanding contaminant fate and transport in this area, it is important to clarify the meaning of the statement above, and to place it in proper context, for the technical or regulatory reader. Please do that.

P27 RAML Statement:

> Visual inspection of the Phase 1 groundwater quality data included in **Table 7** indicates that all three sampling methods provide comparable analytical results. These results indicate that the no purge method using the HydraSleeve and minimal purge low-flow method resulted in groundwater quality data comparable to groundwater samples collected using the traditional volume-based purge method. These results suggest that all three sampling methods would be adequate for compliance monitoring.

DRC Comment:

The DRC agrees that analytical results from the three different sampling methods as shown in Table 7 generally appear to be relatively consistent in the case of dissolved metal constituents. An exception occurs in the case of sampling groundwater from the Jmb Well MW-102DB, as is discussed elsewhere in this review, and as is discussed in several places in the Report. The anomalous results appear likely to be the consequence of pulling down groundwater from the overlying plume in connection with traditional Purge-Based Sampling. This sampling approach appears to have resulted in reported uranium concentrations, for example, being ~274 times the values obtained using Low-Flow Sampling or HydraSleeve Sampling.

On the other hand, analytical results for site wells differ greatly, and do not appear to be consistent, for the field parameters turbidity, dissolved oxygen (DO), and oxidation-

reduction potential (ORP). This is shown in the attached Figures 1, 2 and 3 (for HydraSleeve Sampling) and Figures 4, 5 and 6 (for Low-Flow Sampling) in this review. This finding, by itself, does not support the contentions expressed as generalities in the current version of the Report that all three sampling approaches yield "comparable analytical results" and that "these results suggest that all three sampling methods would be adequate for compliance monitoring."

The discrepancies found for these field parameters, on the other hand, are likely functions of impacts of purging on concentrations of either particles or dissolved gases in the wells, and also of differences in elevation of measured parameters when different sampling approaches were used during field sampling. It is not clear from these studies that the Traditional Purge-Based Sampling method necessarily provides the most representative samples of groundwater in the aquifer, although that might indeed be the case. With HydraSleeve and Low-Flow Sampling, samples during field testing are said to have been obtained at a mid-screen depth, whereas samples collected using the Traditional Purge-Based Sampling appear to have been obtained from near the top of the water column (within 3-5 feet; see the Phase 1 Plan). This difference in vertical location of sampling in the different approaches may give different results, particularly for long saturated portions of screens (e.g., 30 to 70 feet long).

Notwithstanding the DRC concerns about the field parameters, the dissolved metals values seem to be consistent and comparable between different types of sampling approaches. An example is shown in this review's Figure 7. It shows uranium concentrations for samples obtained via Low-Flow Sampling plotted against concentrations for samples from the same wells obtained via Traditional Purge-Based Sampling. Similar results are obtained when comparing HydraSleeve Sampling with Traditional Purge-Based Sampling.

Please justify the Report's characterization of this project's sample results using different sampling methods as being consistent and comparable, when, in the case of turbidity, DO and ORP, the sample results appear to be inconsistent and incomparable.

If you have any questions, please do not hesitate to contact me at 801-536-4259.

Sincerely,

David S. Edwards

David Edwards
Environmental Scientist

DE/de

References

Yeskis, D. and Zavala B. (2002) Ground water sampling guidelines for superfund and RCRA project managers, U.S. EPA, Office of Solid Waste and Emergency Response, Report 542-S-02-001, May 2002.

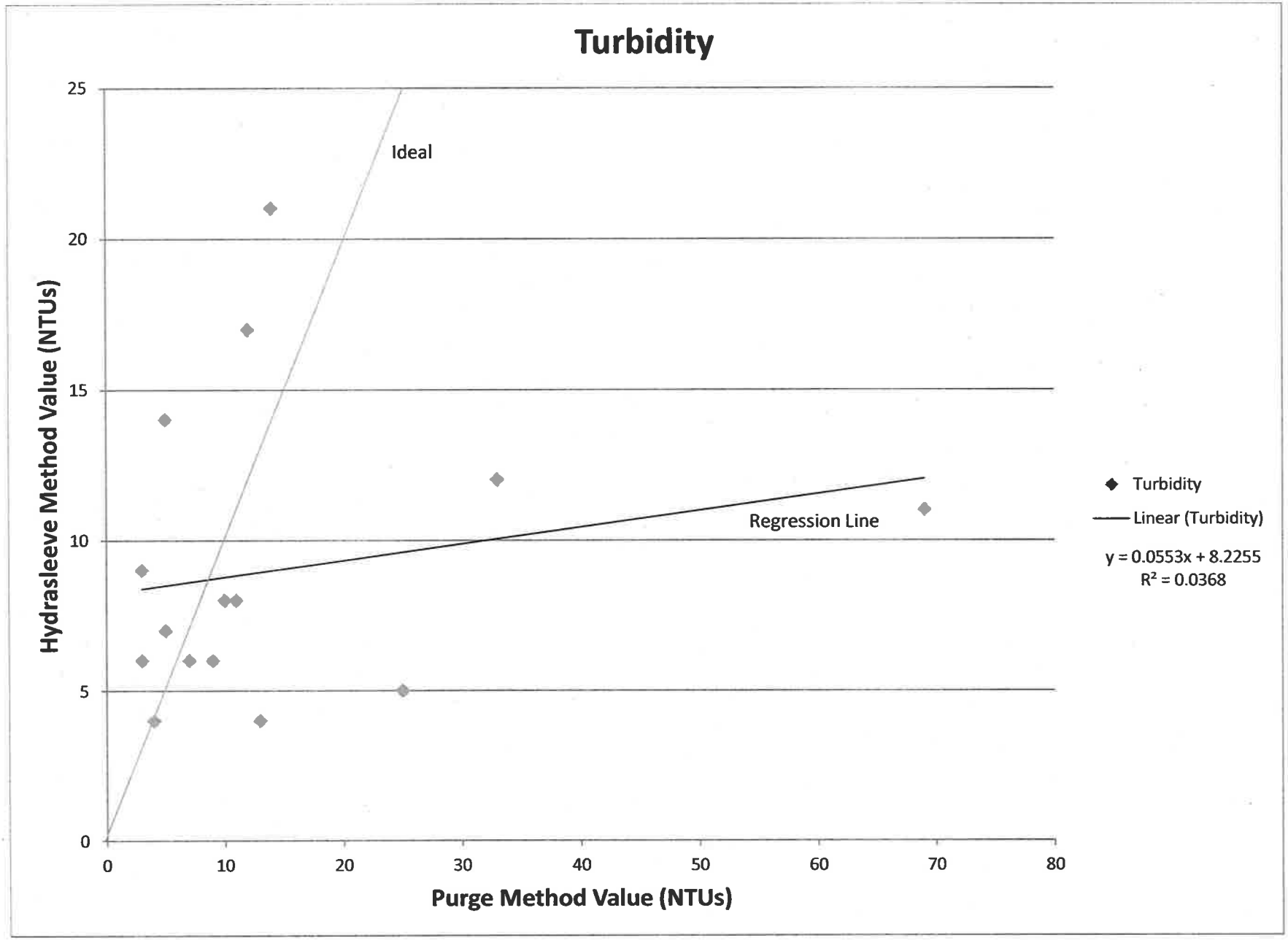

Turbidity
Hydrasleeve Method Value (NTUs)
Purge Method Value (NTUs)
Ideal
Regression Line
Turbidity
Linear (Turbidity)
y = 0.0553x + 8.2255
R² = 0.0368
0
5
10
15
20
25
0
10
20
30
40
50
60
70
80

Figure 1

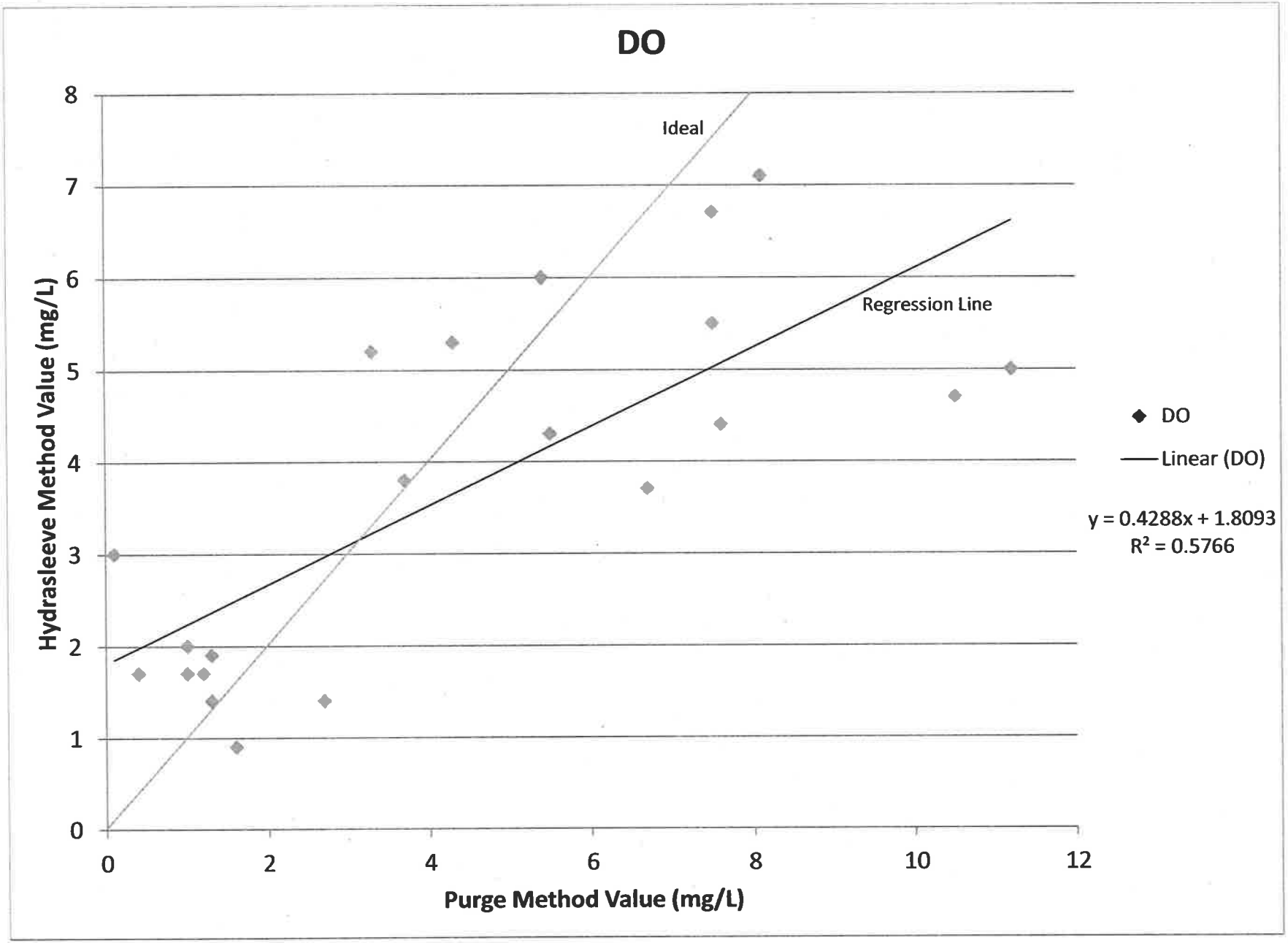

DO
Ideal
Regression Line
Hydrasleeve Method Value (mg/L)
Purge Method Value (mg/L)
0
1
2
3
4
5
6
7
8
0
2
4
6
8
10
12
DO
Linear (DO)
y = 0.4288x + 1.8093
R² = 0.5766

Figure 2

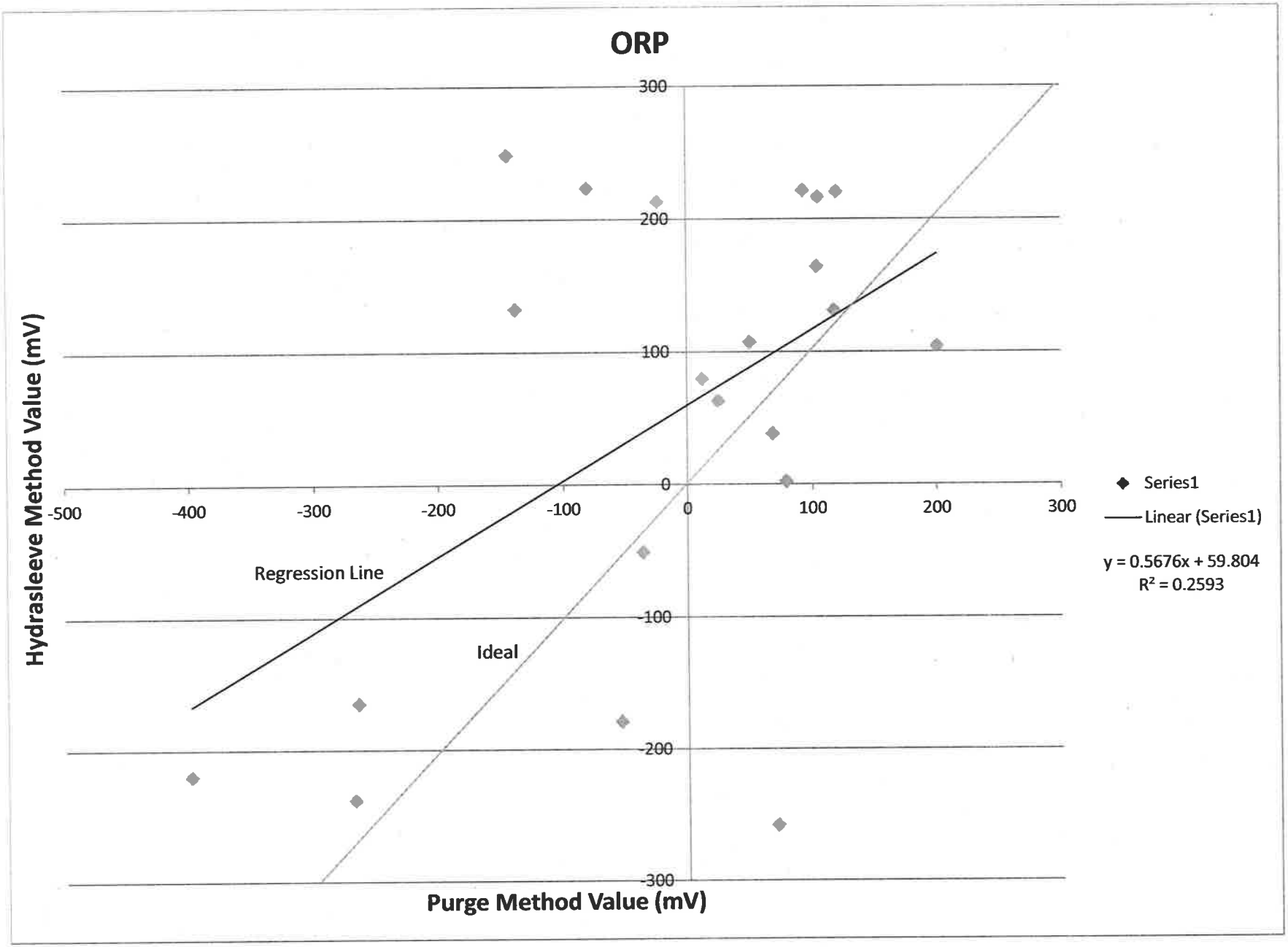

ORP
Hydrasleeve Method Value (mV)
Purge Method Value (mV)
300
200
100
0
-100
-200
-300
-500
-400
-300
-200
-100
0
100
200
300
Regression Line
Ideal
Series1
Linear (Series1)
y = 0.5676x + 59.804
R² = 0.2593

Figure 3

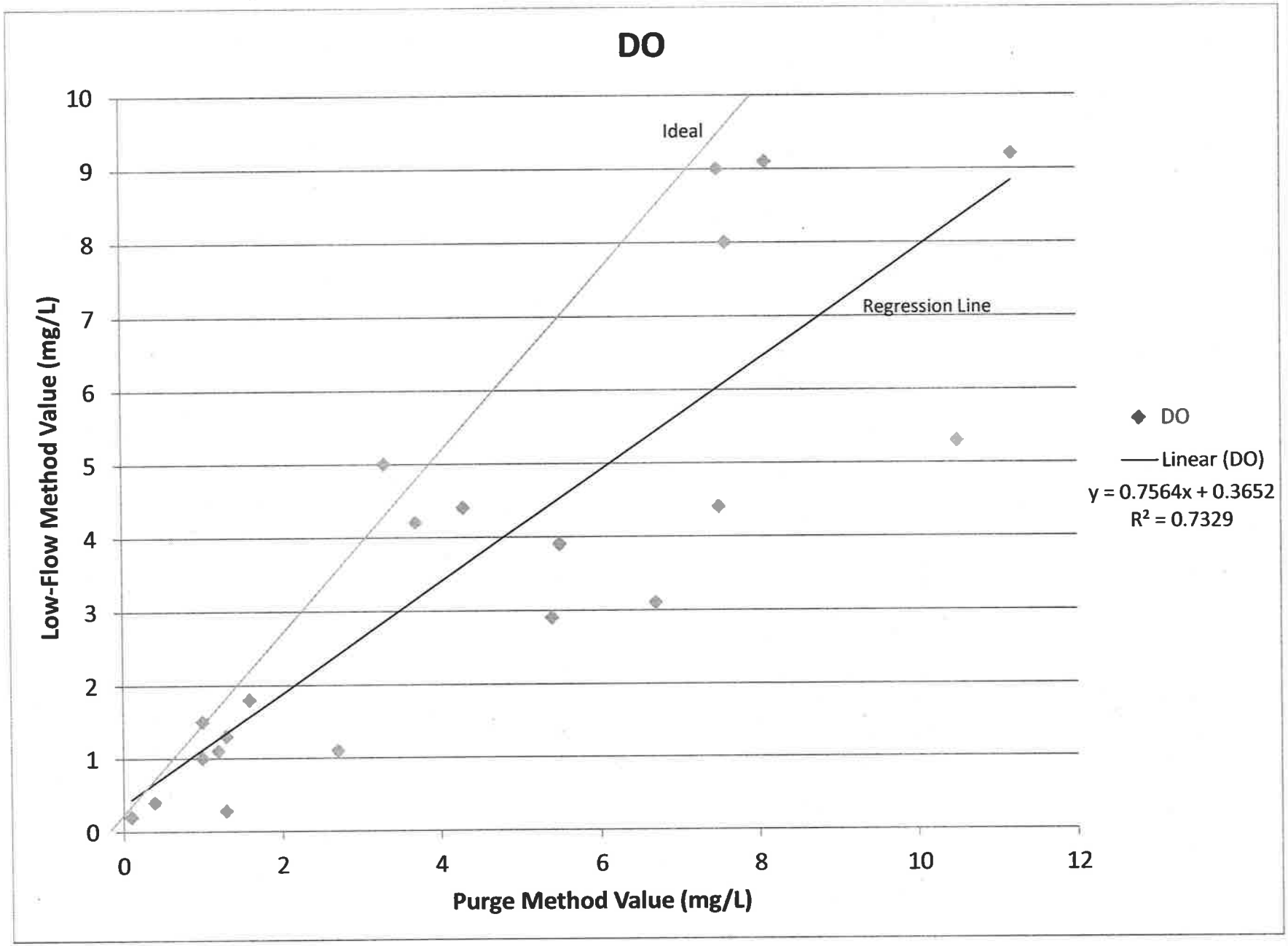

DO
Ideal
Regression Line
Low-Flow Method Value (mg/L)
Purge Method Value (mg/L)
0
1
2
3
4
5
6
7
8
9
10
0
2
4
6
8
10
12
DO
Linear (DO)
y = 0.7564x + 0.3652
R² = 0.7329

Figure 4

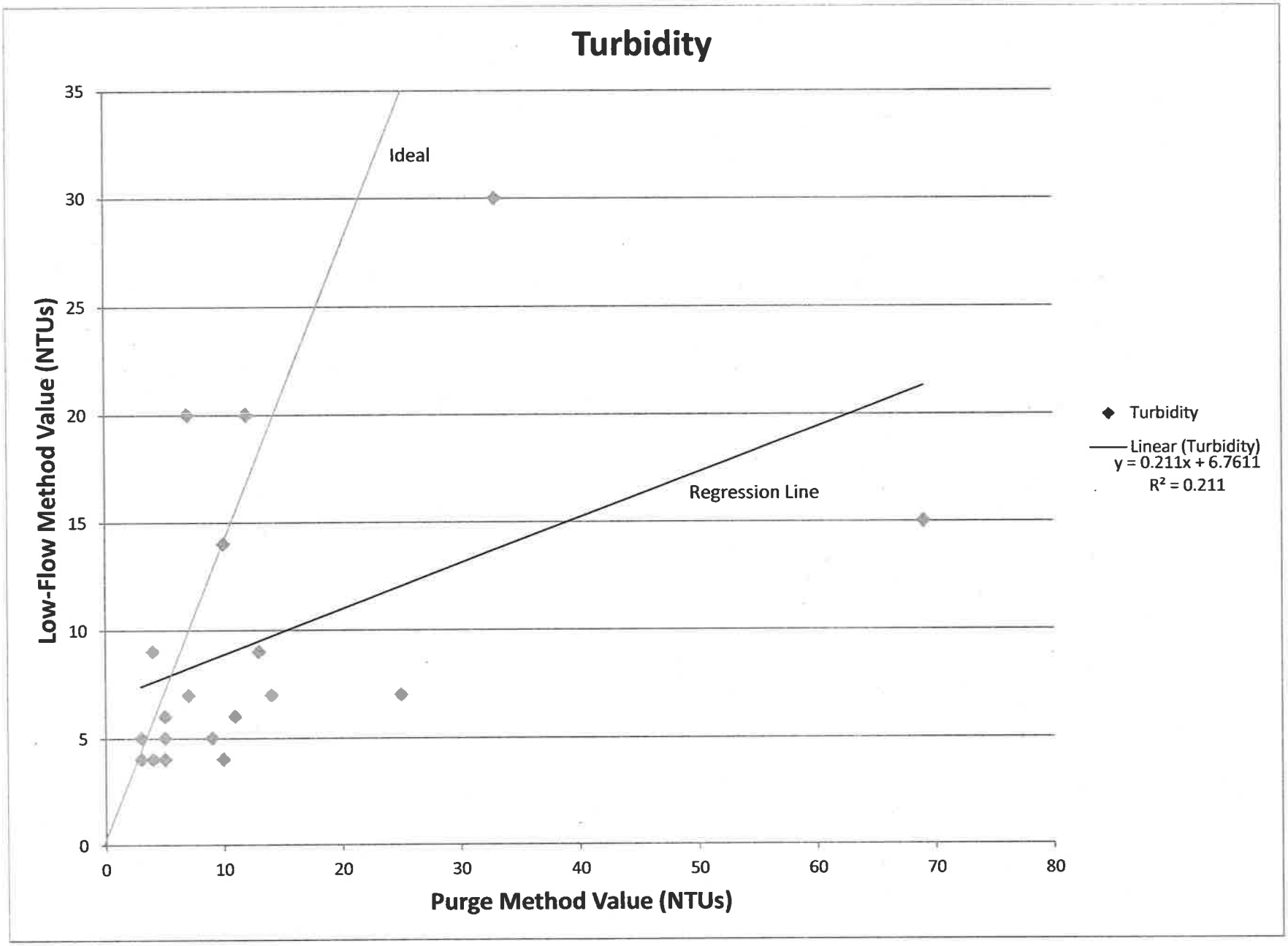

Turbidity
Low-Flow Method Value (NTUs)
Purge Method Value (NTUs)
Ideal
Regression Line
Turbidity
Linear (Turbidity)
y = 0.211x + 6.7611
R² = 0.211
0
5
10
15
20
25
30
35
0
10
20
30
40
50
60
70
80

Figure 5

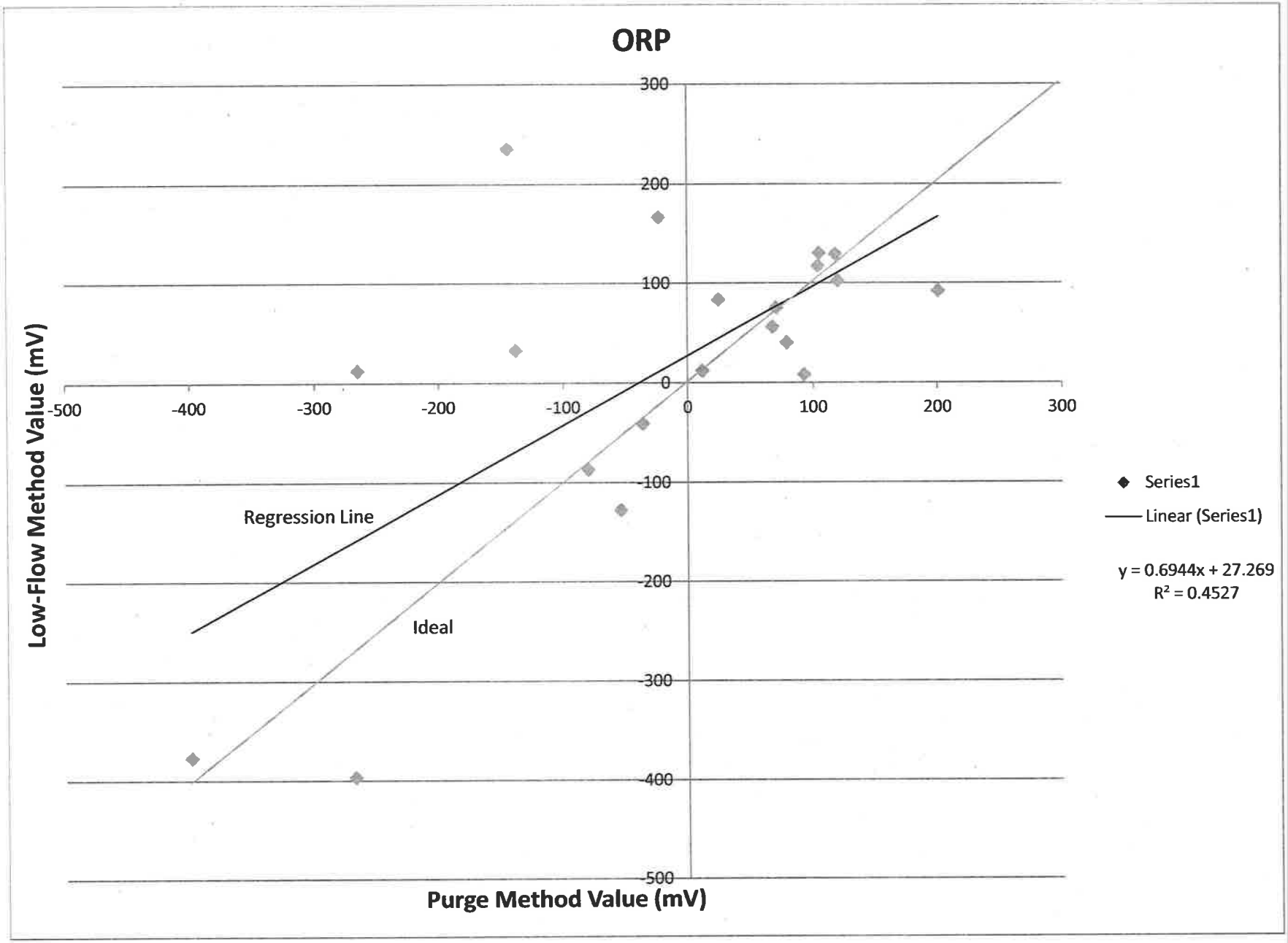

ORP
Low-Flow Method Value (mV)
Purge Method Value (mV)
300
200
100
0
-100
-200
-300
-400
-500
-500
-400
-300
-200
-100
0
100
200
300
Regression Line
Ideal
Series1
Linear (Series1)
y = 0.6944x + 27.269
R² = 0.4527

Figure 6

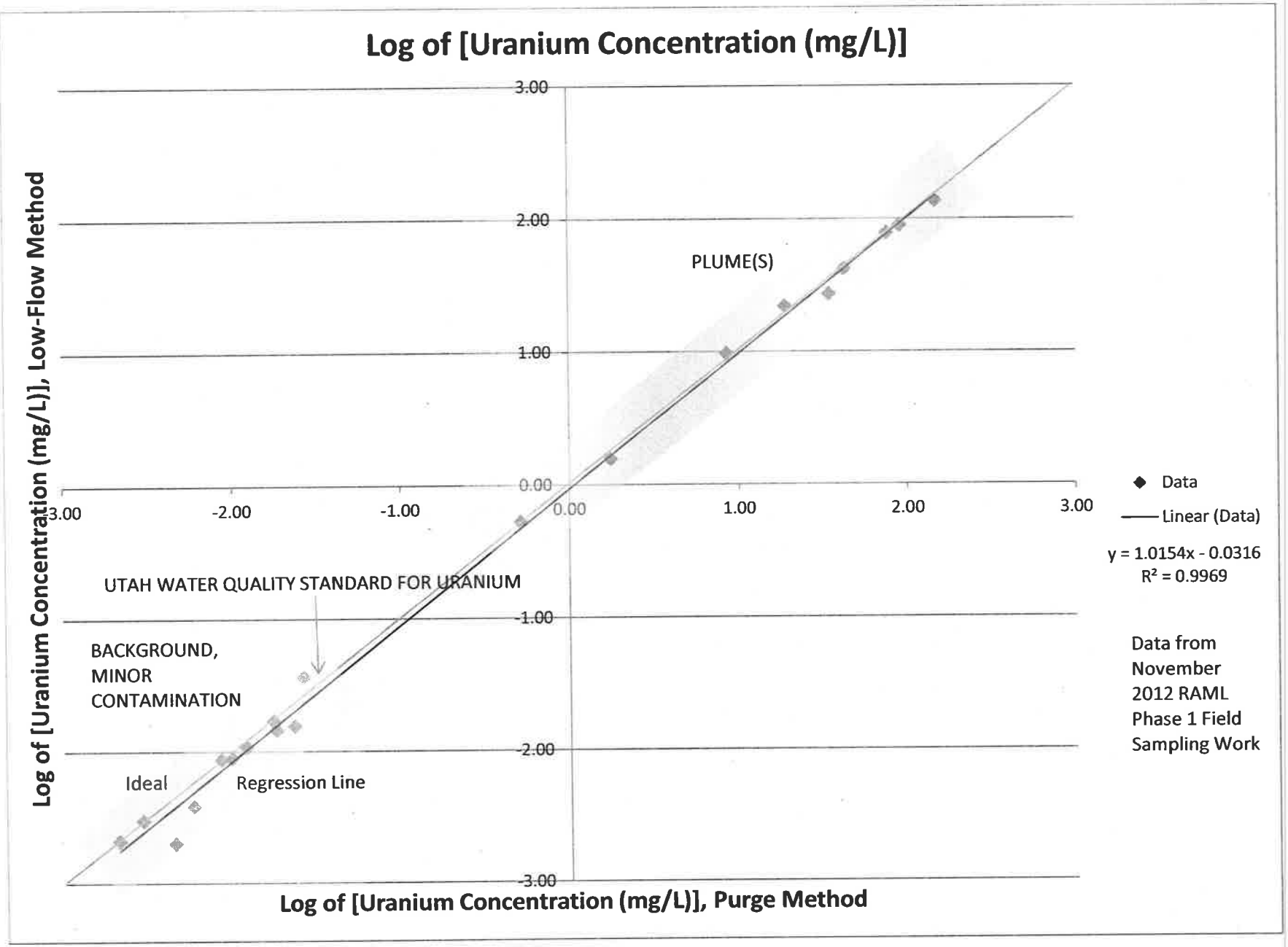

Log of [Uranium Concentration (mg/L)]
Log of [Uranium Concentration (mg/L)], Low-Flow Method
Log of [Uranium Concentration (mg/L)], Purge Method
3.00
2.00
1.00
0.00
-1.00
-2.00
-3.00
-3.00
-2.00
-1.00
0.00
1.00
2.00
3.00
PLUME(S)
UTAH WATER QUALITY STANDARD FOR URANIUM
BACKGROUND, MINOR CONTAMINATION
Ideal
Regression Line
Data
Linear (Data)
y = 1.0154x - 0.0316
R² = 0.9969
Data from November 2012 RAML Phase 1 Field Sampling Work

Figure 7

MONTGOMERY & ASSOCIATES

APPENDIX B

SUMMARY OF WELL INSTALLATION METHODS, WELL SCHEMATICS, AND LITHOLOGIC LOGS

MONTGOMERY & ASSOCIATES

APPENDIX B

SUMMARY OF WELL INSTALLATION METHODS, WELL SCHEMATICS AND LITHOLOGIC LOGS RIO ALGOM MINING LLC, LISBON FACILITY

A total of 27 new monitor wells were installed in 2012 and 2013 during the two-phased Supplemental Site Assessment (SSA) field program conducted at Rio Algom Mining LLC's Lisbon Facility (Site) (**Figure 4**). As part of Phase 1 of the SSA, eight monitor wells were installed on the Site during the period from September 9 to October 31, 2012. The remaining 19 monitor wells were installed on Bureau of Land Management (BLM) land west and south of the Site, during Phase 2 of the SSA from August 20 to October 11, 2013. The wells were designed and constructed in compliance with UAC R317-6-6.3(I)(6), the Utah Division of Water Rights Standards (R655-4 UAC), and the Resource Conservation and Recovery Act guidance document entitled *Ground Water Monitoring Technical Enforcement Guidance Document* (U.S. Environmental Protection Agency, 1986). Well construction activities were generally conducted in accordance with procedures described in the approved Phase 1 and Phase 2 work plans. Modifications to the work plans due to unexpected field conditions were discussed and approved by Utah Department of Environmental Quality, Division of Radiation Control (DRC) prior to implementation.

Twenty-one monitor wells were completed with screens in the Burro Canyon Aquifer hydrostratigraphic unit (BCA) within the Burro Canyon Formation (Kbc) and are designated as BCA wells. Five wells were completed with screens in the Brushy Basin Member (Jmb) of the Morrison Formation, within the Brushy Basin Member hydrostratigraphic unit (BBM), and are designated BBM wells. One well was installed south of the Lisbon Fault (LF) and screened in the Chinle Formation (TRc). The general objectives of the new wells are summarized below:

- BCA wells MW-101, MW-102, MW-104, MW-105, MW-108, MW-109, MW-114, MW-116, MW-118, MW-119, MW-120, and MW-122 were completed to fully penetrate the BCA.
- BCA wells MW-107S and MW-107D were completed as companion wells, to fully penetrate the BCA with isolated shallow and deep screens at a single location.
- BCA wells MW-100, MW-112, MW-113, MW-115S, MW-115M, MW-117S, and MW-117M were completed as companion wells to existing wells, to screen the saturated portion of the BCA not screened by the existing companion well.
- BBM wells MW-103, MW-106, MW-110 and MW-111 were completed in the upper 30 to 50 feet of the Jmb to characterize groundwater conditions in the BBM.
- BBM well MW-102DB was screened in the BBM beneath BCA.
- Well MW-121 was installed to characterize groundwater conditions south of the LF. Boring B-2 was advanced south of the LF, but was not completed as a monitor well.

Drilling was conducted by State of Utah licensed well drillers Boart Longyear (Phase 1) and National EWP (Phase 2), using reverse-circulation and conventional air drilling methods. Drilling and well construction activities were directed in the field by qualified Montgomery & Associates (M&A) hydrogeologists and completed under the supervision of an M&A Professional Geologist, licensed in the State of Utah. During drilling operations, the on-site M&A hydrogeologists obtained cuttings samples at minimally 10-foot depth intervals and maintained continuous lithologic logs of the subsurface materials encountered in each of the boreholes. Additionally, seven borehole locations were sampled continuously using coring methods.

The monitor well borings were generally drilled and constructed in a similar manner during each program phase, although specific adaptations were made on a well-by-well basis

to accommodate local hydrogeologic conditions. During Phase 1, temporary steel surface casing was advanced at each drilling location using a casing hammer and seated into competent bedrock. The boreholes were further advanced to total depth with an air hammer bit. The temporary steel casing was removed during well construction as the annular well materials were placed.

During Phase 2, at the majority of locations, boreholes were advanced approximately 5 feet into competent bedrock using a tri-cone bit. After permanent steel surface casing was cemented in place, the boreholes were further advanced to total depth with an air hammer bit. At several boring locations near the fault zone, where incompetent sandstone was encountered during coring or was suspected, the Symmetrix temporary casing advance method was used. Using this method, an 8-inch diameter casing shoe and locking pilot bit were advanced allowing temporary threaded steel casing to be installed to total borehole depth. During well construction, the steel casing was removed as the annular well materials were placed simultaneously.

During drilling, boreholes were monitored for water production at 10- to 20-foot increments. At each increment, the boreholes were evacuated of drill water by airlifting and airlifting continued for a prescribed period of time to determine whether the borehole was producing water. After total depth was reached at each location, boreholes were evacuated of drill water by airlifting. In general, water levels were allowed to stabilize before wells were designed and constructed. During Phase 1, injection water was used sparingly during drilling to aid in identifying the occurrence of the water table in each borehole. During Phase 2, drill water was injected at a higher rate to mitigate dust generated during drilling as required by the BLM Right of Way (ROW) access agreement.

All wells were constructed of flush-threaded, 4-inch diameter, schedule 40, PVC blank riser, machine-slotted well screen, and end caps. Well screen with horizontal 0.010-inch slots was used for wells installed during Phase 1 and for wells MW-121 and

MW-122 installed during Phase 2. Well screen with horizontal 0.020-inch slots was used at all other wells installed during Phase 2. All new wells were completed with lockable, 8-inch diameter, steel, above-grade monuments, set into four by four-foot concrete pads.

Schematic diagrams of the 27 monitor wells and 1 abandoned boring are presented on **Figures B-1 through B-28**. Detailed lithologic logs are provided in **Figures B-29 through B-57**. Drilling and well installation activities are described in the following sections.

FULLY PENETRATING BURRO CANYON AQUIFER MONITOR WELLS

Monitor wells MW-101, MW-102, MW-104, MW-105, MW-108, MW-109, MW-114, MW-118, MW-119, MW-120, and MW-122 were completed as fully penetrating BCA water table wells, screened across the entire saturated thickness of the aquifer. MW-116 was installed adjacent to the LF as a BCA water table well. Monitor well MW-118 was originally proposed as a companion well to existing well RL-6, to screen the lower saturated portion of the BCA. However, RL-6 extends only 4 feet into the BCA and contains an insufficient amount of water for representative sample collection. MW-118 was completed as a fully penetrating BCA water table well and replaces RL-6.

At MW-101, MW-102, MW-104, and MW-105, 10-inch diameter temporary surface casing was advanced to competent bedrock and the boreholes were further advanced using an 8 ⅝-inch diameter air hammer bit. The MW-108, MW-109, MW-114, MW-116, MW-119, MW-120, and MW-122 boreholes were advanced approximately 5 feet into competent bedrock using a 12 ¼-inch diameter tri-cone bit. Eight-inch diameter steel surface casing was cemented in place and the boreholes were further advanced to total depth using an 8-inch diameter air hammer bit. The MW-118 borehole was advanced using an 8-inch diameter Symmetrix casing shoe and locking hammer bit, and temporary steel casing. Drilling characteristics and specific well construction details for each BCA well are described below.

MW-101: The MW-101 borehole was advanced to a depth of 165 feet below ground surface (bgs), approximately five feet below the Kbc/Jmb contact. Unconsolidated Quaternary eolian and alluvial sediments (Qea) consisting primarily of silty sand were encountered from ground surface to approximately 5 feet bgs. From 5 to 160 feet bgs, Kbc was encountered and primarily consisted of well-lithified, fine-grained sandstone with minor layers of siltstone and limestone in the upper portion of the sequence. Green to red homogeneous Jmb shale was encountered from 160 to 165 feet bgs.

The occurrence of groundwater was not evident during drilling. However, after the borehole was advanced to total depth, the water table stabilized at approximately 149 feet bgs within a 24-hour period.

Monitor well MW-101 was screened from 139 to 159 feet bgs, with the screened interval extending from just above the Kbc/Jmb contact. From bottom to top, the annular space of the MW-101 borehole was back filled with coated bentonite pellets from total depth to the contact at 160 feet bgs, a silica sand filter pack extending 5 feet above the screened interval, a 2-foot thick layer of fine-grained transitional sand above the filter pack, a bentonite grout surface seal to 4 feet bgs, and concrete to ground surface.

MW-102: The MW-102 borehole was advanced to a depth of 141 feet bgs, approximately five feet below the Kbc/Jmb contact. Kbc was encountered from ground surface to 136 feet bgs, and comprised interbedded limestone and siltstone to 25 feet bgs, underlain by well-lithified, fine-grained sandstone with minor lenses of interbedded siltstone. Green to red homogeneous Jmb shale was encountered from 136 to 141 feet bgs.

The occurrence of groundwater was not evident during drilling. After the borehole was advanced to total depth, the water table stabilized at approximately 124 feet bgs within a 24-hour period.

Monitor well MW-102 was screened from 116 to 136 feet bgs, with the screened interval extending from the Kbc/Jmb contact. From bottom to top, the annular space of the MW-102 borehole was back filled with coated bentonite pellets from total depth to the contact at 136 feet bgs, a silica sand filter pack extending 4 feet above the screened interval, a 3-foot thick layer of fine-grained transitional sand above the filter pack, a bentonite grout surface seal to 3 feet bgs, and concrete to ground surface.

MW-104: In the MW-104 borehole, Kbc consisting of well-lithified, fine-grained sandstone was encountered from ground surface to approximately 99 feet bgs, underlain by Jmb shale. After the Kbc/Jmb contact was reached, the borehole was monitored for water production by airlifting. No evidence of groundwater was observed, and the borehole was advanced into the Jmb with the intention of constructing a BBM monitor well. Green to red Jmb shale was encountered from 99 feet bgs to total depth of 232 feet bgs. During continued drilling, the borehole was advanced without injection water to aid in identifying the first occurrence of the water table. Evidence of groundwater was not observed and airlifting yielded no water production at total depth. However, wet mud on the sounder measuring tape indicated that the borehole sidewalls were wet across the entire interval from approximately 97 to 232 feet bgs. The borehole was left open and monitored periodically for water level. After a period of 24 days, water level in the borehole rose to 121 feet bgs. Water level had not yet stabilized and wet mud on the sounder tape indicated that formation water was present in the Kbc several feet above the Kbc/Jmb contact. A decision was made to partially backfill the borehole and complete well MW-104 as a BCA well. Prior to backfilling and well construction, the water that had accumulated in the borehole was evacuated.

Monitor well MW-104 was screened from 68.5 to 98.5 feet bgs, with the screened interval extending from just above the Kbc/Jmb contact. Because the saturated thickness appeared to be small at this location, a 10-foot blank sump was installed below the screen to

provide a greater volume of water for future sample collection. From bottom to top, the annular space of the MW-104 borehole was back filled with hydrated bentonite chips from total depth to 110 feet bgs, coated bentonite pellets from 110 feet bgs to the Kbc/Jmb contact at 99 feet bgs, a silica sand filter pack extending 4 feet above the screened interval, a 3-foot thick layer of fine-grained transitional sand above the filter pack, a bentonite grout surface seal to 2 feet bgs, and concrete to ground surface.

MW-105: The MW-105 borehole was advanced to a depth of 141 feet bgs, approximately six feet below the Kbc/Jmb contact. Unconsolidated Qea consisting primarily of silty sand was encountered from land surface to approximately 10 feet bgs. From 10 to 135 feet bgs, Kbc was encountered and primarily consisted of well-lithified, fine-grained sandstone with a coarse sandstone to conglomerate layer from 120 to 135 feet bgs. Green to red homogeneous Jmb shale was encountered from 135 to 141 feet bgs.

The borehole began producing a measureable amount of groundwater at approximately 80 feet bgs. The borehole produced approximately 20 gallons per minute (gpm) at total depth. The water table stabilized in the borehole at approximately 75 feet bgs prior to well construction

Monitor well MW-105 was screened from 64.5 to 134.5 feet bgs, with the screened interval extending from just above the Kbc/Jmb contact. From bottom to top, the annular space of the MW-105 borehole was back filled with coated bentonite pellets from total depth to the contact at 135 feet bgs, a silica sand filter pack extending 5 feet above the screened interval, a 3-foot thick layer of fine-grained transitional sand above the filter pack, a bentonite grout surface seal to 3 feet bgs, and concrete to ground surface.

MW-108: The MW-108 borehole was initially advanced to a depth of 20 feet bgs and 8-inch diameter permanent steel surface casing was cemented in place. The borehole was further advanced to a depth of 174 feet bgs, approximately 6 feet below the Kbc/Jmb

contact. Unconsolidated Qea consisting primarily of silty sand was encountered from ground surface to approximately 11 feet bgs. Kbc was encountered from ground surface to 168 feet bgs, and primarily consisted of moderately- to well-lithified, fine-grained sandstone, with layers of siltstone and reddish brown shale from 22 to 42 feet bgs and from 83 to 85 feet bgs. Greenish blue to reddish brown homogeneous Jmb shale was encountered from 168 to 174 feet bgs.

Beginning at a depth of 60 feet bgs, the MW-108 borehole was monitored for water production by airlifting at 10-foot increments. The borehole began producing a measureable amount of groundwater at 100 feet bgs, producing less than 1 gpm. Water production increased significantly as the borehole was advanced, and the borehole produced approximately 40 gpm at total depth. Within one hour of final airlifting, the water table stabilized in the borehole at approximately 26 feet bgs. Water production monitoring indicated that the aquifer is confined at this location, most likely by the fine-grained siltstone layers identified above 85 feet bgs. Based on the observed groundwater conditions, the well was designed to screen the interval below the suspected low-permeability confining layer.

Monitor well MW-108 was screened from 88 to 168 feet bgs, with the screened interval extending from the Kbc/Jmb contact to just below the fine-grained siltstone layer at 85 feet bgs. From bottom to top, the annular space of the borehole was back filled with coated bentonite pellets from total depth to the contact at 168 feet bgs, a silica sand filter pack extending 5 feet above the screened interval, a 6-foot thick layer of hydrated bentonite chips above the filter pack, and a bentonite grout surface seal to ground surface.

MW-109: Prior to well drilling at the MW-109 drilling location, a 5-inch diameter (PQ) corehole was advanced to obtain continuous core samples and characterize lithology at the crest of the Lisbon Valley Anticline (LVA). The corehole was advanced to a depth of 160 feet bgs, approximately six feet below the Kbc/Jmb contact. Unconsolidated Qea consisting primarily of silty sand was encountered from ground surface to approximately

3 feet bgs. From 3 to 154 feet bgs, Kbc was encountered and primarily consisted of well-lithified, fine-grained sandstone with conglomerate layers in the lower portion of the sequence. Reddish brown homogeneous Jmb shale was encountered from 154 to 160 feet bgs. The MW-109 well borehole was installed within 10 feet of the coring location. After 8-inch diameter permanent steel surface casing was cemented in place to 12 feet bgs, the borehole was further advanced to a depth of 155 feet bgs, approximately one foot below the Kbc/Jmb contact.

The occurrence of groundwater was not evident during drilling. After drill water was evacuated by airlifting, the borehole produced approximately 1 gpm at total depth. The water table stabilized in the borehole at approximately 135 feet bgs within a 12-hour period (overnight) prior to well construction.

Monitor well MW-109 was screened from 124 to 154 feet bgs, with the screened interval extending from the Kbc/Jmb contact. From bottom to top, the annular space of the borehole was back filled with coated bentonite pellets from total depth to the contact at 154 feet bgs, a silica sand filter pack extending 5 feet above the screened interval, a 7-foot thick layer of hydrated bentonite chips above the filter pack, and a bentonite grout surface seal to ground surface.

MW-114: The MW-114 borehole was initially advanced to a depth of 25 feet bgs and 8-inch diameter permanent steel surface casing was cemented in place. The borehole was further advanced to a depth of 204 feet bgs, approximately 6 feet below the Kbc/Jmb contact. Unconsolidated Qea consisting primarily of silty sand was encountered from ground surface to approximately 22 feet bgs. From 22 to 198 feet bgs, Kbc was encountered and primarily consisted of well-lithified, fine- to medium-grained sandstone with minor layers of siltstone and limestone in the upper portion of the sequence. Greenish blue to reddish brown homogeneous Jmb shale was encountered from 198 to 204 feet bgs.

The borehole began producing a measureable amount of groundwater at approximately 70 feet bgs. The borehole produced approximately 20 gpm at total depth. The water table stabilized in the borehole at approximately 58 feet bgs prior to well construction.

Monitor well MW-114 was screened from 48 to 198 feet bgs, with the screened interval extending from the Kbc/Jmb contact. From bottom to top, the annular space of the borehole was back filled with coated bentonite pellets from total depth to the contact at 198 feet bgs, a silica sand filter pack extending 6 feet above the screened interval, a 4-foot thick layer of hydrated bentonite chips above the filter pack, and a bentonite grout surface seal to ground surface.

MW-116: The MW-116 drill site was selected to characterize groundwater conditions in close proximity to the LF normal fault. Prior to well drilling, a PQ corehole was advanced and core samples were obtained to characterize fault zone geology in this area and to determine the location of the boring relative to the LF. Unconsolidated Qea consisting primarily of silty sand was encountered from ground surface to approximately 11 feet bgs, underlain by weakly- to moderately-lithified, interbedded fine-grained sandstone and siltstone to 33 feet bgs. Interbedded layers of gray shale, siltstone, and sandstone were encountered from 33 to 58 feet bgs. The lithology encountered in the upper sequence at the MW-116 location differed significantly from the Kbc lithology observed in nearby borings. Based on the occurrence of carbonized fossil wood from 33 to 38 feet bgs, characteristic of TRc, a determination was made in the field that the boring had penetrated the footwall of the LF normal fault plane. The corehole was terminated at 58 feet bgs.

Based on field observations, well MW-116 was expected to be screened in the TRc, within the footwall formation on the south side of the LF. The MW-116 well borehole was installed within 10 feet of the coring location. After 8-inch diameter permanent steel surface casing was cemented in place to 20 feet bgs, the borehole was further advanced to a depth of

123 feet bgs. The lithology encountered from ground surface to 58 feet bgs was similar to that observed in the corehole. Interbedded siltstone and fine-grained sandstone was encountered from 58 to 83 feet bgs, underlain by clayey shale from 83 to 96 feet bgs, interbedded fine- to medium-grained sandstone and siltstone from 96 to 110 feet bgs, and siltstone to 123 feet bgs.

Beginning at a depth of 80 feet bgs, the MW-116 well borehole was monitored for water production by airlifting at 10-foot increments. Groundwater was first observed at 100 feet bgs, with the borehole producing less than 1 gpm. At total depth, the borehole produced approximately 5 gpm. Within one hour of final airlifting, the water table stabilized in the borehole at approximately 85 feet bgs. Based on the observed groundwater conditions, the well was designed to screen the interval below the low-permeability layer identified from 83 to 96 feet bgs.

Monitor well MW-116 was screened from 102 to 122 feet bgs. From bottom to top, the annular space of the borehole was back filled with a silica sand filter pack extending 5 feet above the screened interval, a 5-foot thick layer of hydrated bentonite chips above the filter pack, and a bentonite grout surface seal to ground surface.

Following the completion of monitor well MW-116, the MW-121 borehole was advanced approximately 1,000 feet to the south, in a location known to be south of the LF. In the MW-121 borehole, TRc was encountered from 164 to 203 feet bgs and consisted of greenish gray to reddish brown thinly laminated shale. Based on lithology encountered in the MW-121 borehole, the cuttings from the MW-116 borehole were re-examined. It was concluded that the MW-116 borehole was advanced into Kbc in close proximity to the LF and the borehole did not penetrate the fault plane. MW-116 is screened in Kbc on the north side of the LF.

MW-118: As proposed in the Phase 2 work plan, the MW-118 borehole was advanced adjacent to existing well RL-6 to determine if RL-6 is screened in a perched water zone or the regional groundwater. Existing monitor well RL-6 was completed to a depth of 17 feet bgs, and contains approximately 4 feet of water. A description of the lithology encountered during installation is not available and the rationale for the shallow construction is unknown. The findings of exploratory borehole would determine the MW-118 well design, based on whether or not a "perching unit" was encountered.

Prior to well drilling at the MW-118 location, a PQ corehole was advanced to obtain undisturbed samples for detailed lithologic characterization. The corehole was advanced to a depth of 78 feet bgs, approximately 13 feet below the Kbc/Jmb contact. Unconsolidated Qea consisting primarily of silty sand was encountered from ground surface to approximately 12 feet bgs. Kbc was encountered from 12 to 65 feet bgs and consisted of alternating layers of fine- to medium-grained unconsolidated sand, weathered and poorly-lithified sandstone, and well-lithified sandstone. Greenish blue homogeneous Jmb shale was encountered from 65 to 78 feet bgs. Suspected perching units were not identified in the Kbc core samples from 12 to 65 feet bgs. Based on the corehole lithology, RL-6 is installed in the BCA. The incompetent sandstone observed in the core samples indicates sloughing conditions may have prevented deeper well construction.

To maintain borehole stability during drilling and well construction, the MW-118 well borehole was advanced to total depth using the Symmetrix drilling method. The well borehole was installed within 10 feet of the coring location, and was advanced to a depth of 69 feet bgs, approximately four feet below the Kbc/Jmb contact. During drilling, the MW-118 borehole began producing a measureable amount of groundwater at approximately 15 feet bgs. At total depth, the borehole produced approximately 5 gpm. The water table stabilized in the borehole at approximately 15 feet bgs prior to well construction.

Because RL-6 is shallow and contains an insufficient amount of water for representative sample collection, MW-118 was completed as a fully penetrating BCA water table well, screened across the entire saturated thickness of the aquifer. Monitor well MW-118 was screened from 10 to 65 feet bgs, with the screened interval extending from the Kbc/Jmb contact. From bottom to top, the annular space of the borehole was back filled with coated bentonite pellets from total depth to the contact at 65 feet bgs, a silica sand filter pack extending 2 feet above the screened interval, a 3-foot thick layer of hydrated bentonite chips above the filter pack, and a bentonite grout surface seal to ground surface.

MW-119: The MW-119 borehole was initially advanced to a depth of 17 feet bgs and 8-inch diameter permanent steel surface casing was cemented in place. The borehole was further advanced to a depth of 104 feet bgs, approximately 31 feet below the Kbc/Jmb contact. Unconsolidated Qea consisting primarily of silty sand was encountered from ground surface to approximately 5 feet bgs. From 5 to 73 feet bgs, Kbc was encountered and primarily consisted of moderately-lithified, fine- to medium-grained sandstone with minor interbedded siltstone layers. Reddish brown homogeneous Jmb shale was encountered from 73 to 104 feet bgs.

The occurrence of groundwater was not evident during drilling. However, after the borehole was advanced to the Kbc/Jmb contact at 73 feet bgs, drill water was evacuated by airlifting and the water table stabilized at approximately 70 feet bgs within a 12-hour period (overnight). Because the BCA saturated thickness appeared to be small at this location, the borehole was further advanced into the Jmb to accommodate a blank sump below the screened interval to provide a greater volume of water for future sample collection.

Monitor well MW-119 was screened from 53 to 73 feet bgs, with the screened interval extending from the Kbc/Jmb contact. A 15-foot blank sump was installed below the screened interval. From bottom to top, the annular space of the borehole was back filled with coated bentonite pellets from total depth to 74 feet bgs, a silica sand filter pack extending

7 feet above the screened interval, a 3-foot thick layer of hydrated bentonite chips above the filter pack, and a bentonite grout surface seal to ground surface.

MW-120: The MW-120 borehole was initially advanced to a depth of 40 feet bgs and 8-inch diameter permanent steel surface casing was cemented in place. The borehole was further advanced to a depth of 260 feet bgs, approximately 14 feet below the Kbc/Jmb contact. Unconsolidated Qea consisting primarily of silty sand was encountered from ground surface to approximately 18 feet bgs. From 18 to 246 feet bgs, Kbc was encountered and consisted of moderately- to well-lithified, fine-grained sandstone with interbedded layers of conglomerate and siltstone. Greenish gray to reddish brown homogeneous Jmb shale was encountered from 246 to 260 feet bgs.

The borehole began producing a measureable amount of groundwater at approximately 130 feet bgs. The borehole produced approximately 20 gpm at total depth. The water table stabilized in the borehole at approximately 125 feet bgs prior to well construction.

Monitor well MW-120 was screened from 115 to 245 feet bgs, with the screened interval extending from the Kbc/Jmb contact. From bottom to top, the annular space of the borehole was back filled with coated bentonite pellets from total depth to the contact at 245 feet bgs, a silica sand filter pack extending 6 feet above the screened interval, a 10-foot thick layer of hydrated bentonite chips above the filter pack, and a bentonite grout surface seal to ground surface.

MW-122: The MW-122 borehole was initially advanced to a depth of 10 feet bgs and 8-inch diameter permanent steel surface casing was cemented in place. The borehole was further advanced to a depth of 203 feet bgs, approximately 7 feet below the Kbc/Jmb contact. Kbc was encountered from ground surface to 195 feet bgs, and comprised moderately- to well-lithified, fine-grained sandstone with minor layers of interbedded

siltstone. Jmb was encountered at 195 feet bgs and comprised yellowish gray to blue clay from 195 to 200 feet bgs, underlain by reddish brown homogeneous shale from 200 to 203 feet bgs.

The occurrence of groundwater was not evident during drilling. At total depth, drill water was evacuated from the borehole by airlifting. After a monitoring period of 12 hours, the borehole contained a small amount of water, but did not produce a measureable amount of water during airlifting. A decision was made to build the well at the Kbc/Jmb contact, with the screened interval across the lower portion of the Kbc.

Monitor well MW-122 was screened from 156 to 196 feet bgs, with the screened interval extending from the Kbc/Jmb contact. From bottom to top, the annular space of the borehole was back filled with coated bentonite pellets from total depth to the contact at 196 feet bgs, a silica sand filter pack extending 8 feet above the screened interval, a 10-foot thick layer of hydrated bentonite chips above the filter pack, and a bentonite grout surface seal to ground surface.

COMPANION BURRO CANYON AQUIFER MONITOR WELLS

Monitor wells MW-100, MW-112, MW-113, MW-115S, MW-115M, MW-117S, and MW-117M were completed as companion wells to existing wells, to screen the upper saturated portion of the BCA not screened by the existing companion well. Monitor wells MW-107S and MW-107D were completed as new companion wells, to fully penetrate the BCA with isolated shallow and deep screens at a single location.

After temporary surface casing was installed to bedrock, the MW-100 borehole was advanced to total depth using an 8 ⅝-inch diameter air hammer bit. The MW-112, MW-113, and MW-115S boreholes were advanced approximately 5 feet into competent

bedrock using a 12 ¼-inch diameter tri-cone bit. Eight-inch diameter steel surface casing was cemented in place, and the boreholes were further advanced to total depth using a 8-inch diameter air hammer bit. The MW-107S, MW-107D, and MW-117S boreholes were advanced using an 8-inch diameter Symmetrix casing shoe and locking hammer bit, and temporary steel casing. The MW-115M and MW-117M boreholes were advanced using a combination of the drilling methods. The boreholes were initially advanced approximately 5 feet into competent bedrock using a 19-inch diameter tri-cone bit. Fourteen-inch diameter steel surface casing was cemented in place and the boreholes were further advanced using a 10-inch diameter air hammer bit. Because of sloughing conditions, the boreholes were re-entered with the 8-inch diameter Symmetrix bit and temporary casing to stabilize the boreholes for well construction. Drilling characteristics and specific well construction details for each BCA companion well are described below.

MW-100: The MW-100 boring was advanced to a depth of 208 feet bgs, adjacent to existing monitor well LW-1. Unconsolidated Qea consisting primarily of silty sand was encountered from ground surface to approximately 5 feet bgs. Weakly- to well-lithified, interbedded, fine grained sandstone, shale, and siltstone of the Dakota Sandstone (Kd) were encountered from 5 to 70 feet bgs. Kbc was encountered from 70 feet bgs to total depth of 208 feet bgs and comprised siltstone and limestone underlain by moderately- to well-lithified, fine- to coarse-grained sandstone, generally coarsening with depth.

The borehole began producing a measureable amount of groundwater at approximately 170 feet bgs. The borehole produced approximately 10 gpm at total depth. The water table stabilized in the borehole at approximately 145 feet bgs prior to well construction.

Monitor well MW-100 was screened from 138 to 203 feet bgs, with the bottom of the screened interval approximately at the elevation of the top of the well screen in LW-1. From bottom to top, the annular space of the MW-100 borehole was back filled with a silica sand

filter pack extending 5 feet above the screened interval, a 3-foot thick layer of fine-grained transitional sand above the filter pack, a bentonite grout surface seal to 4 feet bgs, and concrete to ground surface.

MW-107S and MW-107D: Prior to well drilling at the MW-107S and MW-107D drilling locations, a PQ corehole was advanced to characterize fault geology near the LF. The corehole was advanced to a depth of 85 feet bgs, approximately 5 feet below the Kbc/Jmb contact. Unconsolidated Qea consisting primarily of silty sand was encountered from ground surface to approximately 5 feet bgs. Kbc was encountered from 5 to 80 feet bgs and consisted of alternating layers of fine- to medium-grained unconsolidated sand, weathered and poorly-lithified sandstone, and well-lithified sandstone. Greenish blue homogeneous Jmb shale was encountered from 80 to 85 feet bgs. To maintain borehole stability during drilling and well construction, the MW-107S and MW-107D well boreholes were advanced to total depth using the Symmetrix drilling method. The well boreholes were installed within 10 feet of the coring location. The deeper MW-107D borehole was drilled first and advanced to a depth of 81 feet bgs, approximately one foot below the Kbc/Jmb contact. The shallow MW-107S borehole was advanced to a depth of 61 feet bgs.

The MW-107D borehole began producing a measureable amount of groundwater at approximately 60 feet bgs. At total depth, the borehole produced approximately 8 gpm. The water table stabilized in the borehole at approximately 50 feet bgs prior to well construction. The lower and upper screened intervals for MW-107D and MW-107S, respectively, were designed based on the static water level observed in the MW-107D borehole.

Monitor well MW-107D was screened from 60 to 80 feet bgs, with the screened interval extending from the Kbc/Jmb contact. From bottom to top, the annular space of the borehole was back filled with coated bentonite pellets from total depth to the contact at 80 feet bgs, a silica sand filter pack extending 5 feet above the screened interval, a 6-foot

thick layer of hydrated bentonite chips above the filter pack, and a bentonite grout surface seal to ground surface.

Monitor well MW-107S was screened from 30 to 60 feet bgs, with the bottom of the screened interval at the approximate elevation of the top of the MW-107D well screen. From bottom to top, the annular space of the borehole was back filled with a silica sand filter pack extending 5 feet above the screened interval, a 5-foot thick layer of hydrated bentonite chips above the filter pack, and a bentonite grout surface seal to ground surface.

MW-112: The MW-112 borehole was advanced adjacent to existing monitor well ML-1. The borehole was initially advanced to a depth of 20 feet bgs and 8-inch diameter permanent steel surface casing was cemented in place. The borehole was further advanced to a depth of 143 feet bgs. Unconsolidated Qea consisting primarily of silty sand was encountered from ground surface to approximately 15 feet bgs. Kbc was encountered from 15 to 143 feet bgs and comprised interbedded moderately- to well-lithified, sandstone, limestone, and siltstone to 40 feet bgs, underlain by fine-grained sandstone with minor layers of interbedded siltstone.

The borehole began producing a measureable amount of groundwater at approximately 90 feet bgs. At total depth, the borehole produced approximately 14 gpm. The water table stabilized in the borehole at approximately 44 feet bgs prior to well construction.

Monitor well MW-112 was screened from 35 to 140 feet bgs, with the bottom of the screened interval approximately at the elevation of the top of the well screen in ML-1. From bottom to top, the annular space of the borehole was back filled with a silica sand filter pack extending 5 feet above the screened interval, a 5-foot thick layer of hydrated bentonite chips above the filter pack, and a bentonite grout surface seal to ground surface.

MW-113: The MW-113 borehole was advanced adjacent to existing monitor well EF-6. The borehole was initially advanced to a depth of 18 feet bgs and 8-inch diameter permanent steel surface casing was cemented in place. The borehole was further advanced to a depth of 105 feet bgs. Unconsolidated Qea consisting primarily of silty sand was encountered from ground surface to approximately 11 feet bgs. Kbc was encountered from 11 to 105 feet bgs, and consisted primarily of weakly- to well-lithified, fine-grained sandstone with minor layers of limestone and siltstone in the upper portion of the sequence.

The occurrence of groundwater was not evident during drilling. After the borehole was advanced to total depth and drill water was evacuated by airlifting, the borehole produced approximately 2 gpm. The water table stabilized in the borehole at approximately 67 feet bgs prior to well construction.

Monitor well MW-113 was screened from 58 to 103 feet bgs, with the bottom of the screened interval approximately at the elevation of the top of the well screen in EF-6. From bottom to top, the annular space of the borehole was back filled with a silica sand filter pack extending 6 feet above the screened interval, a 5-foot thick layer of hydrated bentonite chips above the filter pack, and a bentonite grout surface seal to ground surface.

MW-115S and MW-115M: As proposed in the Phase 2 work plan, a borehole was advanced adjacent to existing well EF-8 for the installation of a single new companion well with a well screen spanning the entire upper portion of BCA saturated interval not screened by EF-8. The borehole was initially advanced to a depth of 20 feet bgs and 8-inch diameter permanent steel surface casing was cemented in place. The borehole was further advanced to the target depth of 218 feet bgs. Unconsolidated Qea consisting primarily of silty sand was encountered from ground surface to approximately 17 feet bgs. Kbc was encountered from 17 to 218 feet bgs, and consisted primarily of moderately- to well-lithified, fine-grained sandstone from 17 to 40 feet bgs, underlain by interbedded moderately-lithified siltstone and sandstone from 40 to 130 feet bgs. From 130 to 218 feet bgs, Kbc primarily consisted of

fine- to medium-grained, moderately-lithified sandstone interbedded with conglomerate. Significant fractures and voids were encountered from 130 to 218 feet bgs.

After total depth was reached and the tooling was removed, the borehole sloughed and became obstructed at approximately 135 feet bgs. Repeated attempts to clear the borehole with the air hammer were unsuccessful. Use of the Symmetrix casing advance method to remove the slough and stabilize the borehole was prevented by the 8-inch diameter surface casing. With DRC approval, the decision was made to complete a shallow monitor well, designated MW-115S, in the borehole above the sloughed zone, to screen the upper portion of the BCA. A second intermediate well, designated MW-115M, would be installed with a screen spanning the interval between the MW-115S and EF-8 well screens.

The MW-115S borehole began producing a measureable amount of groundwater at approximately 100 feet bgs. At total depth of 218 feet bgs, the borehole produced approximately 25 gpm. Prior to well construction, the water table stabilized in the borehole at approximately 75 feet bgs.

Prior to MW-115S well construction, the lower portion of the borehole from 125 to 218 feet bgs was abandoned. The drill string was advanced to total depth and high solids bentonite grout was injected through the drill rods and bit as the tooling was retrieved. Monitor well MW-115S was constructed in the upper portion of the borehole, with a screened interval from 60 to 125 feet bgs. From bottom to top, the upper annular space of the borehole was back filled with a silica sand filter pack from 125 to 50 feet bgs, a 10-foot thick layer of hydrated bentonite chips above the filter pack, and a bentonite grout surface seal to ground surface.

The first attempt at MW-115M well installation was unsuccessful. The first borehole was advanced approximately 45 feet north of the completed MW-115S well. The borehole was initially advanced to a depth of 20 feet bgs and 14-inch diameter permanent steel surface

casing was cemented in place to accommodate the potential use of the Symmetrix drilling method. The borehole was further advanced using a 10-inch diameter air hammer bit. The lithology and groundwater conditions encountered were similar to those observed in the MW-115S borehole. Kbc comprised interbedded, moderately-lithified, fine-grained sandstone and siltstone from 18 to 110 feet bgs, underlain by fractured, moderately-lithified, fine-grained sandstone to 160 feet bgs. The borehole began producing a measureable amount of groundwater at approximately 100 feet bgs and water production increased with depth. When the MW-115M borehole reached a depth of 150 feet bgs, cuttings return and fluid circulation were lost. At 155 feet bgs, groundwater began flowing from adjacent well MW-115S. A decision was made to stop drilling at 160 feet bgs to prevent possible damage to well MW-115S. The borehole was abandoned with high solids bentonite grout and capped with neat cement from 5 feet bgs to ground surface.

A second MW-115M borehole was advanced approximately 45 feet south of well MW-115S. To prevent potential groundwater flow from adjacent wells EF-8 and MW-115S during drilling, temporary 4-inch diameter rubber bell plugs, designed to expand and seal under pressure, were installed just above the screened intervals. After 14-inch surface casing was installed to 20 feet bgs, the MW-115M borehole was further advanced using a 10-inch diameter air hammer bit to a depth of 225 feet bgs. The lithology and groundwater conditions encountered were similar to those observed in the adjacent MW-115S borehole. To maintain borehole stability for well construction, Symmetrix temporary casing was advanced to total depth. As the pilot bit and rods were removed, unconsolidated sand heaved into the temporary casing to a depth of 190 feet bgs. The Symmetrix temporary casing was further advanced past the incompetent zone to a depth of 240 feet bgs. Well-lithified sandstone, encountered from 230 to 240 feet bgs, prevented heaving sands from re-entering the temporary casing.

Intermediate monitor well MW-115M was screened from 125 to 215 feet bgs, with the bottom of the screened interval approximately at the elevation of the top of the well

screen in EF-8. Because the Symmetrix drilling method was used for the final drill pass and the borehole was advanced deeper than anticipated, a blank sump was required from 215 to 240 feet bgs. Using the Symmetrix method, the well casing is lowered into the temporary steel casing and rests on the bottom of the borehole as the temporary casing is retrieved and annular materials are placed. Heaving sands prevented the retrieval of the temporary casing and placement of annular materials before the well casing was placed, and the blank section was required to achieve the desired screened interval depth. From bottom to top, the annular space of the borehole was back filled with a silica sand filter pack extending 10 feet above the screened interval, a 23-foot thick layer of hydrated bentonite chips above the filter pack, and a bentonite grout surface seal to ground surface.

MW-117S and MW-117M: The Phase 2 work plan proposed the installation of two companion wells adjacent to existing well EF-3A. One new well was proposed to screen the upper saturated portion of the BCA not screened by well EF-3A. The second new well was proposed as a BBM well, screened beneath saturated BCA. At the deep well location, the installation of a permanent steel 8-inch diameter conductor casing string was required to seal off the BCA and prevent cross contamination to the BBM. Once the steel casing string was cemented in place from ground surface to the Kbc/Jmb contact, the borehole would be advanced into the Jmb and the well built with 30 feet of screened interval in the BBM. Installation of the conductor casing was contingent upon the borehole remaining open while the conductor casing joints were welded and the casing string was lowered to the desired depth.

Initially, a PQ corehole was advanced to a depth of 212 feet bgs, approximately 14 feet below the Kbc/Jmb contact. Unconsolidated Qea consisting primarily of silty sand was encountered from ground surface to approximately 21 feet bgs. Kbc was encountered from 21 to 198 feet bgs. Kbc consisted of fine-grained, moderately- to well-lithified sandstone from 21 to 48 feet bgs, underlain by moderately-lithified, interbedded siltstone and sandstone to 98 feet bgs. From 98 to 198 feet bgs, Kbc primarily consisted of fine- to

medium-grained, well-lithified sandstone interbedded with minor limestone layers. Two significant zones of unconsolidated sand to very weakly-lithified sandstone were identified from 127 to 130 feet bgs and from 144 to 145 feet bgs. Greenish blue to reddish brown homogeneous Jmb shale was encountered from 198 to 212 feet bgs.

After coring was completed, the borehole intended for the installation of the BBM well was initially advanced to a depth of 19 feet bgs and 14-inch diameter permanent steel surface casing was cemented in place. The borehole was further advanced using a 10-inch diameter air hammer bit to a depth of 210 feet bgs, approximately 12 feet below the Kbc/Jmb. The lithology encountered was similar to that observed at the adjacent cored location. As the tooling was removed, the borehole sloughed and became obstructed at 131 feet bgs. Repeated attempts to clear the borehole were unsuccessful, preventing the installation of the 8-inch conductor casing. With DRC approval, the decision was made to abort the BBM well design. Instead, an intermediate BCA well, designated MW-117M, would be constructed in the borehole and discretely screened across the identified zones of the incompetent, weakly-lithified sandstone. A second shallow BCA well, designated MW-117S, would be installed to screen the remaining upper saturated portion of the BCA.

During drilling, the MW-117M borehole began producing a measureable amount of groundwater at approximately 110 feet bgs. At total depth, the borehole produced approximately 20 gpm. The water table stabilized in the borehole at approximately 82 feet bgs.

Prior to construction of intermediate well MW-117M, the lower portion of the borehole from 150 to 210 feet bgs was abandoned. The drill string was advanced to total depth and high solids bentonite grout was injected through the drill rods and bit as the tooling was retrieved. After the lower portion of the borehole was abandoned, Symmetrix temporary casing was advanced to 150 feet bgs to maintain borehole stability during well construction. Monitor well MW-117M was screened from 125 to 150 feet bgs, with the bottom of the

screened interval approximately at the elevation of the top of the well screen in EF-3A. From bottom to top, the upper annular space of the borehole was back filled with a silica sand filter pack from 150 to 121 feet bgs, a 2-foot thick layer of hydrated bentonite chips above the filter pack, and a bentonite grout surface seal to ground surface.

The MW-117S well borehole was advanced to a depth of 128 feet bgs using the Symmetrix drilling method, to maintain borehole stability during drilling and well construction. The lithology and groundwater conditions encountered were similar to those observed at the adjacent MW-117M borehole. Monitor well MW-117S was screened from 70 to 125 feet bgs. From bottom to top, the annular space of the borehole was back filled with a silica sand filter pack extending 7 feet above the screened interval, a 10-foot thick layer of hydrated bentonite chips above the filter pack, and a bentonite grout surface seal to ground surface.

During development activities at well MW-117M, field parameter monitoring indicated that pH was significantly higher (12.3) than pH observed in adjacent wells EF-3A and MW-117S (7.5 – 7.9). It was suspected that the bentonite grout used to decommission the lower portion of the borehole, from 150 to 210 feet bgs, may have heaved into the lower portion of the well screen, resulting in basic conditions. Approximately 0.5 cubic feet of bentonite grout was removed from the bottom of the well using a bailer, and the well was developed aggressively to remove any additional grout. After approximately 1,800 gallons of water was removed with a temporary pump, the water cleared of grout and pH stabilized at 9.8. Groundwater sampling conducted at the well in April 2014 indicated that pH is decreasing (**Appendix H**).

BRUSHY BASIN MEMBER MONITOR WELLS

Monitor wells MW-103, MW-106, MW-110, and MW-111 were completed to monitor water table conditions in the BBM. At MW-103 and MW-106, temporary surface casing was advanced to competent bedrock and the boreholes were further advanced using an 8 ⅝-inch diameter air hammer bit. The MW-110 and MW-111 boreholes were advanced approximately 5 feet into competent bedrock using a 12 ¼-inch diameter tri-cone bit, 8-inch diameter steel surface casing was cemented in place, and the boreholes were further advanced to total depth using an 8-inch diameter air hammer bit. Monitor well MW-102DB was screened in the BBM beneath the BCA. A steel conductor casing was installed to the Kbc/Jmb contact and cemented in place to seal off the BCA aquifer and prevent cross contamination to the BBM. Drilling characteristics and specific well construction details for each BBM well are described below.

MW-102DB: The MW-102DB borehole was initially advanced with a PQ core barrel to retrieve continuous core samples. The cored borehole was advanced to a depth of 140 feet bgs, approximately four feet below the Kbc/Jmb contact. Once the contact was reached, a 12 ¼-inch diameter corehole-chasing hammer bit was used to ream the borehole to 140 feet bgs. An 8 ⅝-inch diameter welded blank steel conductor casing string was then installed from ground surface to 140 feet bgs, and cement was placed using a tremie pipe in the annular space between the steel casing and the 12 ¼-inch borehole. After a period of 6 days, the borehole was advanced with the core barrel to a depth of 170 feet bgs. An 8-inch diameter tricone corehole-chaser bit was then used to ream and advance the borehole to total depth of 178 feet bgs.

In the cored MW-102DB borehole, Kbc was encountered from ground surface to 136 feet bgs and consisted of interbedded weakly- to well-lithified limestone, siltstone, and fine-grained sandstone to 28.5 feet bgs, underlain by well-lithfied, fine-grained sandstone

with lenses of medium- to coarse-grained sandstone, conglomerate, and siltstone to 136 feet bgs. Significant fracturing in the Kbc was observed at intervals from 2 to 12 feet bgs, from 62 to 74 feet bgs, from 80 to 95 feet bgs, from 107 to 124 feet bgs, and from 133 to 136 feet bgs. Secondary alteration at these intervals included moderate to heavy black and orange oxide staining on fracture surfaces and calcite fracture infill. Green to red homogeneous Jmb shale was encountered from 136 to 155 feet bgs, underlain by well-lithified, very fine-grained sandstone to 165 feet bgs, and red homogeneous shale to total depth of 178 feet bgs. Significant fracturing in the Jmb was observed at intervals from 138 to 142 feet bgs and from 159 to 163 feet bgs. Secondary alteration at these intervals included calcite and pyrite fracture infill.

The occurrence of groundwater was not evident during drilling. After the borehole was advanced to total depth and drill water was evacuated by airlifting, the borehole produced approximately 5 gpm. After a 24-hour period, water level rose into the conductor casing and was measured at a depth of 129 feet bgs.

Monitor well MW-102DB was screened from 145.5 to 175.5 feet bgs, with the top of screened interval approximately 9 feet below the Kbc/Jmb contact. From bottom to top, the annular space of the MW-102DB borehole below the conductor casing was back filled with coated bentonite pellets from total depth to 176 feet bgs, a silica sand filter pack extending 3 feet above the screened interval, and a 2-foot thick layer of fine-grained transitional sand above the filter pack. Hydrated bentonite chips were used to fill the annular space inside the steel conductor casing to ground surface.

MW-103: The MW-103 borehole was initially advanced with a PQ core barrel to a depth of 77 feet bgs, approximately 4 feet below the Kbc/Jmb contact. An 8-inch diameter tricone corehole-chaser bit was then used to ream and advance the borehole to a depth of 82 feet bgs with the intent to construct a BCA well. Drill injection water was evacuated by airlifting, and after a 24-hour period no water had accumulated in the borehole. The borehole was further advanced to a total depth of 114 feet bgs using the 8-inch diameter tricone bit.

The occurrence of groundwater was not evident during drilling. However, after a 24-hour period the water level appeared to stabilize at approximately 93 feet bgs.

In the cored MW-103 borehole, Kbc was encountered from ground surface to 73 feet bgs and consisted of well-lithified, fine-grained sandstone interbedded with lenses of siltstone, medium- to coarse-grained sandstone, and conglomerate to 58 feet bgs, underlain by well-lithified medium- to coarse-grained sandstone and conglomerate to 73 feet bgs. Significant fracturing in the Kbc was observed at intervals from 8 to 14 feet bgs, from 22 to 25 feet bgs, and from 52 to 58 feet bgs. Secondary alteration at these intervals included moderate to heavy black and orange oxide staining on fracture surfaces. Core sampling continued into homogeneous green Jmb shale to a depth of 77 feet bgs. Red Jmb shale was observed in drill cuttings from 77 to 114 feet bgs.

Monitor well MW-103 was screened from 81.5 to 111.5 feet bgs, with the top of screen approximately 8 feet below the Kbc/Jmb contact. From bottom to top, the annular space of the MW-103 borehole was back filled with coated bentonite pellets from total depth to 112 feet bgs, a silica sand filter pack extending 4 feet above the screened interval, a 2-foot thick layer of fine-grained transitional sand above the filter pack, a bentonite grout surface seal to 2 feet bgs, and concrete to ground surface.

MW-106: The MW-106 borehole was initially advanced using an 8 ⅝-inch diameter air hammer bit to a depth of 232 feet bgs, 5 feet below the Kbc/Jmb contact. Well-lithified sandstone and conglomerate of the Kd were encountered from ground surface to 30 feet bgs. Kbc was encountered from 30 to 227 feet bgs, and comprised interbedded sandstone, limestone, and siltstone to 80 feet bgs, underlain by well-lithified, fine-grained sandstone with minor lenses of interbedded siltstone. After the Kbc/Jmb contact was reached, the borehole was monitored for water production by airlifting. No evidence of groundwater was observed, and the borehole was advanced further into the Jmb. Green to red Jmb shale was encountered from 232 feet bgs to total depth of 265 feet bgs. The occurrence of groundwater

was not evident during drilling. The borehole was left open and monitored periodically for water level. After a period of 6 days, approximately one foot of water had accumulated in the borehole.

Monitor well MW-106 was screened from 235 to 265 feet bgs, with the top of screen approximately 8 feet below the Kbc/Jmb contact. From bottom to top, the annular space of the MW-106 borehole was back filled with a 10/20 silica sand filter pack extending 3 feet above the screened interval, a 2-foot thick layer of fine-grained 20/40 transitional sand above the filter pack, a bentonite grout surface seal to 2 feet bgs, and concrete to ground surface.

MW-110: The MW-110 borehole was advanced to a depth of 8 feet bgs and 8-inch diameter permanent steel surface casing was cemented in place. The borehole was further advanced in stages to a total depth of 141 feet bgs. Unconsolidated Qea was encountered from ground surface to 1 foot bgs. Kbc was encountered from 1 foot to 69 feet bgs and consisted primarily of well-lithified, fine-grained sandstone. Reddish brown homogeneous Jmb shale was encountered from 69 to 141 feet bgs.

The occurrence of groundwater was not evident during drilling, and the borehole was advanced in stages to determine the water table elevation for well design. The borehole was initially advanced to a depth of 79 feet bgs, just below the Kbc/Jmb contact. After confirming the borehole was dry, the borehole was further advanced to a depth of 129 feet bgs, the maximum 60-foot penetration depth into the Jmb, as proposed in the work plan. The borehole was evacuated of drill water and remained dry after a monitoring period of 12 hours. The borehole was left open and monitored periodically for water level. After a period of 18 days, approximately 3 feet of water had accumulated in the borehole. With DRC approval, the borehole was further advanced to a total depth of 141 feet bgs to accommodate a well screen with sufficient length for sample collection.

Monitor well MW-110 was screened from 100 to 140 feet bgs, with the top of screen approximately 30 feet below the Kbc/Jmb contact. From bottom to top, the annular space of the MW-110 borehole was back filled with a silica sand filter pack extending 10 feet above the screened interval, a 4-foot thick layer of hydrated bentonite chips above the filter pack, and a bentonite grout surface seal to ground surface.

MW-111: The MW-111 borehole was initially advanced to a depth of 18 feet bgs. After 8-inch diameter permanent steel surface casing was cemented in place, the borehole was further advanced in to a depth of 124 feet bgs. Unconsolidated Qea was encountered from ground surface to 2 feet bgs. Kbc was encountered from 2 to 60 feet bgs and consisted primarily of moderately-lithified, fine-grained sandstone. Greenish blue to reddish brown homogeneous Jmb shale was encountered from 60 to 124 feet bgs.

The occurrence of groundwater was not evident during drilling. The borehole was advanced to a depth of 63 feet bgs, just below the Kbc/Jmb contact. After confirming the borehole was dry, the borehole was further advanced into the Jmb, to a total depth of 124 feet bgs. Drill water was evacuated from the borehole, and after a monitoring period of 12 hours, a small amount of water (<0.1 feet) was observed in the borehole. Following the prescribed observation period, a decision was made to build the well, with the screened interval just below the Kbc/Jmb contact.

Monitor well MW-111 was screened from 74 to 124 feet bgs, with the top of screen approximately 13 feet below the Kbc/Jmb contact. From bottom to top, the annular space of the MW-111 borehole was back filled with a silica sand filter pack extending 4 feet above the screened interval, and hydrated bentonite chips above the filter pack to ground surface.

MONITOR WELL AND BORING SOUTH OF LISBON FAULT

Well MW-121 was installed to monitor water table conditions south of the LF. Boring B-2 was advanced south of the LF, but was not completed as a monitor well. The boreholes were advanced approximately 5 feet into competent bedrock using a 12 ¼-inch diameter tri-cone bit. Eight-inch diameter steel surface casing was cemented in place and the boreholes were further advanced to total depth using an 8-inch diameter air hammer bit. Drilling characteristics and specific well construction details are described below.

MW-121: The MW-121 borehole was initially advanced to a depth of 30 feet bgs and 8-inch diameter permanent steel surface casing was cemented in place. The borehole was further advanced to a depth of 203 feet bgs. Unconsolidated Qea consisting primarily of silty sand was encountered from ground surface to approximately 21 feet bgs. Wingate Formation (Jw) was encountered from 21 to 164 feet bgs, and comprised well-lithified, fine-grained sandstone. TRc shale was encountered from 164 to 203 feet bgs.

The occurrence of groundwater was not evident during drilling. At total depth, drill water was evacuated from the borehole by airlifting. After a monitoring period of 12 hours, the borehole remained dry. Based on the drilling depth elevation of the MW-121 borehole relative to the water table elevations observed north of the LF, a decision was made not to drill further and to build the well with the screened interval below the Jw/TRc contact.

Monitor well MW-121 was screened from 171 to 201 feet bgs. From bottom to top, the annular space of the borehole was back filled with a silica sand filter pack extending 7 feet above the screened interval, a 9-foot thick layer of hydrated bentonite chips above the filter pack, and a bentonite grout surface seal to ground surface.

Boring B-2: The B-2 borehole was initially advanced to a depth of 17 feet bgs and 8-inch diameter permanent steel surface casing was cemented in place. The borehole was

further advanced to a depth of 200 feet bgs. Unconsolidated Qea consisting primarily of silty sand was encountered from ground surface to approximately 5 feet bgs. Well-lithified, fine-grained sandstone of the Navajo Formation (Jn) was encountered from from 5 to 78 feet bgs. Kayenta Formation (Jk) was encountered from 78 to 175 feet bgs and consisted of moderately– to well-lithified, fine-grained sandstone. From 175 to 200 feet bgs, Jw was encountered and consisted well-lithified, fine-grained sandstone.

The occurrence of groundwater was not evident during drilling. At total depth, drill water was evacuated from the borehole by airlifting. After a monitoring period of 12 hours, the borehole remained dry. Based on the drilling depth elevation of the B-2 borehole relative to the water table elevations observed at nearby wells MW-107D and MW-107S north of the LF, a decision was made not to drill further. The borehole was abandoned with high solids bentonite grout and capped with neat cement from 5 feet bgs to ground surface.

MONITOR WELL SURVEY

New monitor wells were surveyed by Keogh Land Surveying, a licensed Utah land surveyor. The elevation of the tops of the PVC casings, protective steel monuments, and land surface/concrete pads were surveyed relative to the 1988 North American Vertical Datum and horizontal coordinates were surveyed relative to the 1927 North American Datum, Utah State Plane South coordinate system. The PVC well casings were marked to indicate the water level measuring point.

WELL DEVELOPMENT

Following installation, new wells were developed by surge and purge methods. Monitor wells installed during Phase 1 were developed by Confluence Environmental, Inc.

(CEI) during the period from October 29 to October 31, 2012. Monitor wells installed during Phase 2 were developed by National EWP during the period from September 19 to September 23, 2013. Monitor well MW-115M, which was completed on October 10, 2013, was developed by CEI on October 11, 2013. Well development activities were supervised in the field by an M&A hydrogeologist.

New wells that contained a sufficient amount of water were surged across the entire saturated screened intervals with a 4-inch diameter surge block. The majority of wells were then purged using a bailer or pump until development water was free of sediment and field parameters including pH, specific conductance, and temperature had stabilized. Wells MW-104, MW-106, MW-109, MW-110, and MW-119 were surged and then purged dry after one borehole volume was removed. Development at these wells was limited by slow recovery after the initial evacuation. Monitor wells MW-111, MW-121, and MW-122 were dry at the time of development activities.

INVESTIGATION DERIVED WASTE MANAGEMENT

All waste rock cuttings generated during drilling activities were contained in roll-off bins. After Phase 1 drilling was completed, four-point composite samples were collected from each roll-off bin and submitted to ACZ Laboratories under standard chain of custody protocols for disposal characterization analyses. Upon approval from the landfill in January 2013, the drill cuttings were transported by MP Environmental Services, Inc. (MPE) to US Ecology (a landfill licensed to accept low-level radioactive material) in Grand View, Idaho for final disposal. Drill cuttings generated during Phase 2 were transported to US Ecology and disposed under the first phase waste profile. Copies of the laboratory reports and disposal manifests for the cuttings are provided in **Appendix D**.

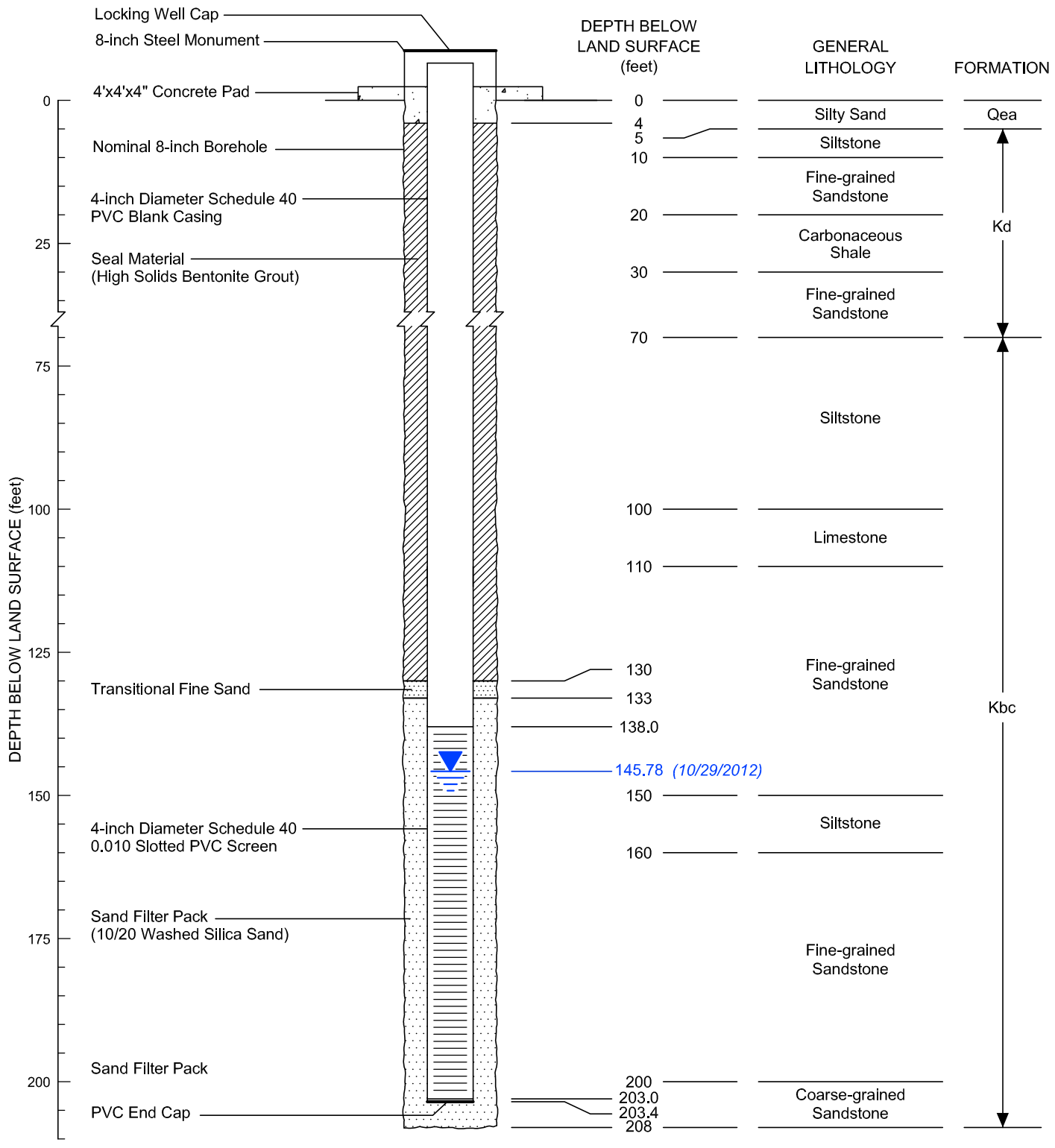
All drilling and development water generated during well installation activities was contained in the roll-off bins and transferred to 20,000-gallon secured storage tanks located

on RAML property. After Phase 1 drilling was completed, a drill water sample was collected on November 7, 2012 and submitted to ACZ Lab under standard chain of custody protocols for disposal characterization analysis. Waste water generated during both phases was transported by MPE to US Ecology for final disposal under the Phase 1 waste water profile. A copy of the disposal characterization laboratory report and waste disposal manifests are provided in **Appendix D**.

REFERENCES

U.S. Environmental Protection Agency, 1986, **Ground Water Monitoring Technical Enforcement Guidance Document**: USEPA/530/SW-86/055, September 1986.

Utah Division of Water Rights, 2011, **State of Utah Water Well Handbook**: R655-4 UAC, April 2011.



EXPLANATION

Qal = Quaternary Eolian and Alluvium Deposits

Kd = Dakota Sandstone

Kbc = Burro Canyon Formation

LICENSED PROFESSIONAL GEOLOGIST
TIMOTHY PATRICK LEO
8272244-2250
12-19-12
STATE OF UTAH
expires 3-31-15

WELL: MW-100	NAD27 STATE PLANE UTAH SO.
UDWR WELL NO: 436190	NORTHING: 594322.5
COMPLETED: OCT. 2012	EASTING: 2636663.9
METHOD: AIR ROTARY	MP ELEVATION: 6725.4

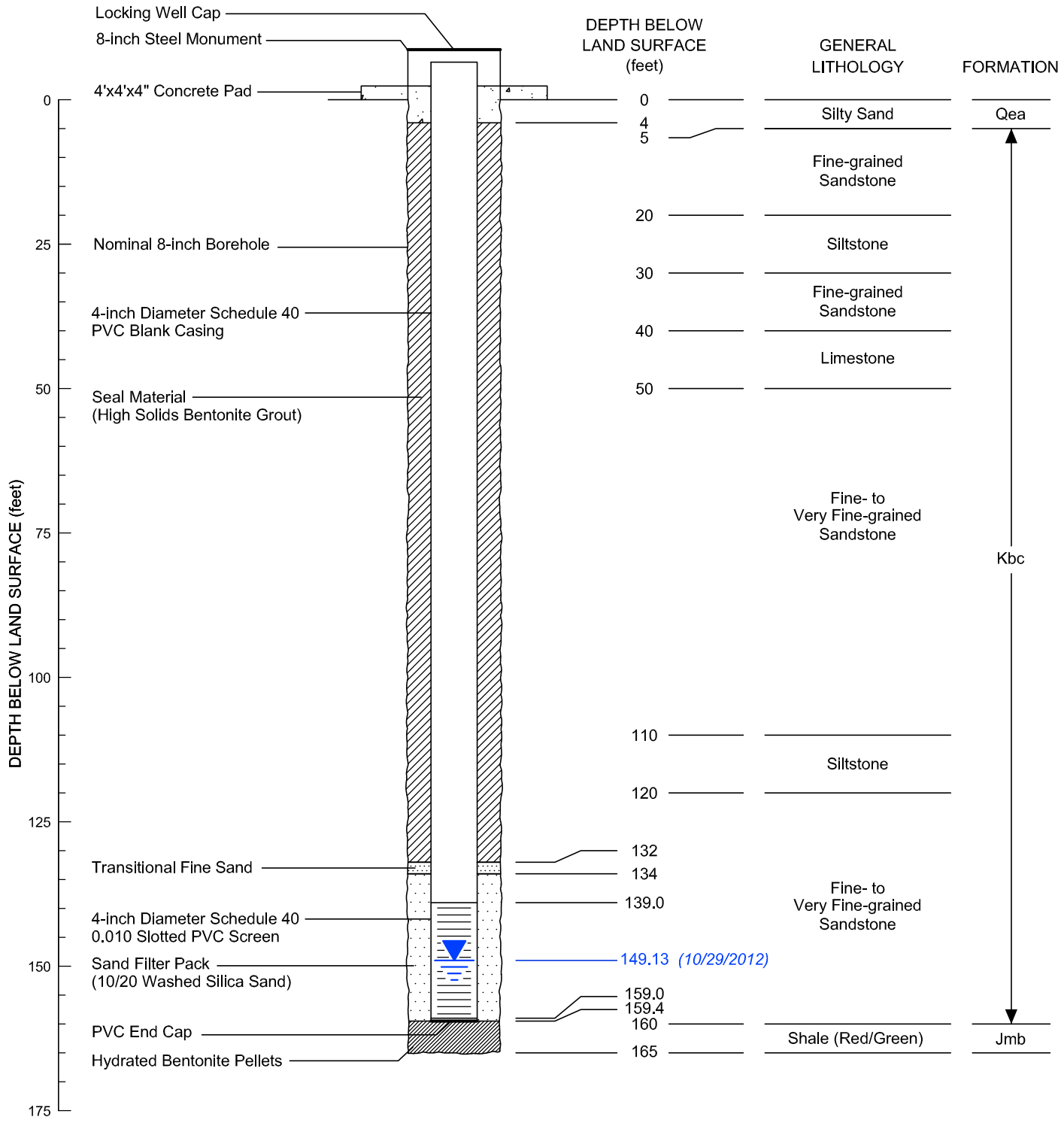
MONITOR WELL MW-100
CONSTRUCTION SCHEMATIC
RIO ALGOM MINING LLC, LISBON FACILITY

2014

MONTGOMERY & ASSOCIATES

FIGURE B-1

Drafting\1350.13\2014_report\MonWell_MW100_wsR2\07July2014



EXPLANATION

Qal = Quaternary Eolian and Alluvium Deposits

Kbc = Burro Canyon Formation

Jmb = Morrison Formation, Brushy Basin Member

LICENSED PROFESSIONAL GEOLOGIST
TIMOTHY PATRICK LEO
8272244-2250
12-19-12
STATE OF UTAH
expires 3-31-15

WELL: MW-101	NAD27 STATE PLANE UTAH SO.
UDWR WELL NO: 436184	NORTHING: 593397.0
COMPLETED: OCT. 2012	EASTING: 2634360.1
METHOD: AIR ROTARY	MP ELEVATION: 6710.9

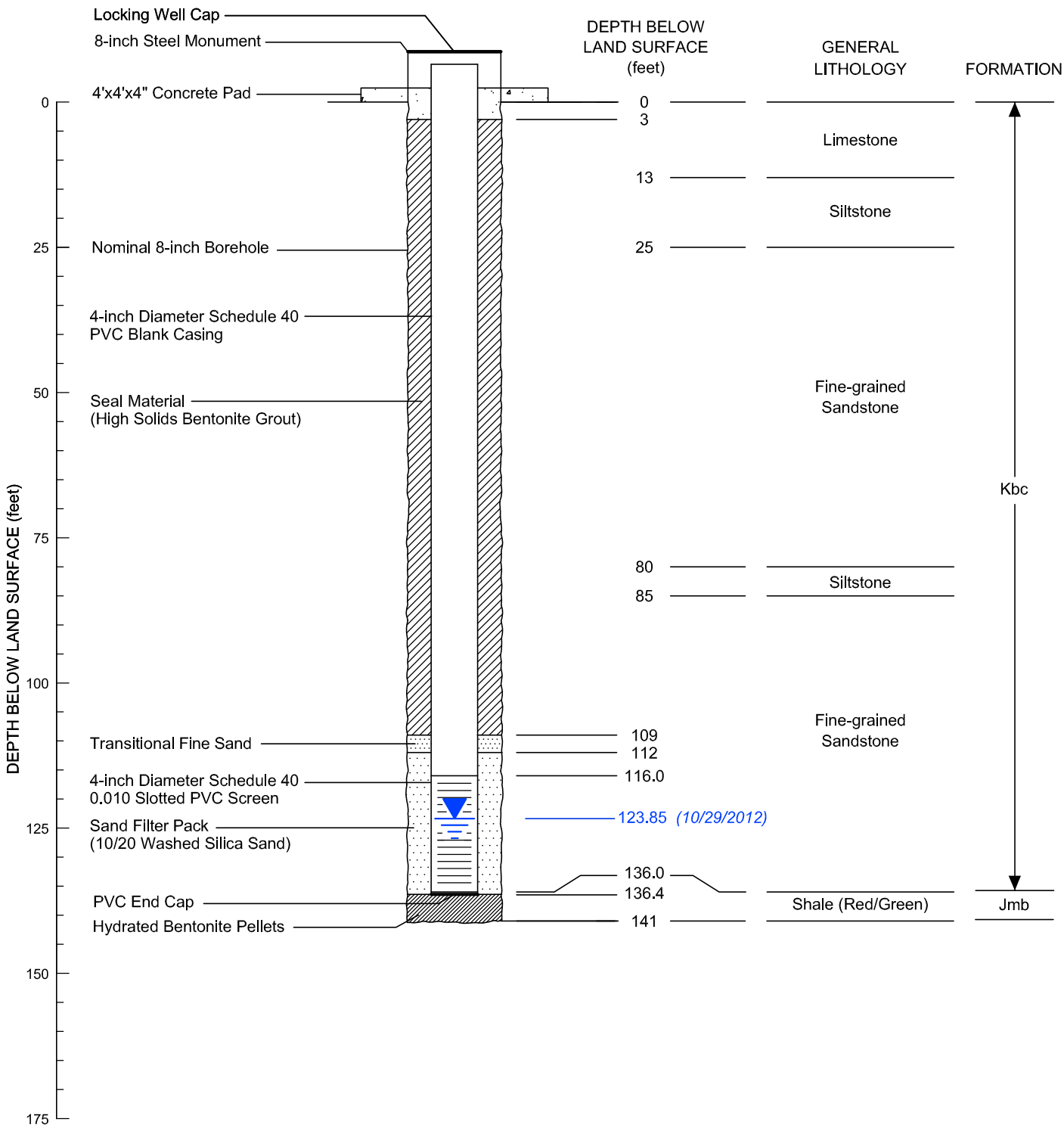
MONITOR WELL MW-101
CONSTRUCTION SCHEMATIC
RIO ALGOM MINING LLC, LISBON FACILITY

2014

MONTGOMERY & ASSOCIATES

FIGURE B-2

Drafting\1350.132013_report\MonWell_MW101_wsR2\07July2014



EXPLANATION

Kbc = Burro Canyon Formation
Jmb = Morrison Formation, Brushy Basin Member

LICENSED PROFESSIONAL GEOLOGIST
TIMOTHY PATRICK LEO
8272244-2250
12-19-12
STATE OF UTAH
expires 3-31-15

WELL: MW-102	NAD27 STATE PLANE UTAH SO.
UDWR WELL NO: 436187	NORTHING: 592128.8
COMPLETED: OCT. 2012	EASTING: 2635889.2
METHOD: AIR ROTARY	MP ELEVATION: 6702.9

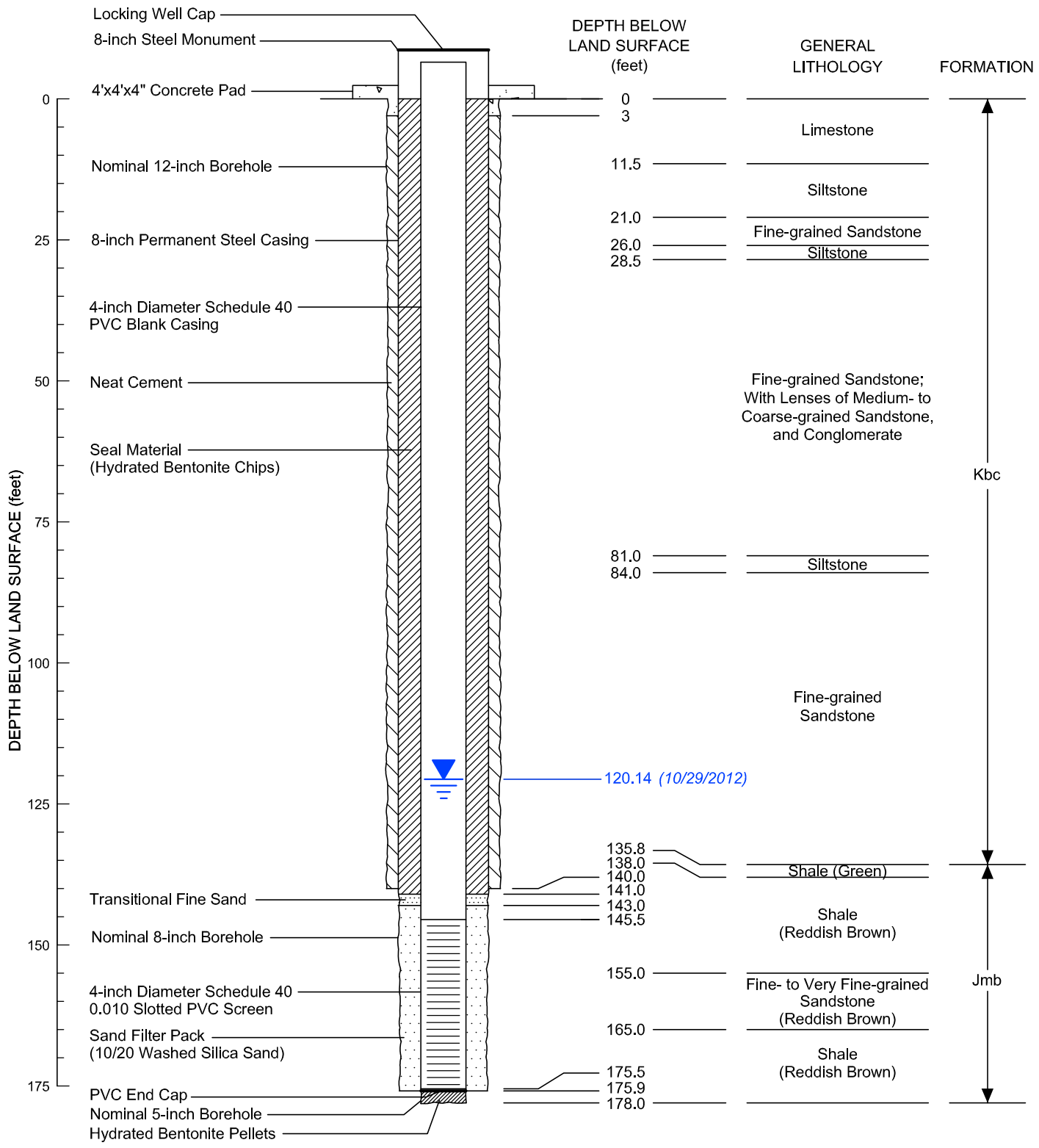
MONITOR WELL MW-102
CONSTRUCTION SCHEMATIC
RIO ALGOM MINING LLC, LISBON FACILITY

2014

MONTGOMERY & ASSOCIATES

FIGURE B-3

Drafting\1350.13\2014Report\MonWell_MW102_wsR2\07July2014



EXPLANATION

Kbc = Burro Canyon Formation
Jmb = Morrison Formation, Brushy Basin Member

Borehole cored to 170' below ground surface; lithology based on continuous core

LICENSED PROFESSIONAL GEOLOGIST
TIMOTHY PATRICK LEO
8272244-2250
12-19-12
STATE OF UTAH
expires 3-31-15

WELL: MW-102DB	NAD27 STATE PLANE UTAH SO.
UDWR WELL NO: 436185	NORTHING: 592170.0
COMPLETED: OCT. 2012	EASTING: 2635877.1
METHOD: AIR ROTARY/CORE	MP ELEVATION: 6703.6

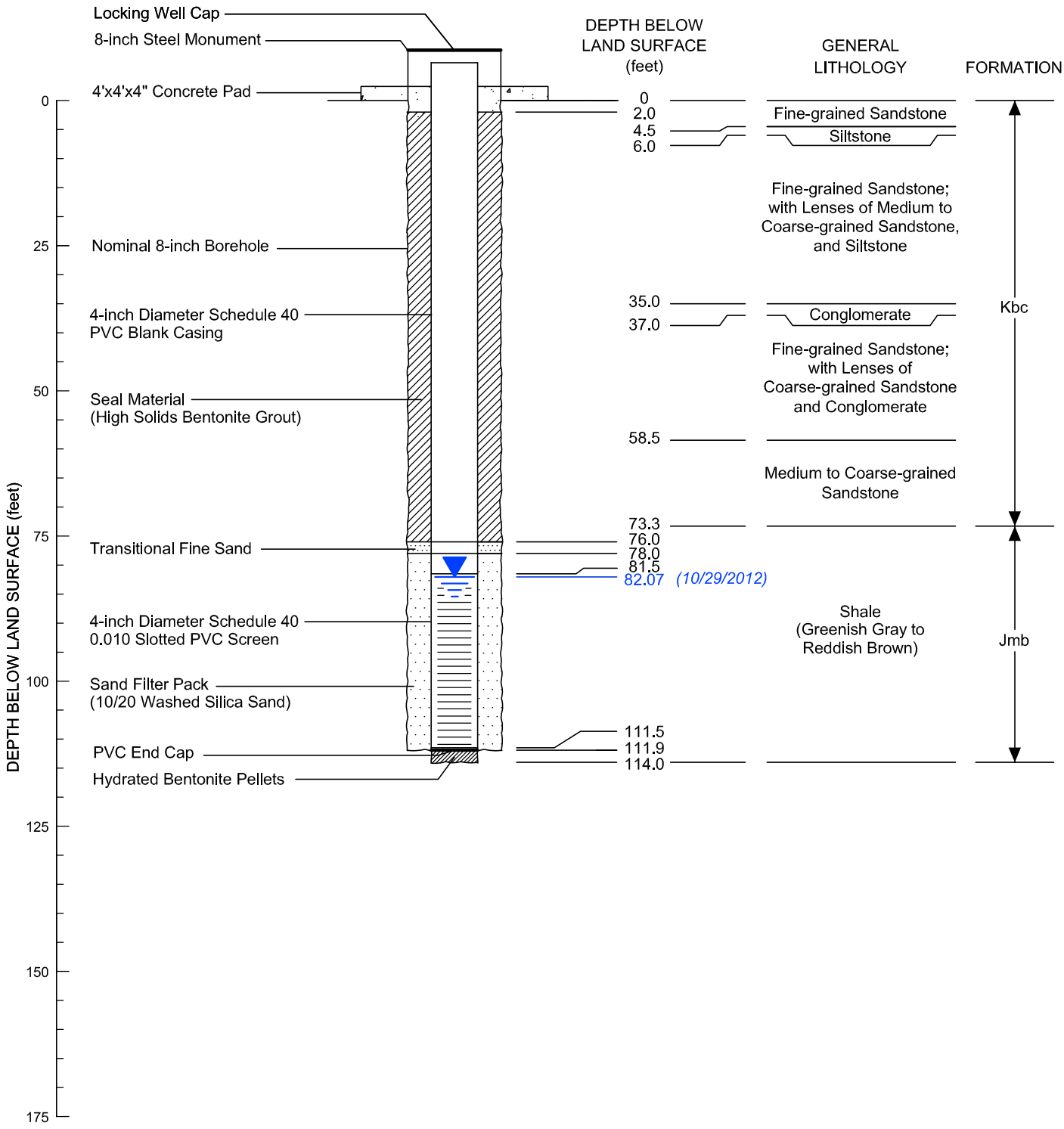
MONITOR WELL MW-102DB CONSTRUCTION SCHEMATIC RIO ALGOM MINING LLC, LISBON FACILITY

2014

MONTGOMERY & ASSOCIATES

FIGURE B-4

Drafting\1350.13\2014_report\MonWell_MW102DB_wsR2\07July2014



EXPLANATION

Kbc = Burro Canyon Formation
Jmb = Morrison Formation,
Brushy Basin Member

Borehole cored to 77' below ground surface; lithology based on continuous core

LICENSED PROFESSIONAL GEOLOGIST
TIMOTHY PATRICK LEO
8272244-2250
12-19-12
STATE OF UTAH
expires 3-31-15

WELL: MW-103	NAD27 STATE PLANE UTAH SO.
UDWR WELL NO: 436186	NORTHING: 589620.3
COMPLETED: OCT. 2012	EASTING: 2635778.1
METHOD: AIR ROTARY/CORE	MP ELEVATION: 6663.9

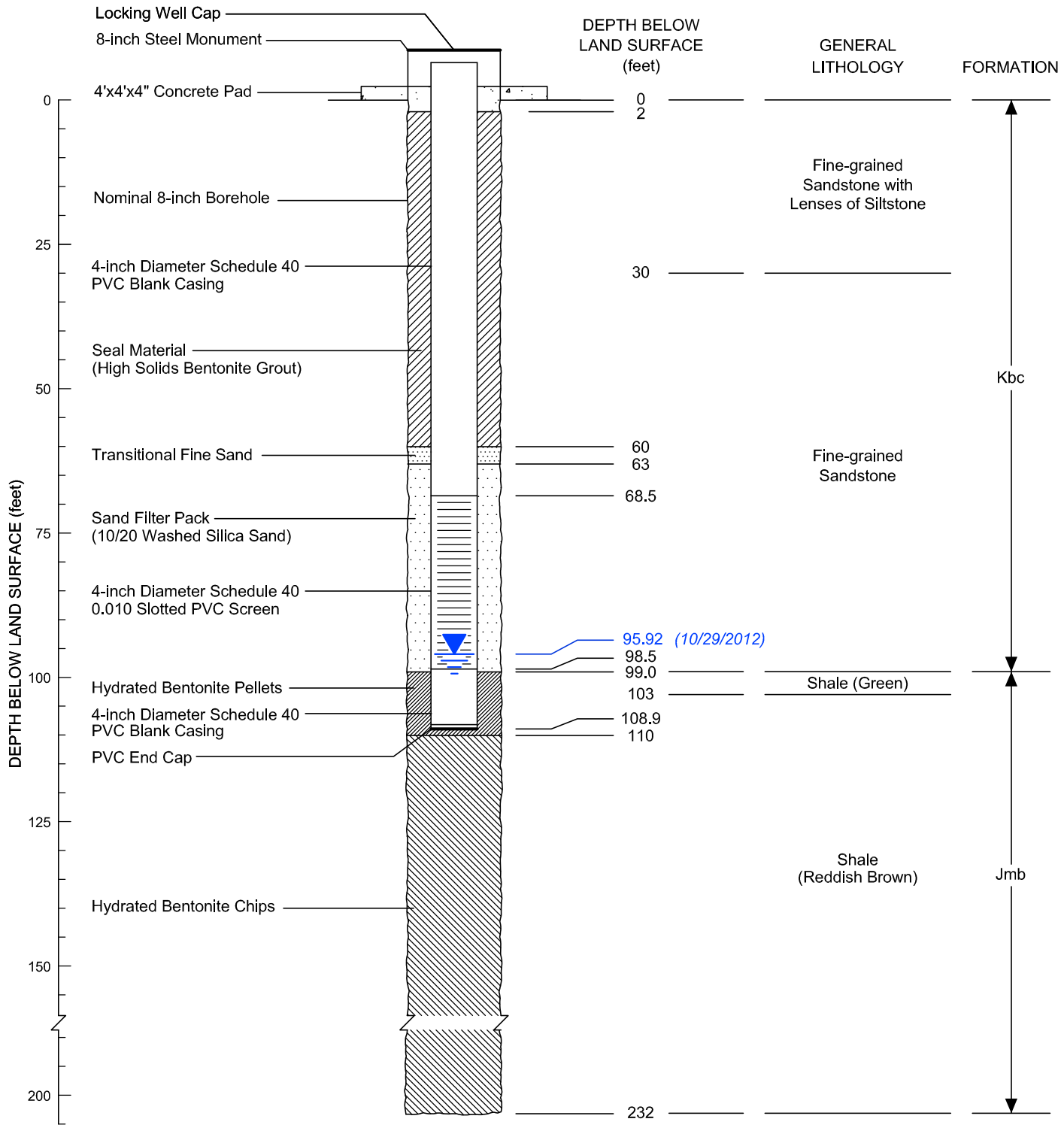
MONITOR WELL MW-103
CONSTRUCTION SCHEMATIC
RIO ALGOM MINING LLC, LISBON FACILITY

2014

MONTGOMERY & ASSOCIATES

FIGURE B-5

Drafting\1350.13\2014_report\MonWell_MW103_wsR2\07July2014



EXPLANATION

Kbc = Burro Canyon Formation

Jmb = Morrison Formation,
Brushy Basin Member

LICENSED PROFESSIONAL GEOLOGIST
TIMOTHY PATRICK LEO
8272244-2250
12-19-12
STATE OF UTAH
expires 3-31-15

WELL: MW-104	NAD27 STATE PLANE UTAH SO.
UDWR WELL NO: 436189	NORTHING: 589369.4
COMPLETED: OCT. 2012	EASTING: 2637513.0
METHOD: AIR ROTARY	MP ELEVATION: 6705.2

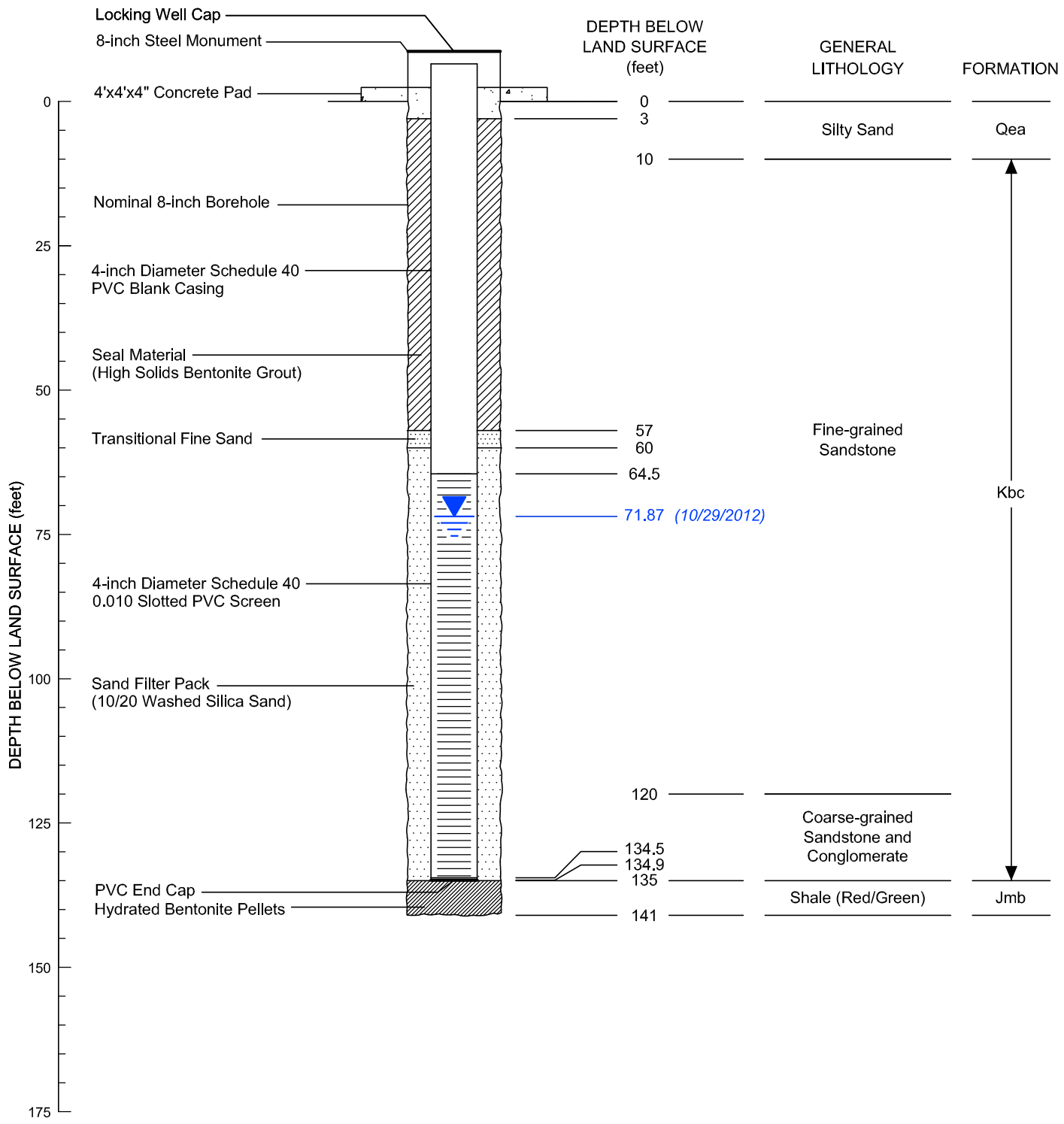
MONITOR WELL MW-104
CONSTRUCTION SCHEMATIC
RIO ALGOM MINING LLC, LISBON FACILITY

2014

MONTGOMERY & ASSOCIATES

FIGURE B-6

Drafting\1350.13\2014_report\MonWell_MW104_wsR2\07July2014



EXPLANATION

Qal = Quaternary Eolian and Alluvium Deposits

Kbc = Burro Canyon Formation

Jmb = Morrison Formation, Brushy Basin Member

LICENSED PROFESSIONAL GEOLOGIST
TIMOTHY PATRICK LEO
8272244-2250
12-19-12
STATE OF UTAH
expires 3-31-15

WELL: MW-105	NAD27 STATE PLANE UTAH SO.
UDWR WELL NO: 436191	NORTHING: 588104.7
COMPLETED: OCT. 2012	EASTING: 2636130.9
METHOD: AIR ROTARY	MP ELEVATION: 6624.1

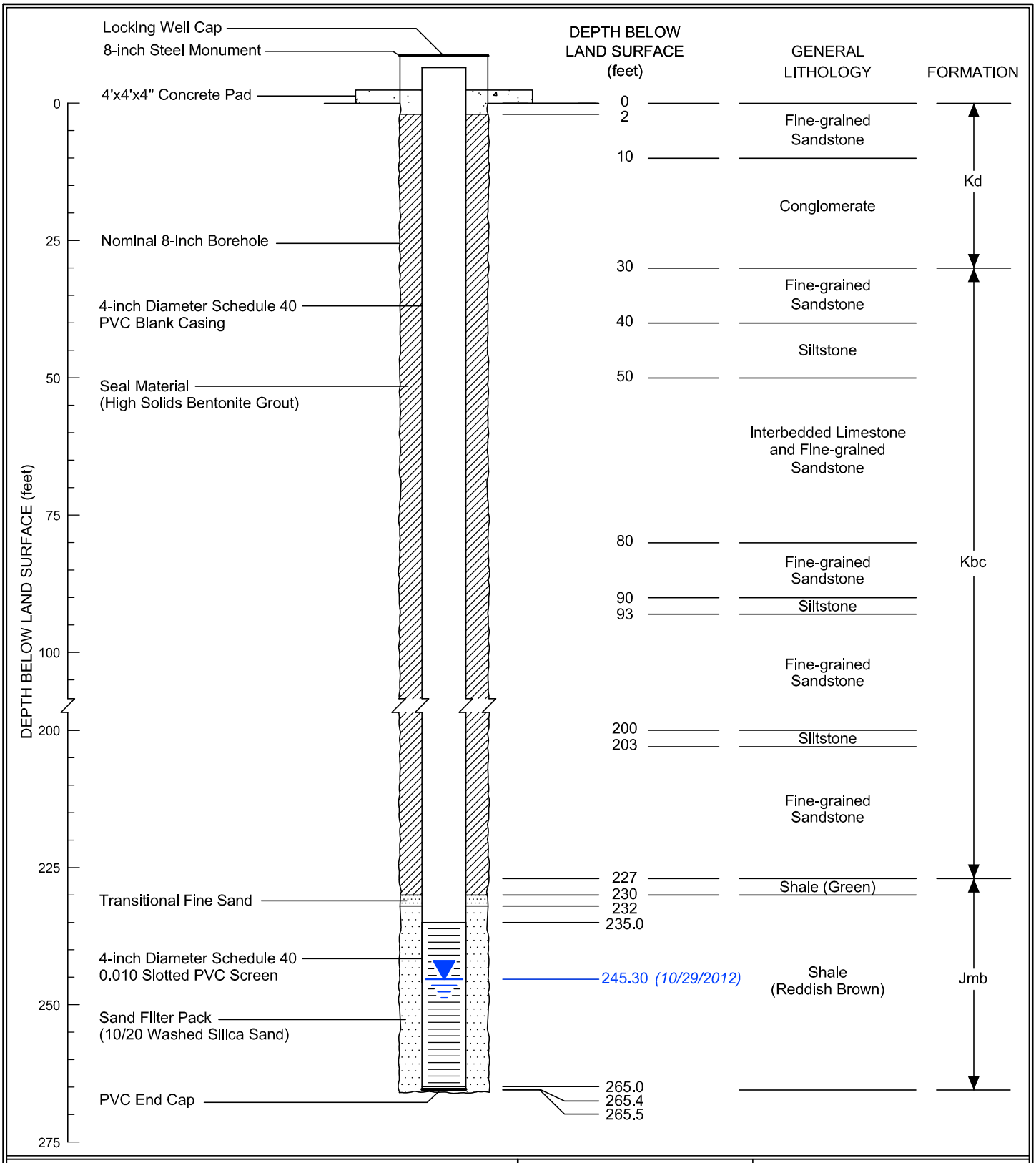
MONITOR WELL MW-105
CONSTRUCTION SCHEMATIC
RIO ALGOM MINING LLC, LISBON FACILITY

2014

MONTGOMERY & ASSOCIATES

FIGURE B-7

Drafting\1350.13\2014_report\MonWell_MW105_wsR2\07July2014



EXPLANATION

Kd = Dakota Sandstone
Kbc = Burro Canyon Formation
Jmb = Morrison Formation, Brushy Basin Member

LICENSED PROFESSIONAL GEOLOGIST
TIMOTHY PATRICK LEO
8272244-2250
12-19-12
STATE OF UTAH
expires 3-31-15

WELL: MW-106	NAD27 STATE PLANE UTAH SO.
UDWR WELL NO: 436187	NORTHING: 587422.7
COMPLETED: OCT. 2012	EASTING: 2639306.0
METHOD: AIR ROTARY	MP ELEVATION: 6852.8

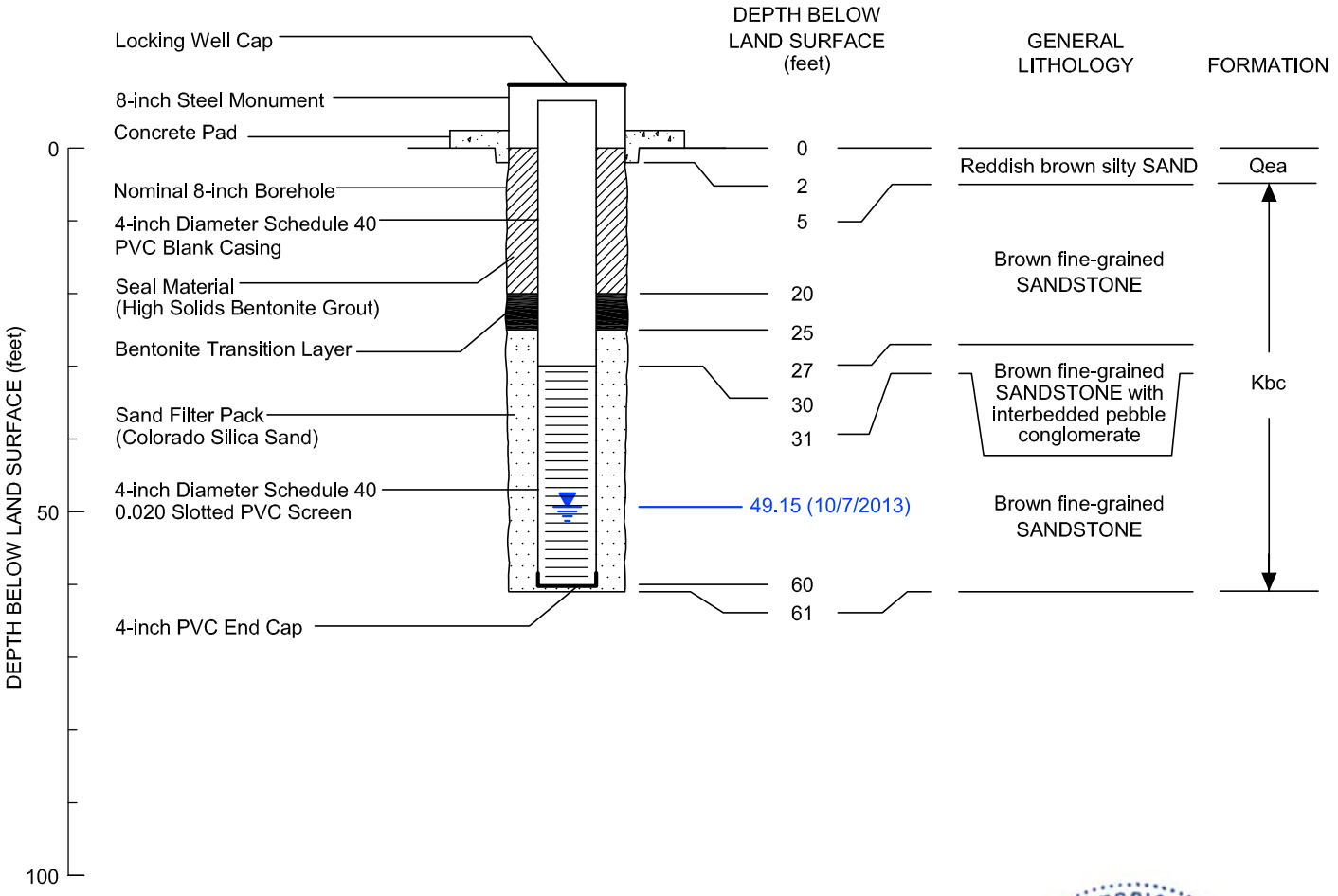
MONITOR WELL MW-106
CONSTRUCTION SCHEMATIC
RIO ALGOM MINING LLC, LISBON FACILITY

2014

MONTGOMERY & ASSOCIATES

FIGURE B-8

Drafting\1350.13\2014_report\MonWell_MW106_wsR2\07July2014



EXPLANATION

Qea = Quaternary Eolian and Alluvial Deposits
Kbc = Burro Canyon Formation

Water Level (feet below ground surface)

WELL: MW-107S	NAD27 STATE PLANE UTAH SO.
GEOLOGIST: John Laney	NORTHING: 593255.353
COMPLETED: Oct. 2013	EASTING: 2628825.674
METHOD: AIR ROTARY	MP ELEVATION: 6,512.1

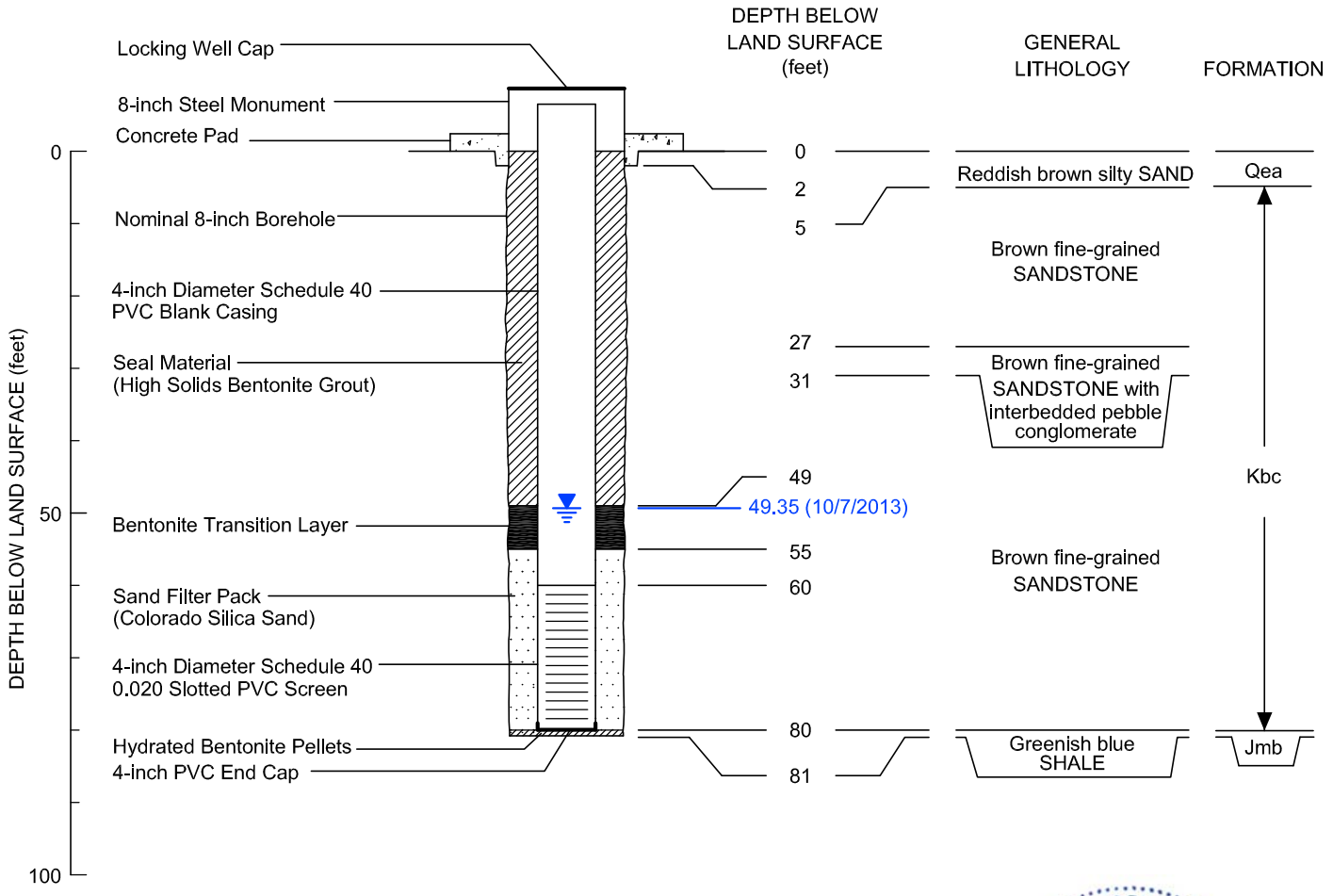
MONITOR WELL MW-107S
CONSTRUCTION SCHEMATIC
RIO ALGOM MINING LLC, LISBON FACILITY

2014

MONTGOMERY & ASSOCIATES

FIGURE B-9

Drafting\1350.21\MonWell_MW107S\15July2014



EXPLANATION

Qea = Quaternary Eolian and Alluvial Deposits
Kbc = Burro Canyon Formation
Jmb = Morrison Formation, Brushy Basin Member

Water Level (feet below ground surface)

WELL: MW-107D	NAD27 STATE PLANE UTAH SO.
GEOLOGIST: John Laney	NORTHING: 593266.785
COMPLETED: Oct. 2013	EASTING: 2628806.532
METHOD: AIR ROTARY/CORE	MP ELEVATION: 6,512.3

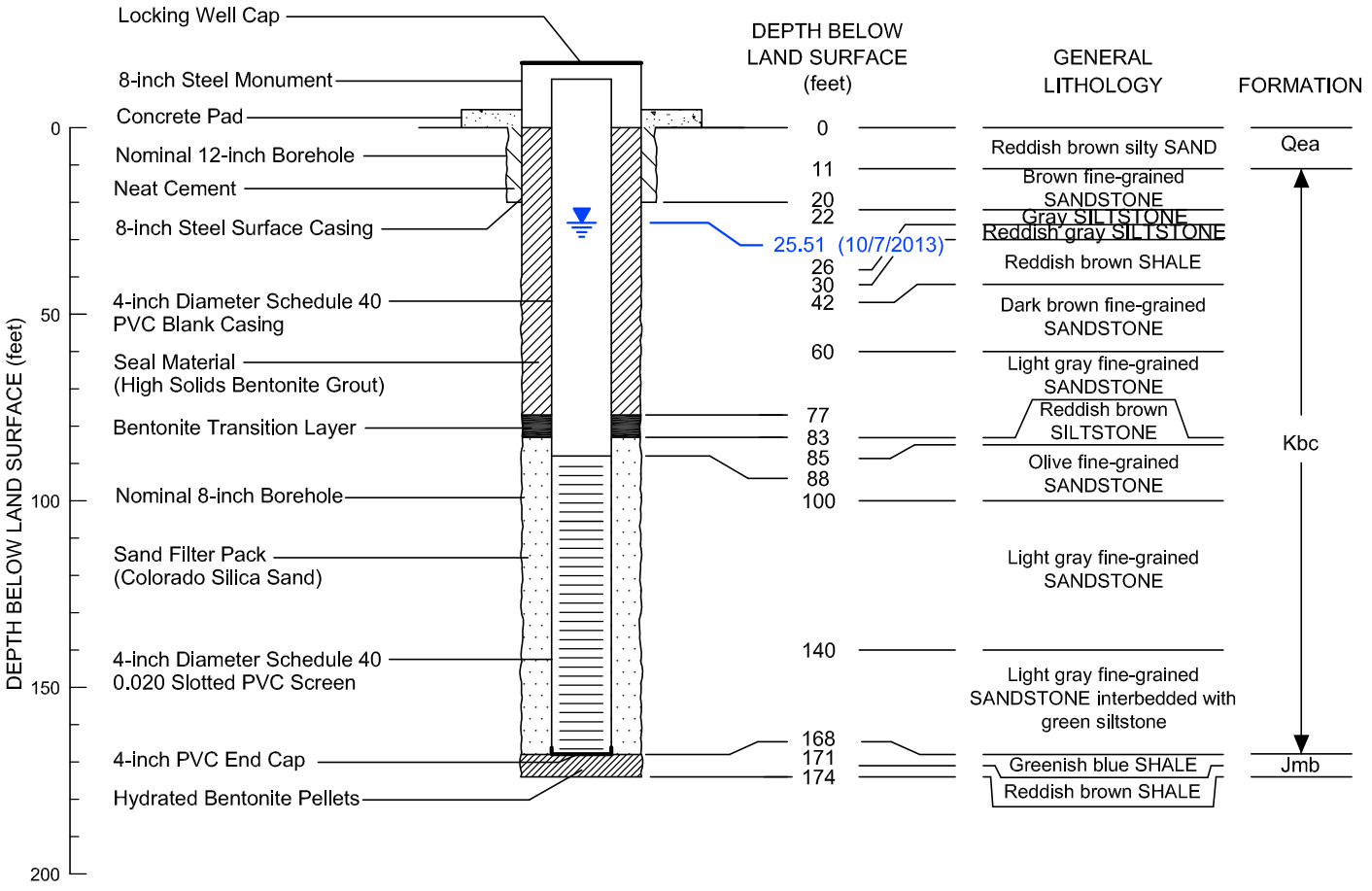
MONITOR WELL MW-107D
CONSTRUCTION SCHEMATIC
RIO ALGOM MINING LLC, LISBON FACILITY

2014

MONTGOMERY & ASSOCIATES

FIGURE B-10

Drafting\1350.21\MonWell_MW107D\15July2014



LICENSED PROFESSIONAL GEOLOGIST
TIMOTHY PATRICK LEO
8272244-2250
11/19/13
STATE OF UTAH
Expires 3/31/15

EXPLANATION

Qea = Quaternary Eolian and Alluvial Deposits
Kbc = Burro Canyon Formation
Jmb = Morrison Formation, Brushy Basin Member

Water Level (feet below ground surface)

WELL: MW-108	NAD27 STATE PLANE UTAH SO.
GEOLOGIST: John Laney	NORTHING: 593861.046
COMPLETED: Oct. 2013	EASTING: 2629864.708
METHOD: AIR ROTARY	MP ELEVATION: 6,514.7

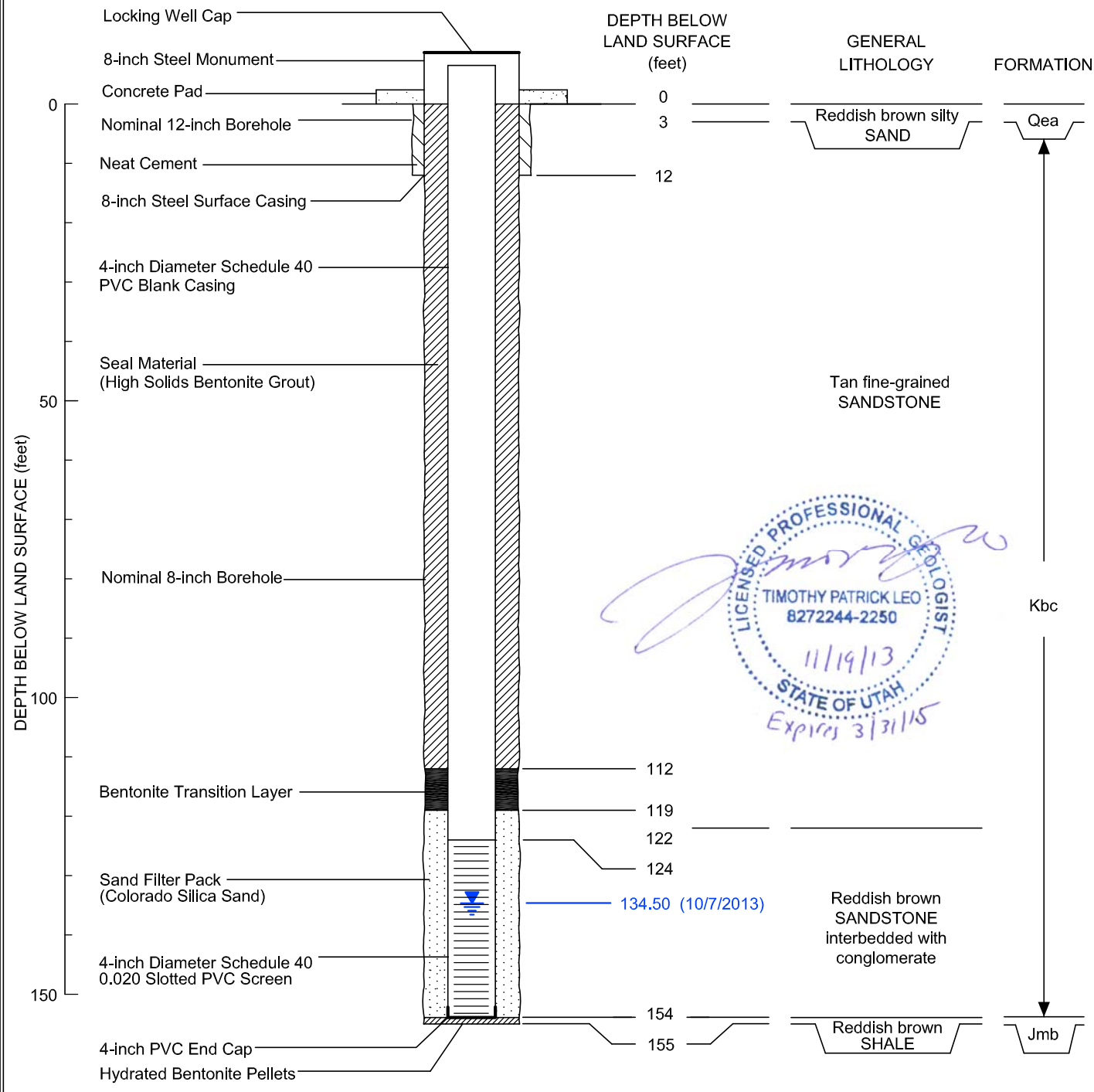
MONITOR WELL MW-108
CONSTRUCTION SCHEMATIC
RIO ALGOM MINING LLC, LISBON FACILITY

2014

MONTGOMERY & ASSOCIATES

FIGURE B-11

Drafting\1350.21\MonWell_MW108\15July2014



EXPLANATION

Qea = Quaternary Eolian and Alluvial Deposits
Kbc = Burro Canyon Formation
Jmb = Morrison Formation, Brushy Basin Member

Water Level (feet below ground surface)

WELL: MW-109	NAD27 STATE PLANE UTAH SO.
GEOLOGIST: John Laney	NORTHING: 593551.865
COMPLETED: Oct. 2013	EASTING: 2632526.682
METHOD: AIR ROTARY/CORE	MP ELEVATION: 6,673.5

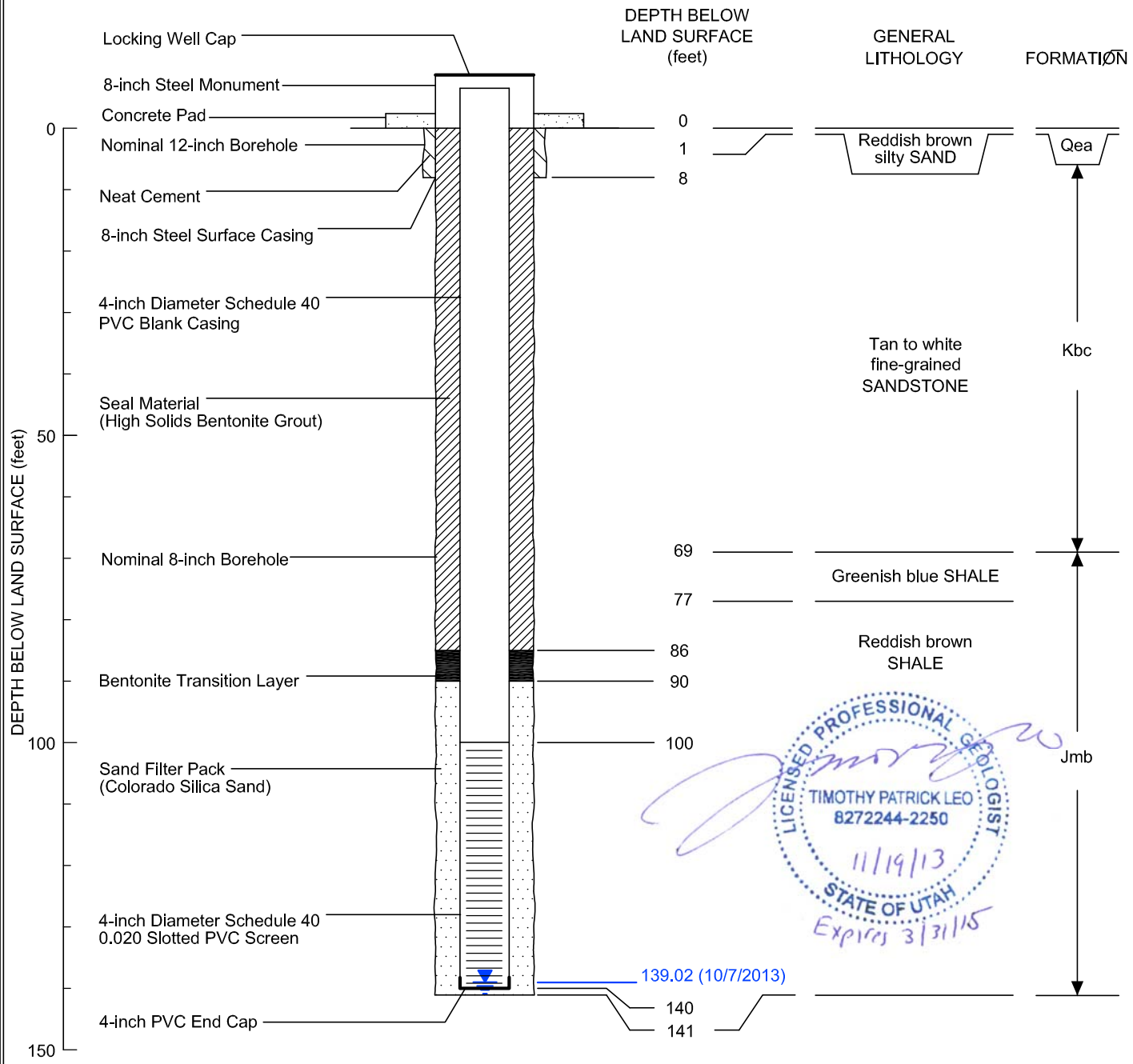
MONITOR WELL MW-109
CONSTRUCTION SCHEMATIC
RIO ALGOM MINING LLC, LISBON FACILITY

2014

MONTGOMERY & ASSOCIATES

FIGURE B-12

Drafting\1350.21\MonWell_MW109\15July2014



EXPLANATION

Qea = Quaternary Eolian and Alluvial Deposits
Kbc = Burro Canyon Formation
Jmb = Morrison Formation, Brushy Basin Member

Water Level (feet below ground surface)

WELL: MW-110	NAD27 STATE PLANE UTAH SO.
GEOLOGIST: John Laney	NORTHING: 592550.344
COMPLETED: Oct. 2013	EASTING: 2632886.145
METHOD: AIR ROTARY	MP ELEVATION: 6,623.9

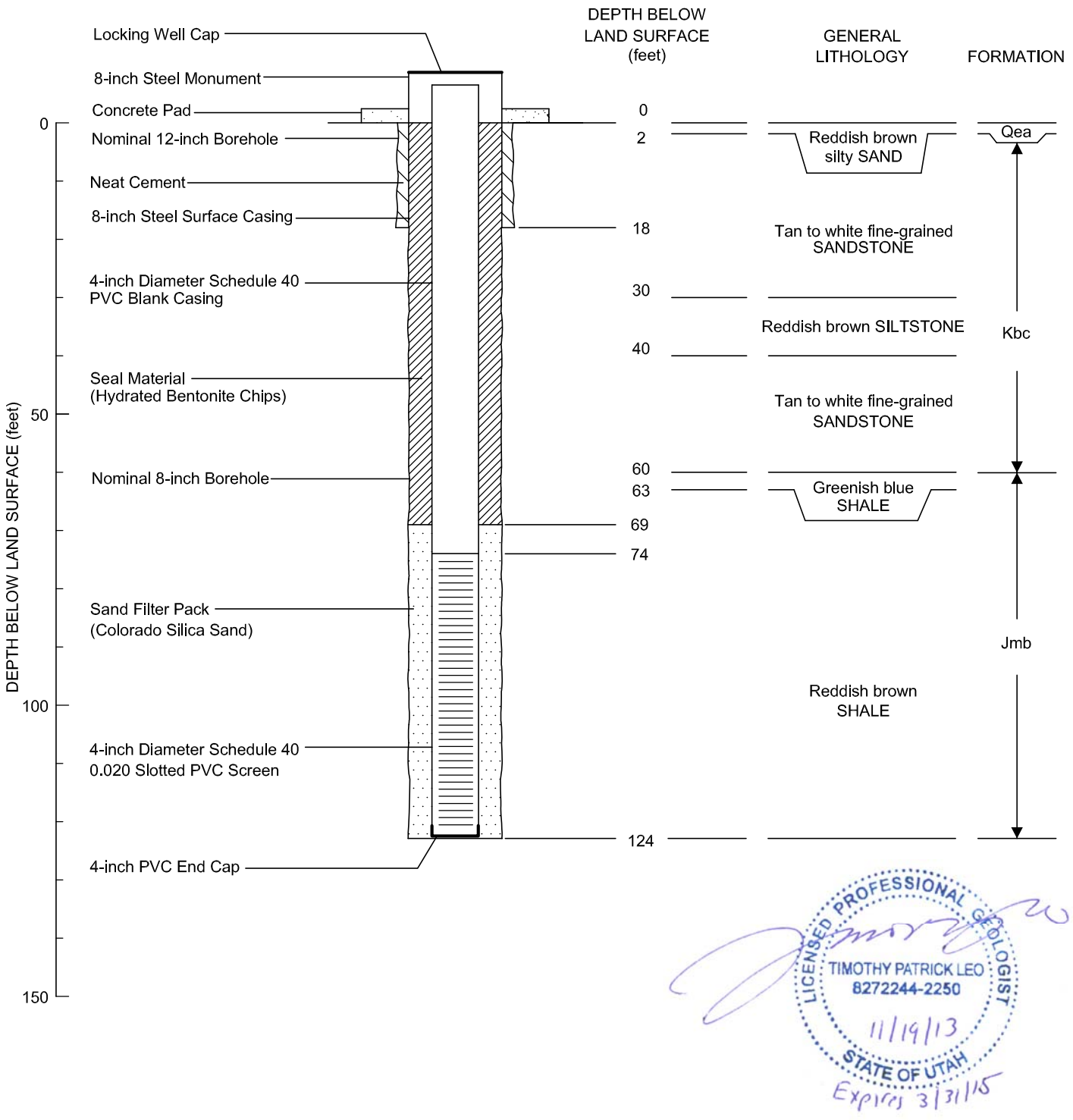
MONITOR WELL MW-110
CONSTRUCTION SCHEMATIC
RIO ALGOM MINING LLC, LISBON FACILITY

2014

MONTGOMERY & ASSOCIATES

FIGURE B-13

Drafting\1350.21\MonWell_MW110\15July2014



EXPLANATION

Qea = Quaternary Eolian and Alluvial Deposits
Kbc = Burro Canyon Formation
Jmb = Morrison Formation,
Brushy Basin Member

Note: Well dry on October 7, 2013

WELL: MW-111	NAD27 STATE PLANE UTAH SO.
GEOLOGIST: John Laney	NORTHING: 591997.005
COMPLETED: Oct. 2013	EASTING: 2634470.309
METHOD: AIR ROTARY	MP ELEVATION: 6,645.5

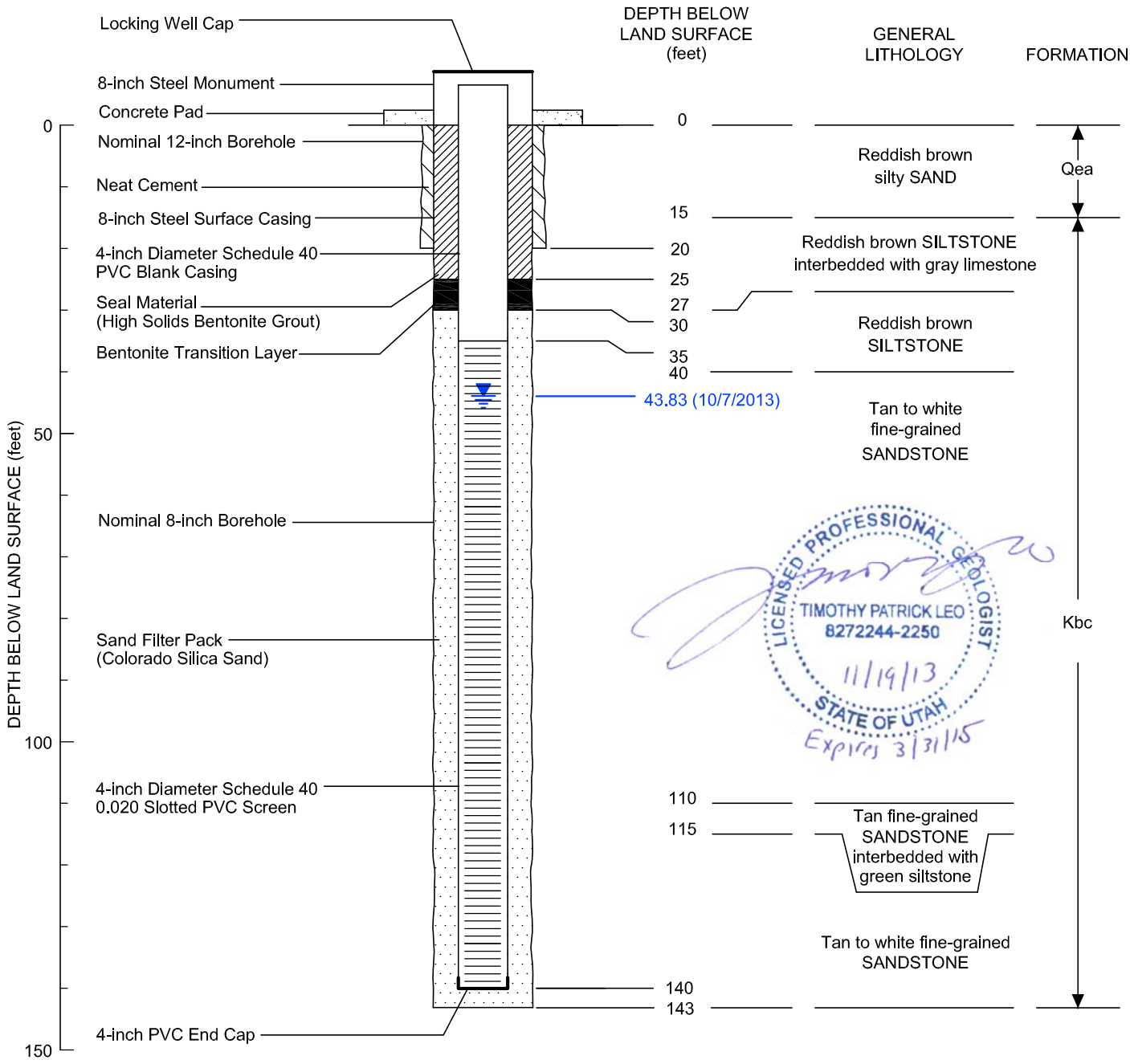
MONITOR WELL MW-111
CONSTRUCTION SCHEMATIC
RIO ALGOM MINING LLC, LISBON FACILITY

2014

MONTGOMERY & ASSOCIATES

FIGURE B-14

Drafting\1350.21\MonWell_MW111\15July2014



EXPLANATION

Qea = Quaternary Eolian and Alluvial Deposits
Kbc = Burro Canyon Formation

Water Level (feet below ground surface)

WELL: MW-112	NAD27 STATE PLANE UTAH SO.
GEOLOGIST: John Laney	NORTHING: 591398.068
COMPLETED: Oct. 2013	EASTING: 2631481.446
METHOD: AIR ROTARY	MP ELEVATION: 6,536.3

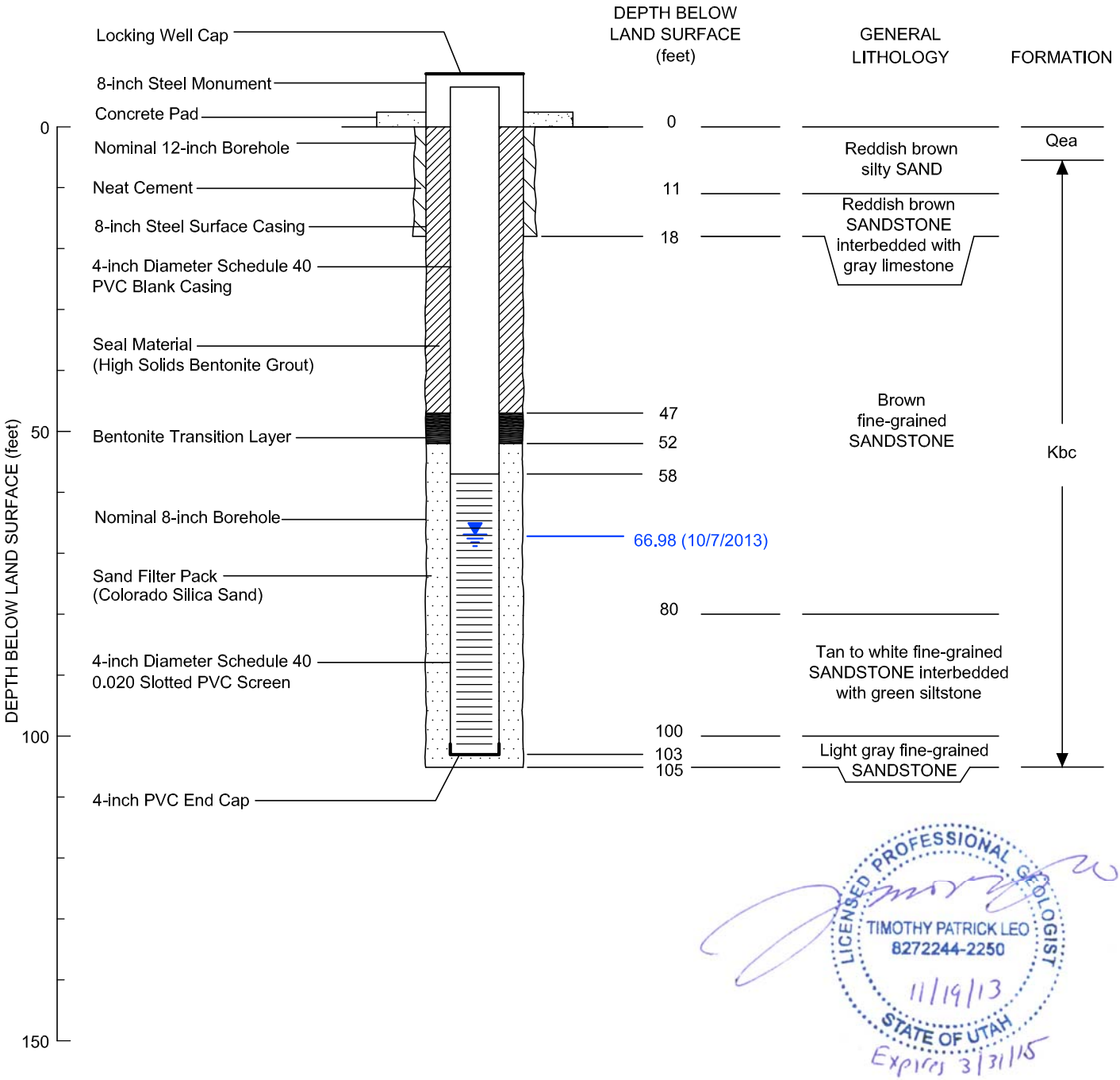
MONITOR WELL MW-112
CONSTRUCTION SCHEMATIC
RIO ALGOM MINING LLC, LISBON FACILITY

2014

MONTGOMERY & ASSOCIATES

FIGURE B-15

Drafting\1350.21\MonWell_MW112\15July2014



EXPLANATION

Qea = Quaternary Eolian and Alluvial Deposits
Kbc = Burro Canyon Formation

Water Level (feet below ground surface)

WELL: MW-113	NAD27 STATE PLANE UTAH SO.
GEOLOGIST: John Laney	NORTHING: 590646.623
COMPLETED: Oct. 2013	EASTING: 2633010.064
METHOD: AIR ROTARY	MP ELEVATION: 6,567.4

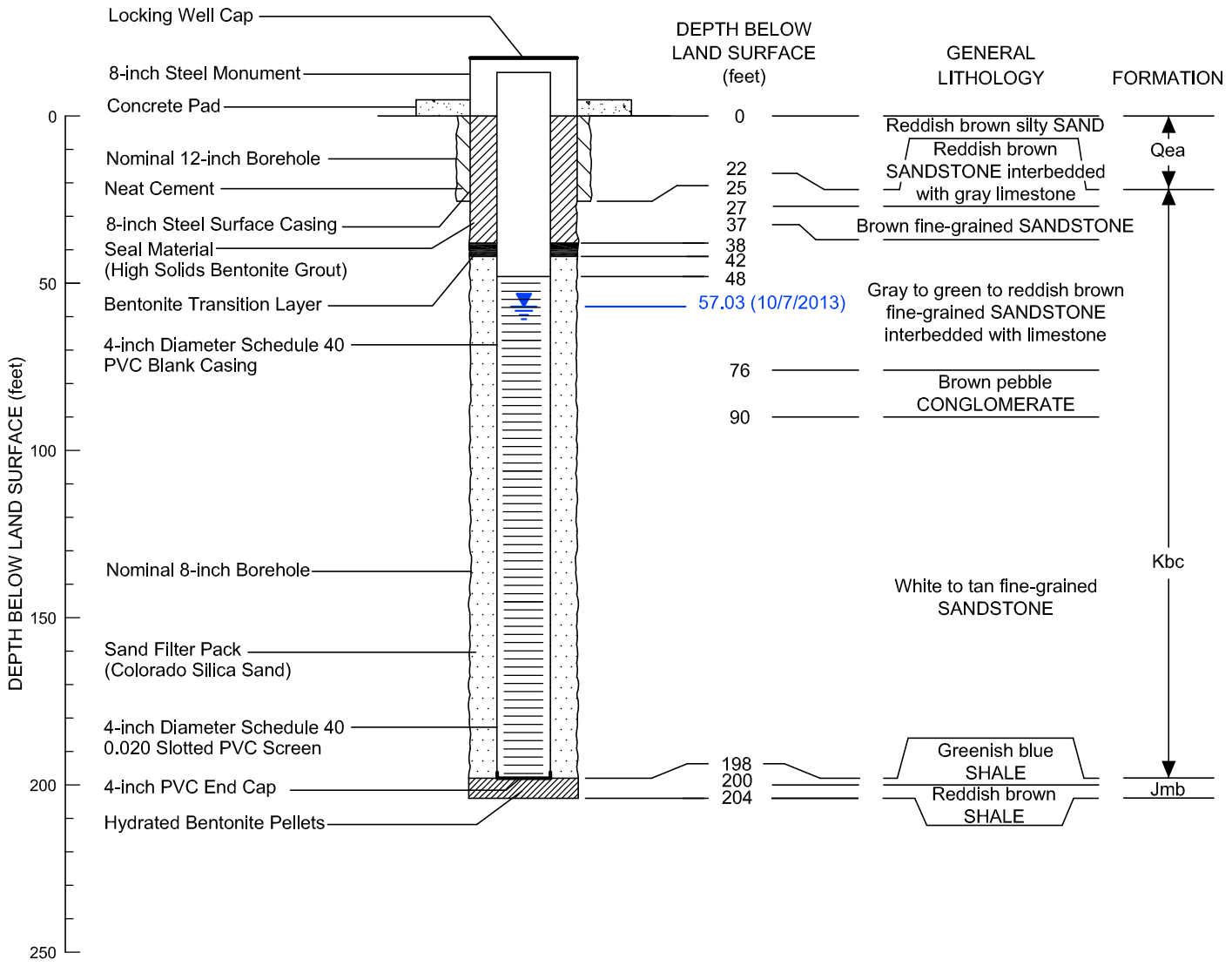
MONITOR WELL MW-113
CONSTRUCTION SCHEMATIC
RIO ALGOM MINING LLC, LISBON FACILITY

2014

MONTGOMERY & ASSOCIATES

FIGURE B-16

Drafting\1350.21\MonWell_MW113\15July2014



EXPLANATION

Qea = Quaternary Eolian and Alluvial Deposits
Kbc = Burro Canyon Formation
Jmb = Morrison Formation, Brushy Basin Member

Water Level (feet below ground surface)

WELL: MW-114	NAD27 STATE PLANE UTAH SO.
GEOLOGIST: John Laney	NORTHING: 590521.651
COMPLETED: Oct. 2013	EASTING: 2632023.456
METHOD: AIR ROTARY	MP ELEVATION: 6,554.4

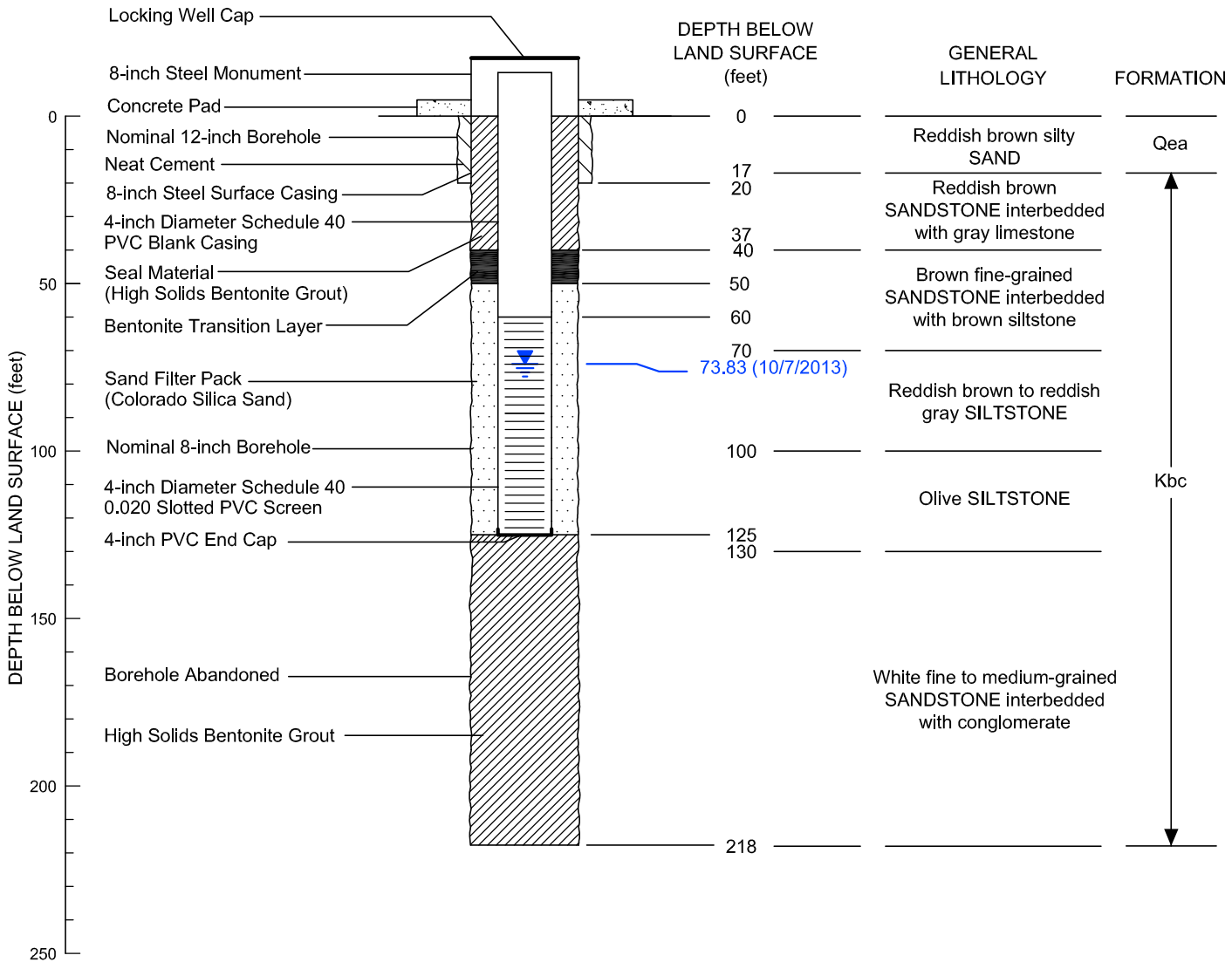
MONITOR WELL MW-114
CONSTRUCTION SCHEMATIC
RIO ALGOM MINING LLC, LISBON FACILITY

2014

MONTGOMERY & ASSOCIATES

FIGURE B-17

Drafting\1350.21\MonWell_MW114\15July2014



LICENSED PROFESSIONAL GEOLOGIST
TIMOTHY PATRICK LEO
8272244-2250
11/19/13
STATE OF UTAH
Expires 3/31/15

EXPLANATION

Qea = Quaternary Eolian and Alluvial Deposits
Kbc = Burro Canyon Formation

Water Level (feet below ground surface)

WELL: MW-115S	NAD27 STATE PLANE UTAH SO.
GEOLOGIST: John Laney	NORTHING: 589523.457
COMPLETED: Oct. 2013	EASTING: 2633289.062
METHOD: AIR ROTARY	MP ELEVATION: 6,578.1

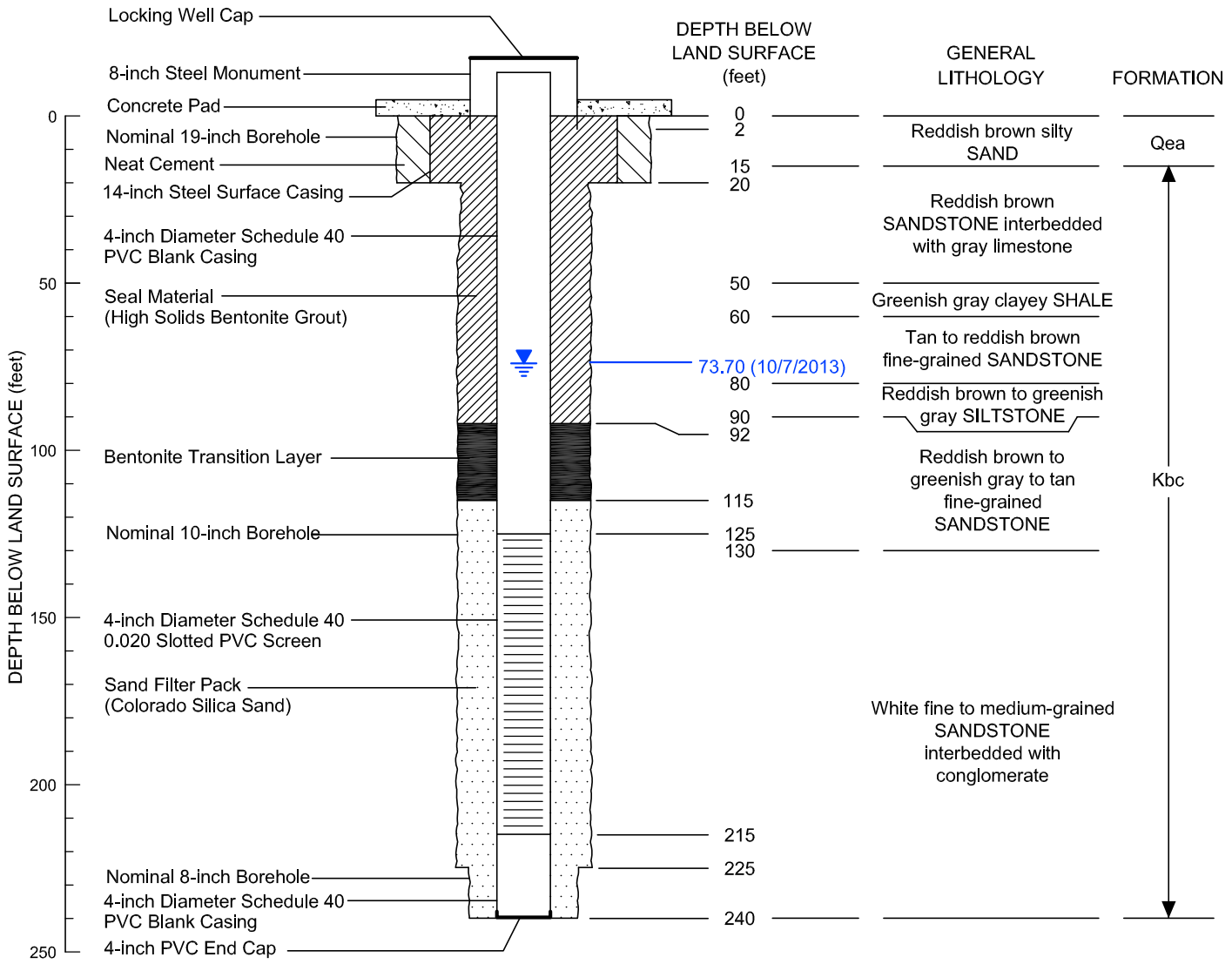
MONITOR WELL MW-115S
CONSTRUCTION SCHEMATIC
RIO ALGOM MINING LLC, LISBON FACILITY

2014

MONTGOMERY & ASSOCIATES

FIGURE B-18

Drafting\1350.21\MonWell_MW115S\15July2014



EXPLANATION

Qea = Quaternary Eolian and Alluvial Deposits
Kbc = Burro Canyon Formation

Water Level (feet below ground surface)

WELL: MW-115M	NAD27 STATE PLANE UTAH SO.
GEOLOGIST: John Laney	NORTHING: 589529.126
COMPLETED: Oct. 2013	EASTING: 2633240.024
METHOD: AIR ROTARY	MP ELEVATION: 6,578.0

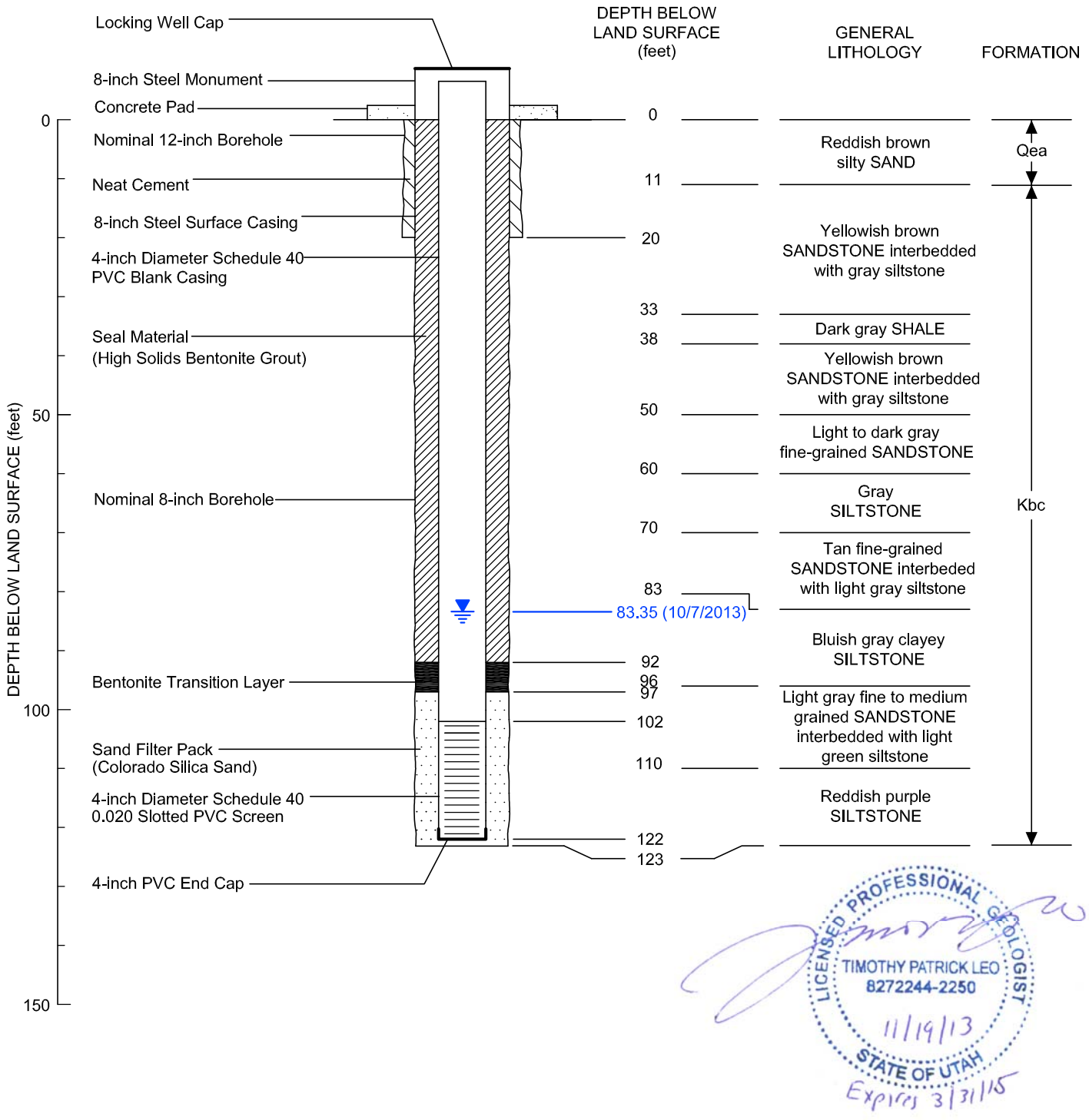
MONITOR WELL MW-115M
CONSTRUCTION SCHEMATIC
RIO ALGOM MINING LLC, LISBON FACILITY

2014

MONTGOMERY & ASSOCIATES

FIGURE B-19

Drafting\1350.21\MonWell_MW115M\15July2014



EXPLANATION

Qea = Quaternary Eolian and Alluvial Deposits
Kbc = Burro Canyon Formation

Water Level (feet below ground surface)

WELL: MW-116	NAD27 STATE PLANE UTAH SO.
GEOLOGIST: John Laney	NORTHING: 589209.925
COMPLETED: Oct. 2013	EASTING: 2632593.247
METHOD: AIR ROTARY	MP ELEVATION: 6,577.8

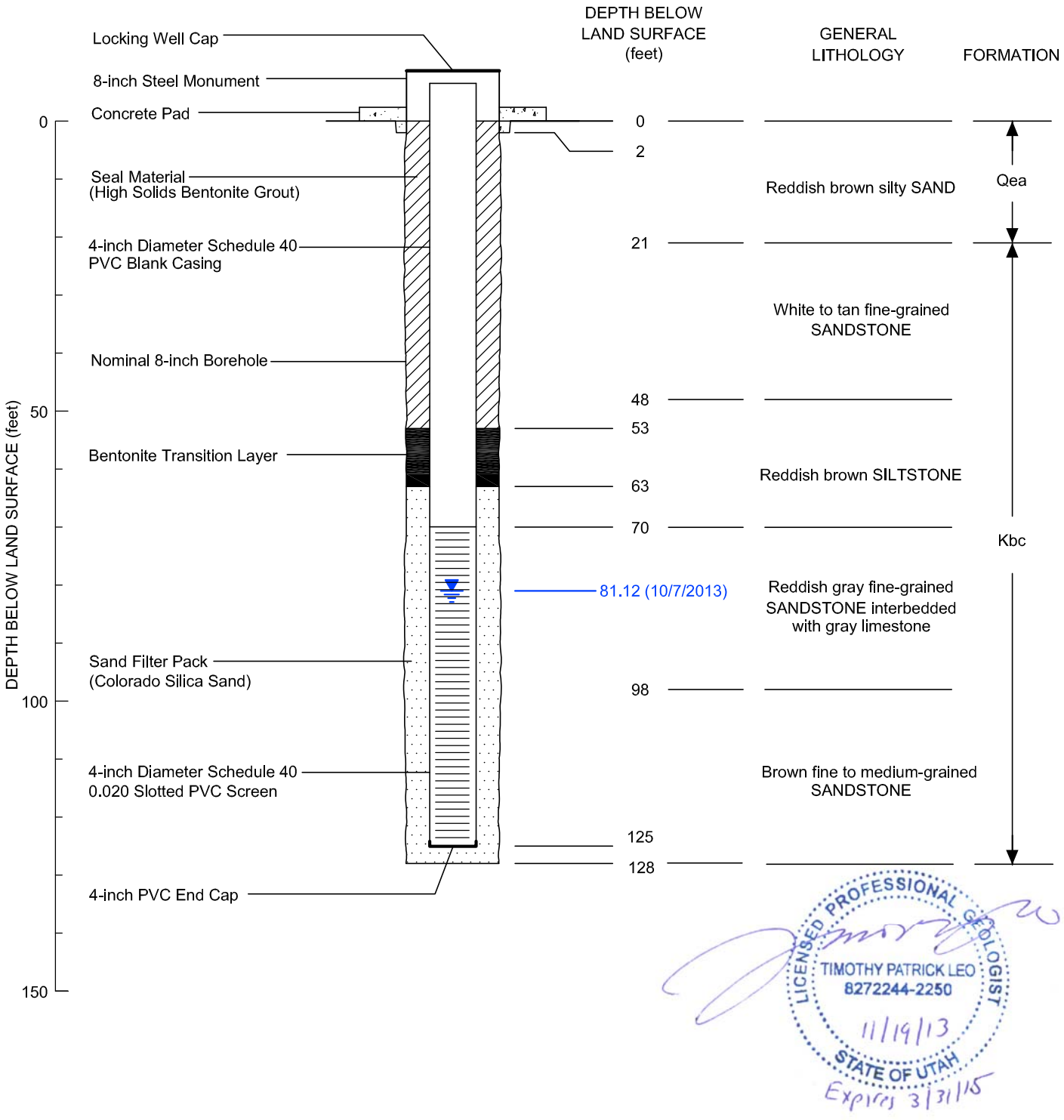
MONITOR WELL MW-116
CONSTRUCTION SCHEMATIC
RIO ALGOM MINING LLC, LISBON FACILITY

2014

MONTGOMERY & ASSOCIATES

FIGURE B-20

Drafting\1350.21\MonWell_MW116\15July2014



EXPLANATION

Qea = Quaternary Eolian and Alluvial Deposits
Kbc = Burro Canyon Formation

Water Level (feet below ground surface)

WELL: MW-117S	NAD27 STATE PLANE UTAH SO.
GEOLOGIST: John Laney	NORTHING: 589260.319
COMPLETED: Oct. 2013	EASTING: 2633998.511
METHOD: AIR ROTARY	MP ELEVATION: 6,586.2

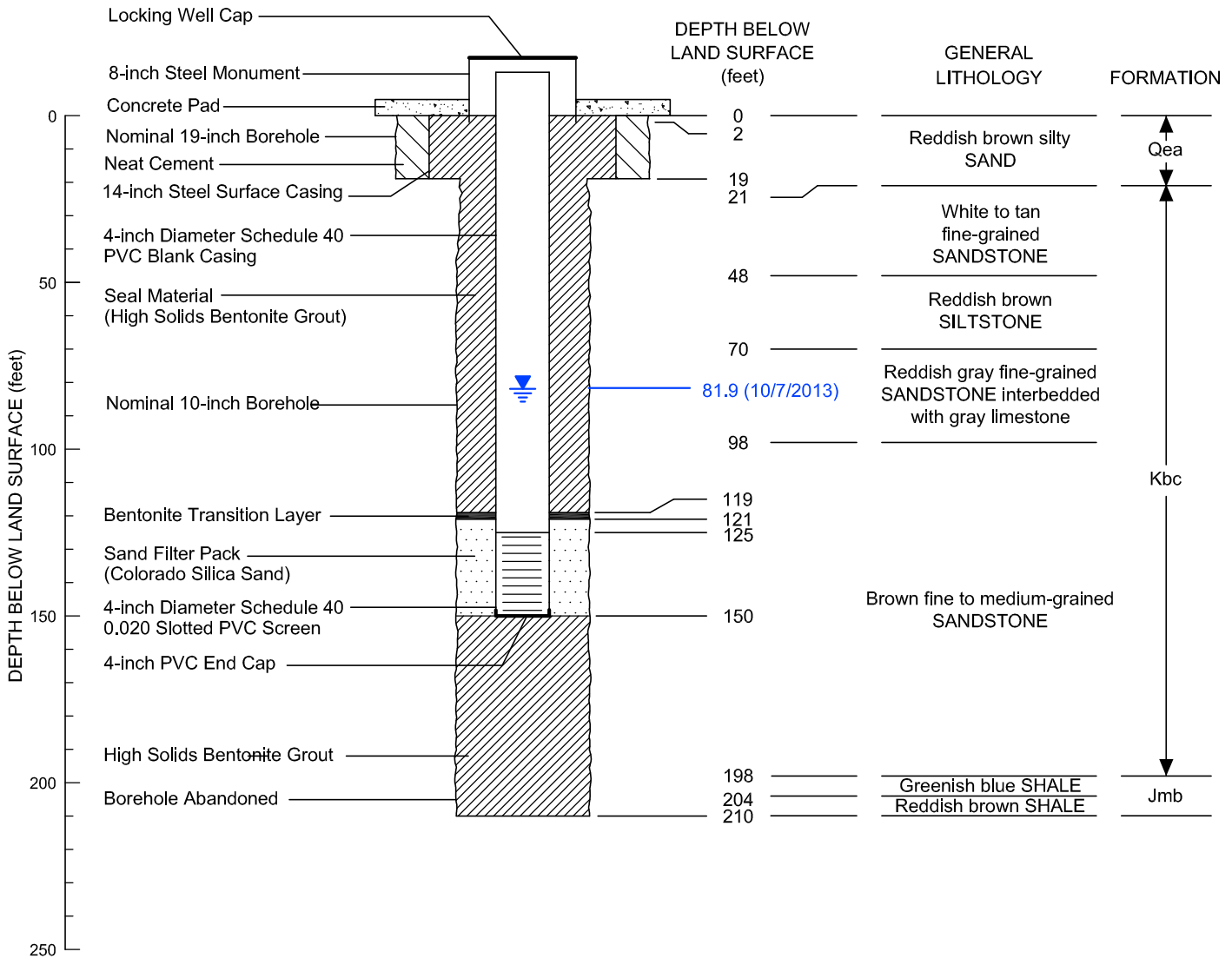
MONITOR WELL MW-117S
CONSTRUCTION SCHEMATIC
RIO ALGOM MINING LLC, LISBON FACILITY

2014

MONTGOMERY & ASSOCIATES

FIGURE B-21

Drafting\1350.21\MonWell_MW117S\15July2014



EXPLANATION

Qea = Quaternary Eolian and Alluvial Deposits
Kbc = Burro Canyon Formation
Jmb = Morrison Formation, Brushy Basin Member

Water Level (feet below ground surface)

WELL: MW-117M	NAD27 STATE PLANE UTAH SO.
GEOLOGIST: John Laney	NORTHING: 589239.524
COMPLETED: Oct. 2013	EASTING: 2633974.818
METHOD: AIR ROTARY	MP ELEVATION: 6,586.6

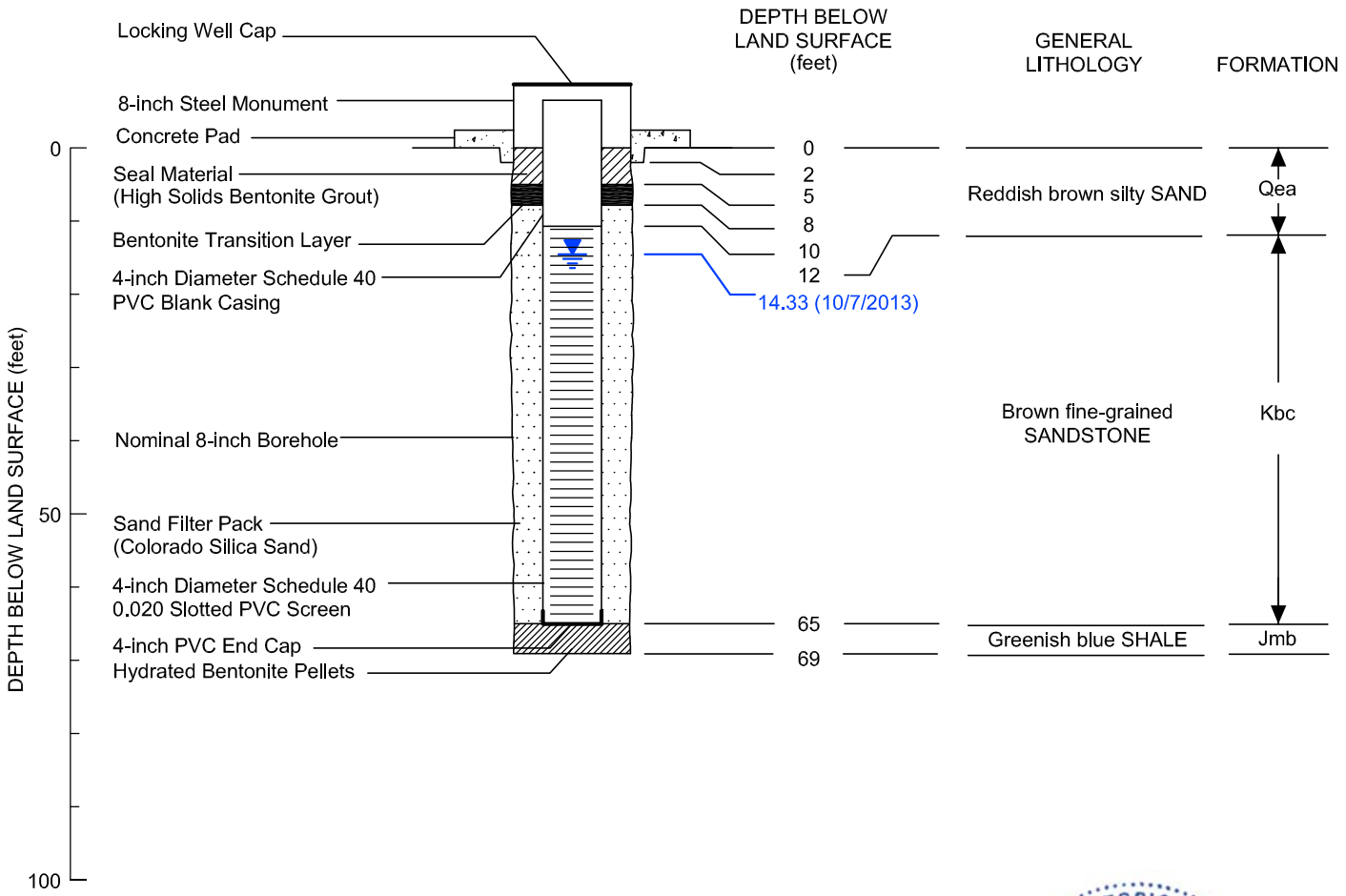
MONITOR WELL MW-117M
CONSTRUCTION SCHEMATIC
RIO ALGOM MINING LLC, LISBON FACILITY

2014

MONTGOMERY & ASSOCIATES

FIGURE B-22

Drafting\1350.21\MonWell_MW117M\07July2014



EXPLANATION

Qea = Quaternary Eolian and Alluvial Deposits
Kbc = Burro Canyon Formation
Jmb = Morrison Formation, Brushy Basin Member

Water Level (feet below ground surface)

WELL: MW-118	NAD27 STATE PLANE UTAH SO.
GEOLOGIST: John Laney	NORTHING: 594554.291
COMPLETED: Oct. 2013	EASTING: 2627874.163
METHOD: AIR ROTARY/CORE	MP ELEVATION: 6,465.4

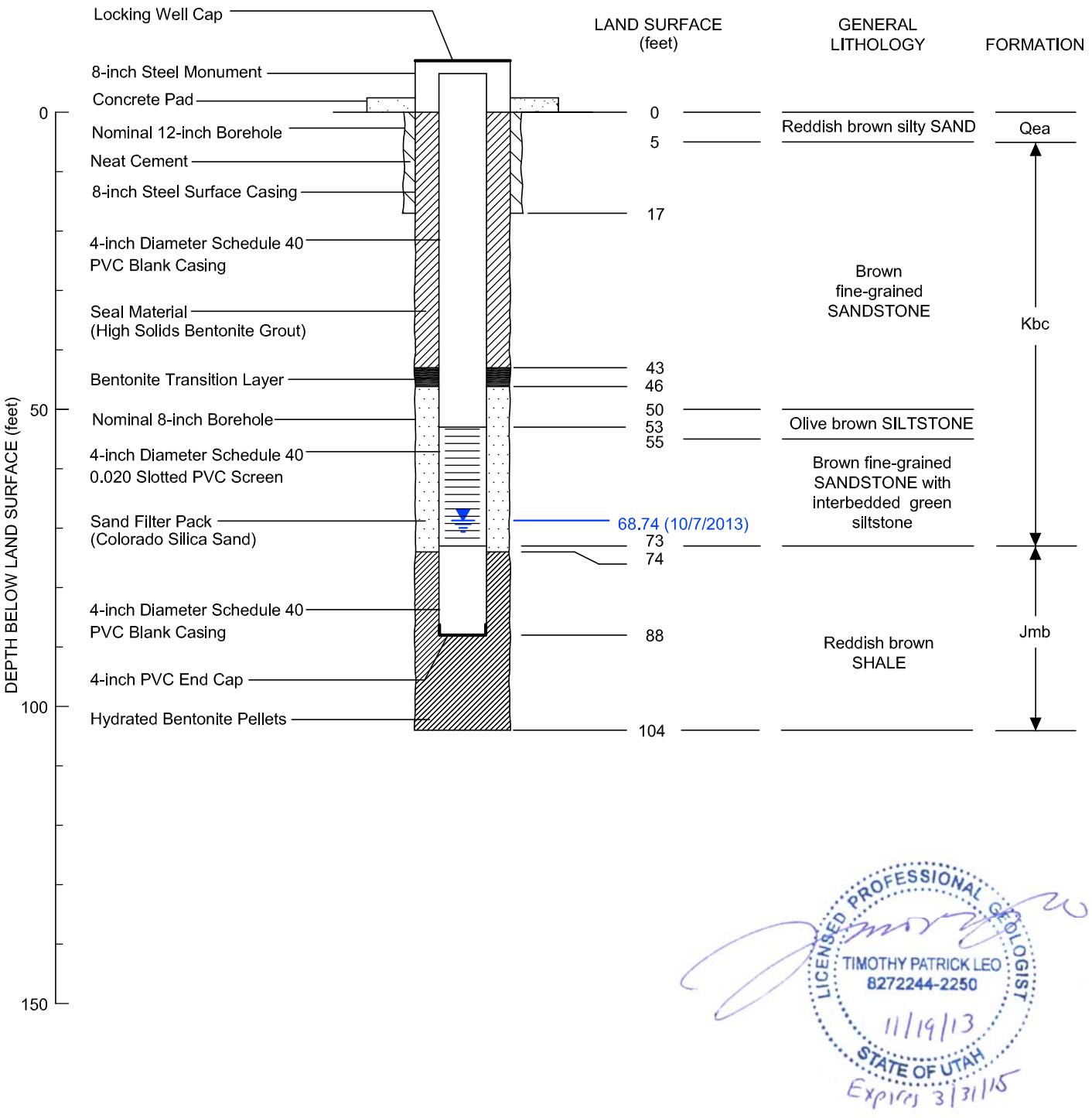
MONITOR WELL MW-118
CONSTRUCTION SCHEMATIC
RIO ALGOM MINING LLC, LISBON FACILITY

2014

MONTGOMERY & ASSOCIATES

FIGURE B-23

Drafting\1350.21\MonWell_MW118\15July2014



EXPLANATION

Qea = Quaternary Eolian and Alluvial Deposits
Kbc = Burro Canyon Formation
Jmb = Morrison Formation,
Brushy Basin Member

Water Level (feet below ground surface)

WELL: MW-119	NAD27 STATE PLANE UTAH SO.
GEOLOGIST: John Laney	NORTHING: 594210.545
COMPLETED: Oct. 2013	EASTING: 2630986.34
METHOD: AIR ROTARY	MP ELEVATION: 6,589.7

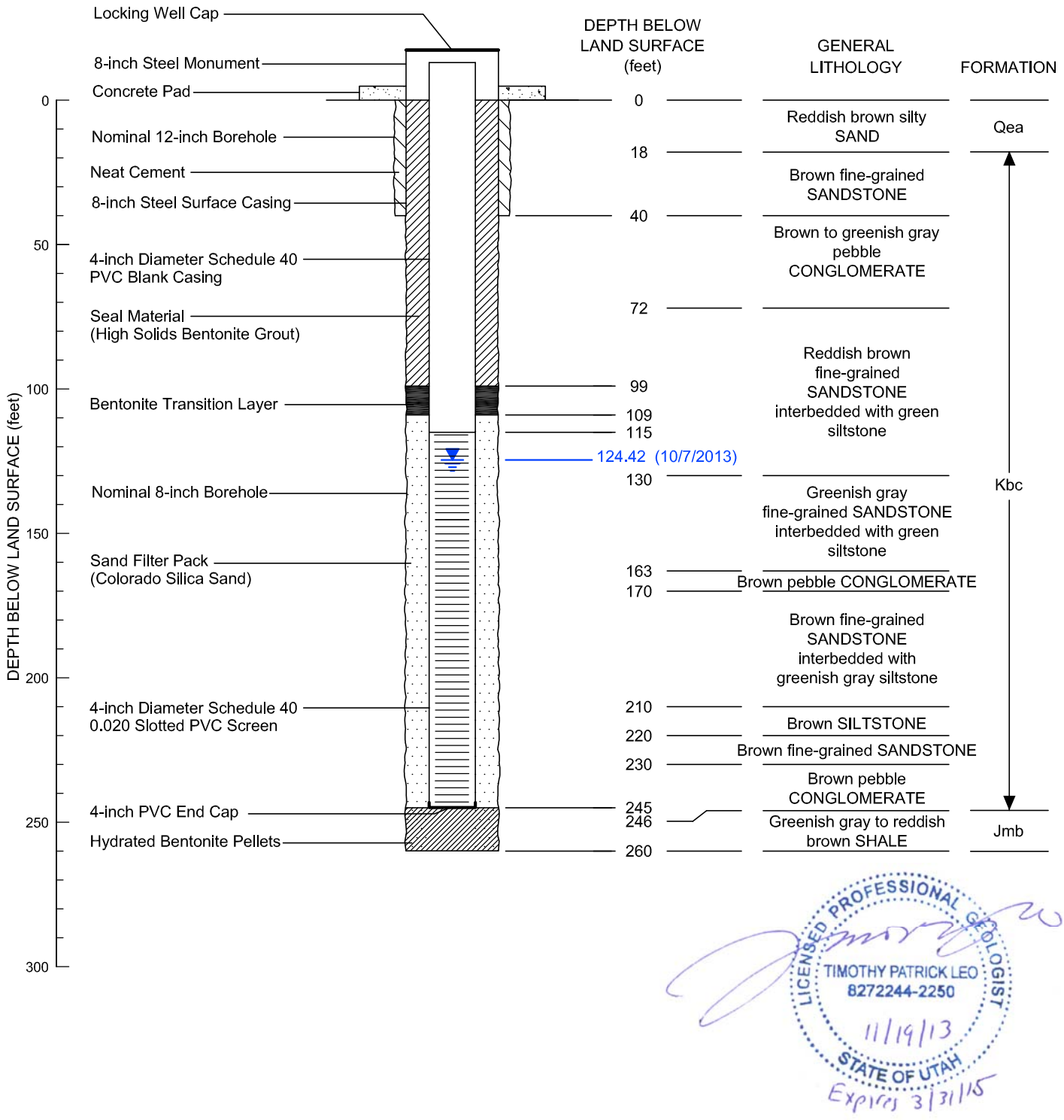
MONITOR WELL MW-119
CONSTRUCTION SCHEMATIC
RIO ALGOM MINING LLC, LISBON FACILITY

2014

MONTGOMERY & ASSOCIATES

FIGURE B-24

Drafting\1350.21\MonWell_MW119\15July2014



EXPLANATION

Qea = Quaternary Eolian and Alluvial Deposits
Kbc = Burro Canyon Formation
Jmb = Morrison Formation, Brushy Basin Member

Water Level (feet below ground surface)

WELL: MW-120	NAD27 STATE PLANE UTAH SO.
GEOLOGIST: John Laney	NORTHING: 586691.404
COMPLETED: Oct. 2013	EASTING: 2637531.855
METHOD: AIR ROTARY	MP ELEVATION: 6,677.2

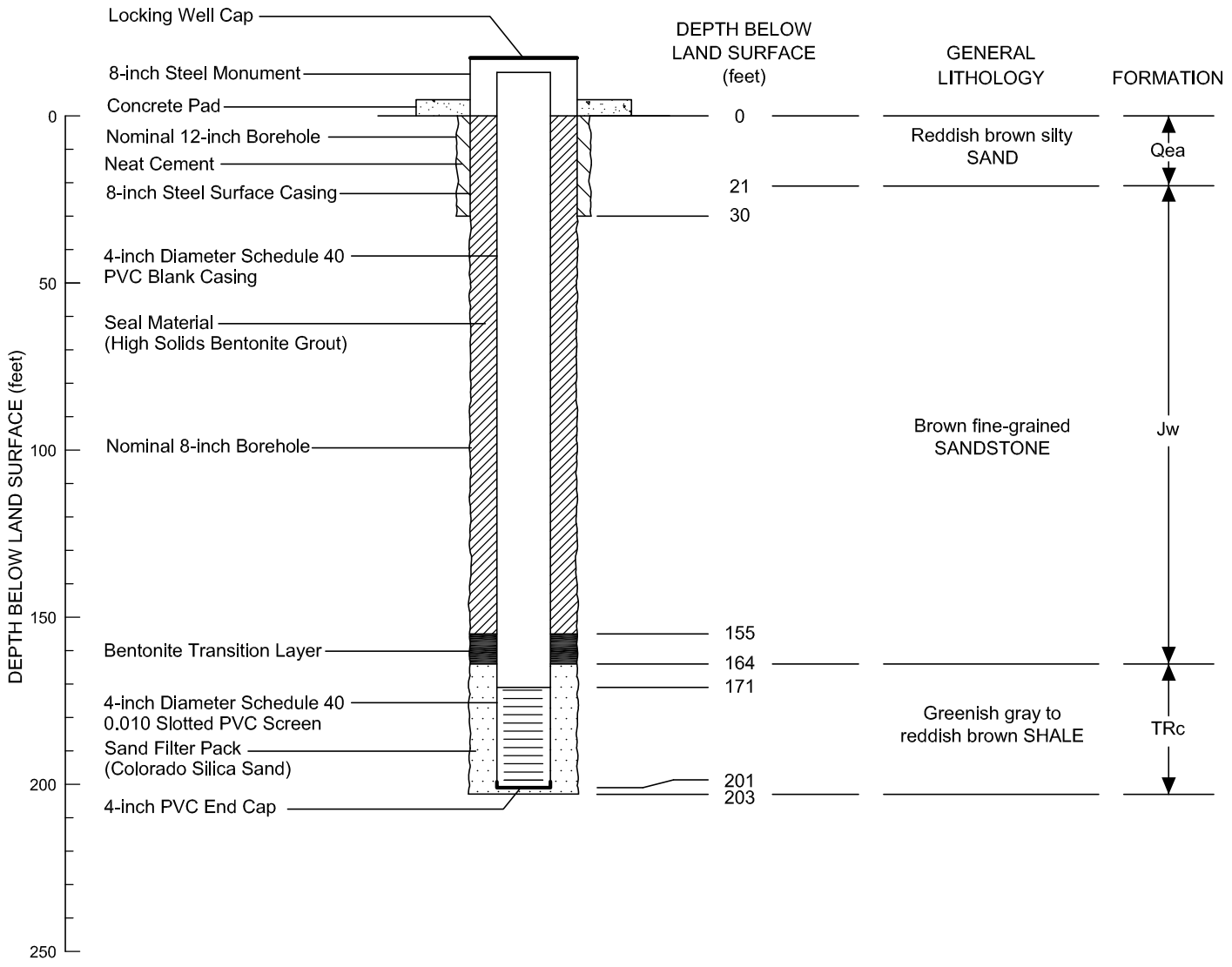
MONITOR WELL MW-120
CONSTRUCTION SCHEMATIC
RIO ALGOM MINING LLC, LISBON FACILITY

2014

MONTGOMERY & ASSOCIATES

FIGURE B-25

Drafting\1350.21\MonWell_MW120\15July2014



EXPLANATION

Qea = Quaternary Eolian and Alluvial Deposits
Jw = Wingate Formation
TRc = Chinle Formation

Note: Well dry on October 7, 2013

WELL: MW-121	NAD27 STATE PLANE UTAH SO.
GEOLOGIST: John Laney	NORTHING: 588290.58
COMPLETED: Oct. 2013	EASTING: 2632203.899
METHOD: AIR ROTARY	MP ELEVATION: 6,595.1

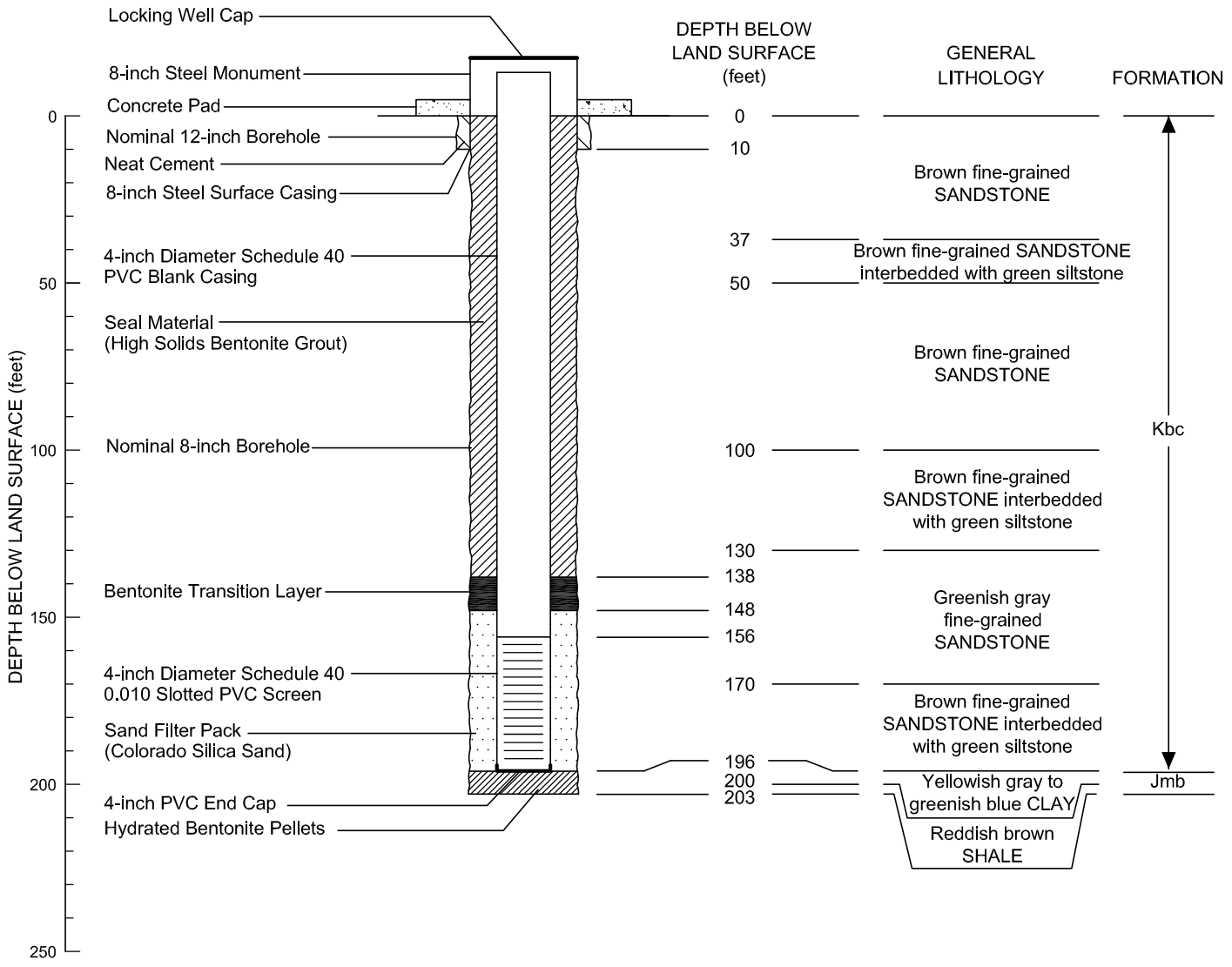
MONITOR WELL MW-121
CONSTRUCTION SCHEMATIC
RIO ALGOM MINING LLC, LISBON FACILITY

2014

MONTGOMERY & ASSOCIATES

FIGURE B-26

Drafting\1350.21\MonWell_MW121\15July2014



EXPLANATION

Kbc = Burro Canyon Formation

Jmb = Morrison Formation, Brushy Basin Member

Note: Well dry on October 7, 2013

WELL: MW-122	NAD27 STATE PLANE UTAH SO.
GEOLOGIST: John Laney	NORTHING: 585156.579
COMPLETED: Oct. 2013	EASTING: 2641532.529
METHOD: AIR ROTARY	MP ELEVATION: 6,928.3

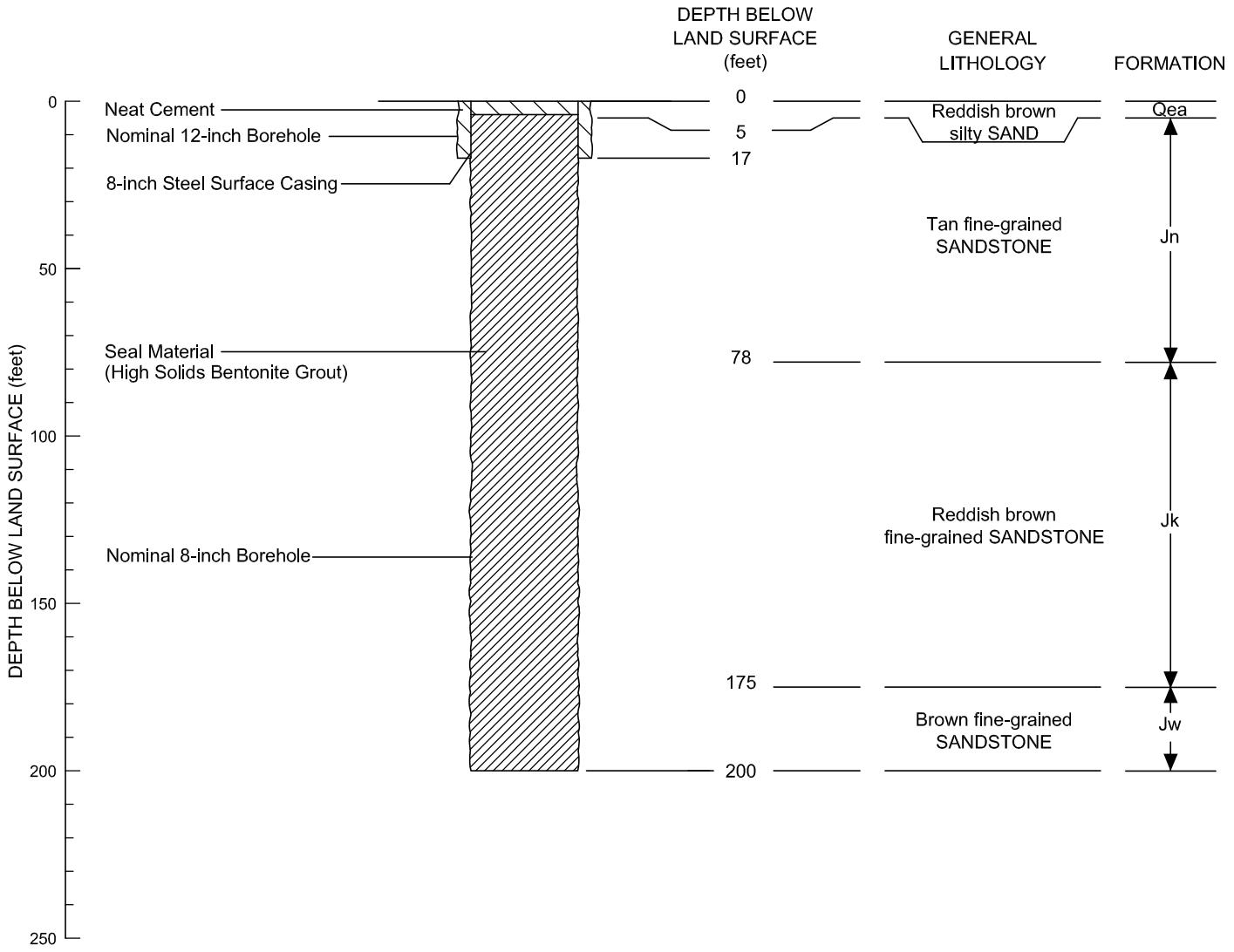
MONITOR WELL MW-122
CONSTRUCTION SCHEMATIC
RIO ALGOM MINING LLC, LISBON FACILITY

2014

MONTGOMERY & ASSOCIATES

FIGURE B-27

Drafting\1350.21\MonWell_MW122\15July2014



LICENSED PROFESSIONAL GEOLOGIST
TIMOTHY PATRICK LEO
8272244-2250
11/19/13
STATE OF UTAH
Expires 3/31/15

EXPLANATION

Qea = Quaternary Eolian and Alluvial Deposits
Jn = Navajo Sandstone Formation
Jk = Kayenta Formation
Jw = Wingate Formation

BORING: B-2	NAD27 STATE PLANE UTAH SO.
GEOLOGIST: John Laney	NORTHING: 592661.51
COMPLETED: Oct. 2013	EASTING: 2628237.492
METHOD: AIR ROTARY	SURFACE ELEVATION: 6,509.2

ABANDONED BOREHOLE B-2
CONSTRUCTION SCHEMATIC
RIO ALGOM MINING LLC, LISBON FACILITY

2014

MONTGOMERY & ASSOCIATES

FIGURE B-28

Drafting\1350.21\MonWell_B-2\15July2014

FIGURE B-29. KEY TO GEOLOGIC FORMATION ABBREVIATIONS

FORMATION ABBREVIATION	FORMATION NAME
Qea	Quaternary Eolian and Alluvial Deposits
Kd	Dakota Sandstone
Kbc	Burro Canyon Formation
Jmb	Morrison Formation, Brushy Basin Member
Jn	Navajo Formation
Jk	Kayenta Formation
Jw	Wingate Formation
TRc	Chinle Formation

FIGURE B-30. GRAPHIC LOG FOR DRILL CUTTINGS FROM MONITOR WELL MW-100 RIO ALGOM MINE LISBON LA SAL, UTAH

DRILLING METHOD / COMPANY: Conventional Air Rotary / Boart Longyear | LOGGED BY: J. Laney

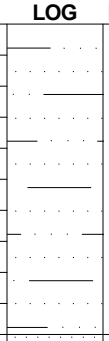
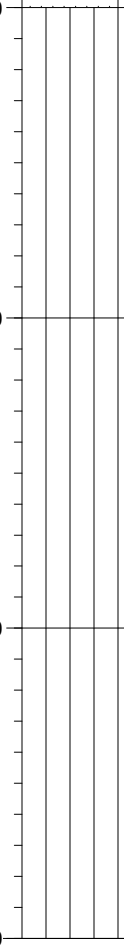
DEPTH DRILLED: 208.0 feet | DATE DRILLED: Sept. 11, 2012

NAD27 : 594322.53 N / 2636663.9 E | BOREHOLE DIAMETER: 8 inches

DEPTH (feet)	GRAPHIC LOG	FORMATION	ROCK TYPE	DESCRIPTION	SECONDARY FEATURES
		Qea	**SILTY SAND**	yellowish red; non-lithified; dry, loose silty sand; well sorted; reaction to acid: none	
		Kd	**SILTSTONE**	greenish gray; weakly lithified; siltstone; friable; reaction to acid: moderate	weathered; orange iron oxide staining
10		Kd	**SANDSTONE**	gray; weakly lithified; very fine grained sandstone; well sorted; reaction to acid: none	trace iron oxide staining
20		Kd	**SHALE**	very dark gray; weakly lithified; carbonaceous shale; soft to friable; reaction to acid: none	
30		Kd	**SANDSTONE**	yellowish brown; well lithified; fine grained sandstone; well sorted; rounded quartz grains; reaction to acid: weak	common iron oxide staining
40		Kd	**SANDSTONE**	yellowish brown; well lithified; fine grained sandstone; well sorted; rounded quartz grains; reaction to acid: very weak	common iron oxide staining
50					

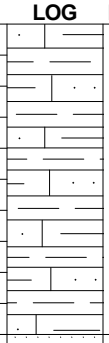
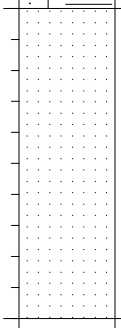
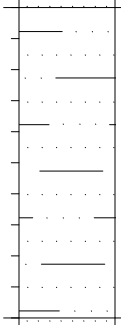
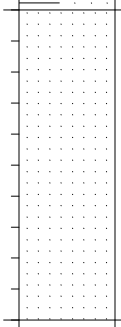
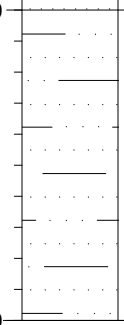
MONTGOMERY & ASSOCIATES

FIGURE B-30. GRAPHIC LOG FOR DRILL CUTTINGS FROM MONITOR WELL MW-100 RIO ALGOM MINE LISBON LA SAL, UTAH

DEPTH (feet)	GRAPHIC LOG	FORMATION	ROCK TYPE	DESCRIPTION	SECONDARY FEATURES
		Kd	**SANDSTONE**	brownish yellow; well lithified; very fine grained sandstone; well sorted, rounded quartz grains; interbedded with lenses of yellowish brown siltstone; reaction to acid: weak	common iron oxide staining
60		Kd	**SANDSTONE**	yellowish brown; well lithified; very fine to fine grained sandstone; well sorted, rounded quartz grains; reaction to acid: moderate	common iron oxide staining
70		Kbc	**SILTSTONE**	greenish gray; weakly lithified; siltstone; soft to friable; reaction to acid: none	
80		Kbc	**SILTSTONE**	greenish gray and dusky red; weakly lithified; interbedded greenish gray, reddish brown, and gray siltstone; soft to friable; reaction to acid: weak	
90		Kbc	**SILTSTONE**	greenish gray; moderately lithified; interbedded greenish gray, reddish brown, and gray siltstone; soft to friable; reaction to acid: weak	
100					

MONTGOMERY & ASSOCIATES

FIGURE B-30. GRAPHIC LOG FOR DRILL CUTTINGS FROM MONITOR WELL MW-100 RIO ALGOM MINE LISBON LA SAL, UTAH

DEPTH (feet)	GRAPHIC LOG	FORMATION	ROCK TYPE	DESCRIPTION	SECONDARY FEATURES
		Kbc	**LIMESTONE**	dark reddish gray; well lithified; limestone; hard; interbedded with lenses of greenish gray, very fine grained sandstone; reaction to acid: strong	
110		Kbc	**SANDSTONE**	light greenish gray; moderately lithified; very fine grained sandstone; well sorted; reaction to acid: weak	
120		Kbc	**SANDSTONE**	brownish yellow; well lithified; fine grained sandstone; well sorted; rounded quartz grains; interbedded with lenses of greenish gray siltstone; reaction to acid: moderate	trace iron oxide staining
130		Kbc	**SANDSTONE**	pale yellow; well lithified; fine to medium grained sandstone; well sorted; clast supported; rounded quartz grains; reaction to acid: moderate	trace iron oxide staining; cuttings moist
140		Kbc	**SANDSTONE**	pale yellow; well lithified; fine to medium grained sandstone; well sorted; clast supported; rounded quartz grains; interbedded with lenses of yellowish brown siltstone; reaction to acid: moderate	trace iron oxide staining; cuttings moist
150					

MONTGOMERY & ASSOCIATES

FIGURE B-30. GRAPHIC LOG FOR DRILL CUTTINGS FROM MONITOR WELL MW-100 RIO ALGOM MINE LISBON LA SAL, UTAH

DEPTH (feet)	GRAPHIC LOG	FORMATION	ROCK TYPE	DESCRIPTION	SECONDARY FEATURES
		Kbc	**SILTSTONE**	greenish gray; well lithified; siltstone; soft to friable; reaction to acid: moderate to strong	cuttings moist
160		Kbc	**SANDSTONE**	pale yellow; well lithified; fine to medium grained sandstone; well sorted; clast supported; subrounded quartz grains; reaction to acid: moderate	trace iron oxide staining; cuttings damp
170		Kbc	**SANDSTONE**	pale yellow; well lithified; fine to medium grained sandstone; well sorted; clast supported; subrounded quartz grains; reaction to acid: very weak	cuttings saturated; borehole producing <1 gpm
180		Kbc	**SANDSTONE**	pale yellow; well lithified; fine to medium grained sandstone; well sorted; clast supported; subrounded quartz grains; interbedded with lenses of olive green siltstone; reaction to acid: very weak	cuttings saturated; borehole producing <5 gpm
190		Kbc	**SANDSTONE**	pale yellow; well lithified; fine to medium grained sandstone; well sorted; clast supported; subrounded quartz grains; interbedded with lenses of olive green siltstone; reaction to acid: very weak	cuttings saturated; borehole producing <5 gpm
200					

MONTGOMERY & ASSOCIATES

FIGURE B-30. GRAPHIC LOG FOR DRILL CUTTINGS FROM MONITOR WELL MW-100 RIO ALGOM MINE LISBON LA SAL, UTAH

DEPTH (feet)	GRAPHIC LOG	FORMATION	ROCK TYPE	DESCRIPTION	SECONDARY FEATURES
		Kbc	**SANDSTONE**	pale yellow; well lithified; coarse grained sandstone; poorly sorted; matrix supported; trace clasts up to 0.5 cm; gravel-size clasts consist of rounded dark gray sandstone, angular red chert, and green shale; reaction to acid: very weak	cuttings saturated; borehole producing ~10 gpm
			TD: 208.0 feet		
210					
220					
230					
240					
250					

MONTGOMERY & ASSOCIATES

FIGURE B-31. GRAPHIC LOG FOR DRILL CUTTINGS FROM MONITOR WELL MW-101 RIO ALGOM MINE LISBON LA SAL, UTAH

DRILLING METHOD / COMPANY: Conventional Air Rotary / Boart Longyear | LOGGED BY: J. Laney

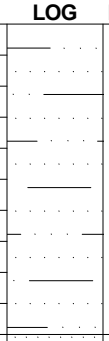
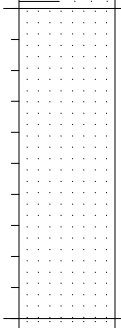
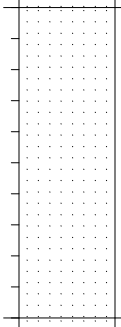
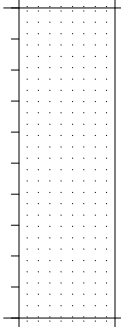
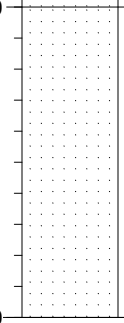
DEPTH DRILLED: 165.0 feet | DATE DRILLED: Sept. 14, 2012

NAD27 : 593397.01 N / 2634360.11 E | BOREHOLE DIAMETER: 8 inches

DEPTH (feet)	GRAPHIC LOG	FORMATION	ROCK TYPE	DESCRIPTION	SECONDARY FEATURES
		Qea	**SILTY SAND**	yellowish red; non-lithified; dry, loose silty sand; well sorted; reaction to acid: none	
		Kbc	**SANDSTONE**	light gray; well lithified; fine grained sandstone; well sorted; clast-supported; subrounded quartz grains; reaction to acid: moderate	orange iron oxide staining
10		Kbc	**SANDSTONE**	brown; well lithified; fine grained sandstone; well sorted; interbedded with lenses of gray limestone; reaction to acid: strong	trace iron oxide staining
20		Kbc	**SILTSTONE**	brown and light greenish gray; weakly to well lithified; siltstone; interbedded with lenses of gray limestone and gray fine grained sandstone; reaction to acid: moderate to strong	
30		Kbc	**SANDSTONE**	pale brown; well lithified; fine grained sandstone; well sorted; clast supported; subrounded quartz grains; reaction to acid: moderate	trace iron oxide staining
40		Kbc	**LIMESTONE**	greenish gray; well lithified; limestone; hard; reaction to acid: strong	
50					

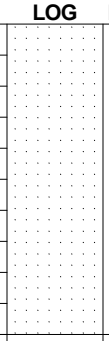
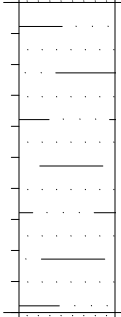
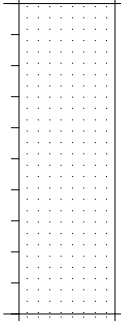
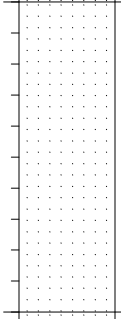
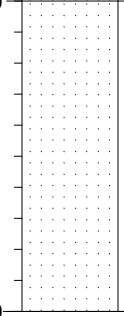
MONTGOMERY & ASSOCIATES

FIGURE B-31. GRAPHIC LOG FOR DRILL CUTTINGS FROM MONITOR WELL MW-101 RIO ALGOM MINE LISBON LA SAL, UTAH

DEPTH (feet)	GRAPHIC LOG	FORMATION	ROCK TYPE	DESCRIPTION	SECONDARY FEATURES
		Kbc	**SANDSTONE**	pale olive; weakly to well lithified; fine grained sandstone; well sorted; interbedded with lenses of soft, greenish gray siltstone; reaction to acid: none	
60		Kbc	**SANDSTONE**	pale yellow; well lithified; fine grained sandstone; well sorted; clast supported; rounded to subrounded quartz grains; reaction to acid: moderate	
70		Kbc	**SANDSTONE**	pale yellow; well lithified; fine grained sandstone; well sorted; clast supported; rounded to subrounded quartz grains; reaction to acid: moderate	
80		Kbc	**SANDSTONE**	pale olive; well lithified; fine grained sandstone; well sorted; clast supported; rounded to subrounded quartz grains; reaction to acid: strong	
90		Kbc	**SANDSTONE**	pale yellow; well lithified; fine grained sandstone; well sorted; rounded to subrounded quartz grains; reaction to acid: weak	
100					

MONTGOMERY & ASSOCIATES

FIGURE B-31. GRAPHIC LOG FOR DRILL CUTTINGS FROM MONITOR WELL MW-101 RIO ALGOM MINE LISBON LA SAL, UTAH

DEPTH (feet)	GRAPHIC LOG	FORMATION	ROCK TYPE	DESCRIPTION	SECONDARY FEATURES
		Kbc	**SANDSTONE**	pale yellow; well lithified; fine grained sandstone; well sorted; rounded to subrounded quartz grains; reaction to acid: weak	
110		Kbc	**SILTSTONE**	yellow; weakly lithified; siltstone; interbedded with lenses of white, fine grained sandstone; reaction to acid: none	trace iron oxide staining
120		Kbc	**SANDSTONE**	pale yellow; well lithified; fine grained sandstone; well sorted; rounded to subrounded quartz grains; reaction to acid: weak	trace iron oxide staining
130		Kbc	**SANDSTONE**	pale yellow; well lithified; fine grained sandstone; well sorted; rounded to subrounded quartz grains; reaction to acid: none	trace iron oxide staining
140		Kbc	**SANDSTONE**	pale yellow; well lithified; fine grained sandstone; well sorted; rounded to subrounded quartz grains; reaction to acid: weak	trace iron oxide staining
150					

MONTGOMERY & ASSOCIATES

FIGURE B-31. GRAPHIC LOG FOR DRILL CUTTINGS FROM MONITOR WELL MW-101 RIO ALGOM MINE LISBON LA SAL, UTAH

DEPTH (feet)	GRAPHIC LOG	FORMATION	ROCK TYPE	DESCRIPTION	SECONDARY FEATURES
		Kbc	**SANDSTONE**	pale yellow; well lithified; fine grained sandstone; well sorted; rounded to subrounded quartz grains; reaction to acid: none	
160		Jmb	**SHALE**	dusky red and greenish gray; moderately lithified; mudstone/shale; reaction to acid: none	
			TD: 165.0 feet		
170					
180					
190					
200					

MONTGOMERY & ASSOCIATES

FIGURE B-32. GRAPHIC LOG FOR DRILL CUTTINGS FROM MONITOR WELL MW-102 RIO ALGOM MINE LISBON LA SAL, UTAH

DRILLING METHOD / COMPANY: Conventional Air Rotary / Boart Longyear | LOGGED BY: J. Laney

DEPTH DRILLED: 141.0 feet | DATE DRILLED: Sept. 20, 2012

NAD27 : 592128.79 N / 2635889.24 E | BOREHOLE DIAMETER: 8 inches

DEPTH (feet)	GRAPHIC LOG	FORMATION	ROCK TYPE	DESCRIPTION	SECONDARY FEATURES
		Kbc	**LIMESTONE**	greenish gray; well lithified; limestone; hard; reaction to acid: strong	weathered
10		Kbc	**LIMESTONE**	greenish gray; well lithified; limestone; hard; reaction to acid: moderate to strong	weathered
		Kbc	**SILTSTONE**	dusky red; weakly lithified; siltstone; reaction to acid: none	weathered
20		Kbc	**SILTSTONE**	greenish gray; weakly lithified; siltstone; reaction to acid: moderate	
		Kbc	**SANDSTONE**	pale yellow; moderately lithified; very fine grained sandstone; well sorted; reaction to acid: moderate	
30		Kbc	**SANDSTONE**	pale yellow; well lithified; fine grained sandstone; well sorted; clast supported; subrounded quartz grains; reaction to acid: moderate	
40		Kbc	**SANDSTONE**	pale yellow; well lithified; fine grained sandstone; well sorted; clast supported; subrounded quartz grains; reaction to acid: moderate	
50					

MONTGOMERY & ASSOCIATES

FIGURE B-32. GRAPHIC LOG FOR DRILL CUTTINGS FROM MONITOR WELL MW-102 RIO ALGOM MINE LISBON LA SAL, UTAH

DEPTH (feet)	GRAPHIC LOG	FORMATION	ROCK TYPE	DESCRIPTION	SECONDARY FEATURES
		Kbc	**SANDSTONE**	pale yellow; well lithified; fine grained sandstone; well sorted; clast supported; subrounded quartz grains; reaction to acid: moderate	trace iron oxide staining
60		Kbc	**SANDSTONE**	pale yellow; well lithified; fine grained sandstone; well sorted; clast supported; subrounded quartz grains; reaction to acid: moderate	trace iron oxide staining
70		Kbc	**SANDSTONE**	pale yellow; well lithified; fine grained sandstone; well sorted; clast supported; subrounded quartz grains; reaction to acid: weak	
80		Kbc	**SILTSTONE**	olive; weakly lithified; siltstone; soft to friable; reaction to acid: none	
		Kbc	**SANDSTONE**	pale yellow; well lithified; fine grained sandstone; well sorted; clast supported; subrounded quartz grains; reaction to acid: none	
90		Kbc	**SANDSTONE**	pale yellow; well lithified; fine grained sandstone; well sorted; clast supported; subrounded quartz grains; reaction to acid: weak	
100					

MONTGOMERY & ASSOCIATES

FIGURE B-32. GRAPHIC LOG FOR DRILL CUTTINGS FROM MONITOR WELL MW-102 RIO ALGOM MINE LISBON LA SAL, UTAH

DEPTH (feet)	GRAPHIC LOG	FORMATION	ROCK TYPE	DESCRIPTION	SECONDARY FEATURES
		Kbc	**SANDSTONE**	pale yellow; well lithified; fine grained sandstone; well sorted; clast supported; subrounded quartz grains; reaction to acid: none	
110		Kbc	**SANDSTONE**	pale yellow; well lithified; fine grained sandstone; well sorted; clast supported; subrounded quartz grains; reaction to acid: none	
120		Kbc	**SANDSTONE**	pale yellow; moderately lithified; fine grained sandstone; well sorted; subrounded quartz grains; interbedded with lenses of olive green siltstone; reaction to acid: weak	trace iron oxide staining
130		Kbc	**SANDSTONE**	pale yellow; well lithified; fine grained sandstone; well sorted; subrounded quartz grains; interbedded with lenses of olive green siltstone; reaction to acid: very weak	
		Jmb	**SHALE**	pale green; weakly to moderately lithified; mudstone/shale; reaction to acid: none	
		Jmb	**SHALE**	dusky red; moderately lithified; mudstone/shale; reaction to acid: none	
140			TD: 141.0 feet		
150					

MONTGOMERY & ASSOCIATES

FIGURE B-33. GRAPHIC LOG FOR DRILL CUTTINGS FROM MONITOR WELL MW-102DB RIO ALGOM MINE LISBON LA SAL, UTAH

DRILLING METHOD / COMPANY: Core and Conventional Air Rotary / Boart Longyear | LOGGED BY: J. Laney

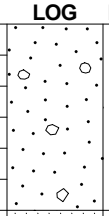
DEPTH DRILLED: 178.0 feet | DATE DRILLED: Sept. 22 - Oct. 8, 2012

NAD27 : 592170.02 N / 2635877.13 E | BOREHOLE DIAMETER: 8 inches

DEPTH (feet)	GRAPHIC LOG	FORMATION	ROCK TYPE	DESCRIPTION	SECONDARY FEATURES
		Kbc	**LIMESTONE**	greenish gray; non-lithified; limestone; reaction to acid: strong	weathered; loose
		Kbc	**LIMESTONE**	greenish gray; well lithified; crystalline limestone; hard; reaction to acid: strong	abundant fractures, orange and black oxide staining on fracture surfaces
10		Kbc	**LIMESTONE**	greenish gray; well lithified; crystalline limestone; hard; reaction to acid: strong	abundant fractures, orange and black oxide staining on fracture surfaces, calcite infill on fracture surfaces
		Kbc	**SILTSTONE**	dusky red; weakly lithified; siltstone; reaction to acid: moderate	weathered; common iron oxide staining on fracture surfaces
20		Kbc	**SANDSTONE**	dusky red; moderately to well lithified; very fine to fine grained sandstone; well sorted; reaction to acid: weak	trace iron oxide staining
		Kbc	**SILTSTONE**	greenish gray; moderately lithified; siltstone; reaction to acid: none	trace iron oxide staining
30		Kbc	**SANDSTONE**	pale yellow; well lithified; very fine to fine grained sandstone; well sorted; subrounded quartz grains; interval contains thin stringers of green siltstone; reaction to acid: none	common iron oxide staining
		Kbc	**SANDSTONE**	pale yellow; well lithified; primarily fine grained sandstone; well sorted; rounded to subrounded quartz grains; 31' - 32': trace subrounded clasts up to 0.5 cm; reaction to acid: weak 36' - 36.5': medium to coarse grained sandstone lens 39' - 39.5': medium to coarse grained sandstone lens	trace iron oxide staining
40		Kbc	**SANDSTONE**	pale yellow; well lithified; coarse grained sandstone; poorly sorted; matrix supported; coarsens with depth; 44' - 44.5': conglomerate lens, matrix supported, fine grained matrix with subrounded clasts up to 2 cm; reaction to acid: weak	
		Kbc	**SILTSTONE**		trace iron oxide staining
		Kbc	**SANDSTONE**	pale yellow; well lithified; siltstone; trace coarse grained subrounded clasts; reaction to acid: weak pale yellow; well lithified; fine grained sandstone; well sorted; subrounded quartz grains; reaction to acid: weak	trace iron oxide staining
50		Kbc	**CONGLOMERATE**	48' - 48.3': coarse grained sandstone lens	

MONTGOMERY & ASSOCIATES

FIGURE B-33. GRAPHIC LOG FOR DRILL CUTTINGS FROM MONITOR WELL MW-102DB RIO ALGOM MINE LISBON LA SAL, UTAH

DEPTH (feet)	GRAPHIC LOG	FORMATION	ROCK TYPE	DESCRIPTION	SECONDARY FEATURES
			**CONGLOMERATE** *continued from previous page*	pale yellow; well lithified; conglomerate; poorly sorted; matrix supported; fine grained matrix with subrounded clasts up to 1.5 cm; reaction to acid: moderate	
		Kbc	**SANDSTONE**	pale yellow; well lithified; very fine to fine grained sandstone; well sorted; rounded to subrounded quartz grains; reaction to acid: weak	
60		Kbc	**SANDSTONE**	pale yellow; well lithified; primarily fine grained sandstone; well sorted; subrounded quartz grains; 60' - 61': very fine grained sandstone lens; reaction to acid: none	trace iron oxide staining; 62' - 65': vertical fracturing with calcite crystals fracture surfaces
70				74' - 75': medium grained sandstone lens	67' - 69': vertical fracturing with calcite crystals on fracture surfaces 71' - 74': vertical fracturing with calcite infill
80		Kbc	**SILTSTONE**	olive; moderately to well lithified; siltstone; reaction to acid: none	80' - 81': vertical fracturing with calcite infill 81' - 83': abundant iron oxide staining
		Kbc	**SANDSTONE**	pale yellow; well lithified; fine grained sandstone; well sorted; rounded to subrounded quartz grains; reaction to acid: none	86' - 88': vertical fracturing with calcite infill
90		Kbc	**SANDSTONE**	pale yellow; moderately lithified; medium grained sandstone with green silty matrix; poorly sorted; reaction to acid: none	common iron oxide staining
		Kbc	**SANDSTONE**	pale yellow; well lithified; fine grained sandstone; well sorted; rounded to subrounded quartz grains; reaction to acid: very weak	91' - 95': vertical fracturing with calcite on fracture surfaces
		Kbc	**SILTSTONE**	olive; moderately lithified; siltstone; reaction to acid: very weak	
100		Kbc	**SANDSTONE**	pale yellow; well lithified; fine grained sandstone; well sorted; rounded to subrounded quartz grains; reaction to acid: very weak	

MONTGOMERY & ASSOCIATES

FIGURE B-33. GRAPHIC LOG FOR DRILL CUTTINGS FROM MONITOR WELL MW-102DB RIO ALGOM MINE LISBON LA SAL, UTAH

DEPTH (feet)	GRAPHIC LOG	FORMATION	ROCK TYPE	DESCRIPTION	SECONDARY FEATURES
			SANDSTONE *continued from previous page*		
					107' - 110': vertical fracturing with black "sooty" staining on fracture surfaces
110					
					114' - 123.5': abundant fracturing with black "sooty" staining on fracture surfaces
120					
					123.5' - 124': orange and black staining on fracture surfaces
		Kbc	**CONGLOMERATE**	pale yellow; well lithified; conglomerate; poorly sorted; matrix supported; fine grained matrix with subrounded clasts up to 3 cm; reaction to acid: weak	
130		Kbc	**SANDSTONE**	pale yellow; well lithified; primarily fine grained sandstone ; well sorted; rounded to subrounded quartz grains; trace subrounded clasts up to 1 cm; reaction to acid: very weak	trace iron oxide staining
		Kbc	**SANDSTONE**	pale yellow; moderately lithified; fine to medium grained sandstone; coarsens with depth; well sorted; reaction to acid: none	weathered appearance; abundant fractures; dark orange to brown iron oxide staining on fracture surfaces
		Jmb	**SHALE**	pale green; well lithified; mudstone/shale; fissile; reaction to acid: none	
		Jmb	**SHALE**		iron oxide staining across entire interval
		Jmb	**SHALE**	pale green; well lithified; mudstone/shale; fissile; reaction to acid: none	
140		Jmb	**SHALE**	dusky red and reddish gray; well lithified; mottled reddish brown to reddish gray to greenish gray mudstone/shale; homogenous; hard; reaction to acid: none	abundant fracturing with yellowish brown mineral infill, not calcite
		Jmb	**SHALE**	dusky red and pale green; well lithified; mottled reddish brown to greenish gray shale; fissile; reaction to acid: none	common fracturing with brown mineral infill
				dusky red; well lithified; mudstone/shale; homogenous; hard to brittle; reaction to acid: none	142' - 151': very small fractures in core sample
150					

MONTGOMERY & ASSOCIATES

FIGURE B-33. GRAPHIC LOG FOR DRILL CUTTINGS FROM MONITOR WELL MW-102DB RIO ALGOM MINE LISBON LA SAL, UTAH

DEPTH (feet)	GRAPHIC LOG	FORMATION	ROCK TYPE	DESCRIPTION	SECONDARY FEATURES
			SHALE *continued from previous page*		153' - 154': vertical fracture with calcite on fracture surfaces
		Jmb	**SANDSTONE**	dusky red; well lithified; very fine grained sandstone; mottled reddish gray to gray; well sorted; very hard; reaction to acid: none	159'-163': vertical fracturing with calcite and pyrite on fracture faces
160					
		Jmb	**SHALE**	dusky red; well lithified; shale; fissile with very thin laminations; reaction to acid: none	
170		Jmb	**SHALE**	dusky red; well lithified; shale; fissile with very thin laminations; reaction to acid: none	
			TD: 178.0 feet		
180					
190					
200					

MONTGOMERY & ASSOCIATES

FIGURE B-34. GRAPHIC LOG FOR DRILL CUTTINGS FROM MONITOR WELL MW-103 RIO ALGOM MINE LISBON LA SAL, UTAH

DRILLING METHOD / COMPANY: Core and Conventional Air Rotary / Boart Longyear | LOGGED BY: J. Laney

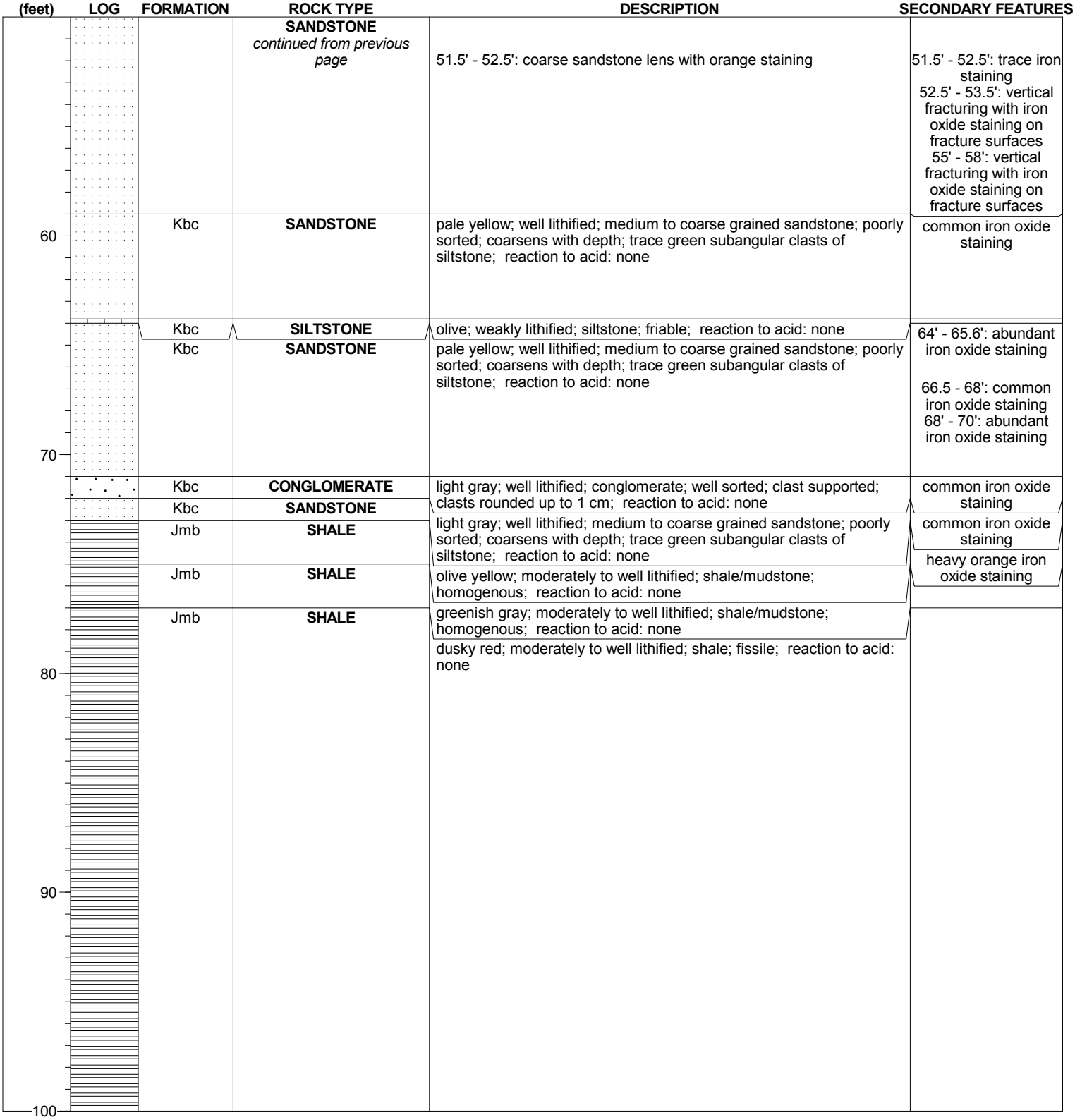
DEPTH DRILLED: 114.0 feet | DATE DRILLED: Oct. 5 - 6, 2012

NAD27 : 589620.31 N / 2635778.11 E | BOREHOLE DIAMETER: 8 inches

DEPTH (feet)	GRAPHIC LOG	FORMATION	ROCK TYPE	DESCRIPTION	SECONDARY FEATURES
		Kbc	**SANDSTONE**	pale brown; well lithified; fine grained sandstone; well sorted; reaction to acid: none	trace iron oxide staining; trace black oxide staining
		Kbc	**SILTSTONE**	brownish yellow; weakly lithified; siltstone; friable; reaction to acid: moderate	weathered; iron oxide staining
		Kbc	**SANDSTONE**	pale yellow; well lithified; fine grained sandstone; well sorted; rounded to subrounded quartz grains; reaction to acid: very weak	8' - 14': abundant fractures with iron oxide staining on fracture surfaces
10					
		Kbc	**SANDSTONE**	light brownish gray; well lithified; medium to coarse grained sandstone; poorly sorted; clast supported; reaction to acid: none	
		Kbc	**SILTSTONE**	pale olive; well lithified; siltstone; friable; reaction to acid: none	common iron oxide staining
		Kbc	**SANDSTONE**	pale yellow; well lithified; very fine grained sandstone; well sorted; reaction to acid: none	abundant iron oxide staining
		Kbc	**SANDSTONE**	pale yellow; well lithified; primarily fine grained sandstone; well sorted; rounded to subrounded quartz grains; reaction to acid: none	
20					22' - 22.5': fracture with "sooty" black oxide staining on fracture surfaces
				26' - 27': green siltstone stringers less than 2 mm thick	25': black oxide staining
				28.5' - 29': coarse sandstone lens with green matrix	
30				32' - 34': thin lenses of medium grained sandstone	
		Kbc	**CONGLOMERATE**	pale yellow; well lithified; conglomerate; poorly sorted; matrix supported; fine grained matrix with rounded to subrounded clasts up to 1 cm; reaction to acid: none	common iron oxide staining
		Kbc	**SANDSTONE**	pale yellow; well lithified; fine grained sandstone; well sorted; rounded to subrounded quartz grains; reaction to acid: none	
40					
		Kbc	**CONGLOMERATE**	pale yellow; moderately to well lithified; conglomerate; poorly sorted; matrix supported; fine grained matrix with rounded to subrounded clasts up to 1 cm; reaction to acid: none	
		Kbc	**SANDSTONE**	pale yellow; well lithified; primarily fine grained sandstone; well sorted; rounded to subrounded quartz grains; reaction to acid: none	
				48.5' - 49': coarse sandstone lens with orange staining	48.5' - 49': iron oxide staining
50					

MONTGOMERY & ASSOCIATES

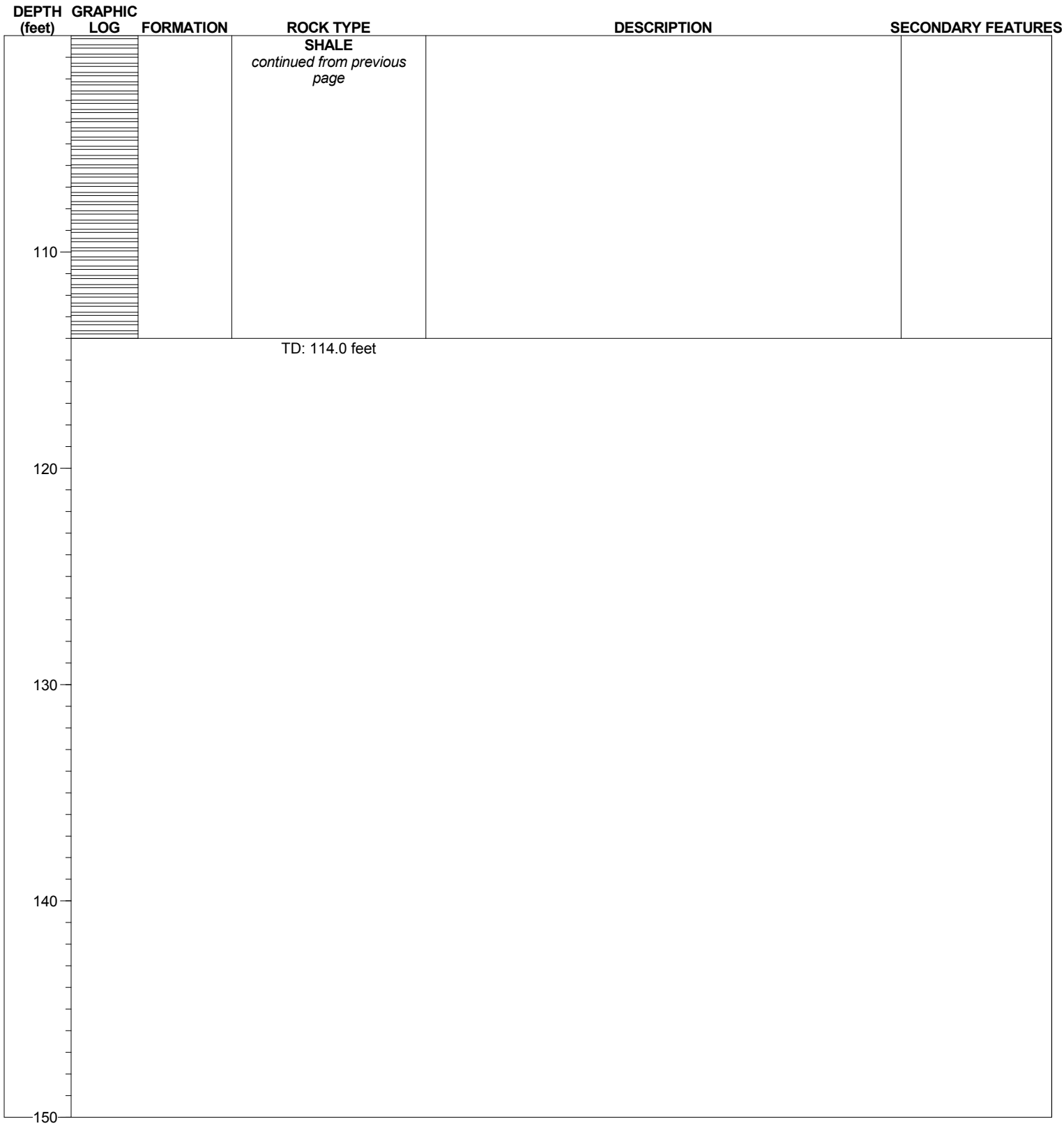
FIGURE B-34. GRAPHIC LOG FOR DRILL CUTTINGS FROM MONITOR WELL MW-103 RIO ALGOM MINE LISBON LA SAL, UTAH



DEPTH (feet)	FORMATION	ROCK TYPE	DESCRIPTION	SECONDARY FEATURES
		SANDSTONE *continued from previous page*	51.5' - 52.5': coarse sandstone lens with orange staining	51.5' - 52.5': trace iron staining 52.5' - 53.5': vertical fracturing with iron oxide staining on fracture surfaces 55' - 58': vertical fracturing with iron oxide staining on fracture surfaces
60	Kbc	**SANDSTONE**	pale yellow; well lithified; medium to coarse grained sandstone; poorly sorted; coarsens with depth; trace green subangular clasts of siltstone; reaction to acid: none	common iron oxide staining
	Kbc	**SILTSTONE**	olive; weakly lithified; siltstone; friable; reaction to acid: none	64' - 65.6': abundant iron oxide staining
	Kbc	**SANDSTONE**	pale yellow; well lithified; medium to coarse grained sandstone; poorly sorted; coarsens with depth; trace green subangular clasts of siltstone; reaction to acid: none	66.5 - 68': common iron oxide staining 68' - 70': abundant iron oxide staining
70	Kbc	**CONGLOMERATE**	light gray; well lithified; conglomerate; well sorted; clast supported; clasts rounded up to 1 cm; reaction to acid: none	common iron oxide staining
	Kbc	**SANDSTONE**	light gray; well lithified; medium to coarse grained sandstone; poorly sorted; coarsens with depth; trace green subangular clasts of siltstone; reaction to acid: none	common iron oxide staining
	Jmb	**SHALE**	olive yellow; moderately to well lithified; shale/mudstone; homogenous; reaction to acid: none	heavy orange iron oxide staining
	Jmb	**SHALE**	greenish gray; moderately to well lithified; shale/mudstone; homogenous; reaction to acid: none dusky red; moderately to well lithified; shale; fissile; reaction to acid: none	
80				
90				
100				

MONTGOMERY & ASSOCIATES

FIGURE B-34. GRAPHIC LOG FOR DRILL CUTTINGS FROM MONITOR WELL MW-103 RIO ALGOM MINE LISBON LA SAL, UTAH



MONTGOMERY & ASSOCIATES

FIGURE B-35. GRAPHIC LOG FOR DRILL CUTTINGS FROM MONITOR WELL MW-104 RIO ALGOM MINE LISBON LA SAL, UTAH

DRILLING METHOD / COMPANY: Conventional Air Rotary / Boart Longyear | LOGGED BY: J. Laney

DEPTH DRILLED: 232.0 feet | DATE DRILLED: Sept. 16, 2012

NAD27 : 589369.37 N / 2637512.96 E | BOREHOLE DIAMETER: 8 inches

DEPTH (feet)	GRAPHIC LOG	FORMATION	ROCK TYPE	DESCRIPTION	SECONDARY FEATURES
		Kbc	**SANDSTONE**	pale yellow; well lithified; fine grained sandstone; well sorted; subrounded quartz grains; interbedded with thin lenses of pale green siltstone; reaction to acid: moderate	
10		Kbc	**SANDSTONE**	pale yellow; well lithified; fine grained sandstone; well sorted; subrounded quartz grains; interbedded with thin lenses of pale green siltstone; reaction to acid: none	
20		Kbc	**SANDSTONE**	pale yellow; well lithified; fine grained sandstone; well sorted; subrounded quartz grains; interbedded with thin lenses of pale green siltstone; reaction to acid: none	
30		Kbc	**SANDSTONE**	pale yellow; well lithified; fine grained sandstone; well sorted; subrounded quartz grains; reaction to acid: none	
40		Kbc	**SANDSTONE**	pale yellow; well lithified; fine grained sandstone; well sorted; subrounded quartz grains; reaction to acid: none	
50					

MONTGOMERY & ASSOCIATES

FIGURE B-35. GRAPHIC LOG FOR DRILL CUTTINGS FROM MONITOR WELL MW-104 RIO ALGOM MINE LISBON LA SAL, UTAH

DEPTH (feet)	GRAPHIC LOG	FORMATION	ROCK TYPE	DESCRIPTION	SECONDARY FEATURES
		Kbc	**SANDSTONE**	pale yellow; well lithified; fine grained sandstone; well sorted; subrounded quartz grains; reaction to acid: none	
60		Kbc	**SANDSTONE**	pale yellow; well lithified; fine grained sandstone; well sorted; subrounded quartz grains; reaction to acid: none	
70		Kbc	**SANDSTONE**	pale yellow; well lithified; fine grained sandstone; well sorted; subrounded quartz grains; reaction to acid: none	
80		Kbc	**SANDSTONE**	pale yellow; well lithified; fine grained sandstone; well sorted; subrounded quartz grains; reaction to acid: none	
90		Kbc	**SANDSTONE**	olive; well lithified; fine grained sandstone; well sorted; subrounded quartz grains; reaction to acid: none	trace iron oxide staining
100		Jmb	**SHALE**	pale green; moderately lithified; mudstone/shale; friable; reaction to	weathered

MONTGOMERY & ASSOCIATES

FIGURE B-35. GRAPHIC LOG FOR DRILL CUTTINGS FROM MONITOR WELL MW-104 RIO ALGOM MINE LISBON LA SAL, UTAH

DEPTH (feet)	GRAPHIC LOG	FORMATION	ROCK TYPE	DESCRIPTION	SECONDARY FEATURES
			SHALE *continued from previous page*	acid: none	
		Jmb	**SHALE**	dusky red; moderately lithified; mudstone/shale; reaction to acid: none	
110		Jmb	**SHALE**	dusky red; moderately lithified; mudstone/shale; reaction to acid: none	
120		Jmb	**SHALE**	dusky red; moderately lithified; mudstone/shale; reaction to acid: none	
130		Jmb	**SHALE**	dusky red; moderately lithified; mudstone/shale; reaction to acid: none	
140		Jmb	**SHALE**	dusky red; moderately lithified; mudstone/shale; reaction to acid: none	
150					

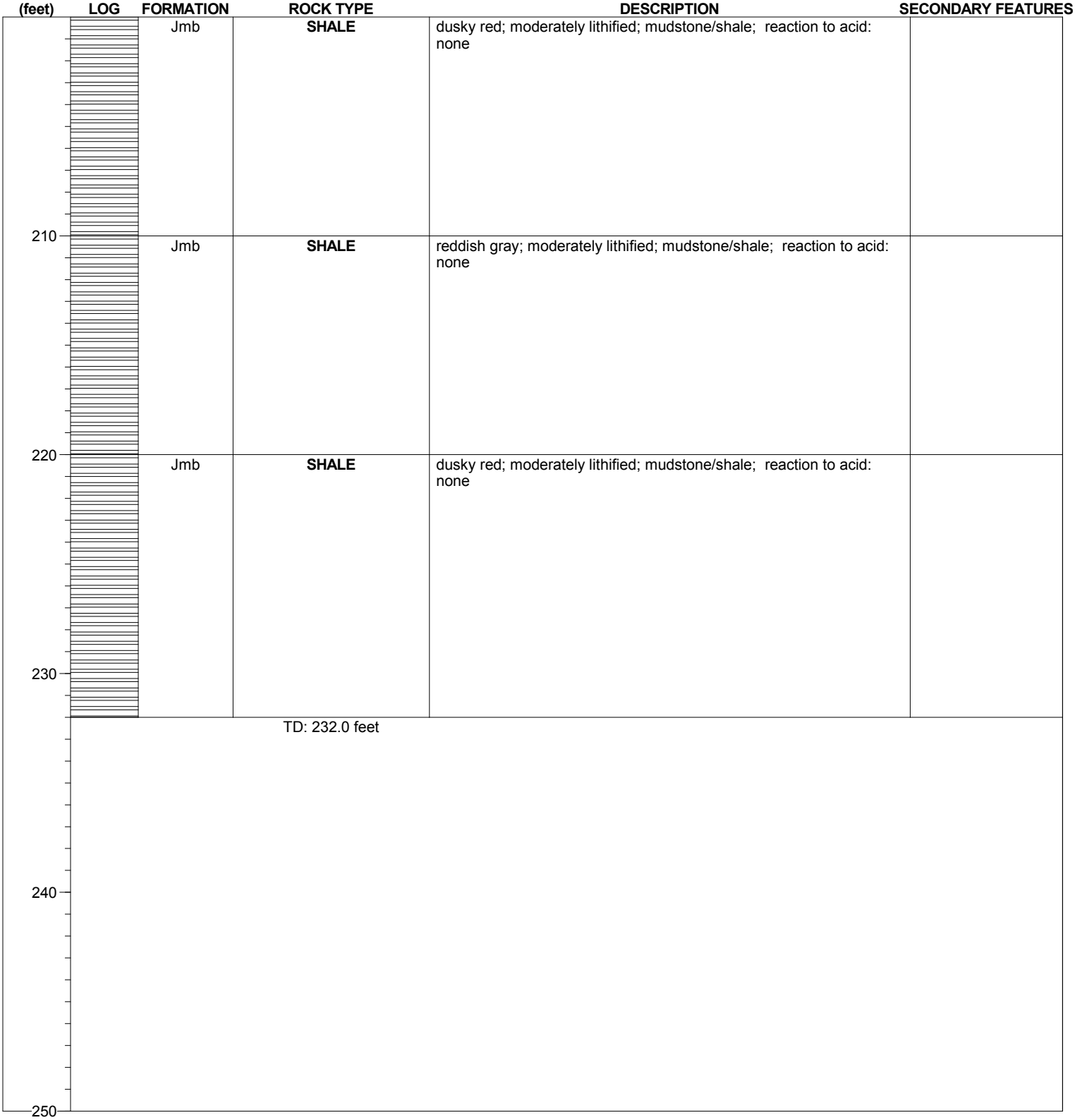
MONTGOMERY & ASSOCIATES

FIGURE B-35. GRAPHIC LOG FOR DRILL CUTTINGS FROM MONITOR WELL MW-104 RIO ALGOM MINE LISBON LA SAL, UTAH

DEPTH (feet)	GRAPHIC LOG	FORMATION	ROCK TYPE	DESCRIPTION	SECONDARY FEATURES
		Jmb	**SHALE**	reddish gray; moderately lithified; interbedded layers of reddish brown and greenish gray mudstone/shale; reaction to acid: none	
160		Jmb	**SHALE**	reddish gray; moderately lithified; interbedded layers of reddish brown and greenish gray mudstone/shale; reaction to acid: none	
170		Jmb	**SHALE**	reddish gray; moderately lithified; interbedded layers of reddish brown and greenish gray mudstone/shale; reaction to acid: none	
180		Jmb	**SHALE**	reddish gray; moderately lithified; interbedded layers of reddish brown and greenish gray mudstone/shale; reaction to acid: none	
190		Jmb	**SHALE**	dusky red; moderately lithified; mudstone/shale; reaction to acid: none	
200					

MONTGOMERY & ASSOCIATES

FIGURE B-35. GRAPHIC LOG FOR DRILL CUTTINGS FROM MONITOR WELL MW-104 RIO ALGOM MINE LISBON LA SAL, UTAH



MONTGOMERY & ASSOCIATES

FIGURE B-36. GRAPHIC LOG FOR DRILL CUTTINGS FROM MONITOR WELL MW-105 RIO ALGOM MINE LISBON LA SAL, UTAH

DRILLING METHOD / COMPANY: Conventional Air Rotary / Boart Longyear | LOGGED BY: J. Laney

DEPTH DRILLED: 141.0 feet | DATE DRILLED: Sept. 18, 2012

NAD27 : 588104.7 N / 2636130.88 E | BOREHOLE DIAMETER: 8 inches

DEPTH (feet)	GRAPHIC LOG	FORMATION	ROCK TYPE	DESCRIPTION	SECONDARY FEATURES
		Qea	**SILTY SAND**	yellowish red; non-lithified; silty sand; well sorted; reaction to acid: weak	
10		Kbc	**SANDSTONE**	pale yellow; well lithified; fine grained sandstone; well sorted; subrounded quartz grains; reaction to acid: weak	trace iron oxide staining
20		Kbc	**SANDSTONE**	pale yellow; well lithified; fine grained sandstone; well sorted; subrounded quartz grains; reaction to acid: weak to moderate	
30		Kbc	**SANDSTONE**	pale yellow; well lithified; fine grained sandstone; well sorted; subrounded quartz grains; reaction to acid: moderate	
40		Kbc	**SANDSTONE**	yellow; well lithified; very fine to fine grained sandstone; well sorted; subrounded quartz grains; reaction to acid: none	
50					

MONTGOMERY & ASSOCIATES

FIGURE B-36. GRAPHIC LOG FOR DRILL CUTTINGS FROM MONITOR WELL MW-105 RIO ALGOM MINE LISBON LA SAL, UTAH

DEPTH (feet)	GRAPHIC LOG	FORMATION	ROCK TYPE	DESCRIPTION	SECONDARY FEATURES
		Kbc	**SANDSTONE**	olive yellow; well lithified; very fine to fine grained sandstone; well sorted; subrounded quartz grains; interbedded with lenses of orangish brown, friable siltstone; reaction to acid: none	
60		Kbc	**SANDSTONE**	pale yellow; well lithified; fine grained sandstone; well sorted; subrounded quartz grains; reaction to acid: none	trace iron oxide staining; cuttings damp at 70'
70		Kbc	**SANDSTONE**	pale yellow; well lithified; fine grained sandstone; well sorted; subrounded quartz grains; reaction to acid: none	trace iron oxide staining; cuttings saturated at 82'
80		Kbc	**SANDSTONE**	pale yellow; well lithified; fine grained sandstone; well sorted; subrounded quartz grains; reaction to acid: none	abundant iron oxide staining on fracture surfaces; cuttings saturated; borehole producing ~20 gpm
90		Kbc	**SANDSTONE**	yellow; well lithified; fine grained sandstone; well sorted; subrounded quartz grains; reaction to acid: none	common iron oxide staining; cuttings saturated; borehole producing ~20 gpm
100					

MONTGOMERY & ASSOCIATES

FIGURE B-36. GRAPHIC LOG FOR DRILL CUTTINGS FROM MONITOR WELL MW-105 RIO ALGOM MINE LISBON LA SAL, UTAH

DEPTH (feet)	GRAPHIC LOG	FORMATION	ROCK TYPE	DESCRIPTION	SECONDARY FEATURES
		Kbc	**SANDSTONE**	yellow; well lithified; fine grained sandstone; well sorted; subrounded quartz grains; reaction to acid: none	common iron oxide staining; cuttings saturated; borehole producing ~20 gpm
110		Kbc	**SANDSTONE**	yellow; well lithified; fine grained sandstone; well sorted; subrounded quartz grains; reaction to acid: none	common iron oxide staining; cuttings saturated; borehole producing ~20 gpm
120		Kbc	**SANDSTONE**	pale yellow; well lithified; interbedded coarse grained sandstone and conglomerate; poorly sorted; matrix supported; clasts up to 1. cm; clasts consist of rounded dark gray sandstone and angular olive green shale; reaction to acid: none	trace iron oxide staining; cuttings saturated; borehole producing ~20 gpm
130		Kbc	**SANDSTONE**	pale yellow; well lithified; interbedded coarse grained sandstone and conglomerate; poorly sorted; matrix supported; clasts up to 1. cm; clasts consist of rounded dark gray sandstone and angular olive green shale; reaction to acid: none	trace iron oxide staining; cuttings saturated; borehole producing ~20 gpm
		Jmb	**SHALE**	pale green; weakly to moderately lithified; shale/mudstone; friable; reaction to acid: none	cuttings saturated; borehole producing ~20 gpm
140		Jmb	**SHALE**	dusky red; moderately lithified; shale; fissile; reaction to acid: none	cuttings saturated; borehole producing ~20 gpm
				TD: 141.0 feet	
150					

MONTGOMERY & ASSOCIATES

FIGURE B-37. GRAPHIC LOG FOR DRILL CUTTINGS FROM MONITOR WELL MW-106 RIO ALGOM MINE LISBON LA SAL, UTAH

DRILLING METHOD / COMPANY: Conventional Air Rotary / Boart Longyear | LOGGED BY: J. Laney

DEPTH DRILLED: 265.0 feet | DATE DRILLED: Oct. 4, 2012

NAD27 : 587422.67 N / 2639305.99 E | BOREHOLE DIAMETER: 8 inches

DEPTH (feet)	GRAPHIC LOG	FORMATION	ROCK TYPE	DESCRIPTION	SECONDARY FEATURES
		Kd	**SANDSTONE**	light gray; well lithified; fine grained sandstone; well sorted; rounded to subrounded quartz grains; reaction to acid: none	trace iron oxide staining
10		Kd	**CONGLOMERATE**	yellow; well lithified; conglomerate; poorly sorted; matrix supported; fine grained sandy matrix; clasts consist of rounded dark gray and brown sandstone, clasts up to 2 cm; reaction to acid: none	common iron oxide staining
20		Kd	**CONGLOMERATE**	olive yellow; well lithified; conglomerate; poorly sorted; matrix supported; fine grained sandy matrix; clasts consist of rounded dark gray and brown sandstone, clasts up to 2 cm; reaction to acid: none	
30		Kbc	**SANDSTONE**	pale yellow; well lithified; fine grained sandstone; well sorted; rounded to subrounded quartz grains; reaction to acid: very weak	
40		Kbc	**SILTSTONE**	greenish gray; weakly to well lithified; siltstone; fissile; friable; reaction to acid: weak to moderate	
50					

MONTGOMERY & ASSOCIATES

FIGURE B-37. GRAPHIC LOG FOR DRILL CUTTINGS FROM MONITOR WELL MW-106 RIO ALGOM MINE LISBON LA SAL, UTAH

DEPTH (feet)	GRAPHIC LOG	FORMATION	ROCK TYPE	DESCRIPTION	SECONDARY FEATURES
		Kbc	**LIMESTONE**	light olive brown and dark reddish gray; weakly to well lithified; limestone; hard; interbedded with lenses of reddish brown, fine grained sandstone; reaction to acid: moderate to strong	
60		Kbc	**LIMESTONE**	light olive brown and dark reddish gray; well lithified; limestone; hard; interbedded with lenses of reddish brown, fine grained sandstone; reaction to acid: none	trace iron oxide staining
70		Kbc	**LIMESTONE**	light olive brown and dark reddish gray; well lithified; limestone; hard; interbedded with lenses of reddish brown, fine grained sandstone; reaction to acid: none	
80		Kbc	**SANDSTONE**	dark reddish gray; well lithified; very fine to fine grained sandstone; well sorted; reaction to acid: very weak	
		Kbc	**SANDSTONE**	greenish gray; well lithified; very fine to fine grained sandstone; well sorted; reaction to acid: very weak	
90		Kbc	**SILTSTONE**	greenish gray and dark reddish gray; moderately to well lithified; interbedded greenish gray to reddish brown siltstone; reaction to acid: very weak	
		Kbc	**SANDSTONE**	pale yellow; well lithified; fine grained sandstone; well sorted; rounded to subrounded quartz grains; reaction to acid: very weak	
100					

MONTGOMERY & ASSOCIATES

FIGURE B-37. GRAPHIC LOG FOR DRILL CUTTINGS FROM MONITOR WELL MW-106 RIO ALGOM MINE LISBON LA SAL, UTAH

DEPTH (feet)	GRAPHIC LOG	FORMATION	ROCK TYPE	DESCRIPTION	SECONDARY FEATURES
		Kbc	**SANDSTONE**	pale yellow; well lithified; fine grained sandstone; well sorted; rounded to subrounded quartz grains; reaction to acid: weak	trace black staining
110		Kbc	**SANDSTONE**	pale yellow; well lithified; fine grained sandstone; well sorted; rounded to subrounded quartz grains; reaction to acid: very weak	
120		Kbc	**SANDSTONE**	pale yellow; well lithified; fine grained sandstone; well sorted; rounded to subrounded quartz grains; reaction to acid: moderate	
130		Kbc	**SANDSTONE**	pale yellow; well lithified; fine grained sandstone; well sorted; rounded to subrounded quartz grains; reaction to acid: weak	
140		Kbc	**SANDSTONE**	pale yellow; well lithified; fine grained sandstone; well sorted; rounded to subrounded quartz grains; reaction to acid: none	
150					

MONTGOMERY & ASSOCIATES

FIGURE B-37. GRAPHIC LOG FOR DRILL CUTTINGS FROM MONITOR WELL MW-106 RIO ALGOM MINE LISBON LA SAL, UTAH

DEPTH (feet)	GRAPHIC LOG	FORMATION	ROCK TYPE	DESCRIPTION	SECONDARY FEATURES
		Kbc	**SANDSTONE**	pale yellow; well lithified; very fine to fine grained sandstone; well sorted rounded to subrounded quartz grains; reaction to acid: none	
160		Kbc	**SANDSTONE**	white; well lithified; very fine to fine grained sandstone; well sorted rounded to subrounded quartz grains; reaction to acid: none	
170		Kbc	**SANDSTONE**	white; well lithified; very fine to fine grained sandstone; well sorted rounded to subrounded quartz grains; reaction to acid: none	
180		Kbc	**SANDSTONE**	white; well lithified; very fine to fine grained sandstone; well sorted rounded to subrounded quartz grains; reaction to acid: none	
190		Kbc	**SANDSTONE**	white; well lithified; very fine to fine grained sandstone; well sorted rounded to subrounded quartz grains; reaction to acid: none	
		Kbc	**SANDSTONE**	yellowish brown; well lithified; very fine to fine grained sandstone; well sorted rounded to subrounded quartz grains; reaction to acid: none	iron oxide staining
200					

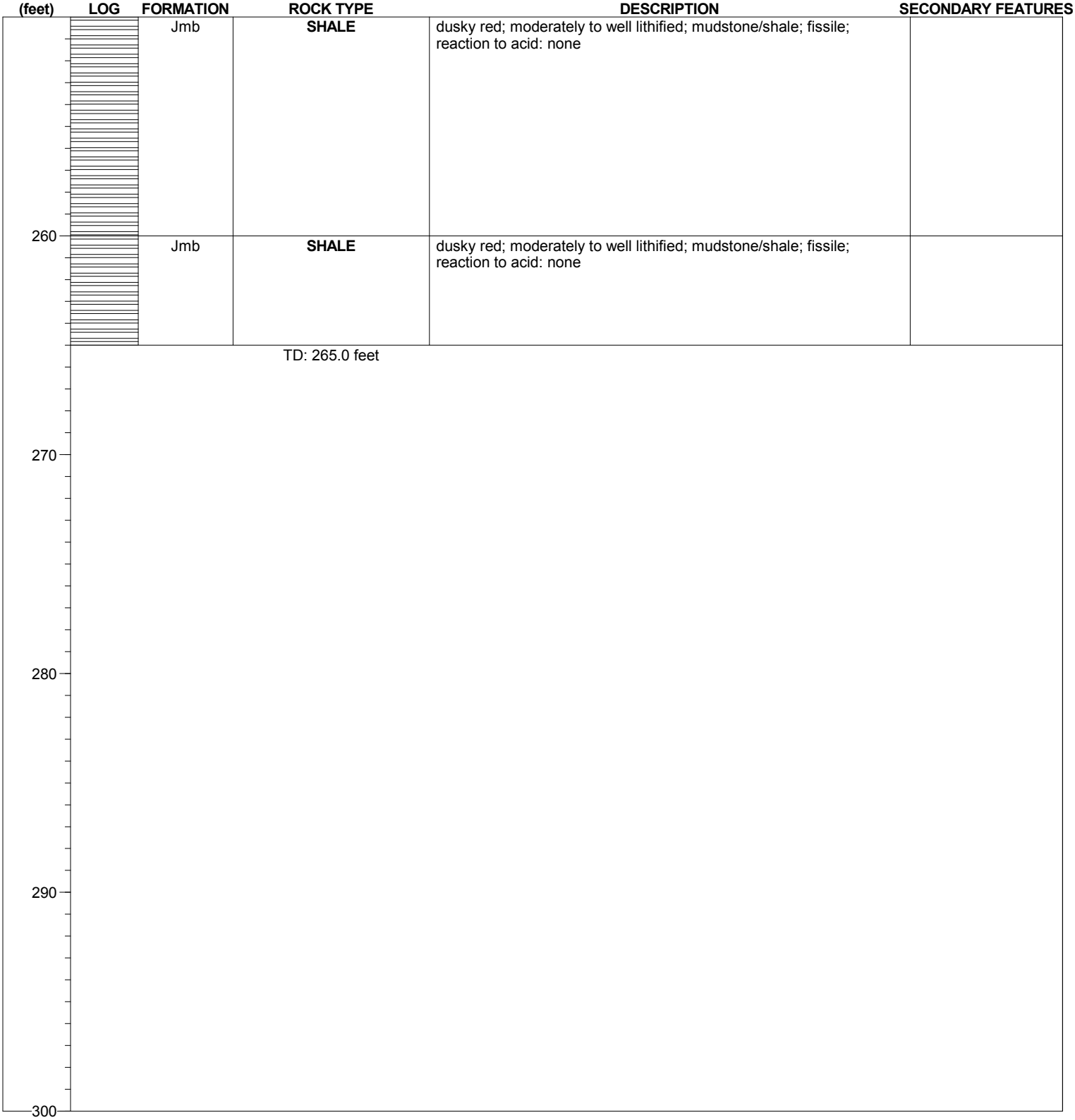
MONTGOMERY & ASSOCIATES

FIGURE B-37. GRAPHIC LOG FOR DRILL CUTTINGS FROM MONITOR WELL MW-106 RIO ALGOM MINE LISBON LA SAL, UTAH

DEPTH (feet)	GRAPHIC LOG	FORMATION	ROCK TYPE	DESCRIPTION	SECONDARY FEATURES
		Kbc	**SILTSTONE**	greenish gray; well lithified; siltstone; friable; reaction to acid: none	
		Kbc	**SANDSTONE**	white; well lithified; very fine to fine grained sandstone; well sorted rounded to subrounded quartz grains; reaction to acid: none	
210		Kbc	**SANDSTONE**	white; well lithified; very fine to fine grained sandstone; well sorted; rounded to subrounded quartz grains; reaction to acid: none	
220		Kbc	**SANDSTONE**	white; well lithified; very fine to fine grained sandstone; well sorted; rounded to subrounded quartz grains; reaction to acid: none	
		Jmb	**SHALE**	greenish gray; moderately lithified; mudstone/shale; soft; friable; reaction to acid: none	trace iron oxide staining
230		Jmb	**SHALE**	dusky red; moderately to well lithified; mudstone/shale; fissile; friable; reaction to acid: none	
240		Jmb	**SHALE**	dusky red; moderately to well lithified; mudstone/shale; fissile; reaction to acid: none	
250					

MONTGOMERY & ASSOCIATES

FIGURE B-37. GRAPHIC LOG FOR DRILL CUTTINGS FROM MONITOR WELL MW-106 RIO ALGOM MINE LISBON LA SAL, UTAH



MONTGOMERY & ASSOCIATES

FIGURE B-38. GRAPHIC LOG FOR CORE SAMPLES FROM MONITOR WELL MW-107D RIO ALGOM MINE LISBON LA SAL, UTAH

DRILLING METHOD / COMPANY: Core and Symmetrix/Conventional Air Rotary / National EWP — LOGGED BY: M. Shelley

DEPTH DRILLED: 85.0 feet — DATE DRILLED: Aug. 28, 2013

NAD27 : 593266.79 N / 2628806.53 E — BOREHOLE DIAMETER: 8 inches

DEPTH (feet)	GRAPHIC LOG	FORMATION	ROCK TYPE	DESCRIPTION	SECONDARY FEATURES
		Qea	**SILTY SAND**	reddish brown; non-lithified; loose silty sand with weakly lithified calcareous deposits (caliche); reaction to acid: very strong	
		Kbc	**SANDSTONE**	yellowish brown to reddish brown; moderately lithified; medium grained sandstone; moderately sorted; reaction to acid: very strong	
10		Kbc	**SANDSTONE**	yellowish brown to reddish brown; non-lithified to weakly lithified; medium grained sandstone; moderately sorted; reaction to acid: weak	weathered
		Kbc	**SANDSTONE**	yellowish brown to reddish brown; moderately to well lithified; fine grained sandstone, moderately sorted; uniform, subrounded quartz grains; with trace subrounded gravel and lithic fragments; reaction to acid: none	fractured with iron oxide staining
20		Kbc	**SILTSTONE**	yellowish brown to reddish brown; non-lithified; siltstone; with trace lithic clasts; reaction to acid: none	weathered and fractured
		Kbc	**SANDSTONE**	yellowish brown to reddish brown; weakly to moderately lithified; medium grained sandstone, moderately sorted; uniform, subrounded quartz grains; with trace subrounded gravel and lithic fragments; reaction to acid: none	
30		Kbc	**SANDSTONE**	light brown; weakly to well lithified; medium grained sandstone; interbedded with conglomerate; reaction to acid: none	
		Kbc	**SANDSTONE**	yellowish brown; weakly lithified; medium grained sandstone, moderately sorted; uniform, subrounded quartz grains; with trace subrounded gravel and lithic fragments; reaction to acid: none	weathered
40		Kbc	**SANDSTONE**	yellowish brown; well lithified; fine to medium grained sandstone, moderately sorted; uniform, subrounded quartz grains; with trace subrounded gravel and lithic fragments; reaction to acid: none	fractured with iron oxide staining
		Kbc	**SANDSTONE**	yellowish brown; well lithified; fine to medium grained sandstone, moderately sorted; uniform, subrounded quartz grains; with trace subrounded gravel and lithic fragments; reaction to acid: none	common fracturing
		Kbc	**SANDSTONE**	light brown to gray; weakly to well lithified; medium grained sandstone, well sorted; uniform, subrounded quartz grains; with trace subrounded gravel and lithic fragments; reaction to acid: none	fractured with iron oxide staining
50					

MONTGOMERY & ASSOCIATES

FIGURE B-38. GRAPHIC LOG FOR CORE SAMPLES FROM MONITOR WELL MW-107D RIO ALGOM MINE LISBON LA SAL, UTAH

DEPTH (feet)	GRAPHIC LOG	FORMATION	ROCK TYPE	DESCRIPTION	SECONDARY FEATURES
			SANDSTONE *continued from previous page*		
60		Kbc	**SANDSTONE**	yellowish brown; non-lithified; medium grained sandstone, well sorted; uniform, subrounded quartz grains; with trace subrounded gravel and lithic fragments; reaction to acid: none	
70		Kbc	**SANDSTONE**	yellowish brown; very weakly to weakly lithified; medium grained sandstone, well sorted; uniform, subrounded quartz grains; with trace subrounded gravel and lithic fragments; reaction to acid: none	iron oxide staining
		Kbc	**SANDSTONE**	yellowish brown to pinkish white; well lithified; medium grained sandstone, well sorted; uniform, subrounded quartz grains; reaction to acid: none	fractured with iron oxide staining
80		Jmb	**SHALE**	greenish blue; moderately to well lithified; mudstone/shale; reaction to acid: none	
			TD: 85.0 feet		
90					
100					

MONTGOMERY & ASSOCIATES

FIGURE B-39. GRAPHIC LOG FOR CORE SAMPLES FROM MONITOR WELL MW-107S RIO ALGOM MINE LISBON LA SAL, UTAH

DRILLING METHOD / COMPANY: Symmetrix/Conventional Air Rotary / National EWP | LOGGED BY: M. Shelley

DEPTH DRILLED: 61.0 feet | DATE DRILLED: Aug. 29, 2013

NAD27 : 593255.35 N / 2628825.67 E | BOREHOLE DIAMETER: 8 inches

DEPTH (feet)	GRAPHIC LOG	FORMATION	ROCK TYPE	DESCRIPTION	SECONDARY FEATURES
		Qea	**SILTY SAND**	reddish brown; non-lithified; loose silty sand with weakly lithified calcareous deposits (caliche); reaction to acid: very strong	
		Kbc	**SANDSTONE**	yellowish brown to reddish brown; moderately lithified; medium grained sandstone; moderately sorted; reaction to acid: very strong	
10		Kbc	**SANDSTONE**	yellowish brown to reddish brown; non-lithified to weakly lithified; medium grained sandstone; moderately sorted; reaction to acid: weak	weathered
		Kbc	**SANDSTONE**	yellowish brown to reddish brown; moderately to well lithified; fine grained sandstone, moderately sorted; uniform, subrounded quartz grains; with trace subrounded gravel and lithic fragments; reaction to acid: none	fractured with iron oxide staining
20		Kbc	**SILTSTONE**	yellowish brown to reddish brown; non-lithified; siltstone; with trace lithic clasts; reaction to acid: none	weathered and fractured
		Kbc	**SANDSTONE**	yellowish brown to reddish brown; weakly to moderately lithified; medium grained sandstone, moderately sorted; uniform, subrounded quartz grains; with trace subrounded gravel and lithic fragments; reaction to acid: none	
30		Kbc	**SANDSTONE**	light brown; weakly to well lithified; medium grained sandstone; interbedded with conglomerate; reaction to acid: none	
		Kbc	**SANDSTONE**	yellowish brown; weakly lithified; medium grained sandstone, moderately sorted; uniform, subrounded quartz grains; with trace subrounded gravel and lithic fragments; reaction to acid: none	weathered
40		Kbc	**SANDSTONE**	yellowish brown; well lithified; fine to medium grained sandstone, moderately sorted; uniform, subrounded quartz grains; with trace subrounded gravel and lithic fragments; reaction to acid: none	fractured with iron oxide staining
		Kbc	**SANDSTONE**	yellowish brown; well lithified; fine to medium grained sandstone, moderately sorted; uniform, subrounded quartz grains; with trace subrounded gravel and lithic fragments; reaction to acid: none	common fracturing
		Kbc	**SANDSTONE**	light brown to gray; weakly to well lithified; medium grained sandstone, well sorted; uniform, subrounded quartz grains; with trace subrounded gravel and lithic fragments; reaction to acid: none	fractured with iron oxide staining
50					

MONTGOMERY & ASSOCIATES

FIGURE B-39. GRAPHIC LOG FOR CORE SAMPLES FROM MONITOR WELL MW-107S RIO ALGOM MINE LISBON LA SAL, UTAH

DEPTH (feet)	GRAPHIC LOG	FORMATION	ROCK TYPE	DESCRIPTION	SECONDARY FEATURES
			SANDSTONE *continued from previous page*		
60		Kbc	**SANDSTONE**	yellowish brown; non-lithified; medium grained sandstone, well sorted; uniform, subrounded quartz grains; with trace subrounded gravel and lithic fragments; reaction to acid: none	
			TD: 61.0 feet		
70					
80					
90					
100					

MONTGOMERY & ASSOCIATES

FIGURE B-40. GRAPHIC LOG FOR DRILL CUTTINGS FROM MONITOR WELL MW-108 RIO ALGOM MINE LISBON LA SAL, UTAH

DRILLING METHOD / COMPANY: Conventional Air Rotary/RC Hammer / National EWP | LOGGED BY: J. Bell

DEPTH DRILLED: 174.0 feet | DATE DRILLED: Aug. 29, 2013

NAD27 : 593861.05 N / 2629864.71 E | BOREHOLE DIAMETER: 8 inches

DEPTH (feet)	GRAPHIC LOG	FORMATION	ROCK TYPE	DESCRIPTION	SECONDARY FEATURES
		Qea	**SILTY SAND**	reddish brown; non-lithified to moderately lithified; loose silty sand with weakly lithified calcareous deposits (caliche); reaction to acid: very strong	
10		Kbc	**SANDSTONE**	yellowish brown; weakly to moderately lithified; very fine to fine grained sandstone; well sorted; uniform, subrounded quartz grains; reaction to acid: strong	calcite mineralization
20		Kbc	**SANDSTONE**	yellowish brown; moderately lithified; very fine to fine grained sandstone; well sorted; uniform, subrounded quartz grains; reaction to acid: strong	
		Kbc	**SILTSTONE**	greenish gray; weakly to moderately lithified; siltstone; reaction to acid: strong	
		Kbc	**SILTSTONE**	reddish gray; weakly to well lithified; siltstone interbedded with limestone; reaction to acid: strong	
30		Kbc	**SHALE**	reddish brown to bluish gray; moderately lithified; mudstone/shale; reaction to acid: none	fractured
		Kbc	**SHALE**	reddish brown to bluish gray; moderately lithified; mudstone/shale; reaction to acid: none	
40		Kbc	**SILTSTONE**	yellowish brown; weakly to moderately lithified; siltstone interbedded with limestone; reaction to acid: moderate	
		Kbc	**SANDSTONE**	olive brown; moderately to well lithified; fine grained sandstone; with trace subrounded gravel and lithic fragments of limestone and chert; reaction to acid: very strong	
		Kbc	**SANDSTONE**	olive brown; moderately to well lithified; fine grained sandstone with trace subrounded gravel and lithic fragments of limestone and chert; reaction to acid: very strong	fractured; calcite mineralization
50					

MONTGOMERY & ASSOCIATES

FIGURE B-40. GRAPHIC LOG FOR DRILL CUTTINGS FROM MONITOR WELL MW-108 RIO ALGOM MINE LISBON LA SAL, UTAH

DEPTH (feet)	GRAPHIC LOG	FORMATION	ROCK TYPE	DESCRIPTION	SECONDARY FEATURES
			SANDSTONE *continued from previous page*		
		Kbc	**SANDSTONE**	olive brown; moderately to well lithified; fine grained sandstone with trace subrounded gravel and lithic fragments of limestone and chert; reaction to acid: very strong	
60		Kbc	**SANDSTONE**	light gray; moderately to well lithified; fine grained sandstone with trace subrounded gravel and lithic fragments of green siltstone; reaction to acid: moderate	
70		Kbc	**SANDSTONE**	light gray; moderately to well lithified; fine grained sandstone with trace subrounded gravel and lithic fragments of green siltstone; reaction to acid: strong	
		Kbc	**SANDSTONE**	light gray; moderately to well lithified; fine grained sandstone with trace subrounded gravel and lithic fragments of green siltstone; reaction to acid: strong	
80		Kbc	**SILTSTONE**	reddish brown to greenish gray; moderately to well lithified; siltstone; reaction to acid: moderate	
		Kbc	**SANDSTONE**	olive to light gray; well lithified; fine grained sandstone; well sorted; uniform, subrounded quartz grains; reaction to acid: moderate	iron oxide staining
90		Kbc	**SANDSTONE**	olive to light gray; well lithified; fine grained sandstone; well sorted; uniform, subrounded quartz grains; reaction to acid: very strong	iron oxide staining
		Kbc	**SANDSTONE**	olive to light gray; well lithified; fine to medium grained grained sandstone; well sorted; uniform, subrounded quartz grains; reaction to acid: very strong	iron oxide staining and calcite mineralization on fractured surfaces
100					

MONTGOMERY & ASSOCIATES

FIGURE B-40. GRAPHIC LOG FOR DRILL CUTTINGS FROM MONITOR WELL MW-108 RIO ALGOM MINE LISBON LA SAL, UTAH

DEPTH (feet)	GRAPHIC LOG	FORMATION	ROCK TYPE	DESCRIPTION	SECONDARY FEATURES
		Kbc	**SANDSTONE**	light gray; well lithified; fine to medium grained grained sandstone; well sorted; uniform, subrounded quartz grains; reaction to acid: none	
110		Kbc	**SANDSTONE**	light gray; well lithified; fine to medium grained grained sandstone; well sorted; uniform, subrounded quartz grains; reaction to acid: none	
120		Kbc	**SANDSTONE**	light gray; well lithified; fine to medium grained grained sandstone; well sorted; uniform, subrounded quartz grains; reaction to acid: none	
130					
140		Kbc	**SANDSTONE**	light gray; well lithified; fine grained sandstone; well sorted; uniform, subrounded quartz grains; interbedded with green siltstone; reaction to acid: none	
150					

MONTGOMERY & ASSOCIATES

FIGURE B-40. GRAPHIC LOG FOR DRILL CUTTINGS FROM MONITOR WELL MW-108 RIO ALGOM MINE LISBON LA SAL, UTAH

DEPTH (feet)	GRAPHIC LOG	FORMATION	ROCK TYPE	DESCRIPTION	SECONDARY FEATURES
			SANDSTONE *continued from previous page*		
160		Kbc	**SANDSTONE**	light gray to yellowish brown; moderately to well lithified; fine grained sandstone; well sorted; uniform, subrounded quartz grains; interbedded with green siltstone; reaction to acid: moderate	iron oxide staining and calcite mineralization
		Jmb	**SHALE**	yellowish brown to bluish gray; weakly to moderately lithified; mudstone/shale; reaction to acid: weak	
170		Jmb	**SHALE**	bluish green; weakly to moderately lithified; mudstone/shale; reaction to acid: none	
		Jmb	**SHALE**	reddish brown; moderately lithified; mudstone/shale; reaction to acid: none	
			TD: 174.0 feet		
180					
190					
200					

MONTGOMERY & ASSOCIATES

FIGURE B-41. GRAPHIC LOG FOR CORE SAMPLES FROM MONITOR WELL MW-109 RIO ALGOM MINE LISBON LA SAL, UTAH

DRILLING METHOD / COMPANY: Core and RC Hammer / National EWP | LOGGED BY: M. Shelley

DEPTH DRILLED: 160.0 feet | DATE DRILLED: Aug. 29, 2013

NAD27 : 593551.87 N / 2632526.68 E | BOREHOLE DIAMETER: 8 inches

DEPTH (feet)	GRAPHIC LOG	FORMATION	ROCK TYPE	DESCRIPTION	SECONDARY FEATURES
		Qea	**SILTY SAND**	reddish brown; non-lithified; loose silty sand; reaction to acid: very strong	
		Kbc	**SANDSTONE**	light brown; well lithified; fine grained sandstone; well sorted; uniform, subrounded quartz grains; reaction to acid: strong	fractures noted
10					
20					
		Kbc	**SANDSTONE**	light brown; well lithified; fine grained sandstone, well sorted; uniform, subrounded quartz grains; with trace subrounded gravel and lithic fragments; reaction to acid: strong	fractures noted
30					
40					
		Kbc	**SANDSTONE**	light brown; well lithified; very fine to fine grained sandstone; well sorted; reaction to acid: none	fractures noted
50					

MONTGOMERY & ASSOCIATES

FIGURE B-41. GRAPHIC LOG FOR CORE SAMPLES FROM MONITOR WELL MW-109 RIO ALGOM MINE LISBON LA SAL, UTAH

DEPTH (feet)	GRAPHIC LOG	FORMATION	ROCK TYPE	DESCRIPTION	SECONDARY FEATURES
			SANDSTONE *continued from previous page*		
		Kbc	**SANDSTONE**	light brown; well lithified; fine to medium grained sandstone, moderately sorted; uniform, subrounded quartz grains; reaction to acid: none	iron oxide staining
60		Kbc	**SANDSTONE**	light brown; well lithified; fine grained sandstone, moderately sorted; uniform, subrounded quartz grains; with trace subrounded gravel and lithic fragments; reaction to acid: none	
70		Kbc	**SANDSTONE**	light brown; well lithified; fine grained sandstone, moderately sorted; uniform, subrounded quartz grains; with trace subrounded gravel and lithic fragments; reaction to acid: none	
80		Kbc	**SANDSTONE**	light brown; well lithified; fine grained sandstone, moderately sorted; uniform, subrounded quartz grains; with trace subrounded gravel and lithic fragments; reaction to acid: none	
90		Kbc	**SANDSTONE**	light brown; well lithified; fine to medium grained sandstone, moderately sorted; uniform, subrounded quartz grains; reaction to acid: none	iron oxide staining
100					

MONTGOMERY & ASSOCIATES

FIGURE B-41. GRAPHIC LOG FOR CORE SAMPLES FROM MONITOR WELL MW-109 RIO ALGOM MINE LISBON LA SAL, UTAH

DEPTH (feet)	GRAPHIC LOG	FORMATION	ROCK TYPE	DESCRIPTION	SECONDARY FEATURES
		Kbc	**SANDSTONE**	light brown; well lithified; fine to medium grained sandstone, moderately sorted; uniform, subrounded quartz grains; reaction to acid: none	
110		Kbc	**SANDSTONE**	light brown; well lithified; fine to medium grained sandstone, moderately sorted; uniform, subrounded quartz grains; reaction to acid: none	
120		Kbc	**SANDSTONE**	reddish brown to gray; moderately to well lithified; medium grained sandstone; interbedded with conglomerate; reaction to acid: none	
130					
140		Kbc	**SANDSTONE**	reddish brown to gray; moderately to well lithified; medium grained sandstone; interbedded with conglomerate; reaction to acid: none	
150					

MONTGOMERY & ASSOCIATES

FIGURE B-41. GRAPHIC LOG FOR CORE SAMPLES FROM MONITOR WELL MW-109 RIO ALGOM MINE LISBON LA SAL, UTAH

DEPTH (feet)	GRAPHIC LOG	FORMATION	ROCK TYPE	DESCRIPTION	SECONDARY FEATURES
			SANDSTONE *continued from previous page*		
		Jmb	**SHALE**	reddish brown; moderately to well lithified; mudstone/shale; reaction to acid: none	
160			TD: 160.0 feet		
170					
180					
190					
200					

MONTGOMERY & ASSOCIATES

FIGURE B-42. GRAPHIC LOG FOR DRILL CUTTINGS FROM MONITOR WELL MW-110 RIO ALGOM MINE LISBON LA SAL, UTAH

DRILLING METHOD / COMPANY: Conventional Air Rotary/RC Hammer / National EWP | LOGGED BY: J. Bell

DEPTH DRILLED: 141.0 feet | DATE DRILLED: Aug. 28, 2013

NAD27 : 592550.34 N / 2632886.15 E | BOREHOLE DIAMETER: 8 inches

DEPTH (feet)	GRAPHIC LOG	FORMATION	ROCK TYPE	DESCRIPTION	SECONDARY FEATURES
		Qea	**SILTY SAND**	reddish brown; non-lithified; loose silty sand with trace rounded gravel; reaction to acid: strong	
		Kbc	**SANDSTONE**	light brown to white; well lithified; medium grained sandstone; well sorted; uniform, subrounded quartz grains; reaction to acid: moderate	
10		Kbc	**SANDSTONE**	light brown to white; well lithified; fine to medium grained sandstone; well sorted; uniform, subrounded quartz grains; trace lithic clasts of chert and shale; reaction to acid: none	
20		Kbc	**SANDSTONE**	light brown to white; well lithified; fine to medium grained sandstone; well sorted; uniform, subrounded quartz grains; trace lithic clasts of chert and shale; reaction to acid: none	
30		Kbc	**SANDSTONE**	light brown to white; moderately to well lithified; fine grained sandstone; interbedded with greenish gray siltstone; reaction to acid: none	
40		Kbc	**SANDSTONE**	light brown to white; well lithified; fine to medium grained sandstone; well sorted; uniform, subrounded quartz grains; trace lithic clasts of chert and shale; reaction to acid: none	
50					

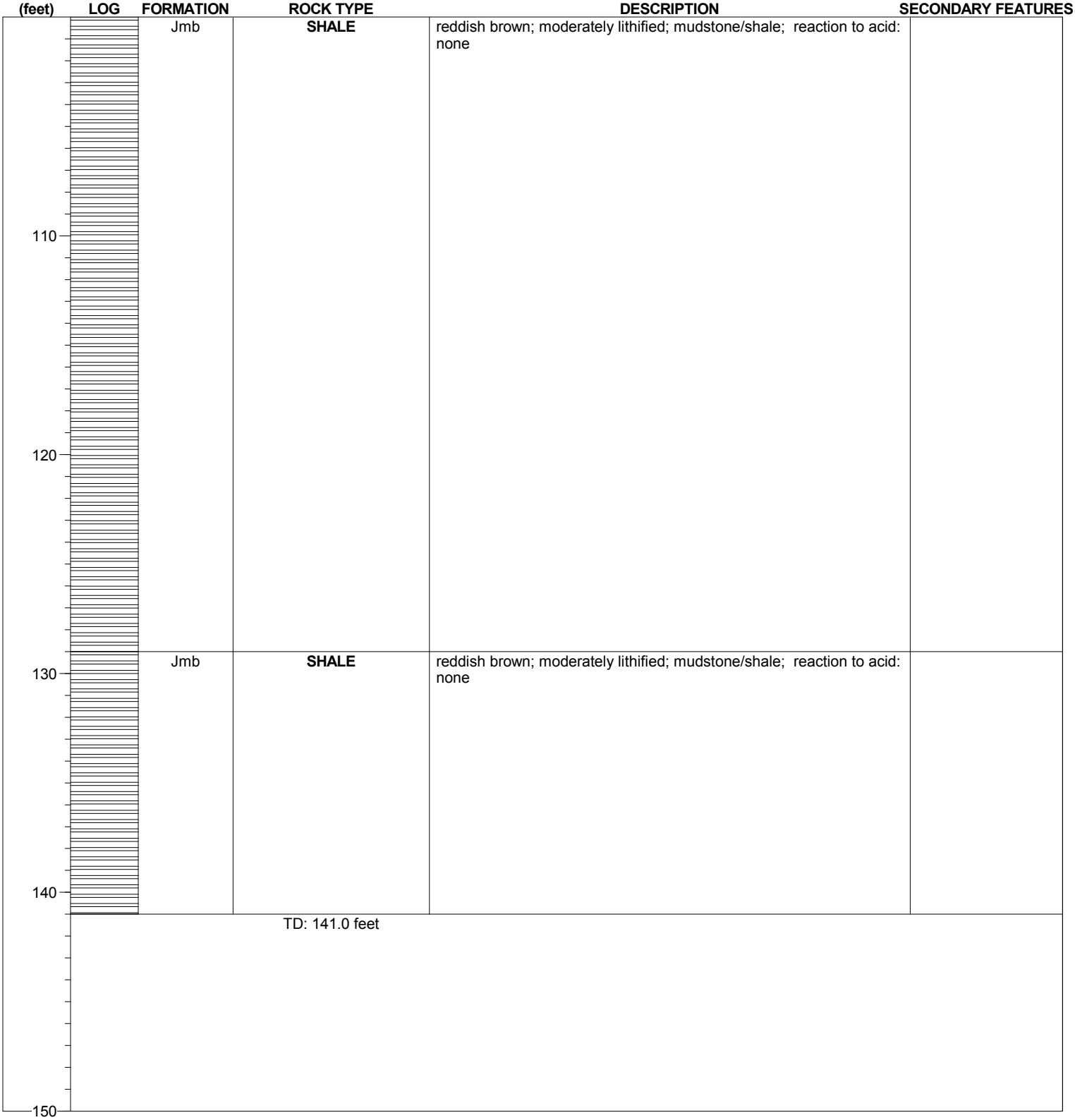
MONTGOMERY & ASSOCIATES

FIGURE B-42. GRAPHIC LOG FOR DRILL CUTTINGS FROM MONITOR WELL MW-110 RIO ALGOM MINE LISBON LA SAL, UTAH

DEPTH (feet)	GRAPHIC LOG	FORMATION	ROCK TYPE	DESCRIPTION	SECONDARY FEATURES
		Kbc	**SANDSTONE**	light brown to white; well lithified; fine to medium grained sandstone; well sorted; uniform, subrounded quartz grains; trace lithic clasts of chert and shale; reaction to acid: none	
60		Kbc	**SANDSTONE**	light brown to white; well lithified; fine grained sandstone; well sorted; uniform, subrounded quartz grains; trace lithic clasts of chert and shale; reaction to acid: none	trace iron oxide staining
		Kbc	**SANDSTONE**	light brown to white; well lithified; fine to medium grained sandstone; well sorted; uniform, subrounded quartz grains; trace lithic clasts of chert and shale; reaction to acid: none	
70		Jmb	**SHALE**	greenish blue; weakly to moderately lithified; mudstone/shale; clayey; reaction to acid: none	
		Jmb	**SHALE**	reddish brown; moderately lithified; mudstone/shale; reaction to acid: none	
80					
90					
100					

MONTGOMERY & ASSOCIATES

FIGURE B-42. GRAPHIC LOG FOR DRILL CUTTINGS FROM MONITOR WELL MW-110 RIO ALGOM MINE LISBON LA SAL, UTAH



MONTGOMERY & ASSOCIATES

FIGURE B-43. GRAPHIC LOG FOR DRILL CUTTINGS FROM MONITOR WELL MW-111 RIO ALGOM MINE LISBON LA SAL, UTAH

DRILLING METHOD / COMPANY: Conventional Air Rotary/RC Hammer / National EWP

LOGGED BY: C. Stielstra

DEPTH DRILLED: 124.0 feet

DATE DRILLED: Sept. 21, 2013

NAD27 : 591997.01 N / 2634470.31 E

BOREHOLE DIAMETER: 8 inches

DEPTH (feet)	GRAPHIC LOG	FORMATION	ROCK TYPE	DESCRIPTION	SECONDARY FEATURES
		Qea	**SILTY SAND**	reddish brown; non-lithified; loose silty sand; reaction to acid: strong	
10		Kbc	**SANDSTONE**	light brown to white; moderately lithified; medium to fine grained sandstone; well sorted, uniform, subrounded quartz grains; with lithic fragments of chert; reaction to acid: moderate	
20		Kbc	**SANDSTONE**	light brown to white; moderately lithified; fine grained sandstone; well sorted, uniform, subrounded quartz grains; with lithic fragments of chert; reaction to acid: strong	
30		Kbc	**SILTSTONE**	reddish brown; weakly lithified; siltstone; clayey; reaction to acid: none	
40		Kbc	**SANDSTONE**	light brown to white; moderately lithified; fine grained sandstone; well sorted, uniform, subrounded quartz grains; with lithic fragments of chert; interbedded with green siltstone; reaction to acid: weak	
50					

MONTGOMERY & ASSOCIATES

FIGURE B-43. GRAPHIC LOG FOR DRILL CUTTINGS FROM MONITOR WELL MW-111 RIO ALGOM MINE LISBON LA SAL, UTAH

DEPTH (feet)	GRAPHIC LOG	FORMATION	ROCK TYPE	DESCRIPTION	SECONDARY FEATURES
		Kbc	**SANDSTONE**	light brown to white; moderately lithified; fine grained sandstone; well sorted, uniform, subrounded quartz grains; with lithic fragments of chert; reaction to acid: very weak	
60		Jmb	**SHALE**	greenish blue; weakly lithified; mudstone/shale; reaction to acid: very weak	
		Jmb	**SHALE**	reddish brown; moderately lithified; mudstone/shale; reaction to acid: none	
70		Jmb	**SHALE**	reddish brown; moderately lithified; mudstone/shale; reaction to acid: none	
80		Jmb	**SHALE**	reddish brown to bluish gray; moderately lithified; mudstone/shale; interbedded with bluish gray very fine grained sandstone; reaction to acid: none	
90		Jmb	**SHALE**	reddish brown to bluish gray; moderately lithified; mudstone/shale; interbedded with bluish gray very fine grained sandstone; reaction to acid: none	
100					

MONTGOMERY & ASSOCIATES

FIGURE B-43. GRAPHIC LOG FOR DRILL CUTTINGS FROM MONITOR WELL MW-111 RIO ALGOM MINE LISBON LA SAL, UTAH

DEPTH (feet)	GRAPHIC LOG	FORMATION	ROCK TYPE	DESCRIPTION	SECONDARY FEATURES
		Jmb	**SHALE**	reddish brown; moderately lithified; mudstone/shale; reaction to acid: none	
110		Jmb	**SHALE**	reddish brown; moderately lithified; mudstone/shale; reaction to acid: none	
120			TD: 124.0 feet		
130					
140					
150					

MONTGOMERY & ASSOCIATES

FIGURE B-44. GRAPHIC LOG FOR DRILL CUTTINGS FROM MONITOR WELL MW-112 RIO ALGOM MINE LISBON LA SAL, UTAH

DRILLING METHOD / COMPANY: Conventional Air Rotary/RC Hammer / National EWP

LOGGED BY: J. Bell

DEPTH DRILLED: 140.0 feet

DATE DRILLED: Aug. 23, 2013

NAD27 : 591398.07 N / 2631481.45 E

BOREHOLE DIAMETER: 8 inches

DEPTH (feet)	GRAPHIC LOG	FORMATION	ROCK TYPE	DESCRIPTION	SECONDARY FEATURES
10		Qea	**SILTY SAND**	reddish brown; non-lithified to very weakly lithified; loose silty sand with weakly lithified calcareous deposits (caliche); reaction to acid: very strong	
20		Kbc	**SILTSTONE**	reddish brown to gray; moderately lithified; siltstone interbedded with limestone; reaction to acid: strong	
30		Kbc	**SILTSTONE**	reddish brown to greenish gray; weakly to moderately lithified; siltstone interbedded with limestone; reaction to acid: strong	
40		Kbc	**SANDSTONE**	light brown; well lithified; fine to medium grained sandstone; interbedded with thin limestone layers; reaction to acid: moderate to strong	
50					

MONTGOMERY & ASSOCIATES

FIGURE B-44. GRAPHIC LOG FOR DRILL CUTTINGS FROM MONITOR WELL MW-112 RIO ALGOM MINE LISBON LA SAL, UTAH

DEPTH (feet)	GRAPHIC LOG	FORMATION	ROCK TYPE	DESCRIPTION	SECONDARY FEATURES
			SANDSTONE *continued from previous page*		
60		Kbc	**SANDSTONE**	white; well lithified; very fine to fine grained sandstone with trace subrounded gravel and lithic fragments; interbedded with thin limestone layers; reaction to acid: strong	
70		Kbc	**SANDSTONE**	yellowish brown; moderately to well lithified; very fine to fine grained sandstone; interbedded with siltstone; reaction to acid: moderate	
		Kbc	**SANDSTONE**	yellowish brown; moderately to well lithified; fine to medium grained sandstone; well sorted; uniform, subrounded quartz grains; reaction to acid: strong	
80		Kbc	**SANDSTONE**	yellowish brown; well lithified; very fine to fine grained sandstone with trace subrounded gravel and lithic fragments; reaction to acid: none	
90					
100					

MONTGOMERY & ASSOCIATES

FIGURE B-44. GRAPHIC LOG FOR DRILL CUTTINGS FROM MONITOR WELL MW-112 RIO ALGOM MINE LISBON LA SAL, UTAH

DEPTH (feet)	GRAPHIC LOG	FORMATION	ROCK TYPE	DESCRIPTION	SECONDARY FEATURES
			SANDSTONE *continued from previous page*		
110		Kbc	**SANDSTONE**	yellowish brown to green; moderately to well lithified; very fine to fine grained sandstone; well sorted; uniform, subrounded quartz grains; interbedded with green siltstone; reaction to acid: none	
		Kbc	**SANDSTONE**	white; well lithified; very fine to fine grained sandstone with trace subrounded gravel and lithic fragments; reaction to acid: none	
120					
130					
140			TD: 140.0 feet		
150					

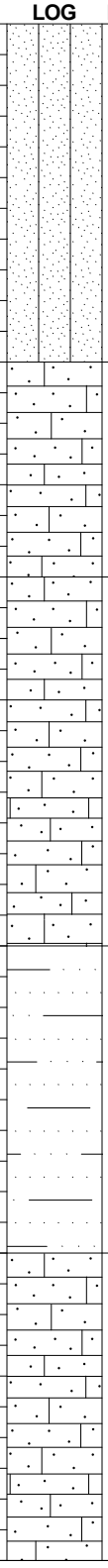
MONTGOMERY & ASSOCIATES

FIGURE B-45. GRAPHIC LOG FOR DRILL CUTTINGS FROM MONITOR WELL MW-113 RIO ALGOM MINE LISBON LA SAL, UTAH

DRILLING METHOD / COMPANY: Conventional Air Rotary/RC Hammer / National EWP | LOGGED BY: J. Laney

DEPTH DRILLED: 105.0 feet | DATE DRILLED: Aug. 21, 2013

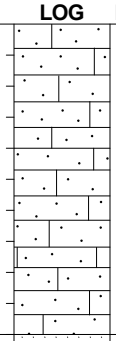
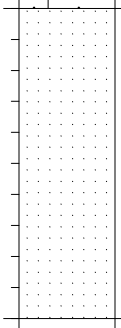
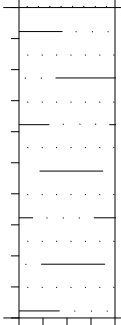
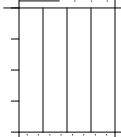
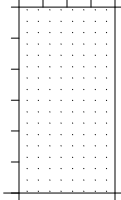
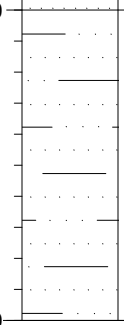
NAD27 : 590646.62 N / 2633010.06 E | BOREHOLE DIAMETER: 8 inches



DEPTH (feet)	FORMATION	ROCK TYPE	DESCRIPTION	SECONDARY FEATURES
10	Qea	**SILTY SAND**	reddish brown; non-lithified; loose silty sand with trace rounded gravel; reaction to acid: strong	
	Kbc	**SANDSTONE**	reddish brown; well lithified; very fine to fine grained sandstone; interbedded with gray limestone and red siltstone/clay; reaction to acid: strong	
20	Kbc	**SANDSTONE**	light brown; moderately lithified; fine grained sandstone; interbedded with greenish gray siltstone and limestone; reaction to acid: strong	
30	Kbc	**SANDSTONE**	light brown; moderately lithified; fine grained sandstone; interbedded with green siltstone; reaction to acid: moderate	trace iron oxide staining
40	Kbc	**SANDSTONE**	light brown; moderately lithified; very fine sandstone; interbedded with gray limestone; reaction to acid: strong	trace iron oxide staining
50				

MONTGOMERY & ASSOCIATES

FIGURE B-45. GRAPHIC LOG FOR DRILL CUTTINGS FROM MONITOR WELL MW-113 RIO ALGOM MINE LISBON LA SAL, UTAH

DEPTH (feet)	GRAPHIC LOG	FORMATION	ROCK TYPE	DESCRIPTION	SECONDARY FEATURES
		Kbc	**SANDSTONE**	light brown; moderately lithified; very fine sandstone; interbedded with gray limestone; reaction to acid: weak	
60		Kbc	**SANDSTONE**	light brown; well lithified; very fine to fine grained sandstone; well sorted; reaction to acid: strong	common iron oxide staining
70		Kbc	**SANDSTONE**	light brown; well lithified; very fine to fine grained sandstone with interbedded with minor lenses of brown clay; reaction to acid: weak	common iron oxide staining, trace manganese oxide
80		Kbc	**SILTSTONE**	light brown to green; weakly lithified; clayey siltstone; reaction to acid: none	
		Kbc	**SANDSTONE**	light gray; weakly lithified; fine grained sandstone; well sorted; reaction to acid: none	
90		Kbc	**SANDSTONE**	light gray; weakly lithified; fine grained sandstone; interbedded with greenish-brown siltstone; reaction to acid: none	
100					

MONTGOMERY & ASSOCIATES

FIGURE B-45. GRAPHIC LOG FOR DRILL CUTTINGS FROM MONITOR WELL MW-113 RIO ALGOM MINE LISBON LA SAL, UTAH

DEPTH (feet)	GRAPHIC LOG	FORMATION	ROCK TYPE	DESCRIPTION	SECONDARY FEATURES
		Kbc	**SANDSTONE**	light gray; moderately lithified; fine grained sandstone; well sorted; uniform subrounded quartz grains; reaction to acid: none	
			TD: 105.0 feet		
110					
120					
130					
140					
150					

MONTGOMERY & ASSOCIATES

FIGURE B-46. GRAPHIC LOG FOR DRILL CUTTINGS FROM MONITOR WELL MW-114 RIO ALGOM MINE LISBON LA SAL, UTAH

DRILLING METHOD / COMPANY: Conventional Air Rotary/RC Hammer / National EWP

LOGGED BY: J. Laney

DEPTH DRILLED: 204.0 feet

DATE DRILLED: Aug. 23, 2013

NAD27 : 590521.65 N / 2632023.46 E

BOREHOLE DIAMETER: 8 inches

DEPTH (feet)	GRAPHIC LOG	FORMATION	ROCK TYPE	DESCRIPTION	SECONDARY FEATURES
10		Qea	**SILTY SAND**	reddish brown; non-lithified; loose silty sand with trace rounded gravel; reaction to acid: strong	
20		Kbc	**SANDSTONE**	white; well lithified; fine to medium grained sandstone; well sorted; uniform, subrounded quartz grains; reaction to acid: none	
30		Kbc	**SANDSTONE**	gray to reddish brown; moderately lithified; fine grained sandstone; well sorted; uniform, subrounded quartz grains; interbedded with red siltstone; reaction to acid: none	
		Kbc	**SANDSTONE**	gray to reddish brown; well lithified; fine grained sandstone; well sorted; uniform, subrounded quartz grains; interbedded with red siltstone; reaction to acid: moderate	
40		Kbc	**SANDSTONE**	gray to reddish brown; well lithified; fine grained sandstone; interbedded with gray limestone and red siltstone; reaction to acid: strong	
50					

MONTGOMERY & ASSOCIATES

FIGURE B-46. GRAPHIC LOG FOR DRILL CUTTINGS FROM MONITOR WELL MW-114 RIO ALGOM MINE LISBON LA SAL, UTAH

DEPTH (feet)	GRAPHIC LOG	FORMATION	ROCK TYPE	DESCRIPTION	SECONDARY FEATURES
		Kbc	**SANDSTONE**	gray to reddish brown; well lithified; fine grained sandstone; interbedded with gray limestone and red siltstone; reaction to acid: strong	
60		Kbc	**SANDSTONE**	gray to reddish brown; well lithified; fine grained sandstone; interbedded with gray limestone and red siltstone; reaction to acid: strong	
70		Kbc	**SANDSTONE**	greenish gray; well lithified; fine grained sandstone interbedded with green siltstone; reaction to acid: moderate	
		Kbc	**CONGLOMERATE**	light brown; well lithified; conglomerate; pebble-sized, subrounded clasts with fine grained sand matrix; reaction to acid: moderate	common iron oxide staining
80		Kbc	**CONGLOMERATE**	light brown; well lithified; conglomerate; pebble-sized, subrounded clasts with fine grained sand matrix; reaction to acid: moderate	common iron oxide staining
90		Kbc	**SANDSTONE**	white to light brown; well lithified; medium grained sandstone; well sorted; uniform, subrounded quartz grains; reaction to acid: moderate	trace iron oxide staining
100					

MONTGOMERY & ASSOCIATES

FIGURE B-46. GRAPHIC LOG FOR DRILL CUTTINGS FROM MONITOR WELL MW-114 RIO ALGOM MINE LISBON LA SAL, UTAH

DEPTH (feet)	GRAPHIC LOG	FORMATION	ROCK TYPE	DESCRIPTION	SECONDARY FEATURES
		Kbc	**SANDSTONE**	white to light brown; well lithified; medium grained sandstone; well sorted; uniform, subrounded quartz grains; reaction to acid: moderate	trace iron oxide staining
110		Kbc	**SANDSTONE**	white to light brown; well lithified; medium grained sandstone; well sorted; uniform, subrounded quartz grains; reaction to acid: none	trace iron oxide staining
120		Kbc	**SANDSTONE**	white to light brown; well lithified; medium grained sandstone; well sorted; uniform, subrounded quartz grains; reaction to acid: none	trace iron oxide staining, fracture noted at 122'
		Kbc	**SANDSTONE**	white to light brown; well lithified; fine to medium grained sandstone; well sorted; uniform, subrounded quartz grains; trace lithic gravel; reaction to acid: none	common iron oxide staining; green alteration mineral on fracture surfaces
130		Kbc	**SANDSTONE**	white to light brown; well lithified; fine to medium grained sandstone; well sorted; uniform, subrounded quartz grains; trace lithic gravel; reaction to acid: none	trace iron oxide staining
140		Kbc	**SANDSTONE**	white to light brown; well lithified; fine to medium grained sandstone; well sorted; uniform, subrounded quartz grains; trace lithic gravel; reaction to acid: none	trace iron oxide staining
150					

MONTGOMERY & ASSOCIATES

FIGURE B-46. GRAPHIC LOG FOR DRILL CUTTINGS FROM MONITOR WELL MW-114 RIO ALGOM MINE LISBON LA SAL, UTAH

DEPTH (feet)	GRAPHIC LOG	FORMATION	ROCK TYPE	DESCRIPTION	SECONDARY FEATURES
		Kbc	**SANDSTONE**	white to light brown; well lithified; fine to medium grained sandstone; well sorted; uniform, subrounded quartz grains; trace lithic gravel; reaction to acid: none	
160		Kbc	**SANDSTONE**	white to light brown; well lithified; fine to medium grained sandstone; well sorted; uniform, subrounded quartz grains; trace lithic gravel; reaction to acid: none	
170		Kbc	**SANDSTONE**	white to light brown; well lithified; fine to medium grained sandstone; well sorted; uniform, subrounded quartz grains; trace lithic gravel; reaction to acid: none	trace iron oxide staining
180		Kbc	**SANDSTONE**	white to light brown; well lithified; fine to medium grained sandstone; well sorted; uniform, subrounded quartz grains; trace lithic gravel; reaction to acid: none	trace iron oxide staining
190		Kbc	**SANDSTONE**	white to light brown; well lithified; fine to medium grained sandstone; well sorted; uniform, subrounded quartz grains; trace lithic gravel; reaction to acid: none	trace iron oxide staining
		Jmb	**SHALE**	greenish blue; moderately lithified; mudstone/shale; reaction to acid: none	
200					

MONTGOMERY & ASSOCIATES

FIGURE B-46. GRAPHIC LOG FOR DRILL CUTTINGS FROM MONITOR WELL MW-114 RIO ALGOM MINE LISBON LA SAL, UTAH

DEPTH (feet)	GRAPHIC LOG	FORMATION	ROCK TYPE	DESCRIPTION	SECONDARY FEATURES
		Jmb	**SHALE**	reddish brown; well lithified; mudstone/shale; reaction to acid: none	
			TD: 204.0 feet		
210					
220					
230					
240					
250					

MONTGOMERY & ASSOCIATES

FIGURE B-47. GRAPHIC LOG FOR DRILL CUTTINGS FROM MONITOR WELL MW-115M RIO ALGOM MINE LISBON LA SAL, UTAH

DRILLING METHOD / COMPANY: Conventional Air Rotary/RC Hammer / National EWP | LOGGED BY: J. Bell

DEPTH DRILLED: 240.0 feet | DATE DRILLED: Aug. 21, 2013

NAD27 : 589529.13 N / 2633240.02 E | BOREHOLE DIAMETER: 8 inches

DEPTH (feet)	GRAPHIC LOG	FORMATION	ROCK TYPE	DESCRIPTION	SECONDARY FEATURES
10		Qea	**SILTY SAND**	reddish brown; non-lithified; loose silty sand; reaction to acid: very strong	
20		Qea	**SANDSTONE**	reddish brown to gray; weakly lithified; fine grained sandstone; well sorted; reaction to acid: weak	
30		Kbc	**SANDSTONE**	reddish brown to gray; moderately lithified; fine grained sandstone; interbedded with gray siltstone; reaction to acid: none	
40		Kbc	**SANDSTONE**	reddish brown to gray; moderately lithified; fine to coarse grained sandstone; poorly sorted; with common gravel sized, subrounded clasts of chert; reaction to acid: none	
50		Kbc	**SANDSTONE**	reddish brown to gray; weakly lithified; fine to coarse grained sandstone; poorly sorted; common gravel sized, subrounded clasts of chert; reaction to acid: none	

MONTGOMERY & ASSOCIATES

FIGURE B-47. GRAPHIC LOG FOR DRILL CUTTINGS FROM MONITOR WELL MW-115M RIO ALGOM MINE LISBON LA SAL, UTAH

DEPTH (feet)	GRAPHIC LOG	FORMATION	ROCK TYPE	DESCRIPTION	SECONDARY FEATURES
		Kbc	**SILTSTONE**	greenish gray; moderately to well lithified; siltstone; clayey; reaction to acid: none	
60		Kbc	**SANDSTONE**	light brown; well lithified; fine grained sandstone; well sorted; reaction to acid: weak	
70		Kbc	**SANDSTONE**	reddish brown; well lithified; very fine to fine grained sandstone; interbedded with reddish brown siltstone; reaction to acid: moderate	
80		Kbc	**SILTSTONE**	reddish brown; weakly lithified; siltstone; reaction to acid: weak	
90		Kbc	**SILTSTONE**	reddish brown; moderately lithified; siltstone; reaction to acid: weak	
		Kbc	**SILTSTONE**	greenish gray; moderately lithified; siltstone; reaction to acid: weak	
100					

MONTGOMERY & ASSOCIATES

FIGURE B-47. GRAPHIC LOG FOR DRILL CUTTINGS FROM MONITOR WELL MW-115M RIO ALGOM MINE LISBON LA SAL, UTAH

DEPTH (feet)	GRAPHIC LOG	FORMATION	ROCK TYPE	DESCRIPTION	SECONDARY FEATURES
		Kbc	**SILTSTONE**	reddish brown; moderately lithified; siltstone; reaction to acid: weak	
110		Kbc	**SANDSTONE**	light brown; well lithified; fine grained sandstone; well sorted; interbedded with reddish brown siltstone; reaction to acid: weak	
120		Kbc	**SANDSTONE**	reddish brown; weakly lithified; very fine to fine grained sandstone; interbedded with reddish brown siltstone; reaction to acid: weak	
130		Kbc	**SANDSTONE**	white to light gray; moderately to well lithified; fine to medium grained sandstone; moderately sorted; uniform, subrounded quartz grains; with rounded gravel up to 1 cm; reaction to acid: none	iron oxide staining
140		Kbc	**SANDSTONE**	white to light gray; moderately to well lithified; fine to medium grained sandstone; moderately sorted; uniform, subrounded quartz grains; with rounded gravel up to 1 cm; reaction to acid: none	trace iron oxide staining; fractured
150					

MONTGOMERY & ASSOCIATES

FIGURE B-47. GRAPHIC LOG FOR DRILL CUTTINGS FROM MONITOR WELL MW-115M RIO ALGOM MINE LISBON LA SAL, UTAH

DEPTH (feet)	GRAPHIC LOG	FORMATION	ROCK TYPE	DESCRIPTION	SECONDARY FEATURES
		Kbc	**SANDSTONE**	white to light gray; moderately to well lithified; fine to medium grained sandstone; moderately sorted; uniform, subrounded quartz grains; with rounded gravel up to 2 cm; reaction to acid: none	trace iron oxide staining; fractured
160		Kbc	**SANDSTONE**	white to light gray; well lithified; fine to medium grained sandstone; moderately sorted; uniform, subrounded quartz grains; with rounded gravel up to 2 cm; reaction to acid: none	trace iron oxide staining; fractured
170		Kbc	**SANDSTONE**	white; well lithified; fine to medium grained sandstone; moderately sorted; reaction to acid: none	trace iron oxide staining; fractured
180		Kbc	**SANDSTONE**	light gray; moderately to well lithified; fine to medium grained sandstone; moderately sorted; interbedded with olive green siltstone; reaction to acid: none	trace iron oxide staining; fractured; weathered; "vuggy" appearance
190		Kbc	**SANDSTONE**	light gray; moderately to well lithified; fine to medium grained sandstone; moderately sorted; interbedded with olive green siltstone; reaction to acid: none	trace iron oxide staining; fractured; weathered; "vuggy" appearance
200					

MONTGOMERY & ASSOCIATES

FIGURE B-47. GRAPHIC LOG FOR DRILL CUTTINGS FROM MONITOR WELL MW-115M RIO ALGOM MINE LISBON LA SAL, UTAH

DEPTH (feet)	GRAPHIC LOG	FORMATION	ROCK TYPE	DESCRIPTION	SECONDARY FEATURES
		Kbc	**SANDSTONE**	white; moderately to well lithified; fine to medium grained sandstone; moderately sorted; interbedded with olive green siltstone; reaction to acid: none	trace iron oxide staining; fractured; weathered; "vuggy" appearance
210		Kbc	**SANDSTONE**	white; well lithified; fine grained sandstone; well sorted; uniform, subrounded quartz grains; reaction to acid: none	trace iron oxide staining; fractured; weathered; "vuggy" appearance
220			**SANDSTONE**	greenish gray; well lithified; fine grained sandstone; well sorted; uniform, subrounded quartz grains; reaction to acid: none	trace iron oxide staining; fractured; weathered; "vuggy" appearance
230			**SANDSTONE**	white; well lithified; fine grained sandstone; well sorted; uniform, subrounded quartz grains; reaction to acid: none	trace iron oxide staining; fractured; weathered; "vuggy" appearance
240			TD: 240.0 feet		
250					

MONTGOMERY & ASSOCIATES

FIGURE B-48. GRAPHIC LOG FOR DRILL CUTTINGS FROM MONITOR WELL MW-115S RIO ALGOM MINE LISBON LA SAL, UTAH

DRILLING METHOD / COMPANY: Conventional Air Rotary/RC Hammer / National EWP | LOGGED BY: J. Bell

DEPTH DRILLED: 218.0 feet | DATE DRILLED: Aug. 21, 2013

NAD27 : 589523.46 N / 2633289.06 E | BOREHOLE DIAMETER: 8 inches

DEPTH (feet)	GRAPHIC LOG	FORMATION	ROCK TYPE	DESCRIPTION	SECONDARY FEATURES
10		Qea	**SILTY SAND**	reddish brown; non-lithified; loose silty sand; reaction to acid: very strong	
20		Kbc	**SANDSTONE**	reddish brown; well lithified; fine to medium grained sandstone; moderately sorted; interbedded with thin limestone layers; reaction to acid: very strong	weathered
30		Kbc	**SANDSTONE**	reddish brown; well lithified; fine to medium grained sandstone; moderately sorted; with trace lithic fragments of chert; reaction to acid: none	weathered
		Kbc	**SANDSTONE**	reddish brown; weakly to moderately lithified; fine grained sandstone; well sorted; reaction to acid: none	
40		Kbc	**SANDSTONE**	light brown; moderately to well lithified; fine grained sandstone; well sorted; interbedded with yellowish brown siltstone; reaction to acid: none	iron oxide staining
50					

MONTGOMERY & ASSOCIATES

FIGURE B-48. GRAPHIC LOG FOR DRILL CUTTINGS FROM MONITOR WELL MW-115S RIO ALGOM MINE LISBON LA SAL, UTAH

DEPTH (feet)	GRAPHIC LOG	FORMATION	ROCK TYPE	DESCRIPTION	SECONDARY FEATURES
		Kbc	**SANDSTONE**	light brown; moderately to well lithified; fine grained sandstone; well sorted; interbedded with yellowish brown siltstone; reaction to acid: none	iron oxide staining
60		Kbc	**SANDSTONE**	light brown; moderately to well lithified; fine grained sandstone; well sorted; reaction to acid: none	iron oxide staining
70		Kbc	**SILTSTONE**	reddish brown to reddish gray; weakly to moderately lithified; siltstone; reaction to acid: none	
80		Kbc	**SILTSTONE**	reddish brown to reddish gray; moderately lithified; siltstone; reaction to acid: none	
90		Kbc	**SILTSTONE**	reddish brown to reddish gray; moderately lithified; siltstone; reaction to acid: none	
100					

MONTGOMERY & ASSOCIATES

FIGURE B-48. GRAPHIC LOG FOR DRILL CUTTINGS FROM MONITOR WELL MW-115S RIO ALGOM MINE LISBON LA SAL, UTAH

DEPTH (feet)	GRAPHIC LOG	FORMATION	ROCK TYPE	DESCRIPTION	SECONDARY FEATURES
		Kbc	**SILTSTONE**	olive to yellowish brown; moderately lithified; siltstone; reaction to acid: none	iron oxide staining
110		Kbc	**SILTSTONE**	olive to yellowish brown; moderately lithified; siltstone; reaction to acid: none	
120		Kbc	**SILTSTONE**	olive to yellowish brown; weakly to moderately lithified; siltstone; interbedded with very fine grained sandstone; reaction to acid: none	
130		Kbc	**SANDSTONE**	white; moderately to well lithified; fine to medium grained sandstone; moderately sorted; uniform, subrounded quartz grains; reaction to acid: none	fractured
140		Kbc	**SANDSTONE**	white; moderately to well lithified; fine to medium grained sandstone; moderately sorted; uniform, subrounded quartz grains; with trace rounded gravel; reaction to acid: none	fractured
150					

MONTGOMERY & ASSOCIATES

FIGURE B-48. GRAPHIC LOG FOR DRILL CUTTINGS FROM MONITOR WELL MW-115S RIO ALGOM MINE LISBON LA SAL, UTAH

DEPTH (feet)	GRAPHIC LOG	FORMATION	ROCK TYPE	DESCRIPTION	SECONDARY FEATURES
		Kbc	**SANDSTONE**	white; moderately to well lithified; fine to medium grained sandstone; moderately sorted; uniform, subrounded quartz grains; reaction to acid: none	fractured
160		Kbc	**SANDSTONE**	white; moderately to well lithified; fine to medium grained sandstone; moderately sorted; uniform, subrounded quartz grains; with trace rounded gravel; reaction to acid: none	fractured
170		Kbc	**SANDSTONE**	white; moderately to well lithified; fine to medium grained sandstone; moderately sorted; uniform, subrounded quartz grains; with trace rounded gravel; reaction to acid: none	fractured
180		Kbc	**SANDSTONE**	white; moderately to well lithified; fine to medium grained sandstone; moderately sorted; reaction to acid: none	iron oxide staining
190		Kbc	**SANDSTONE**	white; moderately to well lithified; fine to medium grained sandstone; moderately sorted; reaction to acid: none	fractured; weathered; "vuggy" appearance
200					

MONTGOMERY & ASSOCIATES

FIGURE B-48. GRAPHIC LOG FOR DRILL CUTTINGS FROM MONITOR WELL MW-115S RIO ALGOM MINE LISBON LA SAL, UTAH

DEPTH (feet)	GRAPHIC LOG	FORMATION	ROCK TYPE	DESCRIPTION	SECONDARY FEATURES
210		Kbc	**SANDSTONE**	white; moderately to well lithified; fine to medium grained sandstone; moderately sorted; reaction to acid: none	fractured; weathered; "vuggy" appearance
			TD: 218.0 feet		
220					
230					
240					
250					

MONTGOMERY & ASSOCIATES

FIGURE B-49. GRAPHIC LOG FOR DRILL CUTTINGS FROM MONITOR WELL MW-116 RIO ALGOM MINE LISBON LA SAL, UTAH

DRILLING METHOD / COMPANY: Conventional Air Rotary/RC Hammer / National EWP | LOGGED BY: J. Bell

DEPTH DRILLED: 123.0 feet | DATE DRILLED: Sept. 11, 2013

NAD27 : 589209.93 N / 2632593.25 E | BOREHOLE DIAMETER: 8 inches

DEPTH (feet)	GRAPHIC LOG	FORMATION	ROCK TYPE	DESCRIPTION	SECONDARY FEATURES
10		Qea	**SILTY SAND**	reddish brown; non-lithified; loose silty sand; reaction to acid: very strong	
20		Kbc	**SANDSTONE**	yellowish brown to gray; weakly lithified; very fine to fine grained sandstone; interbedded with gray siltstone; reaction to acid: none	
30		Kbc	**SANDSTONE**	yellowish brown to gray; moderately lithified; very fine to fine grained sandstone; interbedded with gray siltstone; reaction to acid: none	trace iron oxide staining
		Kbc	**SHALE**	dark gray; weakly lithified; mudstone/shale; with trace fragments of fossilized wood; reaction to acid: none	
40		Kbc	**SANDSTONE**	yellowish brown to gray; moderately lithified; very fine to fine grained sandstone; interbedded with gray siltstone; reaction to acid: none	
50					

MONTGOMERY & ASSOCIATES

FIGURE B-49. GRAPHIC LOG FOR DRILL CUTTINGS FROM MONITOR WELL MW-116 RIO ALGOM MINE LISBON LA SAL, UTAH

DEPTH (feet)	GRAPHIC LOG	FORMATION	ROCK TYPE	DESCRIPTION	SECONDARY FEATURES
		Kbc	**SANDSTONE**	light gray to dark gray; moderately to well lithified; fine grained sandstone; well sorted; with trace subrounded, gravel-sized clasts of chert; reaction to acid: none	trace iron oxide staining
60		Kbc	**SILTSTONE**	gray; moderately to well lithified; siltstone; reaction to acid: none	
70		Kbc	**SANDSTONE**	light brown to light gray; well lithified; fine grained sandstone; interbedded with gray siltstone; reaction to acid: none	trace iron oxide staining
80		Kbc	**SILTSTONE**	bluish gray; moderately lithified; siltstone; clayey; reaction to acid: none	trace iron oxide staining
90		Kbc	**SANDSTONE**	light gray; well lithified; fine to medium grained sandstone; moderately sorted; reaction to acid: none	trace iron oxide staining
100					

MONTGOMERY & ASSOCIATES

FIGURE B-49. GRAPHIC LOG FOR DRILL CUTTINGS FROM MONITOR WELL MW-116 RIO ALGOM MINE LISBON LA SAL, UTAH

DEPTH (feet)	GRAPHIC LOG	FORMATION	ROCK TYPE	DESCRIPTION	SECONDARY FEATURES
			SANDSTONE *continued from previous page*		
		Kbc	**SANDSTONE**	light gray; well lithified; fine to medium grained sandstone; moderately sorted; interbedded with light green siltstone; reaction to acid: none	
110		Kbc	**SILTSTONE**	reddish purple; well lithified; siltstone; reaction to acid: none	
120					
			TD: 123.0 feet		
130					
140					
150					

MONTGOMERY & ASSOCIATES

FIGURE B-50. GRAPHIC LOG FOR CORE SAMPLES FROM MONITOR WELL MW-117M RIO ALGOM MINE LISBON LA SAL, UTAH

DRILLING METHOD / COMPANY: Conventional Air Rotary/RC Hammer / National EWP | LOGGED BY: M. Shelley

DEPTH DRILLED: 210.0 feet | DATE DRILLED: Aug. 21, 2013

NAD27 : 589239.52 N / 2633974.82 E | BOREHOLE DIAMETER: 10 inches

DEPTH (feet)	GRAPHIC LOG	FORMATION	ROCK TYPE	DESCRIPTION	SECONDARY FEATURES
		Qea	**SILTY SAND**	reddish brown; non-lithified; loose silty sand with weakly lithified calcareous deposits (caliche); reaction to acid: very strong	
10		Qea	**SILTY SAND**	reddish brown; non-lithified to weakly lithified; loose silty sand with weakly lithified calcareous deposits (caliche); reaction to acid: very strong	
		Qea	**SILTY SAND**	reddish brown; non-lithified to weakly lithified; loose silty sand with weakly lithified calcareous deposits (caliche) and lith fragments of gray limestone; reaction to acid: very strong	
20		Kbc	**SANDSTONE**	white to yellowish brown; moderately to well lithified; fine grained sandstone; well sorted; with trace lithic fragments of chert and limestone; reaction to acid: weak	fractured; with iron oxide staining
		Kbc	**SANDSTONE**	white to yellowish brown; weakly to moderately lithified; fine grained sandstone; well sorted; reaction to acid: strong	
		Kbc	**SANDSTONE**	white to yellowish brown; well lithified; fine grained sandstone; well sorted; reaction to acid: strong	
30					
40		Kbc	**SANDSTONE**	grayish green; moderately lithified; very fine to fine grained sandstone; with trace lithic fragments of chert; reaction to acid: strong	
		Kbc	**SANDSTONE**	tan; weakly to moderately lithified; very fine to fine grained sandstone; with trace lithic fragments of chert; reaction to acid: moderate	
		Kbc	**SANDSTONE**	white to tan; well lithified; fine to coarse grained sandstone; poorly sorted; with many clasts of gray chert, black shale, and brown siltstone; reaction to acid: moderate	
50		Kbc	**SILTSTONE**	reddish brown to greenish gray; moderately lithified; siltstone with trace lithic fragments of gray chert and black shale; reaction to acid:	

MONTGOMERY & ASSOCIATES

FIGURE B-50. GRAPHIC LOG FOR CORE SAMPLES FROM MONITOR WELL MW-117M RIO ALGOM MINE LISBON LA SAL, UTAH

DEPTH (feet)	GRAPHIC LOG	FORMATION	ROCK TYPE	DESCRIPTION	SECONDARY FEATURES
			SILTSTONE *continued from previous page*	moderate	
		Kbc	**SILTSTONE**	reddish brown; moderately lithified; siltstone; reaction to acid: moderate	
		Kbc	**SILTSTONE**	reddish brown; weakly to moderately lithified; siltstone; reaction to acid: none	
60		Kbc	**SILTSTONE**	reddish brown to greenish gray; moderately to well lithified; siltstone with trace lithic fragments of gray chert and black shale; reaction to acid: none	
70		Kbc	**SANDSTONE**	reddish gray to reddish brown; moderately to well lithified; fine grained sandstone; well sorted; with thinly interbedded layers of gray limestone; reaction to acid: strong	
80					
90					
		Kbc	**SILTSTONE**	bluish green; weakly to moderately lithified; siltstone; reaction to acid: none	
100		Kbc	**SANDSTONE**		

MONTGOMERY & ASSOCIATES

FIGURE B-50. GRAPHIC LOG FOR CORE SAMPLES FROM MONITOR WELL MW-117M RIO ALGOM MINE LISBON LA SAL, UTAH

DEPTH (feet)	GRAPHIC LOG	FORMATION	ROCK TYPE	DESCRIPTION	SECONDARY FEATURES
		Kbc	**SILTY LIMESTONE**	greenish gray; moderately lithified; fine grained sandstone; well sorted; reaction to acid: very weak	
		Kbc	**SANDSTONE**	gray; well lithified; silty limestone; reaction to acid: very strong	weathered; fractured with iron oxide staining
				brown to reddish gray; well lithified; very fine to fine grained sandstone; well sorted; reaction to acid: none	
110					
120		Kbc	**SANDSTONE**	brown to reddish gray; weakly to moderately lithified; very fine to fine grained sandstone; well sorted; reaction to acid: none	fractured; with yellow and black iron oxide staining
		Kbc	**SANDSTONE**	brown to reddish gray; well lithified; very fine to fine grained sandstone; well sorted; reaction to acid: none	
		Kbc	**SANDSTONE**	brown to reddish gray; non-lithified; medium grained sandstone; well sorted; unconsolidated; reaction to acid: none	
130		Kbc	**SANDSTONE**	brown to reddish gray; well lithified; fine grained sandstone; well sorted; reaction to acid: none	fractured; with iron oxide staining
		Kbc	**SANDSTONE**	light brown; well lithified; fine grained sandstone; well sorted; reaction to acid: none	
140					
		Kbc	**SANDSTONE**	light brown to orange; non-lithified; fine to medium grained sandstone; well sorted; unconsolidated; reaction to acid: none	weathered
		Kbc	**SANDSTONE**	light brown to orange; well lithified; medium to coarse grained sandstone; poorly sorted; reaction to acid: none	fractured; with red and black iron oxide staining
150					

MONTGOMERY & ASSOCIATES

FIGURE B-50. GRAPHIC LOG FOR CORE SAMPLES FROM MONITOR WELL MW-117M RIO ALGOM MINE LISBON LA SAL, UTAH

DEPTH (feet)	GRAPHIC LOG	FORMATION	ROCK TYPE	DESCRIPTION	SECONDARY FEATURES
160			**SANDSTONE** *continued from previous page*		
		Kbc	**SANDSTONE**	light brown to orange; weakly lithified; medium to coarse grained sandstone; poorly sorted; reaction to acid: none	very weathered
		Kbc	**SANDSTONE**	light brown to orange; well lithified; medium to coarse grained sandstone; poorly sorted; reaction to acid: none	
170		Kbc	**SANDSTONE**	reddish brown; well lithified; medium grained sandstone; moderately sorted; with trace lithic fragments of green siltstone; reaction to acid: none	
		Kbc	**SANDSTONE**	reddish brown; well lithified; medium grained sandstone; moderately sorted; with trace lithic fragments of green siltstone; reaction to acid: none	
		Kbc	**SANDSTONE**	light brown; well lithified; fine grained sandstone; well sorted; reaction to acid: none	fractured and weathered
180					
190					
		Jmb	**SHALE**	greenish blue to reddish brown; well lithified; mudstone/shale; reaction to acid: none	
200					

MONTGOMERY & ASSOCIATES

FIGURE B-50. GRAPHIC LOG FOR CORE SAMPLES FROM MONITOR WELL MW-117M RIO ALGOM MINE LISBON LA SAL, UTAH

DEPTH (feet)	GRAPHIC LOG	FORMATION	ROCK TYPE	DESCRIPTION	SECONDARY FEATURES
			SHALE *continued from previous page*		
		Jmb	**SHALE**	reddish gray; well lithified; mudstone/shale; reaction to acid: none	
		Jmb	**SHALE**	reddish brown; well lithified; mudstone/shale; reaction to acid: none	
210			TD: 210.0 feet		
220					
230					
240					
250					

MONTGOMERY & ASSOCIATES

FIGURE B-51. GRAPHIC LOG FOR CORE SAMPLES FROM MONITOR WELL MW-117S RIO ALGOM MINE LISBON LA SAL, UTAH

DRILLING METHOD / COMPANY: Symmetrix/Conventional Air Rotary / National EWP | LOGGED BY: M. Shelley

DEPTH DRILLED: 128.0 feet | DATE DRILLED: Aug. 21, 2013

NAD27 : 589260.32 N / 2633998.51 E | BOREHOLE DIAMETER: 8 inches

DEPTH (feet)	GRAPHIC LOG	FORMATION	ROCK TYPE	DESCRIPTION	SECONDARY FEATURES
		Qea	**SILTY SAND**	reddish brown; non-lithified; loose silty sand with weakly lithified calcareous deposits (caliche); reaction to acid: very strong	
10		Qea	**SILTY SAND**	reddish brown; non-lithified to weakly lithified; loose silty sand with weakly lithified calcareous deposits (caliche); reaction to acid: very strong	
20		Qea	**SILTY SAND**	reddish brown; non-lithified to weakly lithified; loose silty sand with weakly lithified calcareous deposits (caliche) and lith fragments of gray limestone; reaction to acid: very strong	
		Kbc	**SANDSTONE**	white to yellowish brown; moderately to well lithified; fine grained sandstone; well sorted; with trace lithic fragments of chert and limestone; reaction to acid: weak	fractured; with iron oxide staining
		Kbc	**SANDSTONE**	white to yellowish brown; weakly to moderately lithified; fine grained sandstone; well sorted; reaction to acid: strong	
30		Kbc	**SANDSTONE**	white to yellowish brown; well lithified; fine grained sandstone; well sorted; reaction to acid: strong	
40		Kbc	**SANDSTONE**	grayish green; moderately lithified; very fine to fine grained sandstone; with trace lithic fragments of chert; reaction to acid: strong	
		Kbc	**SANDSTONE**	tan; weakly to moderately lithified; very fine to fine grained sandstone; with trace lithic fragments of chert; reaction to acid: moderate	
		Kbc	**SANDSTONE**	white to tan; well lithified; fine to coarse grained sandstone; poorly sorted; with many clasts of gray chert, black shale, and brown siltstone; reaction to acid: moderate	
50		Kbc	**SILTSTONE**	reddish brown to greenish gray; moderately lithified; siltstone with trace lithic fragments of gray chert and black shale; reaction to acid:	

MONTGOMERY & ASSOCIATES

FIGURE B-51. GRAPHIC LOG FOR CORE SAMPLES FROM MONITOR WELL MW-117S RIO ALGOM MINE LISBON LA SAL, UTAH

DEPTH (feet)	GRAPHIC LOG	FORMATION	ROCK TYPE	DESCRIPTION	SECONDARY FEATURES
			SILTSTONE *continued from previous page*	moderate	
		Kbc	**SILTSTONE**	reddish brown; moderately lithified; siltstone; reaction to acid: moderate	
		Kbc	**SILTSTONE**	reddish brown; weakly to moderately lithified; siltstone; reaction to acid: none	
60		Kbc	**SILTSTONE**	reddish brown to greenish gray; moderately to well lithified; siltstone with trace lithic fragments of gray chert and black shale; reaction to acid: none	
70		Kbc	**SANDSTONE**	reddish gray to reddish brown; moderately to well lithified; fine grained sandstone; well sorted; with thinly interbedded layers of gray limestone; reaction to acid: strong	
80					
90					
		Kbc	**SILTSTONE**	bluish green; weakly to moderately lithified; siltstone; reaction to acid: none	
100		Kbc	**SANDSTONE**		

MONTGOMERY & ASSOCIATES

FIGURE B-51. GRAPHIC LOG FOR CORE SAMPLES FROM MONITOR WELL MW-117S RIO ALGOM MINE LISBON LA SAL, UTAH

DEPTH (feet)	GRAPHIC LOG	FORMATION	ROCK TYPE	DESCRIPTION	SECONDARY FEATURES
		Kbc	**SILTY LIMESTONE**	greenish gray; moderately lithified; fine grained sandstone; well sorted; reaction to acid: very weak	
		Kbc	**SANDSTONE**	gray; well lithified; silty limestone; reaction to acid: very strong	weathered; fractured with iron oxide staining
				brown to reddish gray; well lithified; very fine to fine grained sandstone; well sorted; reaction to acid: none	
110					
120		Kbc	**SANDSTONE**	brown to reddish gray; weakly to moderately lithified; very fine to fine grained sandstone; well sorted; reaction to acid: none	fractured; with yellow and black iron oxide staining
		Kbc	**SANDSTONE**	brown to reddish gray; well lithified; very fine to fine grained sandstone; well sorted; reaction to acid: none	
		Kbc	**SANDSTONE**	brown to reddish gray; non-lithified; medium grained sandstone; well sorted; unconsolidated; reaction to acid: none	
			TD: 128.0 feet		
130					
140					
150					

MONTGOMERY & ASSOCIATES

FIGURE B-52. GRAPHIC LOG FOR CORE SAMPLES FROM MONITOR WELL MW-118 RIO ALGOM MINE LISBON LA SAL, UTAH

DRILLING METHOD / COMPANY: Core and Symmetrix/Conventional Air Rotary / National EWP

LOGGED BY: M. Shelley

DEPTH DRILLED: 85.0 feet

DATE DRILLED: Aug. 25, 2013

NAD27 : 594554.29 N / 2627874.16 E

BOREHOLE DIAMETER: 8 inches

DEPTH (feet)	GRAPHIC LOG	FORMATION	ROCK TYPE	DESCRIPTION	SECONDARY FEATURES
10		Qea	**SILTY SAND**	reddish brown; weakly lithified; loose silty sand with weakly lithified calcareous deposits (caliche); reaction to acid: strong	
		Kbc	**CONGLOMERATE**	light brown; weakly lithified; conglomerate; poorly sorted; fine grained sandstone matrix with clasts of chert, limestone, sandstone and siltstone; reaction to acid: strong	
20		Kbc	**SANDSTONE**	light brown to gray; non-lithified to moderately lithified; fine grained sandstone; well sorted; uniform, subrounded quartz grains; reaction to acid: none	iron oxidation
30		Kbc	**SANDSTONE**	yellowish brown; weakly to well lithified; fine grained sandstone; well sorted; uniform, subrounded quartz grains; reaction to acid: none	fractured
40		Kbc	**SANDSTONE**	light brown to gray; well lithified; fine grained sandstone; well sorted; uniform, subrounded quartz grains; reaction to acid: none	fractured with iron oxide staining
50					

MONTGOMERY & ASSOCIATES

FIGURE B-52. GRAPHIC LOG FOR CORE SAMPLES FROM MONITOR WELL MW-118 RIO ALGOM MINE LISBON LA SAL, UTAH

DEPTH (feet)	GRAPHIC LOG	FORMATION	ROCK TYPE	DESCRIPTION	SECONDARY FEATURES
			SANDSTONE		
		Kbc	*continued from previous page*	light brown to gray; weakly lithified; fine grained sandstone; well sorted; uniform, subrounded quartz grains; reaction to acid: none	
			SANDSTONE		
		Kbc	**SANDSTONE**	light brown to gray; weakly to moderately lithified; fine grained sandstone; well sorted; uniform, subrounded quartz grains; reaction to acid: none	
60		Kbc	**SANDSTONE**	light brown to gray; moderately to well lithified; fine to medium grained sandstone; poorly sorted; gravels up to 1 cm; reaction to acid: none	
		Kbc	**SANDSTONE**	light brown to gray; moderately to well lithified; fine to medium grained sandstone; poorly sorted; gravels up to 1 cm; reaction to acid: none	
		Kbc	**SANDSTONE**		
		Kbc	**SHALE**	light brown to gray; well lithified; fine grained sandstone; well sorted; uniform, subrounded quartz grains; reaction to acid: none	fractured
70				bluish gray; moderately to very well lithified; mudstone/shale; reaction to acid: none	
80					
			TD: 85.0 feet		
90					
100					

MONTGOMERY & ASSOCIATES

FIGURE B-53. GRAPHIC LOG FOR DRILL CUTTINGS FROM MONITOR WELL MW-119 RIO ALGOM MINE LISBON LA SAL, UTAH

DRILLING METHOD / COMPANY: Conventional Air Rotary/RC Hammer / National EWP

LOGGED BY: C. Stielstra

DEPTH DRILLED: 104.0 feet

DATE DRILLED: Sept. 14, 2013

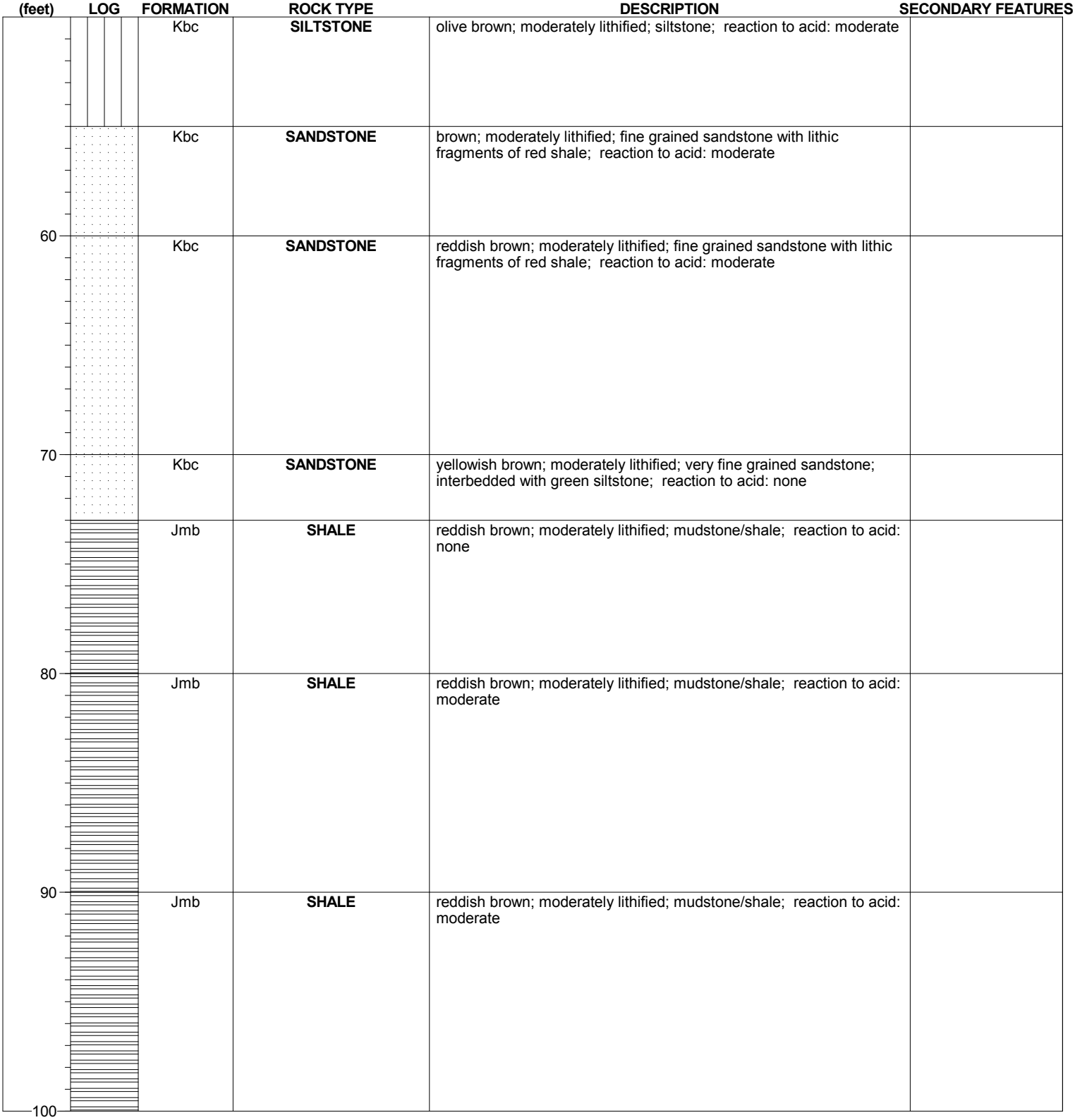
NAD27 : 594210.55 N / 2630986.34 E

BOREHOLE DIAMETER: 8 inches

DEPTH (feet)	GRAPHIC LOG	FORMATION	ROCK TYPE	DESCRIPTION	SECONDARY FEATURES
		Qea	**SILTY SAND**	reddish brown; non-lithified; loose silty sand; reaction to acid: strong	
10		Kbc	**SANDSTONE**	light brown; moderately lithified; medium grained sandstone; well sorted; uniform, subrounded quartz grains; reaction to acid: moderate	
		Kbc	**SANDSTONE**	light brown; moderately lithified; medium grained sandstone with trace subrounded gravel and lithic fragments; reaction to acid: moderate	
20		Kbc	**SANDSTONE**	light brown; moderately lithified; medium grained sandstone with trace subrounded gravel and lithic fragments; reaction to acid: moderate	
30		Kbc	**SANDSTONE**	light brown; moderately lithified; medium grained sandstone with trace subrounded gravel and lithic fragments; reaction to acid: moderate	
40		Kbc	**SANDSTONE**	light brown to light gray; moderately lithified; medium grained sandstone with trace subrounded gravel and lithic fragments; reaction to acid: strong	
50					

MONTGOMERY & ASSOCIATES

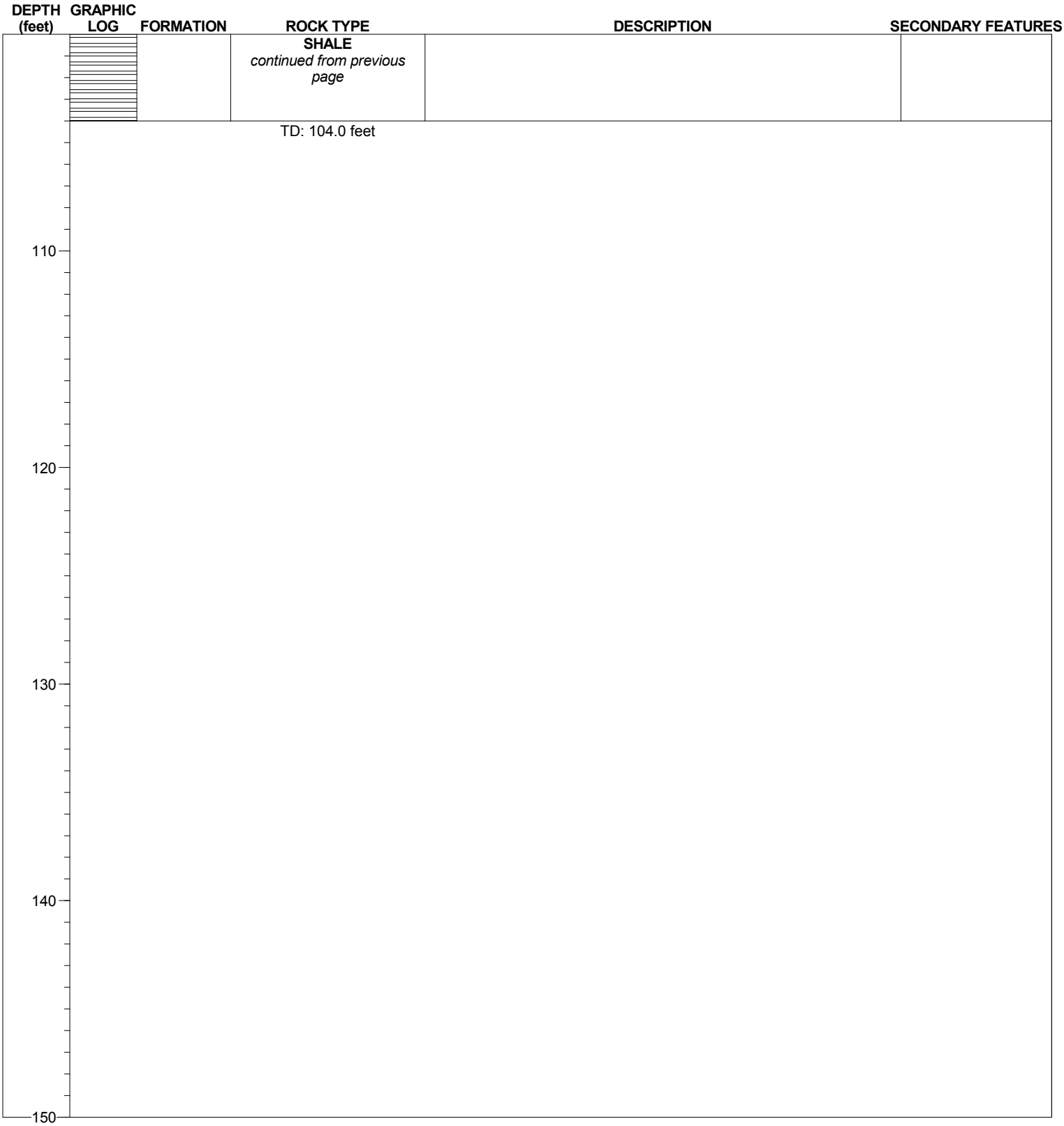
FIGURE B-53. GRAPHIC LOG FOR DRILL CUTTINGS FROM MONITOR WELL MW-119 RIO ALGOM MINE LISBON LA SAL, UTAH



DEPTH (feet)	GRAPHIC LOG	FORMATION	ROCK TYPE	DESCRIPTION	SECONDARY FEATURES
		Kbc	**SILTSTONE**	olive brown; moderately lithified; siltstone; reaction to acid: moderate	
		Kbc	**SANDSTONE**	brown; moderately lithified; fine grained sandstone with lithic fragments of red shale; reaction to acid: moderate	
60		Kbc	**SANDSTONE**	reddish brown; moderately lithified; fine grained sandstone with lithic fragments of red shale; reaction to acid: moderate	
70		Kbc	**SANDSTONE**	yellowish brown; moderately lithified; very fine grained sandstone; interbedded with green siltstone; reaction to acid: none	
		Jmb	**SHALE**	reddish brown; moderately lithified; mudstone/shale; reaction to acid: none	
80		Jmb	**SHALE**	reddish brown; moderately lithified; mudstone/shale; reaction to acid: moderate	
90		Jmb	**SHALE**	reddish brown; moderately lithified; mudstone/shale; reaction to acid: moderate	
100					

MONTGOMERY & ASSOCIATES

FIGURE B-53. GRAPHIC LOG FOR DRILL CUTTINGS FROM MONITOR WELL MW-119 RIO ALGOM MINE LISBON LA SAL, UTAH



MONTGOMERY & ASSOCIATES

FIGURE B-54. GRAPHIC LOG FOR DRILL CUTTINGS FROM MONITOR WELL MW-120 RIO ALGOM MINE LISBON LA SAL, UTAH

DRILLING METHOD / COMPANY: Conventional Air Rotary/RC Hammer / National EWP

LOGGED BY: J. Laney

DEPTH DRILLED: 260.0 feet

DATE DRILLED: Sept. 16, 2013

NAD27 : 586691.4 N / 2637531.86 E

BOREHOLE DIAMETER: 8 inches

DEPTH (feet)	GRAPHIC LOG	FORMATION	ROCK TYPE	DESCRIPTION	SECONDARY FEATURES
10		Qea	**SAND AND GRAVEL**	reddish brown; non-lithified; silty sand with subrounded gravel; reaction to acid: moderate	
20		Kbc	**SANDSTONE**	light brown; non-lithified; fine grained sandstone; well sorted, uniform, subrounded quartz grains; reaction to acid: weak	
		Kbc	**SANDSTONE**	light brown; moderately lithified; fine grained sandstone; well sorted, uniform, subrounded quartz grains; reaction to acid: weak	
30		Kbc	**SANDSTONE**	light brown; moderately lithified; fine grained sandstone; well sorted, uniform, subrounded quartz grains; reaction to acid: very weak	
40		Kbc	**CONGLOMERATE**	brown to greenish gray; moderately to well lithified; conglomerate; subrounded pebble-sized clasts; fine grained sandstone matrix; reaction to acid: none	
50					

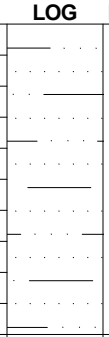
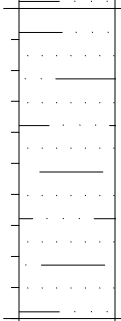
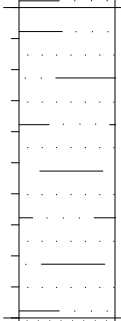
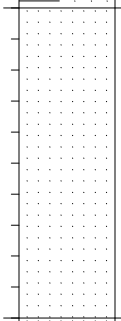
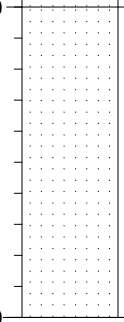
MONTGOMERY & ASSOCIATES

FIGURE B-54. GRAPHIC LOG FOR DRILL CUTTINGS FROM MONITOR WELL MW-120 RIO ALGOM MINE LISBON LA SAL, UTAH

DEPTH (feet)	GRAPHIC LOG	FORMATION	ROCK TYPE	DESCRIPTION	SECONDARY FEATURES
		Kbc	**CONGLOMERATE**	brown to greenish gray; moderately to well lithified; conglomerate; subrounded pebble-sized clasts; fine grained sandstone matrix; reaction to acid: none	
60		Kbc	**CONGLOMERATE**	brown to greenish gray; moderately to well lithified; conglomerate; subrounded pebble-sized clasts; fine grained sandstone matrix; reaction to acid: moderate	fractured with iron oxide staining
70		Kbc	**SANDSTONE**	reddish brown to green; weakly to moderately lithified; very fine to fine grained sandstone; well sorted; interbedded red and green layers; reaction to acid: weak	
80		Kbc	**SANDSTONE**	reddish brown to green; moderately lithified; very fine to fine grained sandstone; well sorted; interbedded red and green layers; reaction to acid: weak	
90		Kbc	**SANDSTONE**	reddish brown; moderately to well lithified; fine grained sandstone; interbedded with red siltstone and gray limestone; reaction to acid: moderate	
100					

MONTGOMERY & ASSOCIATES

FIGURE B-54. GRAPHIC LOG FOR DRILL CUTTINGS FROM MONITOR WELL MW-120 RIO ALGOM MINE LISBON LA SAL, UTAH

DEPTH (feet)	GRAPHIC LOG	FORMATION	ROCK TYPE	DESCRIPTION	SECONDARY FEATURES
		Kbc	**SANDSTONE**	reddish brown; moderately to well lithified; fine grained sandstone; interbedded with red siltstone and gray limestone; reaction to acid: strong	
110		Kbc	**SANDSTONE**	reddish brown; moderately to well lithified; fine grained sandstone; interbedded with red siltstone and gray limestone; reaction to acid: strong	
120		Kbc	**SANDSTONE**	reddish brown; moderately to well lithified; fine grained sandstone; interbedded with red siltstone; reaction to acid: moderate	
130		Kbc	**SANDSTONE**	greenish gray to light brown; moderately lithified; very fine to fine grained sandstone; well sorted; interbedded green and light brown layers; reaction to acid: moderate	
140		Kbc	**SANDSTONE**	greenish gray; moderately lithified; very fine to fine grained sandstone; well sorted; interbedded green and light brown layers; reaction to acid: weak	trace iron oxide staining
150					

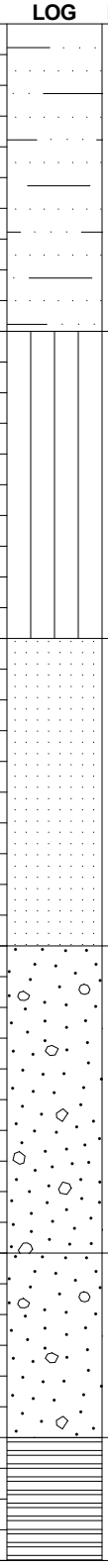
MONTGOMERY & ASSOCIATES

FIGURE B-54. GRAPHIC LOG FOR DRILL CUTTINGS FROM MONITOR WELL MW-120 RIO ALGOM MINE LISBON LA SAL, UTAH

DEPTH (feet)	GRAPHIC LOG	FORMATION	ROCK TYPE	DESCRIPTION	SECONDARY FEATURES
		Kbc	**SILTSTONE**	greenish gray; moderately to well lithified; siltstone; reaction to acid: moderate	trace iron oxide staining
		Kbc	**SANDSTONE**	greenish gray; well lithified; fine grained sandstone; well sorted; trace lithic fragments of chert; reaction to acid: moderate	
160					
		Kbc	**CONGLOMERATE**	light brown; well lithified; conglomerate; subrounded pebble-sized clasts; fine grained sandstone matrix; reaction to acid: weak	
170		Kbc	**SANDSTONE**	light brown to greenish gray; moderately to well lithified; very fine to fine grained sandstone; well sorted; reaction to acid: moderate	trace manganese oxide
180		Kbc	**SANDSTONE**	light brown to greenish gray; moderately to well lithified; fine grained sandstone; interbedded with green siltstone; reaction to acid: moderate	trace manganese oxide
190		Kbc	**SANDSTONE**	light brown to greenish gray; weakly to moderately lithified; fine to medium grained sandstone; poorly sorted; reaction to acid: none	
200					

MONTGOMERY & ASSOCIATES

FIGURE B-54. GRAPHIC LOG FOR DRILL CUTTINGS FROM MONITOR WELL MW-120 RIO ALGOM MINE LISBON LA SAL, UTAH



DEPTH (feet)	FORMATION	ROCK TYPE	DESCRIPTION	SECONDARY FEATURES
	Kbc	**SANDSTONE**	light brown to greenish gray; weakly to moderately lithified; fine grained sandstone; interbedded with green siltstone; reaction to acid: weak	
210	Kbc	**SILTSTONE**	yellowish brown; weakly lithified; siltstone; clayey; reaction to acid: none	
220	Kbc	**SANDSTONE**	yellowish brown; moderately lithified; fine grained sandstone; well sorted; reaction to acid: none	
230	Kbc	**CONGLOMERATE**	brown; moderately lithified; conglomerate; subrounded pebble-sized clasts; fine grained sandstone matrix; reaction to acid: very weak	common iron oxide staining
240	Kbc	**CONGLOMERATE**	brown; moderately lithified; conglomerate; subrounded pebble-sized clasts; fine grained sandstone matrix; reaction to acid: none	common iron oxide staining
	Jmb	**SHALE**	greenish gray to reddish brown; weakly lithified; mudstone/shale; reaction to acid: none	
250				

MONTGOMERY & ASSOCIATES

FIGURE B-54. GRAPHIC LOG FOR DRILL CUTTINGS FROM MONITOR WELL MW-120 RIO ALGOM MINE LISBON LA SAL, UTAH

DEPTH (feet)	GRAPHIC LOG	FORMATION	ROCK TYPE	DESCRIPTION	SECONDARY FEATURES
			SHALE *continued from previous page*		
		Jmb	**SHALE**	greenish gray to reddish brown; moderately lithified; mudstone/shale; reaction to acid: none	
260			TD: 260.0 feet		
270					
280					
290					
300					

MONTGOMERY & ASSOCIATES

FIGURE B-55. GRAPHIC LOG FOR DRILL CUTTINGS FROM MONITOR WELL MW-121 RIO ALGOM MINE LISBON LA SAL, UTAH

DRILLING METHOD / COMPANY: Conventional Air Rotary/RC Hammer / National EWP | LOGGED BY: J. Laney

DEPTH DRILLED: 203.0 feet | DATE DRILLED: Sept. 13, 2013

NAD27 : 588290.58 N / 2632203.9 E | BOREHOLE DIAMETER: 8 inches

DEPTH (feet)	GRAPHIC LOG	FORMATION	ROCK TYPE	DESCRIPTION	SECONDARY FEATURES
		Qea	**SILTY SAND**	reddish brown; non-lithified; loose silty sand; reaction to acid: moderate	
10		Qea	**SILTY SAND**	reddish brown; non-lithified; loose silty sand; reaction to acid: weak	
20		Jw	**SANDSTONE**	light brown; moderately lithified; fine grained sandstone; well sorted; uniform, rounded to subrounded quartz grains; reaction to acid: none	trace manganese oxide
30		Jw	**SANDSTONE**	light brown to bluish gray; moderately lithified; fine grained sandstone; well sorted; uniform, rounded quartz grains; interbedded with bluish gray siltstone; reaction to acid: weak	trace manganese oxide
40		Jw	**SANDSTONE**	light brown; moderately lithified; fine grained sandstone; well sorted; uniform, rounded to subrounded quartz grains; reaction to acid: weak	trace manganese oxide
50					

MONTGOMERY & ASSOCIATES

FIGURE B-55. GRAPHIC LOG FOR DRILL CUTTINGS FROM MONITOR WELL MW-121 RIO ALGOM MINE LISBON LA SAL, UTAH

DEPTH (feet)	GRAPHIC LOG	FORMATION	ROCK TYPE	DESCRIPTION	SECONDARY FEATURES
		Jw	**SANDSTONE**	light brown; moderately lithified; fine grained sandstone; well sorted; uniform, rounded to subrounded quartz grains; reaction to acid: weak	trace manganese oxide
60		Jw	**SANDSTONE**	light brown; moderately lithified; fine grained sandstone; well sorted; uniform, rounded to subrounded quartz grains; reaction to acid: none	trace manganese oxide
70		Jw	**SANDSTONE**	light brown; moderately lithified; fine grained sandstone; well sorted; uniform, rounded to subrounded quartz grains; reaction to acid: none	trace manganese oxide
80		Jw	**SANDSTONE**	light brown; moderately lithified; fine grained sandstone; well sorted; uniform, rounded to subrounded quartz grains; reaction to acid: none	trace manganese oxide
90		Jw	**SANDSTONE**	light brown to bluish gray; moderately lithified; fine grained sandstone; well sorted; uniform, rounded to subrounded quartz grains; interbedded with bluish gray siltstone; reaction to acid: none	
100					

MONTGOMERY & ASSOCIATES

FIGURE B-55. GRAPHIC LOG FOR DRILL CUTTINGS FROM MONITOR WELL MW-121 RIO ALGOM MINE LISBON LA SAL, UTAH

DEPTH (feet)	GRAPHIC LOG	FORMATION	ROCK TYPE	DESCRIPTION	SECONDARY FEATURES
		Jw	**SANDSTONE**	light brown; moderately lithified; fine grained sandstone; well sorted; uniform, rounded to subrounded quartz grains; reaction to acid: none	
110		Jw	**SANDSTONE**	light brown; moderately lithified; fine grained sandstone; well sorted; uniform, rounded to subrounded quartz grains; reaction to acid: none	
120		Jw	**SANDSTONE**	light brown; moderately lithified; fine grained sandstone; well sorted; uniform, rounded to subrounded quartz grains; reaction to acid: none	
130		Jw	**SANDSTONE**	light brown; moderately lithified; fine grained sandstone; well sorted; uniform, rounded to subrounded quartz grains; reaction to acid: none	
140		Jw	**SANDSTONE**	light brown; moderately lithified; fine grained sandstone; well sorted; uniform, rounded to subrounded quartz grains; reaction to acid: none	
150					

MONTGOMERY & ASSOCIATES

FIGURE B-55. GRAPHIC LOG FOR DRILL CUTTINGS FROM MONITOR WELL MW-121 RIO ALGOM MINE LISBON LA SAL, UTAH

DEPTH (feet)	GRAPHIC LOG	FORMATION	ROCK TYPE	DESCRIPTION	SECONDARY FEATURES
160		Jw	**SANDSTONE**	light brown; moderately lithified; fine grained sandstone; well sorted; uniform, rounded to subrounded quartz grains; reaction to acid: none	
		TRc	**SHALE**	greenish gray; moderately to well lithified; shale; thinly laminated; reaction to acid: none	
		TRc	**SHALE**	reddish brown; moderately to well lithified; shale; thinly laminated; reaction to acid: none	
170		TRc	**SHALE**	reddish brown; moderately to well lithified; shale; thinly laminated; reaction to acid: none	
180		TRc	**SHALE**	reddish brown to greenish gray; moderately to well lithified; shale; thinly laminated; reaction to acid: none	
190		TRc	**SHALE**	reddish brown to greenish gray; moderately to well lithified; shale; thinly laminated; reaction to acid: none	
200					

MONTGOMERY & ASSOCIATES

FIGURE B-55. GRAPHIC LOG FOR DRILL CUTTINGS FROM MONITOR WELL MW-121 RIO ALGOM MINE LISBON LA SAL, UTAH

DEPTH (feet)	GRAPHIC LOG	FORMATION	ROCK TYPE	DESCRIPTION	SECONDARY FEATURES
			SHALE *continued from previous page*		

TD: 203.0 feet

210

220

230

240

250

MONTGOMERY & ASSOCIATES

FIGURE B-56. GRAPHIC LOG FOR DRILL CUTTINGS FROM MONITOR WELL MW-122 RIO ALGOM MINE LISBON LA SAL, UTAH

DRILLING METHOD / COMPANY: Conventional Air Rotary/RC Hammer / National EWP

LOGGED BY: J. Laney

DEPTH DRILLED: 203.0 feet

DATE DRILLED: Sept. 19, 2013

NAD27 : 585156.58 N / 2641532.53 E

BOREHOLE DIAMETER: 8 inches

DEPTH (feet)	GRAPHIC LOG	FORMATION	ROCK TYPE	DESCRIPTION	SECONDARY FEATURES
		Kbc	**SANDSTONE**	brown; well lithified; fine grained sandstone; well sorted; uniform, subrounded quartz grains; reaction to acid: moderate	
10		Kbc	**SANDSTONE**	brown; well lithified; fine grained sandstone; well sorted; uniform, subrounded quartz grains; reaction to acid: moderate	
20			**SANDSTONE**	brown; well lithified; fine grained sandstone; well sorted; uniform, subrounded quartz grains; reaction to acid: moderate	trace iron oxide staining
30			**SANDSTONE**	brown; well lithified; fine grained sandstone; well sorted; uniform, subrounded quartz grains; reaction to acid: weak	trace iron oxide staining
			SANDSTONE	brown to greenish gray; moderately to well lithified; very fine to fine grained sandstone; well sorted; interbedded brown and green sandstone and green siltstone layers; reaction to acid: weak	trace iron oxide staining
40			**SANDSTONE**	brown to greenish gray; moderately to well lithified; very fine to fine grained sandstone; well sorted; interbedded brown and green sandstone and green siltstone layers; reaction to acid: weak	
50					

MONTGOMERY & ASSOCIATES

FIGURE B-56. GRAPHIC LOG FOR DRILL CUTTINGS FROM MONITOR WELL MW-122 RIO ALGOM MINE LISBON LA SAL, UTAH

DEPTH (feet)	GRAPHIC LOG	FORMATION	ROCK TYPE	DESCRIPTION	SECONDARY FEATURES
			SANDSTONE	brown to yellowish brown; well lithified; fine grained sandstone; well sorted; uniform, subrounded quartz grains; with trace lithic fragments; reaction to acid: weak	
60			**SANDSTONE**	brown to yellowish brown; well lithified; fine grained sandstone; well sorted; uniform, subrounded quartz grains; with trace lithic fragments; reaction to acid: weak	
70			**SANDSTONE**	brown to yellowish brown; moderately to well lithified; fine grained sandstone; well sorted; uniform, subrounded quartz grains; with trace lithic fragments; reaction to acid: weak	
80			**SANDSTONE**	brown to yellowish brown; moderately lithified; fine grained sandstone; well sorted; uniform, subrounded quartz grains; with trace lithic fragments; reaction to acid: weak	
90			**SANDSTONE**	brown to yellowish brown; moderately lithified; fine grained sandstone; well sorted; uniform, subrounded quartz grains; with trace lithic fragments; reaction to acid: none	trace iron oxide staining
100					

MONTGOMERY & ASSOCIATES

FIGURE B-56. GRAPHIC LOG FOR DRILL CUTTINGS FROM MONITOR WELL MW-122 RIO ALGOM MINE LISBON LA SAL, UTAH

DEPTH (feet)	GRAPHIC LOG	FORMATION	ROCK TYPE	DESCRIPTION	SECONDARY FEATURES
			SANDSTONE	light brown to pale green; weakly to moderately lithified; fine grained sandstone; well sorted; interbedded with green siltstone; reaction to acid: none	
110			SANDSTONE	light brown to pale green; weakly to moderately lithified; fine grained sandstone; well sorted; interbedded with green siltstone; reaction to acid: none	
120			SANDSTONE	light brown to pale green; weakly lithified; fine grained sandstone; well sorted; interbedded with green siltstone; reaction to acid: none	
130			SANDSTONE	greenish gray; weakly to moderately lithified; very fine to fine grained sandstone; well sorted; reaction to acid: none	
140			SANDSTONE	greenish gray; weakly to moderately lithified; very fine to fine grained sandstone; well sorted; reaction to acid: none	
150					

MONTGOMERY & ASSOCIATES

FIGURE B-56. GRAPHIC LOG FOR DRILL CUTTINGS FROM MONITOR WELL MW-122 RIO ALGOM MINE LISBON LA SAL, UTAH

DEPTH (feet)	GRAPHIC LOG	FORMATION	ROCK TYPE	DESCRIPTION	SECONDARY FEATURES
			SANDSTONE	greenish gray; well lithified; very fine to fine grained sandstone; well sorted; reaction to acid: none	
160			**SANDSTONE**	greenish gray; well lithified; very fine to fine grained sandstone; well sorted; reaction to acid: none	
170			**SANDSTONE**	light brown to greenish gray; well lithified; fine grained sandstone; well sorted; interbedded with green siltstone; reaction to acid: none	
180			**SANDSTONE**	light brown to greenish gray; well lithified; fine grained sandstone; well sorted; interbedded with green siltstone; reaction to acid: none	
190			**SANDSTONE**	light brown to greenish gray; well lithified; fine grained sandstone; well sorted; interbedded with green siltstone; reaction to acid: none	trace iron oxide staining
		Jmb	**CLAY**	yellowish gray to greenish blue; weakly lithified; clay; reaction to acid: none	
200					

MONTGOMERY & ASSOCIATES

FIGURE B-56. GRAPHIC LOG FOR DRILL CUTTINGS FROM MONITOR WELL MW-122 RIO ALGOM MINE LISBON LA SAL, UTAH

DEPTH (feet)	GRAPHIC LOG	FORMATION	ROCK TYPE	DESCRIPTION	SECONDARY FEATURES
		Jmb	**SHALE**	reddish brown; weakly lithified; mudstone/shale; clayey; reaction to acid: none	
			TD: 203.0 feet		
210					
220					
230					
240					
250					

MONTGOMERY & ASSOCIATES

FIGURE B-57. GRAPHIC LOG FOR DRILL CUTTINGS FROM EXPLORATION BOREHOLE B-2 RIO ALGOM MINE LISBON LA SAL, UTAH

DRILLING METHOD / COMPANY: Conventional Air Rotary/RC Hammer / National EWP | LOGGED BY: J. Laney

DEPTH DRILLED: 200.0 feet | DATE DRILLED: Sept. 12, 2013

NAD27 : 592661.51 N / 2628237.49 E | BOREHOLE DIAMETER: 8 inches

DEPTH (feet)	GRAPHIC LOG	FORMATION	ROCK TYPE	DESCRIPTION	SECONDARY FEATURES
		Qea	**SILTY SAND**	reddish brown; non-lithified; silty sand; reaction to acid: strong	
		Jn	**SANDSTONE**	tan; moderately to well lithified; fine grained sandstone; well sorted; uniform, rounded quartz grains; reaction to acid: none	
10		Jn	**SANDSTONE**	tan; moderately to well lithified; fine grained sandstone; well sorted; uniform, rounded quartz grains; reaction to acid: none	
20		Jn	**SANDSTONE**	tan; weakly to moderately lithified; fine grained sandstone; well sorted; uniform, rounded quartz grains; reaction to acid: none	trace iron oxide staining
		Jn	**SANDSTONE**	tan; weakly lithified; fine grained sandstone; well sorted; uniform, rounded quartz grains; interbedded with greenish gray siltstone; reaction to acid: none	trace iron oxide staining
30		Jn	**SANDSTONE**	tan; weakly to moderately lithified; fine grained sandstone; well sorted; uniform, rounded quartz grains; interbedded with greenish gray siltstone; reaction to acid: none	common iron oxide staining
40		Jn	**SANDSTONE**	tan; moderately to well lithified; fine grained sandstone; well sorted; uniform, rounded quartz grains; interbedded with greenish gray siltstone; reaction to acid: none	common iron oxide staining
50					

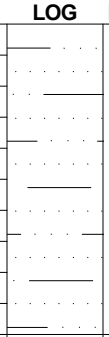
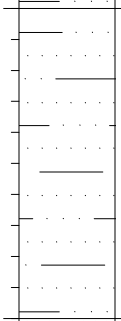
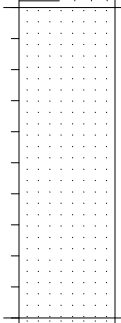
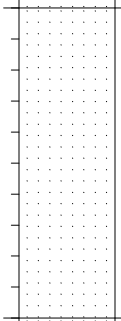
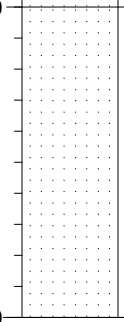
MONTGOMERY & ASSOCIATES

FIGURE B-57. GRAPHIC LOG FOR DRILL CUTTINGS FROM EXPLORATION BOREHOLE B-2 RIO ALGOM MINE LISBON LA SAL, UTAH

DEPTH (feet)	GRAPHIC LOG	FORMATION	ROCK TYPE	DESCRIPTION	SECONDARY FEATURES
		Jn	**SANDSTONE**	tan; moderately to well lithified; fine grained sandstone; well sorted; uniform, rounded quartz grains; reaction to acid: moderate	common iron oxide staining
60		Jn	**SANDSTONE**	tan; weakly to moderately lithified; fine grained sandstone; well sorted; uniform, rounded quartz grains; interbedded with olive siltstone; reaction to acid: weak	common iron oxide staining
70		Jn	**SANDSTONE**	tan; moderately lithified; fine grained sandstone; well sorted; uniform, rounded quartz grains; reaction to acid: weak	trace iron oxide staining
		Jk	**SANDSTONE**	reddish brown; weakly lithified; fine grained sandstone; well sorted; uniform, rounded quartz grains; interbedded with reddish gray siltstone; reaction to acid: moderate	
80		Jk	**SANDSTONE**	reddish brown; weakly lithified; very fine to fine grained sandstone; reaction to acid: moderate	
90		Jk	**SANDSTONE**	reddish brown; weakly lithified; fine grained sandstone; well sorted; uniform, subrounded quartz grains; interbedded with reddish gray siltstone; reaction to acid: very weak	
100					

MONTGOMERY & ASSOCIATES

FIGURE B-57. GRAPHIC LOG FOR DRILL CUTTINGS FROM EXPLORATION BOREHOLE B-2 RIO ALGOM MINE LISBON LA SAL, UTAH

DEPTH (feet)	GRAPHIC LOG	FORMATION	ROCK TYPE	DESCRIPTION	SECONDARY FEATURES
		Jk	**SANDSTONE**	reddish brown; weakly to well lithified; fine grained sandstone; well sorted; interbedded with soft red siltstone; reaction to acid: very weak	
110		Jk	**SANDSTONE**	reddish brown; weakly to well lithified; fine grained sandstone; well sorted; interbedded with soft red siltstone; reaction to acid: very weak	
120		Jk	**SANDSTONE**	reddish brown; well lithified; fine grained sandstone; well sorted; reaction to acid: none	
130		Jk	**SANDSTONE**	reddish brown; well lithified; fine grained sandstone; well sorted; reaction to acid: none	
140		Jk	**SANDSTONE**	reddish brown; moderately to well lithified; fine grained sandstone; well sorted; reaction to acid: none	trace calcite crystals on fracture surfaces
150					

MONTGOMERY & ASSOCIATES

FIGURE B-57. GRAPHIC LOG FOR DRILL CUTTINGS FROM EXPLORATION BOREHOLE B-2 RIO ALGOM MINE LISBON LA SAL, UTAH

DEPTH (feet)	GRAPHIC LOG	FORMATION	ROCK TYPE	DESCRIPTION	SECONDARY FEATURES
		Jk	**SANDSTONE**	reddish brown; well lithified; fine grained sandstone; well sorted; reaction to acid: none	
160		Jk	**SANDSTONE**	reddish brown to gray; well lithified; fine grained sandstone; well sorted; reaction to acid: very weak	
170		Jk	**SANDSTONE**	reddish brown to gray; well lithified; fine grained sandstone; well sorted; reaction to acid: none	
		Jw	**SANDSTONE**	tan to light brown; moderately lithified; fine grained sandstone; well sorted; interbedded with soft bluish gray siltstone; reaction to acid: none	
180		Jw	**SANDSTONE**	tan to light brown; moderately lithified; fine grained sandstone; well sorted; uniform, rounded quartz grains; reaction to acid: none	
190		Jw	**SANDSTONE**	tan to light brown; moderately lithified; fine grained sandstone; well sorted; uniform, rounded quartz grains; reaction to acid: none	
200					

TD: 200.0 feet

MONTGOMERY & ASSOCIATES

MONTGOMERY & ASSOCIATES

APPENDIX C

SUMMARY OF CORE SAMPLING METHODS AND LABORATORY REPORTS

MONTGOMERY & ASSOCIATES

APPENDIX C

SUMMARY OF CORE SAMPLING METHODS AND LABORATORY REPORTS RIO ALGOM MINING LLC, LISBON FACILITY

During the Supplemental Site Assessment (SSA) drilling program, continuous core samples were obtained at seven selected drill locations prior to well drilling and construction. During Phase 1, coreholes were drilled at the MW-102DB and MW-103 locations with the air rotary rig, equipped with a 5-inch diameter (PQ) core barrel. After coring, the coreholes were reamed using a corehole chaser bit to accommodate well construction. During Phase 2, PQ coreholes were drilled at the MW-107D, MW-109, MW-116, MW-117M, and MW-118 locations using a dedicated coring rig. After coring, the coreholes were abandoned with bentonite grout and a cement cap. The associated monitor well boreholes were drilled within 10 feet of the abandoned corehole at each location.

The objectives of the coring program were as follows:

- **MW-102DB**: characterize hydrogeology of the Burro Canyon Formation (Kbc) and Burro Canyon Aquifer (BCA); and the Brushy Basin Member of the Morrison Formation (Jmb) and Jmb aquifer (BBM) north of the Lisbon Valley Anticline (LVA).
- **MW-109**: characterize geology along the crest of the LVA.
- **MW-103**: characterize vadose zone conditions adjacent to the former tailings impoundment.
- **MW-107D, MW-116, MW-117M,** and **MW-118**: characterize geology near the Lisbon Fault.

Selected core samples obtained from the MW-102DB, MW-109, MW-117M, and MW-118 borings were submitted for laboratory analysis of hydraulic conductivity (K).

Selected samples from MW-102DB and MW-103 were submitted for chemical analysis. The depth intervals and lithologic descriptions of the selected core samples and the results of physical and chemical analysis are summarized in the following sections.

PHYSICAL ANALYSIS OF CORE SAMPLES

Selected core samples obtained from the MW-102DB, MW-109, MW-117M, and MW-118 borings were submitted for laboratory K analysis. At least one core sample from the saturated portions of the Kbc (BCA) and Jmb (BBM) was selected from each of the four boreholes. Representative samples of unbroken core, approximately 0.5 to 1 foot in length, were submitted to Daniel B. Stevens & Associates, Inc. of Albuquerque, New Mexico (DBSA Lab) under standard chain of custody protocols. The samples were analyzed for saturated horizontal and vertical K by flexible wall falling head-rising tail method. Samples were also analyzed for porosity.

Sample Selection

The depth intervals and lithologic descriptions of the core samples selected for K analysis are summarized below:

MW-102DB: One Kbc sample and two Jmb samples were submitted for K analysis. The Kbc sample consisted of fine-grained sandstone and was collected at the interval from 130 to 131 feet bgs, approximately 5 feet above the Kbc/Jmb contact. The Jmb samples were collected at intervals from 145 to 146 feet below ground surface (bgs) and 156 to 157 feet bgs, approximately 9 and 20 feet below the Kbc/Jmb contact, respectively. The upper Jmb sample consisted of homogeneous shale. The lower Jmb sample consisted of very fine-grained sandstone.

MW-109: Two Kbc core samples and one Jmb core sample from MW-109 were submitted for K laboratory analysis. The Kbc samples were collected at intervals from 138 to 138.5 feet bgs and 147 to 147.5 feet bgs, approximately 15 and 6 feet above the Kbc/Jmb contact, respectively. The upper Kbc sample consisted of medium- to coarse-grained sandstone. The lower Kbc sample consisted of conglomerate, with clasts up to 1 inch supported by a fine-grained sandstone matrix. The Jmb sample consisted of homogeneous shale and was collected at the interval from 158 to 158.7 feet bgs, approximately 4 feet below the Kbc/Jmb contact.

MW-117M: Three Kbc core samples and one Jmb core sample from MW-117M were submitted for K laboratory analysis. The Kbc samples were collected at intervals from 95.5 to 96 feet bgs, 118 to 118.5 feet bgs and 169 to 169.5 feet bgs, approximately 102, 79, and 28 feet above the Kbc/Jmb contact, respectively. The upper and middle Kbc samples consisted of fine-grained sandstone. The lower Kbc sample consisted of medium- to coarse-grained sandstone. The Jmb sample consisted of homogeneous shale and was collected at the interval from 211 to 211.6 feet bgs, approximately 13 feet below the Kbc/Jmb contact.

MW-118: One Kbc core sample and one Jmb core sample from MW-118 were submitted for K laboratory analysis. The Kbc sample consisted of fine-grained sandstone and was collected at the interval from 46.5 to 47 feet bgs, approximately 17 feet above the Kbc/Jmb contact. The Jmb sample consisted of homogeneous shale and was collected at the interval from 75 to 76.5 feet bgs, approximately 11 feet below the Kbc/Jmb contact.

Results of Laboratory Hydraulic Conductivity Analysis

The results of the K laboratory testing are summarized in **Table 7**. The sample results for cores obtained from the BCA and BBM are summarized separately in the following sections.

Burro Canyon Aquifer (BCA)

Analysis of Kbc core samples from the BCA indicated the following:

- Horizontal K values in the BCA ranged from 0.004 feet per day (ft/d) in core samples from the MW-109 and MW-118 boreholes to 2 ft/d in core samples from the MW-109 and MW-117M boreholes. The geometric mean of the horizontal K values in the BCA is 0.2 ft/d.
- Vertical K values in the BCA ranged from 0.0002 ft/d in a core sample from the MW-109 borehole to 0.3 ft/d in core samples collected from the MW-102DB and MW-117M boreholes. The geometric mean of the vertical K values in the BCA is 0.02 ft/d.
- In the majority of BCA core samples, vertical K was reported at values at least an order of magnitude lower than horizontal K values reported in the same core sample. The largest disparity between horizontal K and vertical K values was observed in the lower core sample from MW-109 (147-147.5 feet bgs) (**Table 7**). In the upper sample from MW-102DB (130-131 feet bgs) and middle sample from MW-117M (118-118.5 feet bgs), horizontal K and vertical K were reported at similar or equal values. In the sample collected from MW-118, vertical K was reported at a value an order of magnitude higher than the horizontal K value.
- The highest horizontal K values were reported in the lower core samples from the MW-109 and MW-117M borings, composed of conglomerate and poorly sorted, medium- to coarse-grained sandstone, respectively. However, the lowest K values were reported in the upper core sample from MW-109, also composed of poorly sorted, medium- to coarse-grained sandstone. K values varied in the remaining samples, composed similarly of well sorted, fine grained sandstone. Based on the results of the analysis, K does not appear to be dependent on any one lithologic characteristic, including clast size, degree of lithification, or sorting. The presence of fractures may affect the K values.

Brushy Basin Member of the Morrison Formation (BBM)

Analysis of Jmb core samples from the BBM indicated the following:

- In BBM core samples collected from the MW-102DB, MW-117M, and MW-118 boreholes, horizontal K and vertical K were reported at values several orders of magnitude lower than those reported in the majority of BCA core samples.
- Horizontal K values in the BBM ranged from 1 x 10^{-5} ft/d in the lower core sample from the MW-102DB borehole to 0.1 ft/d in the upper core sample from the MW-102DB borehole. The geometric mean of the horizontal K values in the BBM is 0.0005 ft/d.
- Vertical K values in the BBM ranged from 1 x 10^{-6} ft/d in the sample from the MW-117M borehole to 0.1 ft/d in the upper sample from the MW-102DB borehole. The geometric mean of the vertical K values in the BCA is 0.0003 ft/d.
- In the majority of BBM core samples, horizontal K and vertical K were reported at similar or equal values. In the BBM core sample collected from MW-117M, vertical K was reported at a value an order of magnitude lower than the horizontal K value reported in the same core sample. In the core sample collected from MW-109, vertical K was reported at a value an order of magnitude higher than the horizontal K value.
- The lowest horizontal and vertical K values were reported in core samples composed of well lithified mudstone/shale (MW-117M and MW-118) or well lithified, very fine-grained sandstone (the lower sample from MW-102DB). These core samples were collected from massively bedded sequences with no evidence of fracturing. Higher K values were observed in the core sample from the MW-109 borehole, composed of well lithified, thinly laminated shale. The highest K values were observed in the upper BBM core sample from MW-102DB. This core sample was composed of mudstone/shale, with common fracturing and mineralized infill.

Comparison of Laboratory Analysis to Slug Test Analysis

The laboratory horizontal K values for the core samples were compared to the horizontal K values estimated from the slug tests at BCA wells MW-109, MW-117M, and MW-118 and BBM well MW-102DB (**Table 7**). The comparison of results indicated the following:

MW-109: At BCA well MW-109, the K value estimated by slug testing is between the laboratory K values reported in the two BCA core samples. The mean of laboratory K values is slightly higher than the slug testing result.

MW-117M: At BCA well MW-117M, the K value estimated by slug testing is similar to the laboratory K values reported in the three BCA core samples. The laboratory K value reported in the lower core sample (169-169.5 feet bgs) is nearly equal to the slug test K value, indicating that the basal sandstone sequence has more influence on groundwater flow.

MW-118: At BCA well MW-118, the K value estimated by slug testing is significantly higher than the laboratory K value reported in the BCA core sample (46.5-47 feet bgs). The disparity in results is expected; core selection is limited to competent sequences that produce unbroken core samples. Results indicate that groundwater flow in the BCA is influenced by the fractured and non-lithified zones observed during drilling.

MW-102DB: At BBM well MW-102DB, the K value estimated by slug testing is similar to the laboratory K value reported in the upper BBM core sample (145-146 feet bgs). The laboratory K value is significantly lower in the deeper BBM core sample (156-156.9 feet bgs). Results indicate that groundwater flow in the BBM in this area is influenced by the fracturing observed just below the Kbc/Jmb contact and is limited by the formation when fewer fractures are present.

CHEMICAL ANALYSIS OF CORE SAMPLES

Selected core samples obtained from the vadose zone at the MW-102DB and MW-103 locations were submitted to ACZ Laboratory (ACZ Lab) under standard chain of custody protocols for chemical analysis. Representative samples of unbroken core, approximately 0.5 foot in length, were analyzed for uranium and other selected metals by Synthetic Precipitation Leaching Procedure (SPLP), US EPA Methods 6010B, 6020, and 7470A.

Vadose Zone Sample Selection

The depth intervals and lithologic descriptions of the core samples selected for chemical analysis are summarized below:

MW-102DB: One Kbc core sample was selected for chemical analysis. The sample was collected at the interval from 123 to 123.5 feet bgs just above the water table observed in adjacent monitor well MW-102. The sample consisted of fractured fine-grained sandstone with black staining along fracture surfaces.

MW-103: Five Kbc and one Jmb core samples were selected from the vadose zone for chemical analysis. The samples were collected at the approximate depths of 22, 35, 44, 56, 69, and 74 feet bgs and were selected based on visual inspection of the core. In general, samples were collected where distinct changes in lithology or significant fracturing and staining were observed. The five Kbc samples collected from 22 to 69 feet bgs consisted primarily of fine- to coarse-grained sandstone. The Jmb sample collected from 74 feet bgs consisted of green homogeneous shale.

Results of Chemical Analysis

Table 10 summarizes the leachate water quality from the SPLP tests conducted on vadose zone core samples from selected depth intervals from wells MW-103 and MW-102DB. Chemical analysis of vadose zone core samples indicated the following:

MW-103: The results of SPLP testing indicate that the uranium concentration in the leachate from all core samples from well MW-103 is low. These results indicate that the amount of leachable uranium in the vadose zone at well MW-103 is low, and uranium in the vadose zone in this area does not represent a significant source to the groundwater. Arsenic, barium, and lead were also detected in SPLP leachate from the core samples from MW-103 at low concentrations. The presence of low concentrations of these trace metals is not believed to pose a long-term threat to groundwater quality at the Site.

MW-102DB: In the core sample collected at a depth interval from 123 to 123.5 ft bgs from well MW-102DB, arsenic, barium, and lead were detected at low concentrations in the SPLP leachate. Uranium was not detected in the SPLP leachate from the MW-102DB core sample. These results indicate that trace metal leaching from the black staining is not an environmental concern.

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Analytical Report

November 08, 2012

Report to:
Tim Leo
Montgomery and Associates
1550 E. Prince Rd.
Tuscon, AZ 85719

Bill to:
Accounts Payable
Montgomery and Associates
1550 E. Prince Rd.
Tucson, AZ 85719

cc: Leilani Bew

Project ID: 1350.13
ACZ Project ID: L97378

Tim Leo:

Enclosed are the analytical results for sample(s) submitted to ACZ Laboratories, Inc. (ACZ) on October 12, 2012. This project has been assigned to ACZ's project number, L97378. Please reference this number in all future inquiries.

All analyses were performed according to ACZ's Quality Assurance Plan. The enclosed results relate only to the samples received under L97378. Each section of this report has been reviewed and approved by the appropriate Laboratory Supervisor, or a qualified substitute.

Except as noted, the test results for the methods and parameters listed on ACZ's current NELAC certificate letter (#ACZ) meet all requirements of NELAC.

This report shall be used or copied only in its entirety. ACZ is not responsible for the consequences arising from the use of a partial report.

All samples and sub-samples associated with this project will be disposed of after December 08, 2012. If the samples are determined to be hazardous, additional charges apply for disposal (typically $11/sample). If you would like the samples to be held longer than ACZ's stated policy or to be returned, please contact your Project Manager or Customer Service Representative for further details and associated costs. ACZ retains analytical raw data reports for ten years.

If you have any questions or other needs, please contact your Project Manager.

S. Habermehl

Scott Habermehl has reviewed
and approved this report.

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Analytical Results

Montgomery and Associates
Project ID: 1350.13
Sample ID: 102-DB-123-123.5

Hard Rock from MW-102DB

ACZ Sample ID: ***L97378-01***
Date Sampled: *10/10/12 14:50*
Date Received: *10/12/12*
Sample Matrix: *Soil*

Inorganic Prep

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Total Hot Plate Digestion	M3010A ICP							10/27/12 10:12	jjc
Total Hot Plate Digestion	M3010A ICP-MS			*				10/31/12 10:14	las

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Arsenic (1312)	M6020 ICP-MS	0.0213			mg/L	0.0002	0.001	11/07/12 14:16	msh
Barium (1312)	M6010B ICP	0.031		*	mg/L	0.003	0.02	10/29/12 12:27	jjc
Cadmium (1312)	M6020 ICP-MS	0.0001	B	*	mg/L	0.0001	0.0005	11/07/12 14:16	msh
Chromium (1312)	M6020 ICP-MS	0.0005	B	*	mg/L	0.0005	0.002	11/07/12 14:16	msh
Lead (1312)	M6020 ICP-MS	0.0224		*	mg/L	0.0001	0.0005	11/07/12 14:16	msh
Mercury (1312)	M7470A CVAA		U	*	mg/L	0.0002	0.001	11/01/12 15:56	mfm
Molybdenum (1312)	M6010B ICP	0.04	B	*	mg/L	0.01	0.05	10/29/12 12:27	jjc
Selenium (1312)	M6020 ICP-MS		U	*	mg/L	0.0001	0.0003	11/07/12 14:16	msh
Silver (1312)	M6010B ICP		U	*	mg/L	0.01	0.03	10/29/12 12:27	jjc
Uranium (1312)	M6020 ICP-MS	0.0005		*	mg/L	0.0001	0.0005	11/07/12 14:16	msh

Soil Preparation

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Synthetic Precip. Leaching Procedure	M1312			*				10/25/12 3:06	nrc

Arizona license number: AZ0102

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Analytical Results

Montgomery and Associates
Project ID: 1350.13
Sample ID: 103-74-74.8

Hard rock from mw-103

ACZ Sample ID: ***L97378-02***
Date Sampled: *10/10/12 15:00*
Date Received: *10/12/12*
Sample Matrix: *Soil*

Inorganic Prep

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Total Hot Plate Digestion	M3010A ICP							10/27/12 11:30	jjc
Total Hot Plate Digestion	M3010A ICP-MS							10/31/12 10:41	las

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Arsenic (1312)	M6020 ICP-MS	0.0052			mg/L	0.0002	0.001	11/07/12 14:23	msh
Barium (1312)	M6010B ICP		U	*	mg/L	0.003	0.02	10/29/12 12:36	jjc
Cadmium (1312)	M6020 ICP-MS	0.0001	B	*	mg/L	0.0001	0.0005	11/07/12 14:23	msh
Chromium (1312)	M6020 ICP-MS	0.0014	B	*	mg/L	0.0005	0.002	11/07/12 14:23	msh
Lead (1312)	M6020 ICP-MS	0.0009		*	mg/L	0.0001	0.0005	11/07/12 14:23	msh
Mercury (1312)	M7470A CVAA		U	*	mg/L	0.0002	0.001	11/01/12 16:02	mfm
Molybdenum (1312)	M6010B ICP		U	*	mg/L	0.01	0.05	10/29/12 12:36	jjc
Selenium (1312)	M6020 ICP-MS	0.0003	B	*	mg/L	0.0001	0.0003	11/07/12 14:23	msh
Silver (1312)	M6010B ICP		U	*	mg/L	0.01	0.03	10/29/12 12:36	jjc
Uranium (1312)	M6020 ICP-MS		U	*	mg/L	0.0001	0.0005	11/07/12 14:23	msh

Soil Preparation

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Synthetic Precip. Leaching Procedure	M1312							10/25/12 7:00	nrc

Arizona license number: AZ0102

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Analytical Results

Montgomery and Associates
Project ID: 1350.13
Sample ID: 103-69.2-70

Hard rock from MW-103

ACZ Sample ID: ***L97378-03***
Date Sampled: *10/10/12 15:05*
Date Received: *10/12/12*
Sample Matrix: *Soil*

Inorganic Prep

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Total Hot Plate Digestion	M3010A ICP							10/27/12 12:22	jjc
Total Hot Plate Digestion	M3010A ICP-MS							10/31/12 11:36	las

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Arsenic (1312)	M6020 ICP-MS	0.1158			mg/L	0.0002	0.001	11/07/12 14:29	msh
Barium (1312)	M6010B ICP		U	*	mg/L	0.003	0.02	10/29/12 12:42	jjc
Cadmium (1312)	M6020 ICP-MS		U	*	mg/L	0.0001	0.0005	11/07/12 14:29	msh
Chromium (1312)	M6020 ICP-MS	0.0032		*	mg/L	0.0005	0.002	11/07/12 14:29	msh
Lead (1312)	M6020 ICP-MS	0.0210		*	mg/L	0.0001	0.0005	11/07/12 14:29	msh
Mercury (1312)	M7470A CVAA		U	*	mg/L	0.0002	0.001	11/01/12 16:06	mfm
Molybdenum (1312)	M6010B ICP		U	*	mg/L	0.01	0.05	10/29/12 12:42	jjc
Selenium (1312)	M6020 ICP-MS	0.0001	B	*	mg/L	0.0001	0.0003	11/07/12 14:29	msh
Silver (1312)	M6010B ICP		U	*	mg/L	0.01	0.03	10/29/12 12:42	jjc
Uranium (1312)	M6020 ICP-MS	0.0039		*	mg/L	0.0001	0.0005	11/07/12 14:29	msh

Soil Preparation

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Synthetic Precip. Leaching Procedure	M1312							10/25/12 9:36	nrc

Arizona license number: AZ0102

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Analytical Results

Montgomery and Associates
Project ID: 1350.13
Sample ID: 103-56-56.8

Hard rock from MW-103

ACZ Sample ID: ***L97378-04***
Date Sampled: *10/10/12 15:15*
Date Received: *10/12/12*
Sample Matrix: *Soil*

Inorganic Prep

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Total Hot Plate Digestion	M3010A ICP							10/27/12 12:48	jjc
Total Hot Plate Digestion	M3010A ICP-MS							10/31/12 12:03	las

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Arsenic (1312)	M6020 ICP-MS	0.0515			mg/L	0.0002	0.001	11/07/12 14:33	msh
Barium (1312)	M6010B ICP	0.097		*	mg/L	0.003	0.02	10/29/12 12:46	jjc
Cadmium (1312)	M6020 ICP-MS	0.0002	B	*	mg/L	0.0001	0.0005	11/07/12 14:33	msh
Chromium (1312)	M6020 ICP-MS	0.0016	B	*	mg/L	0.0005	0.002	11/07/12 14:33	msh
Lead (1312)	M6020 ICP-MS	0.0195		*	mg/L	0.0001	0.0005	11/07/12 14:33	msh
Mercury (1312)	M7470A CVAA		U	*	mg/L	0.0002	0.001	11/01/12 16:09	mfm
Molybdenum (1312)	M6010B ICP		U	*	mg/L	0.01	0.05	10/29/12 12:46	jjc
Selenium (1312)	M6020 ICP-MS		U	*	mg/L	0.0001	0.0003	11/07/12 14:33	msh
Silver (1312)	M6010B ICP		U	*	mg/L	0.01	0.03	10/29/12 12:46	jjc
Uranium (1312)	M6020 ICP-MS	0.0003	B	*	mg/L	0.0001	0.0005	11/07/12 14:33	msh

Soil Preparation

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Synthetic Precip. Leaching Procedure	M1312							10/25/12 10:54	nrc

Arizona license number: AZ0102

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Analytical Results

Montgomery and Associates
Project ID: 1350.13
Sample ID: 103-44-44.8

Hard rock from MW-103

ACZ Sample ID: ***L97378-05***
Date Sampled: *10/10/12 15:20*
Date Received: *10/12/12*
Sample Matrix: *Soil*

Inorganic Prep

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Total Hot Plate Digestion	M3010A ICP							10/27/12 13:14	jjc
Total Hot Plate Digestion	M3010A ICP-MS							10/31/12 12:30	las

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Arsenic (1312)	M6020 ICP-MS	0.0088			mg/L	0.0002	0.001	11/07/12 14:36	msh
Barium (1312)	M6010B ICP	0.119		*	mg/L	0.003	0.02	10/29/12 12:58	jjc
Cadmium (1312)	M6020 ICP-MS		U	*	mg/L	0.0001	0.0005	11/07/12 14:36	msh
Chromium (1312)	M6020 ICP-MS	0.0015	B	*	mg/L	0.0005	0.002	11/07/12 14:36	msh
Lead (1312)	M6020 ICP-MS	0.0006		*	mg/L	0.0001	0.0005	11/07/12 14:36	msh
Mercury (1312)	M7470A CVAA		U	*	mg/L	0.0002	0.001	11/01/12 16:11	mfm
Molybdenum (1312)	M6010B ICP		U	*	mg/L	0.01	0.05	10/29/12 12:58	jjc
Selenium (1312)	M6020 ICP-MS		U	*	mg/L	0.0001	0.0003	11/07/12 14:36	msh
Silver (1312)	M6010B ICP		U	*	mg/L	0.01	0.03	10/29/12 12:58	jjc
Uranium (1312)	M6020 ICP-MS	0.0002	B	*	mg/L	0.0001	0.0005	11/07/12 14:36	msh

Soil Preparation

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Synthetic Precip. Leaching Procedure	M1312							10/25/12 12:12	nrc

Arizona license number: AZ0102

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Analytical Results

Montgomery and Associates
Project ID: 1350.13
Sample ID: 103-35.3-36

Hard Rock from MW-103

ACZ Sample ID: ***L97378-06***
Date Sampled: *10/10/12 15:25*
Date Received: *10/12/12*
Sample Matrix: *Soil*

Inorganic Prep

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Total Hot Plate Digestion	M3010A ICP							10/27/12 13:40	jjc
Total Hot Plate Digestion	M3010A ICP-MS			*				10/31/12 12:58	las

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Arsenic (1312)	M6020 ICP-MS	0.0090			mg/L	0.0002	0.001	11/07/12 14:46	msh
Barium (1312)	M6010B ICP	0.008	B	*	mg/L	0.003	0.02	10/29/12 13:01	jjc
Cadmium (1312)	M6020 ICP-MS		U	*	mg/L	0.0001	0.0005	11/07/12 14:46	msh
Chromium (1312)	M6020 ICP-MS	0.0007	B	*	mg/L	0.0005	0.002	11/07/12 14:46	msh
Lead (1312)	M6020 ICP-MS	0.0002	B	*	mg/L	0.0001	0.0005	11/07/12 14:46	msh
Mercury (1312)	M7470A CVAA		U	*	mg/L	0.0002	0.001	11/01/12 16:17	mfm
Molybdenum (1312)	M6010B ICP		U	*	mg/L	0.01	0.05	10/29/12 13:01	jjc
Selenium (1312)	M6020 ICP-MS		U	*	mg/L	0.0001	0.0003	11/07/12 19:21	pmc
Silver (1312)	M6010B ICP		U	*	mg/L	0.01	0.03	10/29/12 13:01	jjc
Uranium (1312)	M6020 ICP-MS		U	*	mg/L	0.0001	0.0005	11/07/12 14:46	msh

Soil Preparation

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Synthetic Precip. Leaching Procedure	M1312			*				10/25/12 13:30	nrc

Arizona license number: AZ0102

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Analytical Results

Montgomery and Associates
Project ID: 1350.13
Sample ID: 103-22-22.8

Hard rock from mw-103

ACZ Sample ID: ***L97378-07***
Date Sampled: *10/10/12 15:30*
Date Received: *10/12/12*
Sample Matrix: *Soil*

Inorganic Prep

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Total Hot Plate Digestion	M3010A ICP							10/27/12 14:06	jjc
Total Hot Plate Digestion	M3010A ICP-MS			*				10/31/12 13:25	las

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Arsenic (1312)	M6020 ICP-MS	0.0065			mg/L	0.0002	0.001	11/07/12 14:50	msh
Barium (1312)	M6010B ICP	0.397		*	mg/L	0.003	0.02	10/29/12 13:04	jjc
Cadmium (1312)	M6020 ICP-MS	0.0004	B	*	mg/L	0.0001	0.0005	11/07/12 14:50	msh
Chromium (1312)	M6020 ICP-MS	0.0006	B	*	mg/L	0.0005	0.002	11/07/12 14:50	msh
Lead (1312)	M6020 ICP-MS	0.0015		*	mg/L	0.0001	0.0005	11/07/12 14:50	msh
Mercury (1312)	M7470A CVAA		U	*	mg/L	0.0002	0.001	11/01/12 16:19	mfm
Molybdenum (1312)	M6010B ICP		U	*	mg/L	0.01	0.05	10/29/12 13:04	jjc
Selenium (1312)	M6020 ICP-MS		U	*	mg/L	0.0001	0.0003	11/07/12 19:23	pmc
Silver (1312)	M6010B ICP		U	*	mg/L	0.01	0.03	10/29/12 13:04	jjc
Uranium (1312)	M6020 ICP-MS		U	*	mg/L	0.0001	0.0005	11/07/12 14:50	msh

Soil Preparation

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Synthetic Precip. Leaching Procedure	M1312			*				10/25/12 16:06	nrc

Arizona license number: AZ0102

Report Header Explanations

Batch	A distinct set of samples analyzed at a specific time
Found	Value of the QC Type of interest
Limit	Upper limit for RPD, in %.
Lower	Lower Recovery Limit, in % (except for LCSS, mg/Kg)
MDL	Method Detection Limit. Same as Minimum Reporting Limit. Allows for instrument and annual fluctuations.
PCN/SCN	A number assigned to reagents/standards to trace to the manufacturer's certificate of analysis
PQL	Practical Quantitation Limit, typically 5 times the MDL.
QC	True Value of the Control Sample or the amount added to the Spike
Rec	Recovered amount of the true value or spike added, in % (except for LCSS, mg/Kg)
RPD	Relative Percent Difference, calculation used for Duplicate QC Types
Upper	Upper Recovery Limit, in % (except for LCSS, mg/Kg)
Sample	Value of the Sample of interest

QC Sample Types

AS	Analytical Spike (Post Digestion)	*LCSWD*	Laboratory Control Sample - Water Duplicate
ASD	Analytical Spike (Post Digestion) Duplicate	*LFB*	Laboratory Fortified Blank
CCB	Continuing Calibration Blank	*LFM*	Laboratory Fortified Matrix
CCV	Continuing Calibration Verification standard	*LFMD*	Laboratory Fortified Matrix Duplicate
DUP	Sample Duplicate	*LRB*	Laboratory Reagent Blank
ICB	Initial Calibration Blank	*MS*	Matrix Spike
ICV	Initial Calibration Verification standard	*MSD*	Matrix Spike Duplicate
ICSAB	Inter-element Correction Standard - A plus B solutions	*PBS*	Prep Blank - Soil
LCSS	Laboratory Control Sample - Soil	*PBW*	Prep Blank - Water
LCSSD	Laboratory Control Sample - Soil Duplicate	*PQV*	Practical Quantitation Verification standard
LCSW	Laboratory Control Sample - Water	*SDL*	Serial Dilution

QC Sample Type Explanations

Blanks	Verifies that there is no or minimal contamination in the prep method or calibration procedure.
Control Samples	Verifies the accuracy of the method, including the prep procedure.
Duplicates	Verifies the precision of the instrument and/or method.
Spikes/Fortified Matrix	Determines sample matrix interferences, if any.
Standard	Verifies the validity of the calibration.

ACZ Qualifiers (Qual)

B	Analyte concentration detected at a value between MDL and PQL. The associated value is an estimated quantity.
H	Analysis exceeded method hold time. pH is a field test with an immediate hold time.
L	Target analyte response was below the laboratory defined negative threshold.
U	The material was analyzed for, but was not detected above the level of the associated value. The associated value is either the sample quantitation limit or the sample detection limit.

Method References

(1) EPA 600/4-83-020. Methods for Chemical Analysis of Water and Wastes, March 1983.
(2) EPA 600/R-93-100. Methods for the Determination of Inorganic Substances in Environmental Samples, August 1993.
(3) EPA 600/R-94-111. Methods for the Determination of Metals in Environmental Samples - Supplement I, May 1994.
(4) EPA SW-846. Test Methods for Evaluating Solid Waste.
(5) Standard Methods for the Examination of Water and Wastewater.

Comments

(1) QC results calculated from raw data. Results may vary slightly if the rounded values are used in the calculations.
(2) Soil, Sludge, and Plant matrices for Inorganic analyses are reported on a dry weight basis.
(3) Animal matrices for Inorganic analyses are reported on an "as received" basis.
(4) An asterisk in the "XQ" column indicates there is an extended qualifier and/or certification qualifier associated with the result.
(5) If the MDL equals the PQL or the MDL column is omitted, the PQL is the reporting limit.

For a complete list of ACZ's Extended Qualifiers, please click: http://www.acz.com/public/extquallist.pdf

Montgomery and Associates

ACZ Project ID: ***L97378***

Arsenic (1312) M6020 ICP-MS

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG333678													
WG333678ICV	ICV	11/07/12 13:52	MS121001-5	.05		.0525	mg/L	105	90	110			
WG333678ICB	ICB	11/07/12 13:55				U	mg/L		-0.0006	0.0006			
WG332841PBS	PBS	11/07/12 14:09				U	mg/L		-0.0006	0.0006			
WG332841LFB2	LFB	11/07/12 14:12	MS121009-6	.05005		.05429	mg/L	108.5	80	120			
L97378-02DUP	DUP	11/07/12 14:26			.0052	.00443	mg/L				16	20	
L97378-07MS	MS	11/07/12 14:53	MS121009-6	.05005	.0065	.05621	mg/L	99.3	75	125			
L97378-07MSD	MSD	11/07/12 14:56	MS121009-6	.05005	.0065	.05651	mg/L	99.9	75	125	0.53	20	

Barium (1312) M6010B ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG333053													
WG333053ICV	ICV	10/29/12 12:06	II120914-3	2		2.002	mg/L	100.1	90	110			
WG333053ICB	ICB	10/29/12 12:09				U	mg/L		-0.009	0.009			
WG332841PBS	PBS	10/29/12 12:21				U	mg/L		-0.009	0.009			
WG332841LFB1	LFB	10/29/12 12:24	II121001-3	.5		.5089	mg/L	101.8	85	115			
L97378-01MS	MS	10/29/12 12:30	II121001-3	.5	.031	.5341	mg/L	100.6	75	125			
L97378-01MSD	MSD	10/29/12 12:33	II121001-3	.5	.031	.5332	mg/L	100.4	75	125	0.17	20	
L97378-02DUP	DUP	10/29/12 12:39			U	.0052	mg/L				200	20	RA

Cadmium (1312) M6020 ICP-MS

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG333678													
WG333678ICV	ICV	11/07/12 13:52	MS121001-5	.05		.0494	mg/L	98.8	90	110			
WG333678ICB	ICB	11/07/12 13:55				U	mg/L		-0.0003	0.0003			
WG332841PBS	PBS	11/07/12 14:09				U	mg/L		-0.0003	0.0003			
WG332841LFB2	LFB	11/07/12 14:12	MS121009-6	.0501		.04989	mg/L	99.6	80	120			
L97378-02DUP	DUP	11/07/12 14:26			.0001	.00012	mg/L				18.2	20	RA
L97378-07MS	MS	11/07/12 14:53	MS121009-6	.0501	.0004	.04646	mg/L	91.9	75	125			
L97378-07MSD	MSD	11/07/12 14:56	MS121009-6	.0501	.0004	.04725	mg/L	93.5	75	125	1.69	20	

Chromium (1312) M6020 ICP-MS

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG333678													
WG333678ICV	ICV	11/07/12 13:52	MS121001-5	.05		.0502	mg/L	100.4	90	110			
WG333678ICB	ICB	11/07/12 13:55				U	mg/L		-0.0015	0.0015			
WG332841PBS	PBS	11/07/12 14:09				U	mg/L		-0.0015	0.0015			
WG332841LFB2	LFB	11/07/12 14:12	MS121009-6	.05005		.04897	mg/L	97.8	80	120			
L97378-02DUP	DUP	11/07/12 14:26			.0014	.00185	mg/L				27.7	20	RA
L97378-07MS	MS	11/07/12 14:53	MS121009-6	.05005	.0006	.04924	mg/L	97.2	75	125			
L97378-07MSD	MSD	11/07/12 14:56	MS121009-6	.05005	.0006	.04978	mg/L	98.3	75	125	1.09	20	

Montgomery and Associates

ACZ Project ID: ***L97378***

Lead (1312) M6020 ICP-MS

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG333678													
WG333678ICV	ICV	11/07/12 13:52	MS121001-5	.05		.05333	mg/L	106.7	90	110			
WG333678ICB	ICB	11/07/12 13:55				U	mg/L		-0.0003	0.0003			
WG332841PBS	PBS	11/07/12 14:09				U	mg/L		-0.0003	0.0003			
WG332841LFB2	LFB	11/07/12 14:12	MS121009-6	.05005		.04801	mg/L	95.9	80	120			
L97378-02DUP	DUP	11/07/12 14:26			.0009	.00073	mg/L				20.9	20	RA
L97378-07MS	MS	11/07/12 14:53	MS121009-6	.05005	.0015	.0497	mg/L	96.3	75	125			
L97378-07MSD	MSD	11/07/12 14:56	MS121009-6	.05005	.0015	.0507	mg/L	98.3	75	125	1.99	20	

Mercury (1312) M7470A CVAA

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG333327													
WG333327ICV	ICV	11/01/12 14:50	II121022-2	.005025		.00478	mg/L	95.1	90	110			
WG333327ICB	ICB	11/01/12 14:52				U	mg/L		-0.0006	0.0006			
WG333324													
WG332841PBS	PBS	11/01/12 15:52				U	mg/Kg		-0.0006	0.0006			
WG332841LFB1	LFB	11/01/12 15:54	II121030-3	.002002		.00217	mg/L	108.4	85	115			
L97378-01MS	MS	11/01/12 15:58	II121030-3	.002002	U	.00204	mg/L	101.9	85	115			
L97378-01MSD	MSD	11/01/12 16:00	II121030-3	.002002	U	.00192	mg/L	95.9	85	115	6.06	20	
L97378-02DUP	DUP	11/01/12 16:04			U	U	mg/L				0	20	RA

Molybdenum (1312) M6010B ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG333053													
WG333053ICV	ICV	10/29/12 12:06	II120914-3	2		2.017	mg/L	100.9	90	110			
WG333053ICB	ICB	10/29/12 12:09				U	mg/L		-0.03	0.03			
WG332841PBS	PBS	10/29/12 12:21				U	mg/L		-0.03	0.03			
WG332841LFB1	LFB	10/29/12 12:24	II121001-3	.5		.509	mg/L	101.8	85	115			
L97378-01MS	MS	10/29/12 12:30	II121001-3	.5	.04	.547	mg/L	101.4	75	125			
L97378-01MSD	MSD	10/29/12 12:33	II121001-3	.5	.04	.545	mg/L	101	75	125	0.37	20	
L97378-02DUP	DUP	10/29/12 12:39			U	U	mg/L				0	20	RA

Montgomery and Associates

ACZ Project ID: ***L97378***

Selenium (1312) M6020 ICP-MS

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG333678													
WG333678ICV	ICV	11/07/12 13:52	MS121001-5	.05		.05207	mg/L	104.1	90	110			
WG333678ICB	ICB	11/07/12 13:55				U	mg/L		-0.0003	0.0003			
WG332841PBS	PBS	11/07/12 14:09				U	mg/L		-0.0003	0.0003			
WG332841LFB2	LFB	11/07/12 14:12	MS121009-6	.05005		.04852	mg/L	96.9	80	120			
L97378-02DUP	DUP	11/07/12 14:26			.0003	.00025	mg/L				18.2	20	RA
L97378-07MS	MS	11/07/12 14:53	MS121009-6	.05005	U	.04661	mg/L	93.1	75	125			
L97378-07MSD	MSD	11/07/12 14:56	MS121009-6	.05005	U	.04574	mg/L	91.4	75	125	1.88	20	
WG333699													
WG333699ICV	ICV	11/07/12 18:56	MS121001-5	.05		.05077	mg/L	101.5	90	110			
WG333699ICB	ICB	11/07/12 18:59				U	mg/L		-0.0003	0.0003			
WG332841PBS	PBS	11/07/12 19:10				U	mg/L		-0.0003	0.0003			
WG332841LFB2	LFB	11/07/12 19:13	MS121009-6	.05005		.05611	mg/L	112.1	80	120			
L97378-02DUP	DUP	11/07/12 19:18			.0003	.00027	mg/L				10.5	20	RA
L97378-07MS	MS	11/07/12 19:26	MS121009-6	.05005	U	.04846	mg/L	96.8	75	125			
L97378-07MSD	MSD	11/07/12 19:29	MS121009-6	.05005	U	.04809	mg/L	96.1	75	125	0.77	20	
WG333275LFB2	LFB	11/07/12 19:39	MS121009-6	.05005		.05568	mg/L	111.2	80	120			

Silver (1312) M6010B ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG333053													
WG333053ICV	ICV	10/29/12 12:06	II120914-3	.998		1.02	mg/L	102.2	90	110			
WG333053ICB	ICB	10/29/12 12:09				U	mg/L		-0.03	0.03			
WG332841PBS	PBS	10/29/12 12:21				U	mg/L		-0.03	0.03			
WG332841LFB1	LFB	10/29/12 12:24	II121001-3	.5		.506	mg/L	101.2	85	115			
L97378-01MS	MS	10/29/12 12:30	II121001-3	.5	U	.496	mg/L	99.2	75	125			
L97378-01MSD	MSD	10/29/12 12:33	II121001-3	.5	U	.532	mg/L	106.4	75	125	7	20	
L97378-02DUP	DUP	10/29/12 12:39			U	U	mg/L				0	20	RA

Uranium (1312) M6020 ICP-MS

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG333678													
WG333678ICV	ICV	11/07/12 13:52	MS121001-5	.05		.05178	mg/L	103.6	90	110			
WG333678ICB	ICB	11/07/12 13:55				U	mg/L		-0.0003	0.0003			
WG332841PBS	PBS	11/07/12 14:09				U	mg/L		-0.0003	0.0003			
WG332841LFB2	LFB	11/07/12 14:12	MS121009-6	.05		.04853	mg/L	97.1	80	120			
L97378-02DUP	DUP	11/07/12 14:26			U	U	mg/L				0	20	RA
L97378-07MS	MS	11/07/12 14:53	MS121009-6	.05	U	.04976	mg/L	99.5	75	125			
L97378-07MSD	MSD	11/07/12 14:56	MS121009-6	.05	U	.04992	mg/L	99.8	75	125	0.32	20	

Montgomery and Associates

ACZ Project ID: ***L97378***

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L97378-01	WG333053	Barium (1312)	M6010B ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG333678	Cadmium (1312)	M6020 ICP-MS	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Chromium (1312)	M6020 ICP-MS	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Lead (1312)	M6020 ICP-MS	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG333324	Mercury (1312)	M7470A CVAA	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG333053	Molybdenum (1312)	M6010B ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG333678	Selenium (1312)	M6020 ICP-MS	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG333053	Silver (1312)	M6010B ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG333678	Uranium (1312)	M6020 ICP-MS	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
L97378-02	WG333053	Barium (1312)	M6010B ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG333678	Cadmium (1312)	M6020 ICP-MS	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Chromium (1312)	M6020 ICP-MS	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Lead (1312)	M6020 ICP-MS	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG333324	Mercury (1312)	M7470A CVAA	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG333053	Molybdenum (1312)	M6010B ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG333678	Selenium (1312)	M6020 ICP-MS	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG333053	Silver (1312)	M6010B ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG333678	Uranium (1312)	M6020 ICP-MS	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).

Montgomery and Associates

ACZ Project ID: ***L97378***

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L97378-03	WG333053	Barium (1312)	M6010B ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG333678	Cadmium (1312)	M6020 ICP-MS	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Chromium (1312)	M6020 ICP-MS	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Lead (1312)	M6020 ICP-MS	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG333324	Mercury (1312)	M7470A CVAA	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG333053	Molybdenum (1312)	M6010B ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG333678	Selenium (1312)	M6020 ICP-MS	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG333053	Silver (1312)	M6010B ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG333678	Uranium (1312)	M6020 ICP-MS	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
L97378-04	WG333053	Barium (1312)	M6010B ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG333678	Cadmium (1312)	M6020 ICP-MS	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Chromium (1312)	M6020 ICP-MS	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Lead (1312)	M6020 ICP-MS	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG333324	Mercury (1312)	M7470A CVAA	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG333053	Molybdenum (1312)	M6010B ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG333678	Selenium (1312)	M6020 ICP-MS	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG333053	Silver (1312)	M6010B ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG333678	Uranium (1312)	M6020 ICP-MS	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).

Montgomery and Associates

ACZ Project ID: ***L97378***

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L97378-05	WG333053	Barium (1312)	M6010B ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG333678	Cadmium (1312)	M6020 ICP-MS	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Chromium (1312)	M6020 ICP-MS	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Lead (1312)	M6020 ICP-MS	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG333324	Mercury (1312)	M7470A CVAA	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG333053	Molybdenum (1312)	M6010B ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG333678	Selenium (1312)	M6020 ICP-MS	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG333053	Silver (1312)	M6010B ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG333678	Uranium (1312)	M6020 ICP-MS	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
L97378-06	WG333053	Barium (1312)	M6010B ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG333678	Cadmium (1312)	M6020 ICP-MS	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Chromium (1312)	M6020 ICP-MS	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Lead (1312)	M6020 ICP-MS	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG333324	Mercury (1312)	M7470A CVAA	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG333053	Molybdenum (1312)	M6010B ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG333699	Selenium (1312)	M6020 ICP-MS	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG333053	Silver (1312)	M6010B ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG333678	Uranium (1312)	M6020 ICP-MS	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).

Montgomery and Associates

ACZ Project ID: ***L97378***

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L97378-07	WG333053	Barium (1312)	M6010B ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG333678	Cadmium (1312)	M6020 ICP-MS	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Chromium (1312)	M6020 ICP-MS	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Lead (1312)	M6020 ICP-MS	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG333324	Mercury (1312)	M7470A CVAA	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG333053	Molybdenum (1312)	M6010B ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG333699	Selenium (1312)	M6020 ICP-MS	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG333053	Silver (1312)	M6010B ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG333678	Uranium (1312)	M6020 ICP-MS	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).

Metals Analysis

The following parameters are not offered for certification or are not covered by AZ certificate #AZ0102.

Selenium (1312)	M6020 ICP-MS
Uranium (1312)	M6020 ICP-MS

ERROL

ACZ Laboratories, Inc. L97348

2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

CHAIN OF CUSTODY

Name: Tim Leo	Address: 1550 E. Prince Rd
Company: Montgomery & Assoc.	Tucson AZ 85719
E-mail: tleo@elmontgomery.com	Telephone: 520-881-4912

Name: Leilani Baw	E-mail: lbaw@elmontgomery.com
Company: M&A	Telephone: SAA

Name: Tim Leo	Address: SAA
Company: SAA	
E-mail: SAA	Telephone: SAA

If sample(s) received past holding time (HT), or if insufficient HT remains to complete analysis before expiration, shall ACZ proceed with requested short HT analyses? YES [X] NO [ ]

If "NO" then ACZ will contact client for further instruction. If neither "YES" nor "NO" is indicated, ACZ will proceed with the requested analyses, even if HT is expired, and data will be qualified

Are samples for SDWA Compliance Monitoring? Yes [ ] No [X]

If yes, please include state forms. Results will be reported to PQL for Colorado.

Sampler's Name: J. LANEY Sampler's site Information State: UT Zip code: Time Zone: MT

Quote #: Not set up - SPLP

Project/PO #: 1350.13

Reporting state for compliance testing: Utah

Check box if samples include NRC licensed material? [ ]

				# of Containers	1311 TCLP**							
102DB-123-123.5	10/10/12	1450	Other*	1	X							
103-74-74.8		1500		1	X							
103-69.2-70		1505		1	X							
103-56-56.8		1515		1	X							
103-44-44.8		1520		1	X							
103-35.3-36		1525		1	X							
103-22-22.8	↓	1530	↓	1	X							

Matrix: SW (Surface Water) · GW (Ground Water) · WW (Waste Water) · DW (Drinking Water) · SL (Sludge) · SO (Soil) · OL (Oil) · Other (Specify)

(*) Hard rock core

(**) Contact Tim Leo (520)-881-4912 for required analysis

Please refer to ACZ's terms & conditions located on the reverse side of this COC.

J. Laney	10/11/12 1100		10.12.12 9:54

L97348 Chain of Custody

Laboratory Report for

Montgomery & Associates

Rio Algom Lisbon 1350.13

November 5, 2012

Daniel B. Stephens & Associates, Inc.

5840 Osuna Road NE • Albuquerque, New Mexico 87109

November 5, 2012

Tim Leo
Montgomery & Associates
1550 East Prince Rd.
Tucson, AZ 85719
(520) 881-4912

Re: DBS&A Laboratory Report for Montgomery & Associates Rio Algom Lisbon 1350.13

Dear Mr. Leo:

Enclosed is the final report for the Montgomery & Associates Rio Algom Lisbon 1350.13 samples. Please review this report and provide any comments as samples will be held for a maximum of 30 days. After 30 days samples will be returned or disposed of in an appropriate manner.

All testing results were evaluated subjectively for consistency and reasonableness, and the results appear to be reasonably representative of the material tested. However, DBS&A does not assume any responsibility for interpretations or analyses based on the data enclosed, nor can we guarantee that these data are fully representative of the undisturbed materials at the field site. We recommend that careful evaluation of these laboratory results be made for your particular application.

The testing utilized to generate the enclosed report employs methods that are standard for the industry. The results do not constitute a professional opinion by DBS&A, nor can the results affect any professional or expert opinions rendered with respect thereto by DBS&A. You have acknowledged that all the testing undertaken by us, and the report provided, constitutes mere test results using standardized methods, and cannot be used to disqualify DBS&A from rendering any professional or expert opinion, having waived any claim of conflict of interest by DBS&A.

We are pleased to provide this service to Montgomery & Associates and look forward to future laboratory testing on other projects. If you have any questions about the enclosed data, please do not hesitate to call.

Sincerely,

DANIEL B. STEPHENS & ASSOCIATES, INC.
SOIL TESTING & RESEARCH LABORATORY

Celina Sessa
Assistant Laboratory Manager
Enclosure

Daniel B. Stephens & Associates, Inc.
Soil Testing & Research Laboratory
5840 Osuna Rd. NE
Albuquerque, NM 87109
505-889-7752
FAX 505-889-0258

Summaries

Summary of Tests Performed

Laboratory Sample Number	Initial Soil Properties[1]			Saturated Hydraulic Conductivity[2]			Moisture Characteristics[3]								Particle Size[4]			Specific Gravity[5]		Air Perm-eability	Atterberg Limits	Proctor Compaction
	G	VM	VD	CH	FH	FW	HC	PP	FP	DPP	RH	EP	WHC	K_{unsat}	DS	WS	H	F	C			
102DB-130-131 (Vertical)	X	X				X																
102DB-130-131 (Horizontal)	X	X				X																
102DB-145-146 (Vertical)	X	X				X																
102DB-145-146 (Horizontal)	X	X				X																
102DB-156-156.9 (Vertical)	X	X				X																
102DB-156-156.9 (Horizontal)	X	X				X																

[1] G = Gravimetric Moisture Content, VM = Volume Measurement Method, VD = Volume Displacement Method

[2] CH = Constant Head Rigid Wall, FH = Falling Head Rigid Wall, FW = Falling Head Rising Tail Flexible Wall

[3] HC = Hanging Column, PP = Pressure Plate, FP = Filter Paper, DPP = Dew Point Potentiometer, RH = Relative Humidity Box, EP = Effective Porosity, WHC = Water Holding Capacity, Kunsat = Calculated Unsaturated Hydraulic Conductivity

[4] DS = Dry Sieve, WS = Wet Sieve, H = Hydrometer

[5] F = Fine (<4.75mm), C = Coarse (>4.75mm)

Notes

Sample Receipt:

Three rock core samples arrived on October 12, 2012.

Sample Preparation and Testing:

Two sub-samples were obtained for each sample for testing. A chop saw was used to trim each sample in both the vertical and horizontal directions for initial properties and saturated hydraulic conductivity testing.

Total porosity calculations in this report are based on the use of an assumed specific gravity value of 2.65.

Summary of Sample Preparation/Volume Changes

	Initial Sample Data[1]		Volume Change Post Saturation[2]		
Sample Number	Moisture Content (%, g/g)	Dry Bulk Density (g/cm^3)	Dry Bulk Density (g/cm^3)	% Volume Change (%)	% of Initial Density (%)
102DB-130-131 (Vertical)	0.5	2.04	2.02	+0.8%	99.2%
102DB-130-131 (Horizontal)	0.8	2.12	2.12	+0.3%	99.7%
102DB-145-146 (Vertical)	4.1	2.38	2.30	+3.7%	96.4%
102DB-145-146 (Horizontal)	3.7	2.40	2.34	+2.5%	97.6%
102DB-156-156.9 (Vertical)	3.4	2.39	2.38	+0.1%	99.9%
102DB-156-156.9 (Horizontal)	3.5	2.40	2.40	---	100.0%

[1]Initial Sample Data: The 'as received' dry bulk density and moisture content.

[2]Volume Change Post Saturation: Volume change measurements were obtained after saturated hydraulic conductivity testing.

Notes:
"+" indicates sample swelling, "-" indicates sample settling, and "---" indicates no volume change occurred.

Summary of Saturated Hydraulic Conductivity Tests

Sample Number	K_{sat} (cm/sec)	Oversize Corrected K_{sat} (cm/sec)	Method of Analysis: Constant Head Flexible Wall	Method of Analysis: Falling Head Flexible Wall
102DB-130-131 (Vertical)	1.23E-04	NA		X
102DB-130-131 (Horizontal)	2.18E-04	NA		X
102DB-145-146 (Vertical)	2.15E-05	NA		X
102DB-145-146 (Horizontal)	3.09E-05	NA		X
102DB-156-156.9 (Vertical)	7.93E-09	NA		X
102DB-156-156.9 (Horizontal)	3.60E-09	NA		X

--- = Oversize correction is unnecessary since coarse fraction < 5% of composite mass
NR = Not requested
NA = Not applicable

Saturated Hydraulic Conductivity

Summary of Saturated Hydraulic Conductivity Tests

Sample Number	K_{sat} (cm/sec)	Oversize Corrected K_{sat} (cm/sec)	Method of Analysis: Constant Head Flexible Wall	Method of Analysis: Falling Head Flexible Wall
102DB-130-131 (Vertical)	1.23E-04	NA		X
102DB-130-131 (Horizontal)	2.18E-04	NA		X
102DB-145-146 (Vertical)	2.15E-05	NA		X
102DB-145-146 (Horizontal)	3.09E-05	NA		X
102DB-156-156.9 (Vertical)	7.93E-09	NA		X
102DB-156-156.9 (Horizontal)	3.60E-09	NA		X

--- = Oversize correction is unnecessary since coarse fraction < 5% of composite mass
NR = Not requested
NA = Not applicable

Saturated Hydraulic Conductivity
Flexible Wall Falling Head-Rising Tail Method

Job Name: Montgomery & Associates
Job Number: LB12.0210.00
Sample Number: 102DB-130-131 (Vertical)
Project Name: Rio Algom Lisbon 1350.13
Depth: NA

Remolded or Initial Sample Properties	
Initial Mass (g):	343.35
Diameter (cm):	7.376
Length (cm):	3.926
Area (cm^2):	42.73
Volume (cm^3):	167.76
Dry Density (g/cm^3):	2.04
Dry Density (pcf):	127.16
Water Content (%, g/g):	0.5
Water Content (%, vol):	1.0
Void Ratio (e):	0.30
Porosity (%, vol):	23.1
Saturation (%):	4.2

Post Permeation Sample Properties	
Saturated Mass (g):	376.63
Dry Mass (g):	341.72
Diameter (cm):	7.376
Length (cm):	3.957
*Deformation (%)**:*	0.78
Area (cm^2):	42.73
Volume (cm^3):	169.08
Dry Density (g/cm^3):	2.02
Dry Density (pcf):	126.17
Water Content (%, g/g):	10.2
Water Content (%, vol):	20.6
Void Ratio(e):	0.31
Porosity (%, vol):	23.7
Saturation (%):*	87.0

Test and Sample Conditions

Permeant liquid used: Tap Water
Sample Preparation: ☑ In situ sample, extruded ☐ Remolded Sample
Number of Lifts: NA
Split: NA
Percent Coarse Material (%): NA
Particle Density(g/cm^3): 2.65 ☑ Assumed ☐ Measured
Cell pressure (PSI): 82.0
Influent pressure (PSI): 80.0
Effluent pressure (PSI): 80.0
Panel Used: ☐ D ☐ E ☑ F
Reading: ☐ Annulus ☑ Pipette

		Date/Time
B-Value (% saturation) prior to test*:	0.95	10/25/12 1415
B-Value (% saturation) post to test:	0.98	10/26/12 1310

* Per ASTM D5084 percent saturation is ensured (B-Value ≥ 95%) prior to testing, as post test saturation values may be exaggerated during depressurizing and sample removal.

**Percent Deformation: based on initial sample length and post permeation sample length.

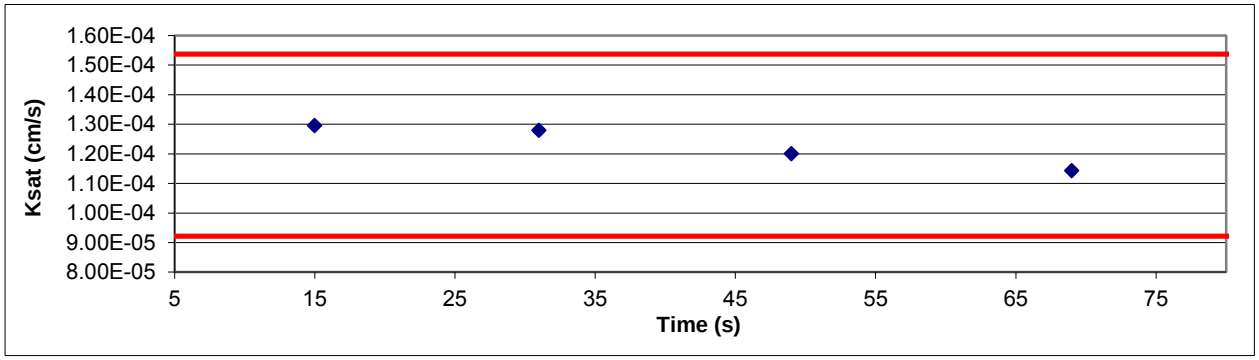
Laboratory analysis by: D. O'Dowd
Data entered by: D. O'Dowd
Checked by: J. Hines

Saturated Hydraulic Conductivity
Flexible Wall Falling Head-Rising Tail Method

Job Name: Montgomery & Associates
Job Number: LB12.0210.00
Sample Number: 102DB-130-131 (Vertical)
Project Name: Rio Algom Lisbon 1350.13
Depth: NA

Date	Time	Temp (°C)	Influent Pipette Reading	Effluent Pipette Reading	Gradient (ΔH/ΔL)	Average Flow (cm^3)	Elapsed Time (s)	Ratio (outflow to inflow)	Change in Head (Not to exceed 25%)	k_{sat} T°C (cm/s)	k_{sat} Corrected (cm/s)
Test # 1:											
26-Oct-12	12:52:51	21.5	13.40	21.60	2.39	0.17	15	1.00	5%	1.34E-04	1.30E-04
26-Oct-12	12:53:06	21.5	13.60	21.40	2.28						
Test # 2:											
26-Oct-12	12:53:06	21.5	13.60	21.40	2.28	0.17	16	1.00	5%	1.32E-04	1.28E-04
26-Oct-12	12:53:22	21.5	13.80	21.20	2.16						
Test # 3:											
26-Oct-12	12:53:22	21.5	13.80	21.20	2.16	0.17	18	1.00	5%	1.24E-04	1.20E-04
26-Oct-12	12:53:40	21.5	14.00	21.00	2.04						
Test # 4:											
26-Oct-12	12:53:40	21.5	14.00	21.00	2.04	0.17	20	1.00	6%	1.18E-04	1.14E-04
26-Oct-12	12:54:00	21.5	14.20	20.80	1.93						

***Average Ksat* (cm/sec):** **1.23E-04**
Calculated Gravel Corrected Average Ksat (cm/sec): NA



ASTM Required Range (+/- 25%)

Ksat (-25%) (cm/s): 9.22E-05

Ksat (+25%) (cm/s): 1.54E-04

Saturated Hydraulic Conductivity
Flexible Wall Falling Head-Rising Tail Method

Job Name: Montgomery & Associates
Job Number: LB12.0210.00
Sample Number: 102DB-130-131 (Horizontal)
Project Name: Rio Algom Lisbon 1350.13
Depth: NA

Remolded or Initial Sample Properties	
Initial Mass (g):	282.4
Diameter (cm):	5.287
Length (cm):	6.006
Area (cm^2):	21.95
Volume (cm^3):	131.85
Dry Density (g/cm^3):	2.12
Dry Density (pcf):	132.58
Water Content (%, g/g):	0.8
Water Content (%, vol):	1.8
Void Ratio (e):	0.25
Porosity (%, vol):	19.9
Saturation (%):	9.1

Post Permeation Sample Properties	
Saturated Mass (g):	305.21
Dry Mass (g):	280.02
Diameter (cm):	5.287
Length (cm):	6.025
*Deformation (%)**:*	0.32
Area (cm^2):	21.95
Volume (cm^3):	132.27
Dry Density (g/cm^3):	2.12
Dry Density (pcf):	132.16
Water Content (%, g/g):	9.0
Water Content (%, vol):	19.0
Void Ratio(e):	0.25
Porosity (%, vol):	20.1
Saturation (%):*	94.7

Test and Sample Conditions		
Permeant liquid used:	Tap Water	
Sample Preparation:	☑ In situ sample, extruded	
	☐ Remolded Sample	
Number of Lifts:	NA	
Split:	NA	
Percent Coarse Material (%):	NA	
Particle Density(g/cm^3):	2.65 ☑ Assumed ☐ Measured	
Cell pressure (PSI):	82.0	
Influent pressure (PSI):	80.0	
Effluent pressure (PSI):	80.0	
Panel Used:	☐ D ☑ E ☐ F	
Reading:	☐ Annulus ☑ Pipette	
		Date/Time
B-Value (% saturation) prior to test*:	0.98	10/25/12 1411
B-Value (% saturation) post to test:	0.98	10/26/12 1306

* Per ASTM D5084 percent saturation is ensured (B-Value ≥ 95%) prior to testing, as post test saturation values may be exaggerated during depressurizing and sample removal.

**Percent Deformation: based on initial sample length and post permeation sample length.

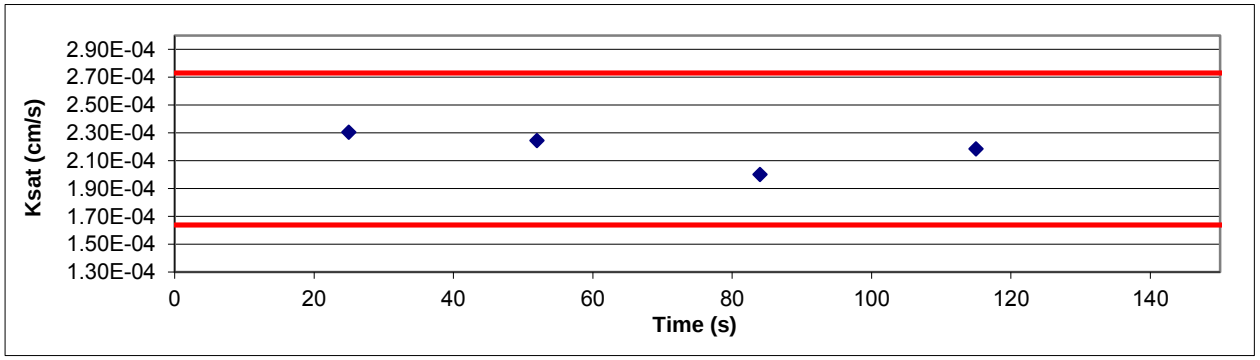
Laboratory analysis by: D. O'Dowd
Data entered by: D. O'Dowd
Checked by: J. Hines

Saturated Hydraulic Conductivity
Flexible Wall Falling Head-Rising Tail Method

Job Name: Montgomery & Associates
Job Number: LB12.0210.00
Sample Number: 102DB-130-131 (Horizontal)
Project Name: Rio Algom Lisbon 1350.13
Depth: NA

Date	Time	Temp (°C)	Influent Pipette Reading	Effluent Pipette Reading	Gradient (ΔH/ΔL)	Average Flow (cm^3)	Elapsed Time (s)	Ratio (outflow to inflow)	Change in Head (Not to exceed 25%)	k_{sat} T°C (cm/s)	k_{sat} Corrected (cm/s)
Test # 1:											
26-Oct-12	12:49:39	21.5	13.40	21.60	1.57	0.17	25	1.00	5%	2.39E-04	2.30E-04
26-Oct-12	12:50:04	21.5	13.60	21.40	1.49						
Test # 2:											
26-Oct-12	12:50:04	21.5	13.60	21.40	1.49	0.17	27	1.00	5%	2.32E-04	2.25E-04
26-Oct-12	12:50:31	21.5	13.80	21.20	1.42						
Test # 3:											
26-Oct-12	12:50:31	21.5	13.80	21.20	1.42	0.17	32	1.00	5%	2.07E-04	2.00E-04
26-Oct-12	12:51:03	21.5	14.00	21.00	1.34						
Test # 4:											
26-Oct-12	12:51:03	21.5	14.00	21.00	1.34	0.17	31	1.00	6%	2.26E-04	2.19E-04
26-Oct-12	12:51:34	21.5	14.20	20.80	1.26						

***Average Ksat* (cm/sec):** **2.18E-04**
Calculated Gravel Corrected Average Ksat (cm/sec): NA



ASTM Required Range (+/- 25%)

Ksat (-25%) (cm/s): 1.64E-04

Ksat (+25%) (cm/s): 2.73E-04

Saturated Hydraulic Conductivity
Flexible Wall Falling Head-Rising Tail Method

Job Name: Montgomery & Associates
Job Number: LB12.0210.00
Sample Number: 102DB-145-146 (Vertical)
Project Name: Rio Algom Lisbon 1350.13
Depth: NA

Remolded or Initial Sample Properties	
Initial Mass (g):	287.9
Diameter (cm):	7.507
Length (cm):	2.622
Area (cm^2):	44.26
Volume (cm^3):	116.05
Dry Density (g/cm^3):	2.38
Dry Density (pcf):	148.72
Water Content (%, g/g):	4.1
Water Content (%, vol):	9.9
Void Ratio (e):	0.11
Porosity (%, vol):	10.1
Saturation (%):	97.5

Post Permeation Sample Properties	
Saturated Mass (g):	293.3
Dry Mass (g):	276.46
Diameter (cm):	7.507
Length (cm):	2.720
*Deformation (%)**:*	3.60
Area (cm^2):	44.26
Volume (cm^3):	120.39
Dry Density (g/cm^3):	2.30
Dry Density (pcf):	143.36
Water Content (%, g/g):	6.1
Water Content (%, vol):	14.0
Void Ratio(e):	0.15
Porosity (%, vol):	13.3
Saturation (%):*	104.8

Test and Sample Conditions		
Permeant liquid used:	Tap Water	
Sample Preparation:	☑ In situ sample, extruded	
	☐ Remolded Sample	
Number of Lifts:	NA	
Split:	NA	
Percent Coarse Material (%):	NA	
Particle Density(g/cm^3):	2.65 ☑ Assumed ☐ Measured	
Cell pressure (PSI):	82.0	
Influent pressure (PSI):	80.0	
Effluent pressure (PSI):	80.0	
Panel Used:	☑ D ☐ E ☐ F	
Reading:	☐ Annulus ☑ Pipette	
		Date/Time
B-Value (% saturation) prior to test*:	0.98	10/25/12 1408
B-Value (% saturation) post to test:	1.00	10/26/12 1302

* Per ASTM D5084 percent saturation is ensured (B-Value ≥ 95%) prior to testing, as post test saturation values may be exaggerated during depressurizing and sample removal.

**Percent Deformation: based on initial sample length and post permeation sample length.

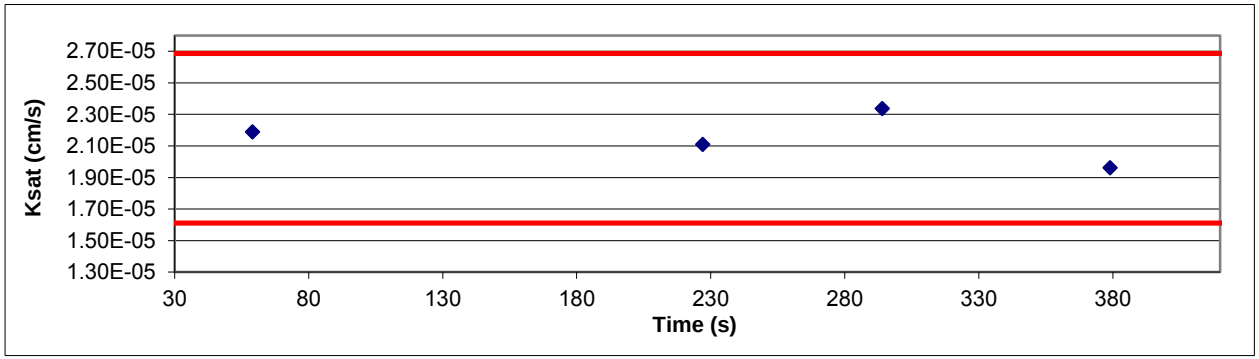
Laboratory analysis by: D. O'Dowd
Data entered by: D. O'Dowd
Checked by: J. Hines

Saturated Hydraulic Conductivity
Flexible Wall Falling Head-Rising Tail Method

Job Name: Montgomery & Associates
Job Number: LB12.0210.00
Sample Number: 102DB-145-146 (Vertical)
Project Name: Rio Algom Lisbon 1350.13
Depth: NA

Date	Time	Temp (°C)	Influent Pipette Reading	Effluent Pipette Reading	Gradient (ΔH/ΔL)	Average Flow (cm^3)	Elapsed Time (s)	Ratio (outflow to inflow)	Change in Head (Not to exceed 25%)	k_{sat} T°C (cm/s)	k_{sat} Corrected (cm/s)
Test # 1:											
26-Oct-12	12:41:39	21.4	13.40	21.60	3.48	0.17	59	1.00	5%	2.26E-05	2.19E-05
26-Oct-12	12:42:38	21.4	13.60	21.40	3.31						
Test # 2:											
26-Oct-12	12:42:38	21.4	13.60	21.40	3.31	0.43	168	1.00	13%	2.18E-05	2.11E-05
26-Oct-12	12:45:26	21.4	14.10	20.90	2.89						
Test # 3:											
26-Oct-12	12:45:26	21.4	14.10	20.90	2.89	0.17	67	1.00	6%	2.42E-05	2.34E-05
26-Oct-12	12:46:33	21.4	14.30	20.70	2.72						
Test # 4:											
26-Oct-12	12:46:33	21.4	14.30	20.70	2.72	0.17	85	1.00	6%	2.03E-05	1.96E-05
26-Oct-12	12:47:58	21.4	14.50	20.50	2.55						

***Average Ksat* (cm/sec):** **2.15E-05**
Calculated Gravel Corrected Average Ksat (cm/sec): NA



ASTM Required Range (+/- 25%)

Ksat (-25%) (cm/s): 1.61E-05

Ksat (+25%) (cm/s): 2.69E-05

Saturated Hydraulic Conductivity
Flexible Wall Falling Head-Rising Tail Method

Job Name: Montgomery & Associates
Job Number: LB12.0210.00
Sample Number: 102DB-145-146 (Horizontal)
Project Name: Rio Algom Lisbon 1350.13
Depth: NA

Remolded or Initial Sample Properties	
Initial Mass (g):	145.25
Diameter (cm):	5.164
Length (cm):	2.788
Area (cm^2):	20.94
Volume (cm^3):	58.39
Dry Density (g/cm^3):	2.40
Dry Density (pcf):	149.72
Water Content (%, g/g):	3.7
Water Content (%, vol):	8.9
Void Ratio (e):	0.10
Porosity (%, vol):	9.5
Saturation (%):	93.9

Post Permeation Sample Properties	
Saturated Mass (g):	147.27
Dry Mass (g):	140.04
Diameter (cm):	5.164
Length (cm):	2.857
*Deformation (%)**:*	2.42
Area (cm^2):	20.94
Volume (cm^3):	59.84
Dry Density (g/cm^3):	2.34
Dry Density (pcf):	146.10
Water Content (%, g/g):	5.2
Water Content (%, vol):	12.1
Void Ratio(e):	0.13
Porosity (%, vol):	11.7
Saturation (%):*	103.4

Test and Sample Conditions

Permeant liquid used: Tap Water
Sample Preparation: ☑ In situ sample, extruded ☐ Remolded Sample
Number of Lifts: NA
Split: NA
Percent Coarse Material (%): NA
Particle Density(g/cm^3): 2.65 ☑ Assumed ☐ Measured
Cell pressure (PSI): 82.0
Influent pressure (PSI): 80.0
Effluent pressure (PSI): 80.0
Panel Used: ☐ A ☐ B ☑ C
Reading: ☐ Annulus ☑ Pipette

		Date/Time
B-Value (% saturation) prior to test*:	1.00	10/25/12 1407
B-Value (% saturation) post to test:	1.00	10/26/12 1300

* Per ASTM D5084 percent saturation is ensured (B-Value ≥ 95%) prior to testing, as post test saturation values may be exaggerated or skewed during depressurizing and sample removal.
**Percent Deformation: based on initial sample length and post permeation sample length.

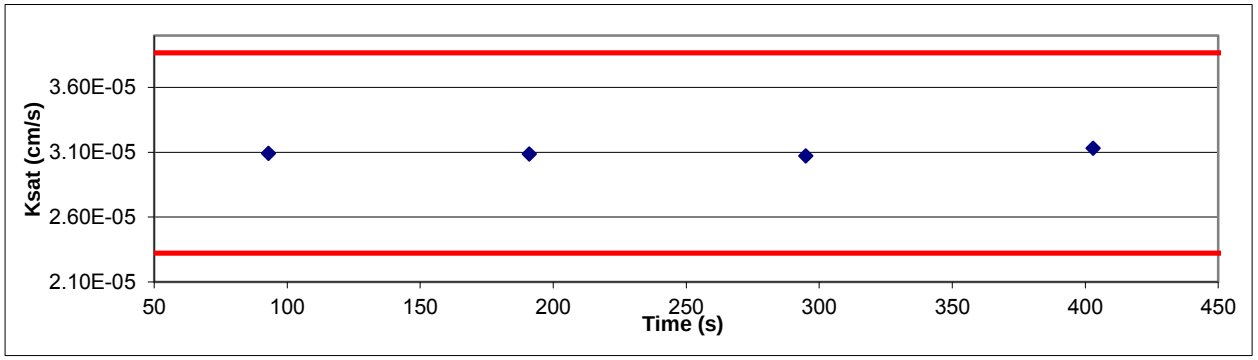
Laboratory analysis by: D. O'Dowd
Data entered by: D. O'Dowd
Checked by: J. Hines

Saturated Hydraulic Conductivity
Flexible Wall Falling Head-Rising Tail Method

Job Name: Montgomery & Associates
Job Number: LB12.0210.00
Sample Number: 102DB-145-146 (Horizontal)
Project Name: Rio Algom Lisbon 1350.13
Depth: NA

Date	Time	Temp (°C)	Influent Pipette Reading	Effluent Pipette Reading	Gradient (ΔH/ΔL)	Average Flow (cm^3)	Elapsed Time (s)	Ratio (outflow to inflow)	Change in Head (Not to exceed 25%)	k_{sat} T°C (cm/s)	k_{sat} Corrected (cm/s)
Test # 1:											
26-Oct-12	11:01:42	21.2	13.40	21.60	3.31	0.17	93	1.00	5%	3.18E-05	3.09E-05
26-Oct-12	11:03:15	21.2	13.60	21.40	3.15						
Test # 2:											
26-Oct-12	11:03:15	21.2	13.60	21.40	3.15	0.17	98	1.00	5%	3.17E-05	3.09E-05
26-Oct-12	11:04:53	21.2	13.80	21.20	2.99						
Test # 3:											
26-Oct-12	11:04:53	21.2	13.80	21.20	2.99	0.17	104	1.00	5%	3.16E-05	3.07E-05
26-Oct-12	11:06:37	21.2	14.00	21.00	2.83						
Test # 4:											
26-Oct-12	11:06:37	21.2	14.00	21.00	2.83	0.17	108	1.00	6%	3.22E-05	3.13E-05
26-Oct-12	11:08:25	21.2	14.20	20.80	2.67						

***Average Ksat* (cm/sec):** **3.09E-05**
Calculated Gravel Corrected Average Ksat (cm/sec): NA



ASTM Required Range (+/- 25%)

Ksat (-25%) (cm/s): 2.32E-05

Ksat (+25%) (cm/s): 3.87E-05

Saturated Hydraulic Conductivity
Flexible Wall Falling Head-Rising Tail Method

Job Name: Montgomery & Associates
Job Number: LB12.0210.00
Sample Number: 102DB-156-156.9 (Vertical)
Project Name: Rio Algom Lisbon 1350.13
Depth: NA

Remolded or Initial Sample Properties	
Initial Mass (g):	308.43
Diameter (cm):	7.487
Length (cm):	2.840
Area (cm^2):	44.03
Volume (cm^3):	125.03
Dry Density (g/cm^3):	2.39
Dry Density (pcf):	148.91
Water Content (%, g/g):	3.4
Water Content (%, vol):	8.1
Void Ratio (e):	0.11
Porosity (%, vol):	10.0
Saturation (%):	81.6

Post Permeation Sample Properties	
Saturated Mass (g):	310.95
Dry Mass (g):	298.24
Diameter (cm):	7.487
Length (cm):	2.842
*Deformation (%)**:*	0.07
Area (cm^2):	44.03
Volume (cm^3):	125.12
Dry Density (g/cm^3):	2.38
Dry Density (pcf):	148.80
Water Content (%, g/g):	4.3
Water Content (%, vol):	10.2
Void Ratio(e):	0.11
Porosity (%, vol):	10.1
Saturation (%):*	101.1

Test and Sample Conditions

Permeant liquid used: Tap Water
Sample Preparation: ☑ In situ sample, extruded ☐ Remolded Sample
Number of Lifts: NA
Split: NA
Percent Coarse Material (%): NA
Particle Density(g/cm^3): 2.65 ☑ Assumed ☐ Measured
Cell pressure (PSI): 84.0
Influent pressure (PSI): 83.0
Effluent pressure (PSI): 80.0
Panel Used: ☐ A ☑ B ☐ C
Reading: ☐ Annulus ☑ Pipette

		Date/Time
B-Value (% saturation) prior to test*:	0.98	10/29/12 828
B-Value (% saturation) post to test:	1.00	10/30/12 1325

* Per ASTM D5084 percent saturation is ensured (B-Value ≥ 95%) prior to testing, as post test saturation values may be exaggerated or skewed during depressurizing and sample removal.
**Percent Deformation: based on initial sample length and post permeation sample length.

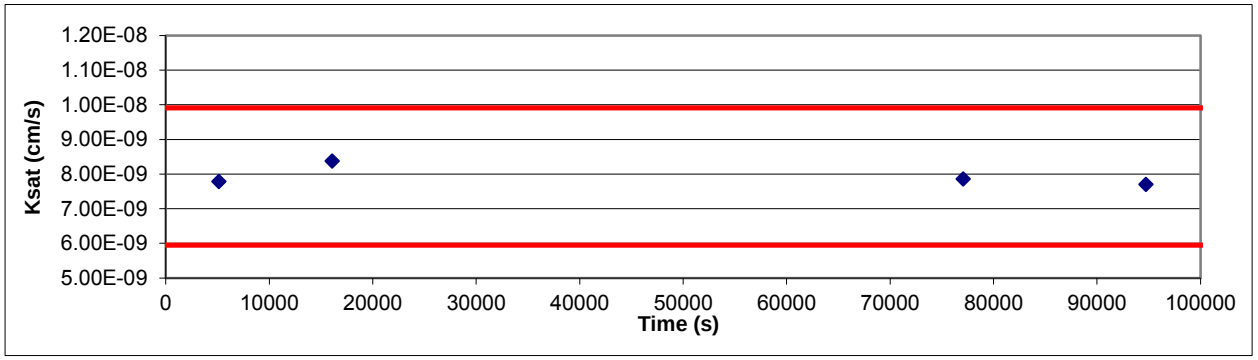
Laboratory analysis by: D. O'Dowd
Data entered by: D. O'Dowd
Checked by: J. Hines

Saturated Hydraulic Conductivity
Flexible Wall Falling Head-Rising Tail Method

Job Name: Montgomery & Associates
Job Number: LB12.0210.00
Sample Number: 102DB-156-156.9 (Vertical)
Project Name: Rio Algom Lisbon 1350.13
Depth: NA

Date	Time	Temp (°C)	Influent Pipette Reading	Effluent Pipette Reading	Gradient (ΔH/ΔL)	Average Flow (cm^3)	Elapsed Time (s)	Ratio (outflow to inflow)	Change in Head (Not to exceed 25%)	k_{sat} T°C (cm/s)	k_{sat} Corrected (cm/s)
Test # 1:											
29-Oct-12	11:02:02	21.3	3.35	22.65	82.09	0.13	5148	1.00	0%	8.07E-09	7.78E-09
29-Oct-12	12:27:50	21.7	3.50	22.50	81.97						
Test # 2:											
29-Oct-12	12:27:50	21.7	3.50	22.50	81.97	0.30	10939	1.00	0%	8.88E-09	8.38E-09
29-Oct-12	15:30:09	23.2	3.85	22.15	81.69						
Test # 3:											
29-Oct-12	15:30:09	23.2	3.85	22.15	81.69	1.56	60981	0.95	2%	8.28E-09	7.86E-09
30-Oct-12	08:26:30	21.2	5.70	20.40	80.22						
Test # 4:											
30-Oct-12	08:26:30	21.2	5.70	20.40	80.22	0.43	17670	1.00	1%	8.03E-09	7.70E-09
30-Oct-12	13:21:00	22.3	6.20	19.90	79.82						

***Average Ksat* (cm/sec):** **7.93E-09**
Calculated Gravel Corrected Average Ksat (cm/sec): NA



ASTM Required Range (+/- 25%)

Ksat (-25%) (cm/s): 5.95E-09

Ksat (+25%) (cm/s): 9.91E-09

Saturated Hydraulic Conductivity
Flexible Wall Falling Head-Rising Tail Method

Job Name: Montgomery & Associates
Job Number: LB12.0210.00
Sample Number: 102DB-156-156.9 (Horizontal)
Project Name: Rio Algom Lisbon 1350.13
Depth: NA

Remolded or Initial Sample Properties	
Initial Mass (g):	145.26
Diameter (cm):	5.217
Length (cm):	2.736
Area (cm^2):	21.38
Volume (cm^3):	58.49
Dry Density (g/cm^3):	2.40
Dry Density (pcf):	149.80
Water Content (%, g/g):	3.5
Water Content (%, vol):	8.4
Void Ratio (e):	0.10
Porosity (%, vol):	9.5
Saturation (%):	89.0

Post Permeation Sample Properties	
Saturated Mass (g):	146.38
Dry Mass (g):	140.34
Diameter (cm):	5.217
Length (cm):	2.736
*Deformation (%)**:*	0.00
Area (cm^2):	21.38
Volume (cm^3):	58.49
Dry Density (g/cm^3):	2.40
Dry Density (pcf):	149.80
Water Content (%, g/g):	4.3
Water Content (%, vol):	10.3
Void Ratio(e):	0.10
Porosity (%, vol):	9.5
Saturation (%):*	109.3

Test and Sample Conditions

Permeant liquid used: Tap Water
Sample Preparation: ☑ In situ sample, extruded ☐ Remolded Sample
Number of Lifts: NA
Split: NA
Percent Coarse Material (%): NA
Particle Density(g/cm^3): 2.65 ☑ Assumed ☐ Measured
Cell pressure (PSI): 84.0
Influent pressure (PSI): 83.0
Effluent pressure (PSI): 80.0
Panel Used: ☑ A ☐ B ☐ C
Reading: ☐ Annulus ☑ Pipette

		Date/Time
B-Value (% saturation) prior to test*:	1.00	10/29/12 825
B-Value (% saturation) post to test:	1.00	10/30/12 1558

* Per ASTM D5084 percent saturation is ensured (B-Value ≥ 95%) prior to testing, as post test saturation values may be exaggerated or skewed during depressurizing and sample removal.
**Percent Deformation: based on initial sample length and post permeation sample length.

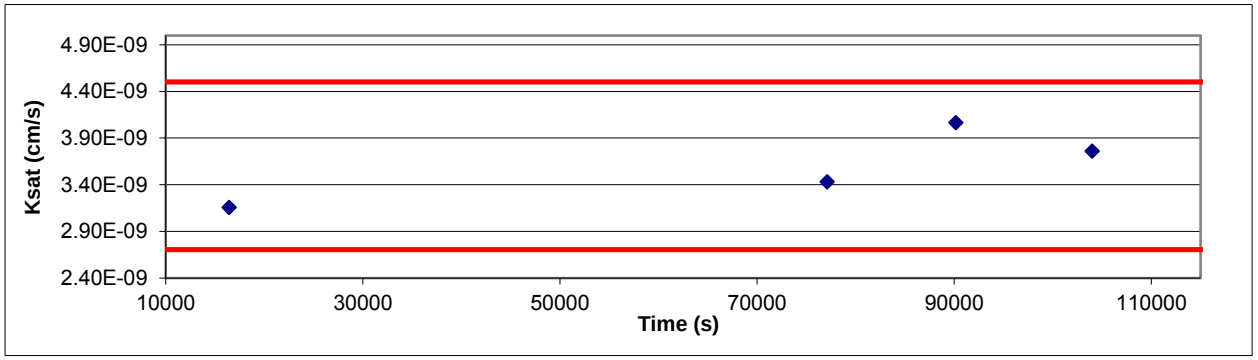
Laboratory analysis by: D. O'Dowd
Data entered by: D. O'Dowd
Checked by: J. Hines

Saturated Hydraulic Conductivity
Flexible Wall Falling Head-Rising Tail Method

Job Name: Montgomery & Associates
Job Number: LB12.0210.00
Sample Number: 102DB-156-156.9 (Horizontal)
Project Name: Rio Algom Lisbon 1350.13
Depth: NA

Date	Time	Temp (°C)	Influent Pipette Reading	Effluent Pipette Reading	Gradient (ΔH/ΔL)	Average Flow (cm^3)	Elapsed Time (s)	Ratio (outflow to inflow)	Change in Head (Not to exceed 25%)	k_{sat} T°C (cm/s)	k_{sat} Corrected (cm/s)
Test # 1:											
29-Oct-12	11:02:34	21.3	3.10	22.90	85.48	0.09	16436	1.00	0%	3.33E-09	3.16E-09
29-Oct-12	15:36:30	23.2	3.20	22.80	85.40						
Test # 2:											
29-Oct-12	15:36:30	23.2	3.20	22.80	85.40	0.35	60705	1.00	0%	3.62E-09	3.43E-09
30-Oct-12	08:28:15	21.2	3.60	22.40	85.06						
Test # 3:											
30-Oct-12	08:28:15	21.2	3.60	22.40	85.06	0.09	13025	1.00	0%	4.22E-09	4.07E-09
30-Oct-12	12:05:20	22.0	3.70	22.30	84.98						
Test # 4:											
30-Oct-12	12:05:20	22.0	3.70	22.30	84.98	0.09	13840	1.00	0%	3.98E-09	3.76E-09
30-Oct-12	15:56:00	22.8	3.80	22.20	84.89						

***Average Ksat* (cm/sec):** **3.60E-09**
Calculated Gravel Corrected Average Ksat (cm/sec): NA



ASTM Required Range (+/- 25%)

Ksat (-25%) (cm/s): 2.70E-09

Ksat (+25%) (cm/s): 4.50E-09

Laboratory Tests and Methods

Tests and Methods

Dry Bulk Density:	ASTM D7263
Moisture Content:	ASTM D7263
Calculated Porosity:	ASTM D7263
Saturated Hydraulic Conductivity:	
Falling Head Rising Tail: (Flexible Wall)	ASTM D5084

Laboratory Report for

Montgomery & Associates

Project: Lisbon, 1350.21

December 12, 2013

Daniel B. Stephens & Associates, Inc.

4400 Alameda Blvd. NE, Suite C • Albuquerque, New Mexico 87113

December 12, 2013

Clare Stielstra
Montgomery & Associates
1550 East Prince Rd.
Tucson, AZ 85719
(520) 881-4912

Re: DBS&A Laboratory Report for the Montgomery & Associates Lisbon 1350.21 Project

Dear Ms. Stielstra:

Enclosed is the report for the Montgomery & Associates Lisbon 1350.21 Project samples. Please review this report and provide any comments as samples will be held for a maximum of 30 days. After 30 days samples will be returned or disposed of in an appropriate manner.

All testing results were evaluated subjectively for consistency and reasonableness, and the results appear to be reasonably representative of the material tested. However, DBS&A does not assume any responsibility for interpretations or analyses based on the data enclosed, nor can we guarantee that these data are fully representative of the undisturbed materials at the field site. We recommend that careful evaluation of these laboratory results be made for your particular application.

The testing utilized to generate the enclosed report employs methods that are standard for the industry. The results do not constitute a professional opinion by DBS&A, nor can the results affect any professional or expert opinions rendered with respect thereto by DBS&A. You have acknowledged that all the testing undertaken by us, and the report provided, constitutes mere test results using standardized methods, and cannot be used to disqualify DBS&A from rendering any professional or expert opinion, having waived any claim of conflict of interest by DBS&A.

We are pleased to provide this service to Montgomery & Associates and look forward to future laboratory testing on other projects. If you have any questions about the enclosed data, please do not hesitate to call.

Sincerely,

DANIEL B. STEPHENS & ASSOCIATES, INC.
SOIL TESTING & RESEARCH LABORATORY

Joleen Hines

Joleen Hines
Laboratory Supervising Manager

Enclosure

Daniel B. Stephens & Associates, Inc.
Soil Testing & Research Laboratory
4400 Alameda Blvd. NE, Suite C
Albuquerque, NM 87113
505-889-7752
FAX 505-889-0258

Summaries

Summary of Tests Performed

Laboratory Sample Number	Initial Soil Properties[1]			Saturated Hydraulic Conductivity[2]			Moisture Characteristics[3]								Particle Size[4]			Specific Gravity[5]		Air Perm-eability	Atterberg Limits	Proctor Compaction
	G	VM	VD	CH	FH	FW	HC	PP	FP	DPP	RH	EP	WHC	K_{unsat}	DS	WS	H	F	C			
MW-109 (138 - 138.5)	X	X				X																
MW-109 (147 - 147.5)	X	X				X																
MW-109 (158 - 158.7)	X	X				X																
MW-117 (95.5 - 96)	X	X				X																
MW-117 (118 - 118.5)	X	X				X																
MW-117 (169 - 169.5)	X	X				X																
MW-117 (211 - 211.6)	X	X				X																
MW-118 (46.5 - 47)	X	X				X																
MW-118 (76.5 - 75)	X	X				X																

[1] G = Gravimetric Moisture Content, VM = Volume Measurement Method, VD = Volume Displacement Method

[2] CH = Constant Head Rigid Wall, FH = Falling Head Rigid Wall, FW = Falling Head Rising Tail Flexible Wall

[3] HC = Hanging Column, PP = Pressure Plate, FP = Filter Paper, DPP = Dew Point Potentiometer, RH = Relative Humidity Box, EP = Effective Porosity, WHC = Water Holding Capacity, Kunsat = Calculated Unsaturated Hydraulic Conductivity

[4] DS = Dry Sieve, WS = Wet Sieve, H = Hydrometer

[5] F = Fine (<4.75mm), C = Coarse (>4.75mm)

Notes

Sample Receipt:
Nine solid 3.25” to 3.5” diameter x 5.5” to 8” length rock cores were received on November 8, 2013, each wrapped in bubble wrap, in a well packed cooler.

Testing Notes:
Horizontal sub-samples were obtained for initial properties and saturated hydraulic conductivity testing by first cutting a section of the sample horizontally, and then trimming the diameter to ~3”. The results of this test were initially reported on November 24, 2013. Subsequently, vertical sub-samples were obtained from the original cores for initial properties and saturated hydraulic conductivity testing by first cutting a section of the sample vertically and then trimming the diameter to ~2”. The results of both the horizontal and vertical sub-sample testing are included in this report. A 3-D scanner was used to measure the volume of each sub-sample pre and post saturated hydraulic conductivity testing.

Total porosity calculations are based on the use of assumed specific gravity values. The assumed specific gravity values were estimated based on the saturated “B-value” determined before and after each saturated hydraulic conductivity test. The assumed specific gravity values used are as follows:

Sample Number	Assumed Specific Gravity
MW-109 (138 - 138.5)	2.60
MW-109 (147 - 147.5)	2.62
MW-109 (158 - 158.7)	2.74
MW-117 (95.5 - 96)	2.74
MW-117 (118 - 118.5)	2.62
MW-117 (169 - 169.5)	2.65
MW-117 (211 - 211.6)	2.70
MW-118 (46.5 - 47)	2.64
MW-118 (76.5 - 75)	2.70

Summary of Initial Moisture Content, Dry Bulk Density Wet Bulk Density and Calculated Porosity

Sample Number	Moisture Content				Dry Bulk Density (g/cm^3)	Wet Bulk Density (g/cm^3)	Calculated Porosity (%)
	As Received		Remolded				
	Gravimetric (%, g/g)	Volumetric (%, cm^3/cm^3)	Gravimetric (%, g/g)	Volumetric (%, cm^3/cm^3)			
MW-109 (138 - 138.5) Vertical	1.0	2.3	---	---	2.37	2.40	8.7
MW-109 (138 - 138.5) Horizontal	1.1	2.6	---	---	2.33	2.36	10.2
MW-109 (147 - 147.5) Vertical	2.0	4.6	---	---	2.33	2.38	10.9
MW-109 (147 - 147.5) Horizontal	1.6	3.5	---	---	2.21	2.25	15.6
MW-109 (158 - 158.7) Vertical	4.9	11.5	---	---	2.33	2.44	15.0
MW-109 (158 - 158.7) Horizontal	4.8	11.5	---	---	2.40	2.51	12.5
MW-117 (95.5 - 96) Vertical	7.8	17.5	---	---	2.25	2.42	18.0
MW-117 (95.5 - 96) Horizontal	7.7	17.2	---	---	2.23	2.40	18.7
MW-117 (118 - 118.5) Vertical	10.7	21.3	---	---	1.99	2.20	24.1
MW-117 (118 - 118.5) Horizontal	10.4	20.8	---	---	2.00	2.21	23.7
MW-117 (169 - 169.5) Vertical	8.1	16.5	---	---	2.03	2.20	23.2
MW-117 (169 - 169.5) Horizontal	5.2	10.4	---	---	2.02	2.13	23.7

NA = Not analyzed

--- = This sample was not remolded

Summary of Initial Moisture Content, Dry Bulk Density Wet Bulk Density and Calculated Porosity (Continued)

Sample Number	Moisture Content				Dry Bulk Density (g/cm^3)	Wet Bulk Density (g/cm^3)	Calculated Porosity (%)
	As Received		Remolded				
	Gravimetric (%, g/g)	Volumetric (%, cm^3/cm^3)	Gravimetric (%, g/g)	Volumetric (%, cm^3/cm^3)			
MW-117 (211 - 211.6) Vertical	4.7	10.9	---	---	2.33	2.43	13.9
MW-117 (211 - 211.6) Horizontal	4.9	11.1	---	---	2.29	2.40	15.2
MW-118 (46.5 - 47) Vertical	4.2	9.2	---	---	2.20	2.29	16.7
MW-118 (46.5 - 47) Horizontal	3.4	7.9	---	---	2.34	2.42	11.5
MW-118 (76.5 - 75) Vertical	5.7	13.2	---	---	2.31	2.44	14.3
MW-118 (76.5 - 75) Horizontal	4.5	10.7	---	---	2.36	2.47	12.4

NA = Not analyzed

--- = This sample was not remolded

Summary of Saturated Hydraulic Conductivity

Sample Number	K_{sat} (cm/sec)	Oversize Corrected K_{sat} (cm/sec)	Method of Analysis: Constant Head Flexible Wall	Method of Analysis: Falling Head Flexible Wall
MW-109 (138-138.5) Vertical	6.36E-08	NA		X
MW-109 (138-138.5) Horizontal	1.35E-06	NA		X
MW-109 (147 - 147.5) Vertical	2.43E-07	NA		X
MW-109 (147 - 147.5) Horizontal	6.93E-04	NA		X
MW-109 (158-158.7) Vertical	6.94E-06	NA		X
MW-109 (158-158.7) Horizontal	7.98E-07	NA		X
MW-117 (95.5-96) Vertical	1.88E-05	NA		X
MW-117 (95.5-96) Horizontal	3.82E-04	NA		X
MW-117 (118 - 118.5) Vertical	1.10E-04	NA		X
MW-117 (118 - 118.5) Horizontal	1.19E-04	NA		X
MW-117 (169 - 169.5) Vertical	1.12E-04	NA		X
MW-117 (169 - 169.5) Horizontal	6.83E-04	NA		X
MW-117 (211-211.6) Vertical	3.58E-10	NA		X
MW-117 (211-211.6) Horizontal	9.60E-09	NA		X
MW-118 (46.5-47) Vertical	7.20E-06	NA		X
MW-118 (46.5-47) Horizontal	1.53E-06	NA		X
MW-118 (75-76.5) Vertical	5.96E-08	NA		X
MW-118 (75-76.5) Horizontal	2.28E-07	NA		X

--- = Oversize correction is unnecessary since coarse fraction < 5% of composite mass
NR = Not requested
NA = Not applicable

Laboratory Data and Graphical Plots

Initial Properties

Summary of Initial Moisture Content, Dry Bulk Density Wet Bulk Density and Calculated Porosity

Sample Number	Moisture Content				Dry Bulk Density (g/cm^3)	Wet Bulk Density (g/cm^3)	Calculated Porosity (%)
	As Received		Remolded				
	Gravimetric (%, g/g)	Volumetric (%, cm^3/cm^3)	Gravimetric (%, g/g)	Volumetric (%, cm^3/cm^3)			
MW-109 (138 - 138.5) Vertical	1.0	2.3	---	---	2.37	2.40	8.7
MW-109 (138 - 138.5) Horizontal	1.1	2.6	---	---	2.33	2.36	10.2
MW-109 (147 - 147.5) Vertical	2.0	4.6	---	---	2.33	2.38	10.9
MW-109 (147 - 147.5) Horizontal	1.6	3.5	---	---	2.21	2.25	15.6
MW-109 (158 - 158.7) Vertical	4.9	11.5	---	---	2.33	2.44	15.0
MW-109 (158 - 158.7) Horizontal	4.8	11.5	---	---	2.40	2.51	12.5
MW-117 (95.5 - 96) Vertical	7.8	17.5	---	---	2.25	2.42	18.0
MW-117 (95.5 - 96) Horizontal	7.7	17.2	---	---	2.23	2.40	18.7
MW-117 (118 - 118.5) Vertical	10.7	21.3	---	---	1.99	2.20	24.1
MW-117 (118 - 118.5) Horizontal	10.4	20.8	---	---	2.00	2.21	23.7
MW-117 (169 - 169.5) Vertical	8.1	16.5	---	---	2.03	2.20	23.2
MW-117 (169 - 169.5) Horizontal	5.2	10.4	---	---	2.02	2.13	23.7

NA = Not analyzed

--- = This sample was not remolded

Summary of Initial Moisture Content, Dry Bulk Density Wet Bulk Density and Calculated Porosity (Continued)

Sample Number	Moisture Content				Dry Bulk Density (g/cm^3)	Wet Bulk Density (g/cm^3)	Calculated Porosity (%)
	As Received		Remolded				
	Gravimetric (%, g/g)	Volumetric (%, cm^3/cm^3)	Gravimetric (%, g/g)	Volumetric (%, cm^3/cm^3)			
MW-117 (211 - 211.6) Vertical	4.7	10.9	---	---	2.33	2.43	13.9
MW-117 (211 - 211.6) Horizontal	4.9	11.1	---	---	2.29	2.40	15.2
MW-118 (46.5 - 47) Vertical	4.2	9.2	---	---	2.20	2.29	16.7
MW-118 (46.5 - 47) Horizontal	3.4	7.9	---	---	2.34	2.42	11.5
MW-118 (76.5 - 75) Vertical	5.7	13.2	---	---	2.31	2.44	14.3
MW-118 (76.5 - 75) Horizontal	4.5	10.7	---	---	2.36	2.47	12.4

NA = Not analyzed

--- = This sample was not remolded

Data for Initial Moisture Content, Bulk Density, Porosity, and Percent Saturation

Job Name: Montgomery & Associates
Job Number: LB13.0271.00
Sample Number: MW-109 (138 - 138.5) Vertical
Project: Lisbon, 1350.21
Depth: 138-138.5

	As Received	Remolded
Test Date:	11-Nov-13	---
Field weight of sample* (g)*:*	302.94	
Tare weight, ring (g)*:*	0.00	
Tare weight, pan/plate (g)*:*	0.00	
Tare weight, other (g)*:*	0.00	
Dry weight of sample (g)*:*	299.99	
Sample volume (cm^3)*:*	126.38	
Assumed particle density (g/cm^3)*:*	2.60	
Gravimetric Moisture Content (% g/g)*:*	1.0	
Volumetric Moisture Content (% vol)*:*	2.3	
Dry bulk density (g/cm^3)*:*	2.37	
Wet bulk density (g/cm^3)*:*	2.40	
Calculated Porosity (% vol)*:*	8.7	
Percent Saturation:	26.8	

Laboratory analysis by: D. O' Dowd
Data entered by: J. Hines
Checked by: J. Hines

Comments:

* Weight including tares
NA = Not analyzed
--- = This sample was not remolded

Data for Initial Moisture Content, Bulk Density, Porosity, and Percent Saturation

Job Name: Montgomery & Associates
Job Number: LB13.0271.00
Sample Number: MW-109 (138 - 138.5) Horizontal
Project: Lisbon, 1350.21
Depth: 138-138.5

	As Received	Remolded
Test Date:	27-Nov-13	---
Field weight of sample* (g)*:*	181.44	
Tare weight, ring (g)*:*	0.00	
Tare weight, pan/plate (g)*:*	0.00	
Tare weight, other (g)*:*	0.00	
Dry weight of sample (g)*:*	179.47	
Sample volume (cm^3)*:*	76.89	
Assumed particle density (g/cm^3)*:*	2.60	

Gravimetric Moisture Content (% g/g)*:*	1.1
Volumetric Moisture Content (% vol)*:*	2.6
Dry bulk density (g/cm^3)*:*	2.33
Wet bulk density (g/cm^3)*:*	2.36
Calculated Porosity (% vol)*:*	10.2
Percent Saturation:	25.1

Laboratory analysis by: D. O' Dowd
Data entered by: J. Hines
Checked by: J. Hines

Comments:

* Weight including tares
NA = Not analyzed
--- = This sample was not remolded

Data for Initial Moisture Content, Bulk Density, Porosity, and Percent Saturation

Job Name: Montgomery & Associates
Job Number: LB13.0271.00
Sample Number: MW-109 (147 - 147.5) Vertical
Project: Lisbon, 1350.21
Depth: 147-147.5

	As Received	Remolded
Test Date:	11-Nov-13	---
Field weight of sample* (g)*:*	431.04	
Tare weight, ring (g)*:*	0.00	
Tare weight, pan/plate (g)*:*	0.00	
Tare weight, other (g)*:*	0.00	
Dry weight of sample (g)*:*	422.64	
Sample volume (cm^3)*:*	181.08	
Assumed particle density (g/cm^3)*:*	2.62	
Gravimetric Moisture Content (% g/g)*:*	2.0	
Volumetric Moisture Content (% vol)*:*	4.6	
Dry bulk density (g/cm^3)*:*	2.33	
Wet bulk density (g/cm^3)*:*	2.38	
Calculated Porosity (% vol)*:*	10.9	
Percent Saturation:	42.5	

Laboratory analysis by: D. O' Dowd
Data entered by: J. Hines
Checked by: J. Hines

Comments:

* Weight including tares
NA = Not analyzed
--- = This sample was not remolded

Data for Initial Moisture Content, Bulk Density, Porosity, and Percent Saturation

Job Name: Montgomery & Associates
Job Number: LB13.0271.00
Sample Number: MW-109 (147 - 147.5) Horizontal
Project: Lisbon, 1350.21
Depth: 147-147.5

	As Received	Remolded
Test Date:	27-Nov-13	---
Field weight of sample* (g)*:*	183.47	
Tare weight, ring (g)*:*	0.00	
Tare weight, pan/plate (g)*:*	0.00	
Tare weight, other (g)*:*	0.00	
Dry weight of sample (g)*:*	180.60	
Sample volume (cm^3)*:*	81.71	
Assumed particle density (g/cm^3)*:*	2.62	
Gravimetric Moisture Content (% g/g)*:*	1.6	
Volumetric Moisture Content (% vol)*:*	3.5	
Dry bulk density (g/cm^3)*:*	2.21	
Wet bulk density (g/cm^3)*:*	2.25	
Calculated Porosity (% vol)*:*	15.6	
Percent Saturation:	22.5	

Laboratory analysis by: D. O' Dowd
Data entered by: J. Hines
Checked by: J. Hines

Comments:

* Weight including tares
NA = Not analyzed
--- = This sample was not remolded

Data for Initial Moisture Content, Bulk Density, Porosity, and Percent Saturation

Job Name: Montgomery & Associates
Job Number: LB13.0271.00
Sample Number: MW-109 (158 - 158.7) Vertical
Project: Lisbon, 1350.21
Depth: 158-158.7

	As Received	Remolded
Test Date:	11-Nov-13	---
Field weight of sample* (g)*:*	343.19	
Tare weight, ring (g)*:*	0.00	
Tare weight, pan/plate (g)*:*	0.00	
Tare weight, other (g)*:*	0.00	
Dry weight of sample (g)*:*	327.06	
Sample volume (cm^3)*:*	140.47	
Assumed particle density (g/cm^3)*:*	2.74	
Gravimetric Moisture Content (% g/g)*:*	4.9	
Volumetric Moisture Content (% vol)*:*	11.5	
Dry bulk density (g/cm^3)*:*	2.33	
Wet bulk density (g/cm^3)*:*	2.44	
Calculated Porosity (% vol)*:*	15.0	
Percent Saturation:	76.4	

Laboratory analysis by: D. O' Dowd
Data entered by: J. Hines
Checked by: J. Hines

Comments:

* Weight including tares
NA = Not analyzed
--- = This sample was not remolded

Data for Initial Moisture Content, Bulk Density, Porosity, and Percent Saturation

Job Name: Montgomery & Associates
Job Number: LB13.0271.00
Sample Number: MW-109 (158 - 158.7) Horizontal
Project: Lisbon, 1350.21
Depth: 158-158.7

	As Received	Remolded
Test Date:	27-Nov-13	---
Field weight of sample* (g)*:*	187.74	
Tare weight, ring (g)*:*	0.00	
Tare weight, pan/plate (g)*:*	0.00	
Tare weight, other (g)*:*	0.00	
Dry weight of sample (g)*:*	179.12	
Sample volume (cm^3)*:*	74.73	
Assumed particle density (g/cm^3)*:*	2.74	

Gravimetric Moisture Content (% g/g)*:*	4.8
Volumetric Moisture Content (% vol)*:*	11.5
Dry bulk density (g/cm^3)*:*	2.40
Wet bulk density (g/cm^3)*:*	2.51
Calculated Porosity (% vol)*:*	12.5
Percent Saturation:	92.1

Laboratory analysis by: D. O' Dowd
Data entered by: J. Hines
Checked by: J. Hines

Comments:

* Weight including tares
NA = Not analyzed
--- = This sample was not remolded

Data for Initial Moisture Content, Bulk Density, Porosity, and Percent Saturation

Job Name: Montgomery & Associates
Job Number: LB13.0271.00
Sample Number: MW-117 (95.5 - 96) Vertical
Project: Lisbon, 1350.21
Depth: 95.5-96

	As Received	Remolded
Test Date:	11-Nov-13	---
Field weight of sample* (g)*:*	301.21	
Tare weight, ring (g)*:*	0.00	
Tare weight, pan/plate (g)*:*	0.00	
Tare weight, other (g)*:*	0.00	
Dry weight of sample (g)*:*	279.40	
Sample volume (cm^3)*:*	124.42	
Assumed particle density (g/cm^3)*:*	2.74	
Gravimetric Moisture Content (% g/g)*:*	7.8	
Volumetric Moisture Content (% vol)*:*	17.5	
Dry bulk density (g/cm^3)*:*	2.25	
Wet bulk density (g/cm^3)*:*	2.42	
Calculated Porosity (% vol)*:*	18.0	
Percent Saturation:	97.2	

Laboratory analysis by: D. O' Dowd
Data entered by: J. Hines
Checked by: J. Hines

Comments:

* Weight including tares
NA = Not analyzed
--- = This sample was not remolded

Data for Initial Moisture Content, Bulk Density, Porosity, and Percent Saturation

Job Name: Montgomery & Associates
Job Number: LB13.0271.00
Sample Number: MW-117 (95.5 - 96) Horizontal
Project: Lisbon, 1350.21
Depth: 95.5-96

	As Received	Remolded
Test Date:	27-Nov-13	---
Field weight of sample* (g)*:*	233.80	
Tare weight, ring (g)*:*	0.00	
Tare weight, pan/plate (g)*:*	0.00	
Tare weight, other (g)*:*	0.00	
Dry weight of sample (g)*:*	217.02	
Sample volume (cm^3)*:*	97.38	
Assumed particle density (g/cm^3)*:*	2.74	

Gravimetric Moisture Content (% g/g)*:*	7.7
Volumetric Moisture Content (% vol)*:*	17.2
Dry bulk density (g/cm^3)*:*	2.23
Wet bulk density (g/cm^3)*:*	2.40
Calculated Porosity (% vol)*:*	18.7
Percent Saturation:	92.3

Laboratory analysis by: D. O' Dowd
Data entered by: J. Hines
Checked by: J. Hines

Comments:

* Weight including tares
NA = Not analyzed
--- = This sample was not remolded

Data for Initial Moisture Content, Bulk Density, Porosity, and Percent Saturation

Job Name: Montgomery & Associates
Job Number: LB13.0271.00
Sample Number: MW-117 (118 - 118.5) Vertical
Project: Lisbon, 1350.21
Depth: 118-118.5

	As Received	Remolded
Test Date:	11-Nov-13	---
Field weight of sample* (g)*:*	316.80	
Tare weight, ring (g)*:*	0.00	
Tare weight, pan/plate (g)*:*	0.00	
Tare weight, other (g)*:*	0.00	
Dry weight of sample (g)*:*	286.18	
Sample volume (cm^3)*:*	143.98	
Assumed particle density (g/cm^3)*:*	2.62	
Gravimetric Moisture Content (% g/g)*:*	10.7	
Volumetric Moisture Content (% vol)*:*	21.3	
Dry bulk density (g/cm^3)*:*	1.99	
Wet bulk density (g/cm^3)*:*	2.20	
Calculated Porosity (% vol)*:*	24.1	
Percent Saturation:	88.1	

Laboratory analysis by: D. O' Dowd
Data entered by: J. Hines
Checked by: J. Hines

Comments:

* Weight including tares
NA = Not analyzed
--- = This sample was not remolded

Data for Initial Moisture Content, Bulk Density, Porosity, and Percent Saturation

Job Name: Montgomery & Associates
Job Number: LB13.0271.00
Sample Number: MW-117 (118 - 118.5) Horizontal
Project: Lisbon, 1350.21
Depth: 118-118.5

	As Received	Remolded
Test Date:	27-Nov-13	---
Field weight of sample* (g)*:*	230.10	
Tare weight, ring (g)*:*	0.00	
Tare weight, pan/plate (g)*:*	0.00	
Tare weight, other (g)*:*	0.00	
Dry weight of sample (g)*:*	208.43	
Sample volume (cm^3)*:*	104.21	
Assumed particle density (g/cm^3)*:*	2.62	
Gravimetric Moisture Content (% g/g)*:*	10.4	
Volumetric Moisture Content (% vol)*:*	20.8	
Dry bulk density (g/cm^3)*:*	2.00	
Wet bulk density (g/cm^3)*:*	2.21	
Calculated Porosity (% vol)*:*	23.7	
Percent Saturation:	87.9	

Laboratory analysis by: D. O' Dowd
Data entered by: J. Hines
Checked by: J. Hines

Comments:

* Weight including tares
NA = Not analyzed
--- = This sample was not remolded

Data for Initial Moisture Content, Bulk Density, Porosity, and Percent Saturation

Job Name: Montgomery & Associates
Job Number: LB13.0271.00
Sample Number: MW-117 (169 - 169.5) Vertical
Project: Lisbon, 1350.21
Depth: 169-169.5

	As Received	Remolded
Test Date:	11-Nov-13	---
Field weight of sample* (g)*:*	383.90	
Tare weight, ring (g)*:*	0.00	
Tare weight, pan/plate (g)*:*	0.00	
Tare weight, other (g)*:*	0.00	
Dry weight of sample (g)*:*	355.15	
Sample volume (cm^3)*:*	174.61	
Assumed particle density (g/cm^3)*:*	2.65	
Gravimetric Moisture Content (% g/g)*:*	8.1	
Volumetric Moisture Content (% vol)*:*	16.5	
Dry bulk density (g/cm^3)*:*	2.03	
Wet bulk density (g/cm^3)*:*	2.20	
Calculated Porosity (% vol)*:*	23.2	
Percent Saturation:	70.8	

Laboratory analysis by: D. O' Dowd
Data entered by: J. Hines
Checked by: J. Hines

Comments:

* Weight including tares
NA = Not analyzed
--- = This sample was not remolded

Data for Initial Moisture Content, Bulk Density, Porosity, and Percent Saturation

Job Name: Montgomery & Associates
Job Number: LB13.0271.00
Sample Number: MW-117 (169 - 169.5) Horizontal
Project: Lisbon, 1350.21
Depth: 169-169.5

	As Received	Remolded
Test Date:	3-Dec-13	---
Field weight of sample* (g)*:*	278.67	
Tare weight, ring (g)*:*	0.00	
Tare weight, pan/plate (g)*:*	0.00	
Tare weight, other (g)*:*	0.00	
Dry weight of sample (g)*:*	265.00	
Sample volume (cm^3)*:*	131.04	
Assumed particle density (g/cm^3)*:*	2.65	

Gravimetric Moisture Content (% g/g)*:*	5.2
Volumetric Moisture Content (% vol)*:*	10.4
Dry bulk density (g/cm^3)*:*	2.02
Wet bulk density (g/cm^3)*:*	2.13
Calculated Porosity (% vol)*:*	23.7
Percent Saturation:	44.0

Laboratory analysis by: D. O' Dowd
Data entered by: J. Hines
Checked by: J. Hines

Comments:

* Weight including tares
NA = Not analyzed
--- = This sample was not remolded

Data for Initial Moisture Content, Bulk Density, Porosity, and Percent Saturation

Job Name: Montgomery & Associates
Job Number: LB13.0271.00
Sample Number: MW-117 (211 - 211.6) Vertical
Project: Lisbon, 1350.21
Depth: 211-211.6

	As Received	Remolded
Test Date:	11-Nov-13	---
Field weight of sample* (g)*:*	338.84	
Tare weight, ring (g)*:*	0.00	
Tare weight, pan/plate (g)*:*	0.00	
Tare weight, other (g)*:*	0.00	
Dry weight of sample (g)*:*	323.64	
Sample volume (cm^3)*:*	139.16	
Assumed particle density (g/cm^3)*:*	2.70	
Gravimetric Moisture Content (% g/g)*:*	4.7	
Volumetric Moisture Content (% vol)*:*	10.9	
Dry bulk density (g/cm^3)*:*	2.33	
Wet bulk density (g/cm^3)*:*	2.43	
Calculated Porosity (% vol)*:*	13.9	
Percent Saturation:	78.8	

Laboratory analysis by: D. O' Dowd
Data entered by: J. Hines
Checked by: J. Hines

Comments:

* Weight including tares
NA = Not analyzed
--- = This sample was not remolded

Data for Initial Moisture Content, Bulk Density, Porosity, and Percent Saturation

Job Name: Montgomery & Associates
Job Number: LB13.0271.00
Sample Number: MW-117 (211 - 211.6) Horizontal
Project: Lisbon, 1350.21
Depth: 211-211.6

	As Received	Remolded
Test Date:	27-Nov-13	---
Field weight of sample* (g)*:*	239.51	
Tare weight, ring (g)*:*	0.00	
Tare weight, pan/plate (g)*:*	0.00	
Tare weight, other (g)*:*	0.00	
Dry weight of sample (g)*:*	228.39	
Sample volume (cm^3)*:*	99.80	
Assumed particle density (g/cm^3)*:*	2.70	
Gravimetric Moisture Content (% g/g)*:*	4.9	
Volumetric Moisture Content (% vol)*:*	11.1	
Dry bulk density (g/cm^3)*:*	2.29	
Wet bulk density (g/cm^3)*:*	2.40	
Calculated Porosity (% vol)*:*	15.2	
Percent Saturation:	73.1	

Laboratory analysis by: D. O' Dowd
Data entered by: J. Hines
Checked by: J. Hines

Comments:

* Weight including tares
NA = Not analyzed
--- = This sample was not remolded

Data for Initial Moisture Content, Bulk Density, Porosity, and Percent Saturation

Job Name: Montgomery & Associates
Job Number: LB13.0271.00
Sample Number: MW-118 (46.5 - 47) Vertical
Project: Lisbon, 1350.21
Depth: 46.5-47

	As Received	Remolded
Test Date:	11-Nov-13	---
Field weight of sample* (g)*:*	287.42	
Tare weight, ring (g)*:*	0.00	
Tare weight, pan/plate (g)*:*	0.00	
Tare weight, other (g)*:*	0.00	
Dry weight of sample (g)*:*	275.86	
Sample volume (cm^3)*:*	125.39	
Assumed particle density (g/cm^3)*:*	2.64	
Gravimetric Moisture Content (% g/g)*:*	4.2	
Volumetric Moisture Content (% vol)*:*	9.2	
Dry bulk density (g/cm^3)*:*	2.20	
Wet bulk density (g/cm^3)*:*	2.29	
Calculated Porosity (% vol)*:*	16.7	
Percent Saturation:	55.3	

Laboratory analysis by: D. O' Dowd
Data entered by: J. Hines
Checked by: J. Hines

Comments:

* Weight including tares
NA = Not analyzed
--- = This sample was not remolded

Data for Initial Moisture Content, Bulk Density, Porosity, and Percent Saturation

Job Name: Montgomery & Associates
Job Number: LB13.0271.00
Sample Number: MW-118 (46.5 - 47) Horizontal
Project: Lisbon, 1350.21
Depth: 46.5-47

	As Received	Remolded
Test Date:	27-Nov-13	---
Field weight of sample* (g)*:*	199.74	
Tare weight, ring (g)*:*	0.00	
Tare weight, pan/plate (g)*:*	0.00	
Tare weight, other (g)*:*	0.00	
Dry weight of sample (g)*:*	193.19	
Sample volume (cm^3)*:*	82.65	
Assumed particle density (g/cm^3)*:*	2.64	
Gravimetric Moisture Content (% g/g)*:*	3.4	
Volumetric Moisture Content (% vol)*:*	7.9	
Dry bulk density (g/cm^3)*:*	2.34	
Wet bulk density (g/cm^3)*:*	2.42	
Calculated Porosity (% vol)*:*	11.5	
Percent Saturation:	69.1	

Laboratory analysis by: D. O' Dowd
Data entered by: J. Hines
Checked by: J. Hines

Comments:

* Weight including tares
NA = Not analyzed
--- = This sample was not remolded

Data for Initial Moisture Content, Bulk Density, Porosity, and Percent Saturation

Job Name: Montgomery & Associates
Job Number: LB13.0271.00
Sample Number: MW-118 (76.5 - 75) Vertical
Project: Lisbon, 1350.21
Depth: 76.5-75

	As Received	Remolded
Test Date:	11-Nov-13	---
Field weight of sample* (g)*:*	353.18	
Tare weight, ring (g)*:*	0.00	
Tare weight, pan/plate (g)*:*	0.00	
Tare weight, other (g)*:*	0.00	
Dry weight of sample (g)*:*	334.12	
Sample volume (cm^3)*:*	144.47	
Assumed particle density (g/cm^3)*:*	2.70	

Gravimetric Moisture Content (% g/g)*:*	5.7
Volumetric Moisture Content (% vol)*:*	13.2
Dry bulk density (g/cm^3)*:*	2.31
Wet bulk density (g/cm^3)*:*	2.44
Calculated Porosity (% vol)*:*	14.3
Percent Saturation:	92.0

Laboratory analysis by: D. O' Dowd
Data entered by: J. Hines
Checked by: J. Hines

Comments:

* Weight including tares
NA = Not analyzed
--- = This sample was not remolded

Data for Initial Moisture Content, Bulk Density, Porosity, and Percent Saturation

Job Name: Montgomery & Associates
Job Number: LB13.0271.00
Sample Number: MW-118 (76.5 - 75) Horizontal
Project: Lisbon, 1350.21
Depth: 76.5-75

	As Received	Remolded
Test Date:	27-Nov-13	---
Field weight of sample* (g)*:*	137.98	
Tare weight, ring (g)*:*	0.00	
Tare weight, pan/plate (g)*:*	0.00	
Tare weight, other (g)*:*	0.00	
Dry weight of sample (g)*:*	132.00	
Sample volume (cm^3)*:*	55.82	
Assumed particle density (g/cm^3)*:*	2.70	

Gravimetric Moisture Content (% g/g)*:*	4.5
Volumetric Moisture Content (% vol)*:*	10.7
Dry bulk density (g/cm^3)*:*	2.36
Wet bulk density (g/cm^3)*:*	2.47
Calculated Porosity (% vol)*:*	12.4
Percent Saturation:	86.2

Laboratory analysis by: D. O' Dowd
Data entered by: J. Hines
Checked by: J. Hines

Comments:

* Weight including tares
NA = Not analyzed
--- = This sample was not remolded

Saturated Hydraulic Conductivity

Summary of Saturated Hydraulic Conductivity

Sample Number	K_{sat} (cm/sec)	Oversize Corrected K_{sat} (cm/sec)	Method of Analysis: Constant Head Flexible Wall	Method of Analysis: Falling Head Flexible Wall
MW-109 (138-138.5) Vertical	6.36E-08	NA		X
MW-109 (138-138.5) Horizontal	1.35E-06	NA		X
MW-109 (147 - 147.5) Vertical	2.43E-07	NA		X
MW-109 (147 - 147.5) Horizontal	6.93E-04	NA		X
MW-109 (158-158.7) Vertical	6.94E-06	NA		X
MW-109 (158-158.7) Horizontal	7.98E-07	NA		X
MW-117 (95.5-96) Vertical	1.88E-05	NA		X
MW-117 (95.5-96) Horizontal	3.82E-04	NA		X
MW-117 (118 - 118.5) Vertical	1.10E-04	NA		X
MW-117 (118 - 118.5) Horizontal	1.19E-04	NA		X
MW-117 (169 - 169.5) Vertical	1.12E-04	NA		X
MW-117 (169 - 169.5) Horizontal	6.83E-04	NA		X
MW-117 (211-211.6) Vertical	3.58E-10	NA		X
MW-117 (211-211.6) Horizontal	9.60E-09	NA		X
MW-118 (46.5-47) Vertical	7.20E-06	NA		X
MW-118 (46.5-47) Horizontal	1.53E-06	NA		X
MW-118 (75-76.5) Vertical	5.96E-08	NA		X
MW-118 (75-76.5) Horizontal	2.28E-07	NA		X

--- = Oversize correction is unnecessary since coarse fraction < 5% of composite mass
NR = Not requested
NA = Not applicable

Saturated Hydraulic Conductivity
Flexible Wall Falling Head-Rising Tail Method

Job name: Montgomery & Associates
Job number: LB13.0271.00
Sample number: MW-109 (138-138.5) Vertical
Project: Lisbon, 1350.21
Depth: 138-138.5

Remolded or Initial Sample Properties		Post Permeation Sample Properties		Test and Sample Conditions	
Initial Mass (g):	302.94	*Saturated Mass (g):*	311.27	*Permeant liquid used:*	Tap Water
Diameter (cm):	7.449	*Dry Mass (g):*	299.99	*Sample Preparation:*	☑ In situ sample, extruded
Length (cm):	2.900	*Diameter (cm):*	7.463		☐ Remolded Sample
Area (cm^2):	43.58	*Length (cm):*	2.899	*Number of Lifts:*	NA
Volume (cm^3):	126.38	*Deformation (%)**:*	0.05	*Split:*	NA
Dry Density (g/cm^3):	2.37	*Area (cm^2):*	43.74	*Percent Coarse Material (%):*	NA
Dry Density (pcf):	148.18	*Volume (cm^3):*	126.79	*Particle Density(g/cm^3):*	2.6 ☑ Assumed ☐ Measured
Water Content (%, g/g):	1.0	*Dry Density (g/cm^3):*	2.37	*Cell pressure (PSI):*	82.0
Water Content (%, vol):	2.3	*Dry Density (pcf):*	147.71	*Influent pressure (PSI):*	81.0
Void Ratio (e):	0.10	*Water Content (%, g/g):*	3.8	*Effluent pressure (PSI):*	80.0
Porosity (%, vol):	8.7	*Water Content (%, vol):*	8.9	*Panel Used:*	☐ D ☐ E ☑ F
Saturation (%):	26.8	*Void Ratio(e):*	0.10	*Reading:*	☐ Annulus ☑ Pipette
		Porosity (%, vol):	9.0		Date/Time
		Saturation (%):*	98.9	B-Value (% saturation) prior to test*:	0.98 11/13/13 950
				B-Value (% saturation) post to test:	1.00 11/13/13 1448

* Per ASTM D5084 percent saturation is ensured (B-Value ≥ 95%) prior to testing, as post test saturation values may be exaggerated during depressurizing and sample removal.

**Percent Deformation: based on initial sample length and post permeation sample length.

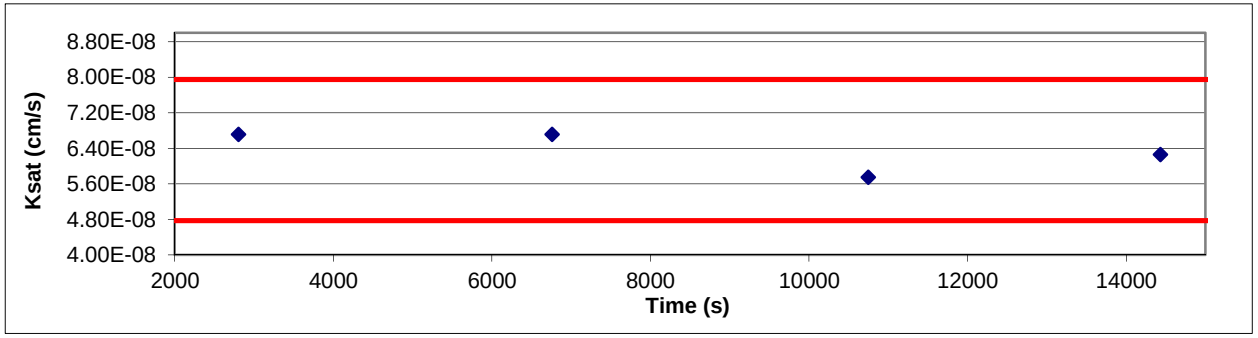
Laboratory analysis by: D. O'Dowd
Data entered by: D. O'Dowd
Checked by: J. Hines

Saturated Hydraulic Conductivity
Flexible Wall Falling Head-Rising Tail Method

Job name: Montgomery & Associates
Job number: LB13.0271.00
Sample number: MW-109 (138-138.5) Vertical
Project: Lisbon, 1350.21
Depth: 138-138.5

Date	Time	Temp (°C)	Influent Pipette Reading	Effluent Pipette Reading	Gradient (DH/DL)	Average Flow (cm^3)	Elapsed Time (s)	Ratio (outflow to inflow)	Change in Head (Not to exceed 25%)	k_{sat} T°C (cm/s)	k_{sat} Corrected (cm/s)
Test # 1:											
13-Nov-13	10:45:00	20.2	5.30	20.70	30.40	0.22	2804	1.00	1%	6.75E-08	6.71E-08
13-Nov-13	11:31:44	20.3	5.55	20.45	30.20						
Test # 2:											
13-Nov-13	11:31:44	20.3	5.55	20.45	30.20	0.30	3954	1.00	1%	6.75E-08	6.71E-08
13-Nov-13	12:37:38	20.3	5.90	20.10	29.92						
Test # 3:											
13-Nov-13	12:37:38	20.3	5.90	20.10	29.92	0.26	3987	1.00	1%	5.79E-08	5.75E-08
13-Nov-13	13:44:05	20.4	6.20	19.80	29.69						
Test # 4:											
13-Nov-13	13:44:05	20.4	6.20	19.80	29.69	0.26	3685	1.00	1%	6.32E-08	6.26E-08
13-Nov-13	14:45:30	20.4	6.50	19.50	29.45						

***Average Ksat* (cm/sec):** **6.36E-08**
Calculated Gravel Corrected Average Ksat (cm/sec): NA



ASTM Required Range (+/- 25%)

Ksat (-25%) (cm/s): 4.77E-08

Ksat (+25%) (cm/s): 7.95E-08

Saturated Hydraulic Conductivity
Flexible Wall Falling Head-Rising Tail Method

Job name: Montgomery & Associates
Job number: LB13.0271.00
Sample number: MW-109 (138-138.5) Horizontal
Project: Lisbon, 1350.21
Depth: 138-138.5

Remolded or Initial Sample Properties		Post Permeation Sample Properties		Test and Sample Conditions	
Initial Mass (g):	181.44	*Saturated Mass (g):*	187.45	*Permeant liquid used:*	Tap Water
Diameter (cm):	5.214	*Dry Mass (g):*	179.47	*Sample Preparation:*	☑ In situ sample, extruded
Length (cm):	3.601	*Diameter (cm):*	5.210		☐ Remolded Sample
Area (cm^2):	21.35	*Length (cm):*	3.597	*Number of Lifts:*	NA
Volume (cm^3):	76.89	*Deformation (%)**:*	0.13	*Split:*	NA
Dry Density (g/cm^3):	2.33	*Area (cm^2):*	21.32	*Percent Coarse Material (%):*	NA
Dry Density (pcf):	145.72	*Volume (cm^3):*	76.67	*Particle Density(g/cm^3):*	2.6 ☑ Assumed ☐ Measured
Water Content (%, g/g):	1.1	*Dry Density (g/cm^3):*	2.34	*Cell pressure (PSI):*	82.0
Water Content (%, vol):	2.6	*Dry Density (pcf):*	146.13	*Influent pressure (PSI):*	81.0
Void Ratio (e):	0.11	*Water Content (%, g/g):*	4.4	*Effluent pressure (PSI):*	80.0
Porosity (%, vol):	10.2	*Water Content (%, vol):*	10.4	*Panel Used:*	☐ D ☑ E ☐ F
Saturation (%):	25.1	*Void Ratio(e):*	0.11	*Reading:*	☐ Annulus ☑ Pipette
		Porosity (%, vol):	10.0		Date/Time
		Saturation (%):*	104.4	B-Value (% saturation) prior to test*:	0.95 12/3/13 1340
				B-Value (% saturation) post to test:	0.95 12/3/13 1414

* Per ASTM D5084 percent saturation is ensured (B-Value ≥ 95%) prior to testing, as post test saturation values may be exaggerated during depressurizing and sample removal.

**Percent Deformation: based on initial sample length and post permeation sample length.

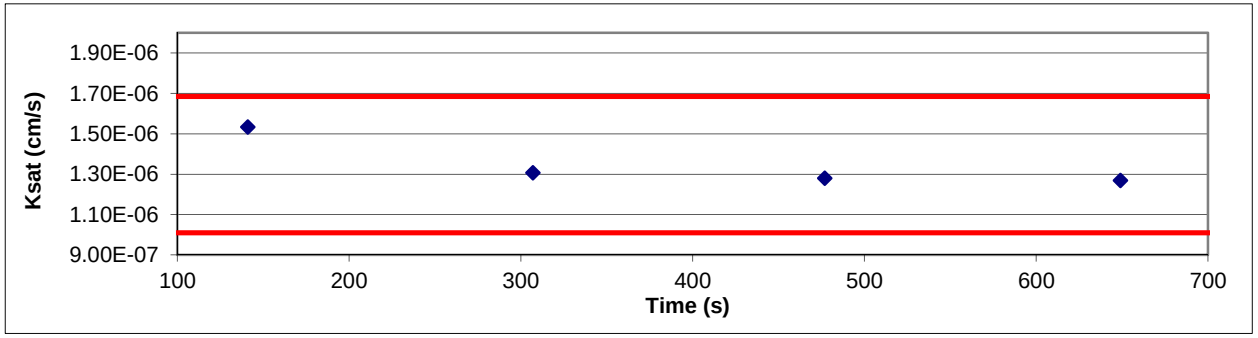
Laboratory analysis by: D. O'Dowd
Data entered by: D. O'Dowd
Checked by: J. Hines

Saturated Hydraulic Conductivity
Flexible Wall Falling Head-Rising Tail Method

Job name: Montgomery & Associates
Job number: LB13.0271.00
Sample number: MW-109 (138-138.5) Horizontal
Project: Lisbon, 1350.21
Depth: 138-138.5

Date	Time	Temp (°C)	Influent Pipette Reading	Effluent Pipette Reading	Gradient (DH/DL)	Average Flow (cm^3)	Elapsed Time (s)	Ratio (outflow to inflow)	Change in Head (Not to exceed 25%)	k_{sat} T°C (cm/s)	k_{sat} Corrected (cm/s)
Test # 1:											
03-Dec-13	14:00:07	19.1	10.20	18.70	22.29	0.09	141	1.00	0%	1.50E-06	1.53E-06
03-Dec-13	14:02:28	19.1	10.30	18.60	22.22						
Test # 2:											
03-Dec-13	14:02:28	19.1	10.30	18.60	22.22	0.09	166	1.00	0%	1.28E-06	1.31E-06
03-Dec-13	14:05:14	19.1	10.40	18.50	22.16						
Test # 3:											
03-Dec-13	14:05:14	19.1	10.40	18.50	22.16	0.09	170	1.00	0%	1.25E-06	1.28E-06
03-Dec-13	14:08:04	19.1	10.50	18.40	22.09						
Test # 4:											
03-Dec-13	14:08:04	19.1	10.50	18.40	22.09	0.09	172	1.00	0%	1.24E-06	1.27E-06
03-Dec-13	14:10:56	19.1	10.60	18.30	22.03						

***Average Ksat* (cm/sec):** **1.35E-06**
Calculated Gravel Corrected Average Ksat (cm/sec): NA



ASTM Required Range (+/- 25%)

Ksat (-25%) (cm/s): 1.01E-06

Ksat (+25%) (cm/s): 1.68E-06

Saturated Hydraulic Conductivity
Flexible Wall Falling Head-Rising Tail Method

Job name: Montgomery & Associates
Job number: LB13.0271.00
Sample number: MW-109 (147 - 147.5) Vertical
Project: Lisbon, 1350.21
Depth: 147-147.5

Remolded or Initial Sample Properties		Post Permeation Sample Properties		Test and Sample Conditions	
Initial Mass (g):	431.04	*Saturated Mass (g):*	443.18	*Permeant liquid used:*	Tap Water
Diameter (cm):	7.266	*Dry Mass (g):*	422.64	*Sample Preparation:*	☑ In situ sample, extruded
Length (cm):	4.369	*Diameter (cm):*	7.299		☐ Remolded Sample
Area (cm^2):	41.46	*Length (cm):*	4.362	*Number of Lifts:*	NA
Volume (cm^3):	181.16	*Deformation (%)**:*	0.16	*Split:*	NA
Dry Density (g/cm^3):	2.33	*Area (cm^2):*	41.84	*Percent Coarse Material (%):*	NA
Dry Density (pcf):	145.64	*Volume (cm^3):*	182.52	*Particle Density(g/cm^3):*	2.62 ☑ Assumed ☐ Measured
Water Content (%, g/g):	2.0	*Dry Density (g/cm^3):*	2.32	*Cell pressure (PSI):*	82.0
Water Content (%, vol):	4.6	*Dry Density (pcf):*	144.55	*Influent pressure (PSI):*	81.0
Void Ratio (e):	0.12	*Water Content (%, g/g):*	4.9	*Effluent pressure (PSI):*	80.0
Porosity (%, vol):	11.0	*Water Content (%, vol):*	11.3	*Panel Used:*	☐ A ☐ B ☑ C
Saturation (%):	42.3	*Void Ratio(e):*	0.13	*Reading:*	☐ Annulus ☑ Pipette
		Porosity (%, vol):	11.6		Date/Time
		Saturation (%):*	96.8	B-Value (% saturation) prior to test*:	0.95 11/13/13 930
				B-Value (% saturation) post to test:	0.95 11/13/13 1453

* Per ASTM D5084 percent saturation is ensured (B-Value ≥ 95%) prior to testing, as post test saturation values may be exaggerated or skewed during depressurizing and sample removal.
**Percent Deformation: based on initial sample length and post permeation sample length.

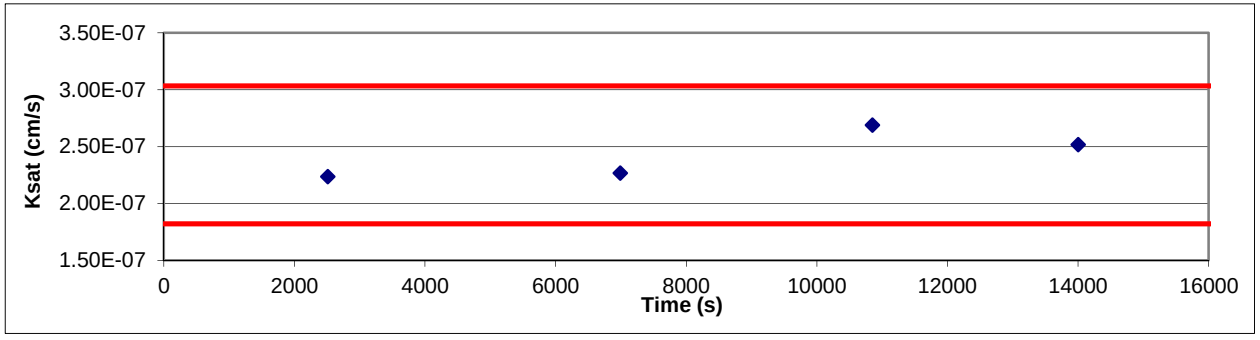
Laboratory analysis by: D. O'Dowd
Data entered by: D. O'Dowd
Checked by: J. Hines

Saturated Hydraulic Conductivity
Flexible Wall Falling Head-Rising Tail Method

Job name: Montgomery & Associates
Job number: LB13.0271.00
Sample number: MW-109 (147 - 147.5) Vertical
Project: Lisbon, 1350.21
Depth: 147-147.5

Date	Time	Temp (°C)	Influent Pipette Reading	Effluent Pipette Reading	Gradient (ΔH/ΔL)	Average Flow (cm^3)	Elapsed Time (s)	Ratio (outflow to inflow)	Change in Head (Not to exceed 25%)	k_{sat} T°C (cm/s)	k_{sat} Corrected (cm/s)
Test # 1:											
13-Nov-13	10:43:40	20.2	7.75	19.25	19.17	0.39	2510	1.00	1%	2.25E-07	2.24E-07
13-Nov-13	11:25:30	20.3	8.20	18.80	18.93						
Test # 4:											
13-Nov-13	11:25:30	20.3	8.20	18.80	18.93	0.69	4480	1.00	2%	2.28E-07	2.27E-07
13-Nov-13	12:40:10	20.3	9.00	18.00	18.51						
Test # 4:											
13-Nov-13	12:40:10	20.3	9.00	18.00	18.51	0.69	3860	1.00	2%	2.71E-07	2.69E-07
13-Nov-13	13:44:30	20.4	9.80	17.20	18.08						
Test # 4:											
13-Nov-13	13:44:30	20.4	9.80	17.20	18.08	0.52	3150	1.00	2%	2.54E-07	2.52E-07
13-Nov-13	14:37:00	20.4	10.40	16.60	17.77						

***Average Ksat* (cm/sec):** **2.43E-07**
Calculated Gravel Corrected Average Ksat (cm/sec): NA



ASTM Required Range (+/- 25%)

Ksat (-25%) (cm/s): 1.82E-07

Ksat (+25%) (cm/s): 3.03E-07

Saturated Hydraulic Conductivity
Flexible Wall Falling Head-Rising Tail Method

Job name: Montgomery & Associates
Job number: LB13.0271.00
Sample number: MW-109 (147 - 147.5) Horizontal
Project: Lisbon, 1350.21
Depth: 147-147.5

Remolded or Initial Sample Properties		Post Permeation Sample Properties		Test and Sample Conditions	
Initial Mass (g):	183.47	*Saturated Mass (g):*	192.86	*Permeant liquid used:*	Tap Water
Diameter (cm):	5.107	*Dry Mass (g):*	180.6	*Sample Preparation:*	☑ In situ sample, extruded
Length (cm):	3.989	*Diameter (cm):*	5.113		☐ Remolded Sample
Area (cm^2):	20.48	*Length (cm):*	3.987	*Number of Lifts:*	NA
Volume (cm^3):	81.71	*Deformation (%)**:*	0.06	*Split:*	NA
Dry Density (g/cm^3):	2.21	*Area (cm^2):*	20.53	*Percent Coarse Material (%):*	NA
Dry Density (pcf):	137.98	*Volume (cm^3):*	81.85	*Particle Density(g/cm^3):*	2.62 ☑ Assumed ☐ Measured
Water Content (%, g/g):	1.6	*Dry Density (g/cm^3):*	2.21	*Cell pressure (PSI):*	82.0
Water Content (%, vol):	3.5	*Dry Density (pcf):*	137.74	*Influent pressure (PSI):*	80.0
Void Ratio (e):	0.19	*Water Content (%, g/g):*	6.8	*Effluent pressure (PSI):*	80.0
Porosity (%, vol):	15.6	*Water Content (%, vol):*	15.0	*Panel Used:*	☑ A ☐ B ☐ C
Saturation (%):	22.5	*Void Ratio(e):*	0.19	*Reading:*	☐ Annulus ☑ Pipette
		Porosity (%, vol):	15.8		Date/Time
		Saturation (%):*	94.9	B-Value (% saturation) prior to test*:	1.00 12/3/13 1348
				B-Value (% saturation) post to test:	1.00 12/3/13 1428

* Per ASTM D5084 percent saturation is ensured (B-Value ≥ 95%) prior to testing, as post test saturation values may be exaggerated or skewed during depressurizing and sample removal.
**Percent Deformation: based on initial sample length and post permeation sample length.

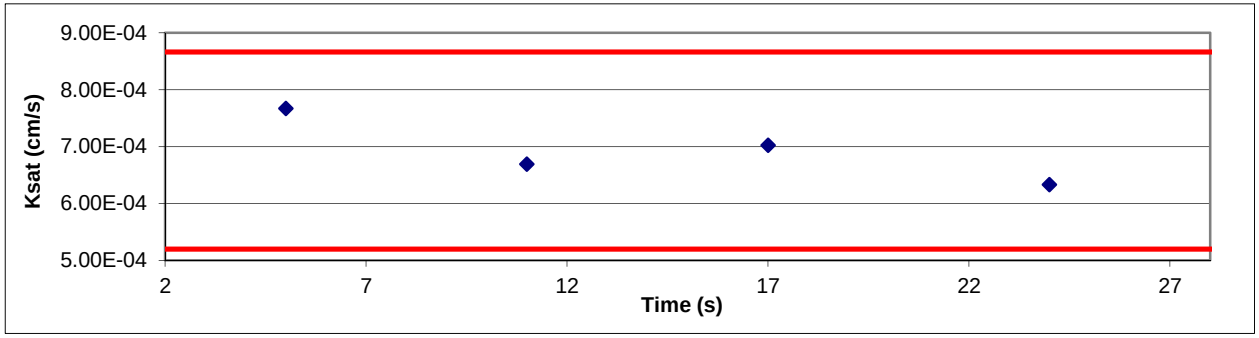
Laboratory analysis by: D. O'Dowd
Data entered by: D. O'Dowd
Checked by: J. Hines

Saturated Hydraulic Conductivity
Flexible Wall Falling Head-Rising Tail Method

Job name: Montgomery & Associates
Job number: LB13.0271.00
Sample number: MW-109 (147 - 147.5) Horizontal
Project: Lisbon, 1350.21
Depth: 147-147.5

Date	Time	Temp (°C)	Influent Pipette Reading	Effluent Pipette Reading	Gradient (ΔH/ΔL)	Average Flow (cm^3)	Elapsed Time (s)	Ratio (outflow to inflow)	Change in Head (Not to exceed 25%)	k_{sat} T°C (cm/s)	k_{sat} Corrected (cm/s)
Test # 1:											
03-Dec-13	14:25:15	19.4	11.60	20.70	2.64	0.17	5	1.00	4%	7.56E-04	7.67E-04
03-Dec-13	14:25:20	19.4	11.80	20.50	2.52						
Test # 4:											
03-Dec-13	14:25:20	19.4	11.80	20.50	2.52	0.17	6	1.00	5%	6.59E-04	6.69E-04
03-Dec-13	14:25:26	19.4	12.00	20.30	2.40						
Test # 4:											
03-Dec-13	14:25:26	19.4	12.00	20.30	2.40	0.17	6	1.00	5%	6.92E-04	7.03E-04
03-Dec-13	14:25:32	19.4	12.20	20.10	2.29						
Test # 4:											
03-Dec-13	14:25:32	19.4	12.20	20.10	2.29	0.17	7	1.00	5%	6.24E-04	6.33E-04
03-Dec-13	14:25:39	19.4	12.40	19.90	2.17						

***Average Ksat* (cm/sec):** **6.93E-04**
Calculated Gravel Corrected Average Ksat (cm/sec): NA



ASTM Required Range (+/- 25%)

Ksat (-25%) (cm/s): 5.20E-04

Ksat (+25%) (cm/s): 8.66E-04

Saturated Hydraulic Conductivity
Flexible Wall Falling Head-Rising Tail Method

Job name: Montgomery & Associates
Job number: LB13.0271.00
Sample number: MW-109 (158-158.7) Vertical
Project: Lisbon, 1350.21
Depth: 158-158.7

Remolded or Initial Sample Properties		Post Permeation Sample Properties		Test and Sample Conditions	
Initial Mass (g):	343.19	*Saturated Mass (g):*	355.09	*Permeant liquid used:*	Tap Water
Diameter (cm):	7.343	*Dry Mass (g):*	327.06	*Sample Preparation:*	☑ In situ sample, extruded
Length (cm):	3.317	*Diameter (cm):*	7.538		☐ Remolded Sample
Area (cm^2):	42.35	*Length (cm):*	3.314	*Number of Lifts:*	NA
Volume (cm^3):	140.47	*Deformation (%)**:*	0.09	*Split:*	NA
Dry Density (g/cm^3):	2.33	*Area (cm^2):*	44.63	*Percent Coarse Material (%):*	NA
Dry Density (pcf):	145.35	*Volume (cm^3):*	147.90	*Particle Density(g/cm^3):*	2.74 ☑ Assumed ☐ Measured
Water Content (%, g/g):	4.9	*Dry Density (g/cm^3):*	2.21	*Cell pressure (PSI):*	82.0
Water Content (%, vol):	11.5	*Dry Density (pcf):*	138.05	*Influent pressure (PSI):*	80.0
Void Ratio (e):	0.18	*Water Content (%, g/g):*	8.6	*Effluent pressure (PSI):*	80.0
Porosity (%, vol):	15.0	*Water Content (%, vol):*	19.0	*Panel Used:*	☑ D ☐ E ☐ F
Saturation (%):	76.4	*Void Ratio(e):*	0.24	*Reading:*	☐ Annulus ☑ Pipette
		Porosity (%, vol):	19.3		Date/Time
		Saturation (%):*	98.2	B-Value (% saturation) prior to test*:	0.98 11/15/13 845
				B-Value (% saturation) post to test:	0.98 11/15/13 925

* Per ASTM D5084 percent saturation is ensured (B-Value ≥ 95%) prior to testing, as post test saturation values may be exaggerated during depressurizing and sample removal.

**Percent Deformation: based on initial sample length and post permeation sample length.

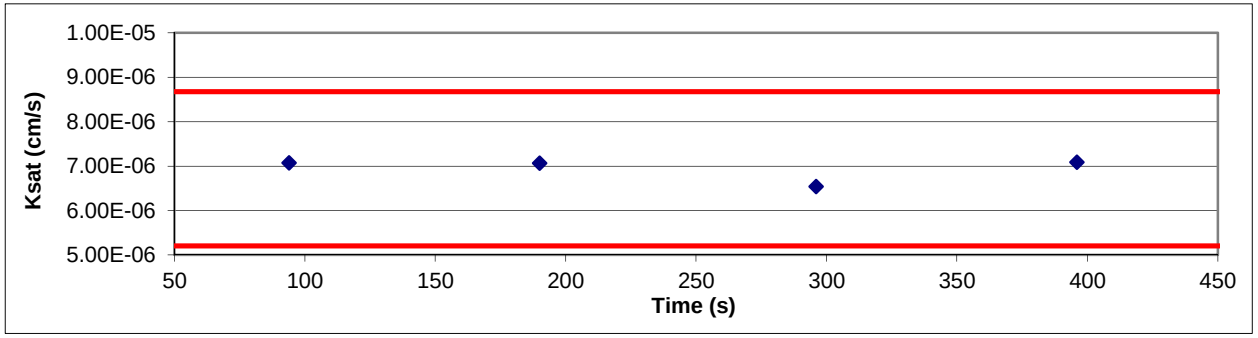
Laboratory analysis by: D. O'Dowd
Data entered by: D. O'Dowd
Checked by: J. Hines

Saturated Hydraulic Conductivity
Flexible Wall Falling Head-Rising Tail Method

Job name: Montgomery & Associates
Job number: LB13.0271.00
Sample number: MW-109 (158-158.7) Vertical
Project: Lisbon, 1350.21
Depth: 158-158.7

Date	Time	Temp (°C)	Influent Pipette Reading	Effluent Pipette Reading	Gradient (DH/DL)	Average Flow (cm^3)	Elapsed Time (s)	Ratio (outflow to inflow)	Change in Head (Not to exceed 25%)	k_{sat} T°C (cm/s)	k_{sat} Corrected (cm/s)
Test # 1:											
15-Nov-13	08:49:04	20.1	9.10	18.90	3.41	0.09	94	1.00	2%	7.08E-06	7.07E-06
15-Nov-13	08:50:38	20.1	9.20	18.80	3.35						
Test # 2:											
15-Nov-13	08:50:38	20.1	9.20	18.80	3.35	0.09	96	1.00	2%	7.08E-06	7.07E-06
15-Nov-13	08:52:14	20.1	9.30	18.70	3.28						
Test # 3:											
15-Nov-13	08:52:14	20.1	9.30	18.70	3.28	0.09	106	1.00	2%	6.55E-06	6.54E-06
15-Nov-13	08:54:00	20.1	9.40	18.60	3.21						
Test # 4:											
15-Nov-13	08:54:00	20.1	9.40	18.60	3.21	0.09	100	1.00	2%	7.09E-06	7.08E-06
15-Nov-13	08:55:40	20.1	9.50	18.50	3.14						

***Average Ksat* (cm/sec):** **6.94E-06**
Calculated Gravel Corrected Average Ksat (cm/sec): NA



ASTM Required Range (+/- 25%)

Ksat (-25%) (cm/s): 5.21E-06

Ksat (+25%) (cm/s): 8.68E-06

Saturated Hydraulic Conductivity
Flexible Wall Falling Head-Rising Tail Method

Job name: Montgomery & Associates
Job number: LB13.0271.00
Sample number: MW-109 (158-158.7) Horizontal
Project: Lisbon, 1350.21
Depth: 158-158.7

Remolded or Initial Sample Properties		Post Permeation Sample Properties		Test and Sample Conditions	
Initial Mass (g):	187.74	*Saturated Mass (g):*	196.42	*Permeant liquid used:*	Tap Water
Diameter (cm):	5.117	*Dry Mass (g):*	179.12	*Sample Preparation:*	☑ In situ sample, extruded
Length (cm):	3.634	*Diameter (cm):*	5.391		☐ Remolded Sample
Area (cm^2):	20.56	*Length (cm):*	3.634	*Number of Lifts:*	NA
Volume (cm^3):	74.73	*Deformation (%)**:*	0.01	*Split:*	NA
Dry Density (g/cm^3):	2.40	*Area (cm^2):*	22.83	*Percent Coarse Material (%):*	NA
Dry Density (pcf):	149.63	*Volume (cm^3):*	82.94	*Particle Density(g/cm^3):*	2.74 ☑ Assumed ☐ Measured
Water Content (%, g/g):	4.8	*Dry Density (g/cm^3):*	2.16	*Cell pressure (PSI):*	82.0
Water Content (%, vol):	11.5	*Dry Density (pcf):*	134.82	*Influent pressure (PSI):*	81.0
Void Ratio (e):	0.14	*Water Content (%, g/g):*	9.7	*Effluent pressure (PSI):*	79.0
Porosity (%, vol):	12.5	*Water Content (%, vol):*	20.9	*Panel Used:*	☐ D ☐ E ☑ F
Saturation (%):	92.1	*Void Ratio(e):*	0.27	*Reading:*	☐ Annulus ☑ Pipette
		Porosity (%, vol):	21.2		Date/Time
		Saturation (%):*	98.5	B-Value (% saturation) prior to test*:	0.95 12/3/13 1342
				B-Value (% saturation) post to test:	0.95 12/3/13 1430

* Per ASTM D5084 percent saturation is ensured (B-Value ≥ 95%) prior to testing, as post test saturation values may be exaggerated during depressurizing and sample removal.

**Percent Deformation: based on initial sample length and post permeation sample length.

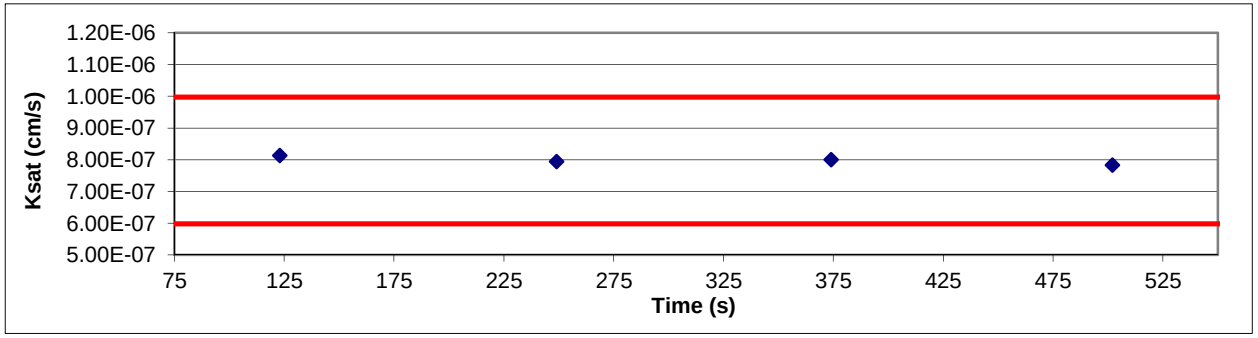
Laboratory analysis by: D. O'Dowd
Data entered by: D. O'Dowd
Checked by: J. Hines

Saturated Hydraulic Conductivity
Flexible Wall Falling Head-Rising Tail Method

Job name: Montgomery & Associates
Job number: LB13.0271.00
Sample number: MW-109 (158-158.7) Horizontal
Project: Lisbon, 1350.21
Depth: 158-158.7

Date	Time	Temp (°C)	Influent Pipette Reading	Effluent Pipette Reading	Gradient (DH/DL)	Average Flow (cm^3)	Elapsed Time (s)	Ratio (outflow to inflow)	Change in Head (Not to exceed 25%)	k_{sat} T°C (cm/s)	k_{sat} Corrected (cm/s)
Test # 1:											
03-Dec-13	14:15:45	19.3	3.00	22.00	44.76	0.09	123	1.00	0%	7.99E-07	8.13E-07
03-Dec-13	14:17:48	19.3	3.10	21.90	44.69						
Test # 2:											
03-Dec-13	14:17:48	19.3	3.10	21.90	44.69	0.09	126	1.00	0%	7.81E-07	7.94E-07
03-Dec-13	14:19:54	19.4	3.20	21.80	44.63						
Test # 3:											
03-Dec-13	14:19:54	19.4	3.20	21.80	44.63	0.09	125	1.00	0%	7.89E-07	8.01E-07
03-Dec-13	14:21:59	19.4	3.30	21.70	44.57						
Test # 4:											
03-Dec-13	14:21:59	19.4	3.30	21.70	44.57	0.09	128	1.00	0%	7.71E-07	7.83E-07
03-Dec-13	14:24:07	19.4	3.40	21.60	44.50						

***Average Ksat* (cm/sec):** **7.98E-07**
Calculated Gravel Corrected Average Ksat (cm/sec): NA



ASTM Required Range (+/- 25%)

Ksat (-25%) (cm/s): 5.98E-07

Ksat (+25%) (cm/s): 9.97E-07

Saturated Hydraulic Conductivity
Flexible Wall Falling Head-Rising Tail Method

Job name: Montgomery & Associates
Job number: LB13.0271.00
Sample number: MW-117 (95.5-96) Vertical
Project: Lisbon, 1350.21
Depth: 95.5-96

Remolded or Initial Sample Properties		Post Permeation Sample Properties		Test and Sample Conditions	
Initial Mass (g):	301.21	*Saturated Mass (g):*	309.34	*Permeant liquid used:*	Tap Water
Diameter (cm):	7.245	*Dry Mass (g):*	279.4	*Sample Preparation:*	☑ In situ sample, extruded
Length (cm):	3.018	*Diameter (cm):*	7.431		☐ Remolded Sample
Area (cm^2):	41.23	*Length (cm):*	3.047	*Number of Lifts:*	NA
Volume (cm^3):	124.42	*Deformation (%)**:*	0.95	*Split:*	NA
Dry Density (g/cm^3):	2.25	*Area (cm^2):*	43.37	*Percent Coarse Material (%):*	NA
Dry Density (pcf):	140.19	*Volume (cm^3):*	132.15	*Particle Density(g/cm^3):*	2.74 ☑ Assumed ☐ Measured
Water Content (%, g/g):	7.8	*Dry Density (g/cm^3):*	2.11	*Cell pressure (PSI):*	82.0
Water Content (%, vol):	17.5	*Dry Density (pcf):*	131.99	*Influent pressure (PSI):*	80.0
Void Ratio (e):	0.22	*Water Content (%, g/g):*	10.7	*Effluent pressure (PSI):*	80.0
Porosity (%, vol):	18.0	*Water Content (%, vol):*	22.7	*Panel Used:*	☐ A ☐ B ☑ C
Saturation (%):	97.2	*Void Ratio(e):*	0.30	*Reading:*	☐ Annulus ☑ Pipette
		Porosity (%, vol):	22.8		Date/Time
		Saturation (%):*	99.2	B-Value (% saturation) prior to test*:	1.00 11/15/13 850
				B-Value (% saturation) post to test:	1.00 11/15/13 920

* Per ASTM D5084 percent saturation is ensured (B-Value ≥ 95%) prior to testing, as post test saturation values may be exaggerated or skewed during depressurizing and sample removal.
**Percent Deformation: based on initial sample length and post permeation sample length.

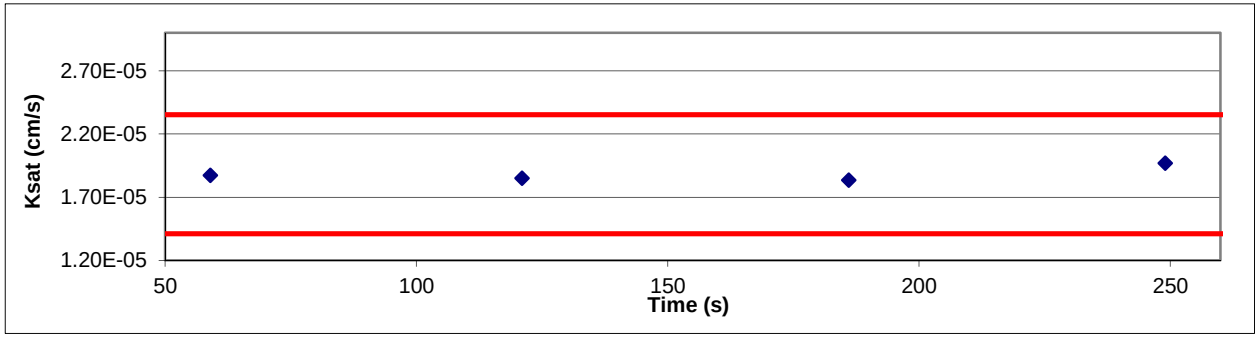
Laboratory analysis by: D. O'Dowd
Data entered by: D. O'Dowd
Checked by: J. Hines

Saturated Hydraulic Conductivity
Flexible Wall Falling Head-Rising Tail Method

Job name: Montgomery & Associates
Job number: LB13.0271.00
Sample number: MW-117 (95.5-96) Vertical
Project: Lisbon, 1350.21
Depth: 95.5-96

Date	Time	Temp (°C)	Influent Pipette Reading	Effluent Pipette Reading	Gradient (ΔH/ΔL)	Average Flow (cm^3)	Elapsed Time (s)	Ratio (outflow to inflow)	Change in Head (Not to exceed 25%)	k_{sat} T°C (cm/s)	k_{sat} Corrected (cm/s)
Test # 1:											
15-Nov-13	09:10:34	20.1	9.40	20.60	4.24	0.17	59	1.00	4%	1.88E-05	1.87E-05
15-Nov-13	09:11:33	20.1	9.60	20.40	4.09						
Test # 2:											
15-Nov-13	09:11:33	20.1	9.60	20.40	4.09	0.17	62	1.00	4%	1.85E-05	1.85E-05
15-Nov-13	09:12:35	20.1	9.80	20.20	3.94						
Test # 3:											
15-Nov-13	09:12:35	20.1	9.80	20.20	3.94	0.17	65	1.00	4%	1.84E-05	1.83E-05
15-Nov-13	09:13:40	20.1	10.00	20.00	3.79						
Test # 4:											
15-Nov-13	09:13:40	20.1	10.00	20.00	3.79	0.17	63	1.00	4%	1.97E-05	1.97E-05
15-Nov-13	09:14:43	20.1	10.20	19.80	3.64						

***Average Ksat* (cm/sec):** **1.88E-05**
Calculated Gravel Corrected Average Ksat (cm/sec): NA



ASTM Required Range (+/- 25%)

Ksat (-25%) (cm/s): 1.41E-05

Ksat (+25%) (cm/s): 2.35E-05

Saturated Hydraulic Conductivity
Flexible Wall Falling Head-Rising Tail Method

Job name: Montgomery & Associates
Job number: LB13.0271.00
Sample number: MW-117 (95.5-96) Horizontal
Project: Lisbon, 1350.21
Depth: 95.5-96

Remolded or Initial Sample Properties		Post Permeation Sample Properties		Test and Sample Conditions	
Initial Mass (g):	233.8	*Saturated Mass (g):*	239.57	*Permeant liquid used:*	Tap Water
Diameter (cm):	5.152	*Dry Mass (g):*	217.02	*Sample Preparation:*	☑ In situ sample, extruded
Length (cm):	4.671	*Diameter (cm):*	5.281		☐ Remolded Sample
Area (cm^2):	20.85	*Length (cm):*	4.679	*Number of Lifts:*	NA
Volume (cm^3):	97.38	*Deformation (%)**:*	0.17	*Split:*	NA
Dry Density (g/cm^3):	2.23	*Area (cm^2):*	21.90	*Percent Coarse Material (%):*	NA
Dry Density (pcf):	139.13	*Volume (cm^3):*	102.49	*Particle Density(g/cm^3):*	2.74 ☑ Assumed ☐ Measured
Water Content (%, g/g):	7.7	*Dry Density (g/cm^3):*	2.12	*Cell pressure (PSI):*	82.0
Water Content (%, vol):	17.2	*Dry Density (pcf):*	132.19	*Influent pressure (PSI):*	80.0
Void Ratio (e):	0.23	*Water Content (%, g/g):*	10.4	*Effluent pressure (PSI):*	80.0
Porosity (%, vol):	18.7	*Water Content (%, vol):*	22.0	*Panel Used:*	☐ A ☐ B ☑ C
Saturation (%):	92.3	*Void Ratio(e):*	0.29	*Reading:*	☐ Annulus ☑ Pipette
		Porosity (%, vol):	22.7		Date/Time
		Saturation (%):*	96.8	B-Value (% saturation) prior to test*:	1.00 12/4/13 1020
				B-Value (% saturation) post to test:	1.00 12/4/13 1100

* Per ASTM D5084 percent saturation is ensured (B-Value ≥ 95%) prior to testing, as post test saturation values may be exaggerated or skewed during depressurizing and sample removal.
**Percent Deformation: based on initial sample length and post permeation sample length.

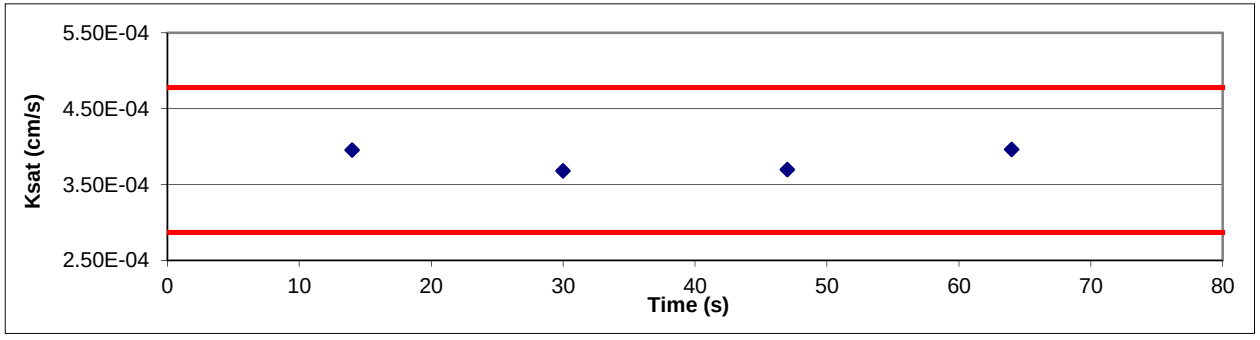
Laboratory analysis by: D. O'Dowd
Data entered by: D. O'Dowd
Checked by: J. Hines

Saturated Hydraulic Conductivity
Flexible Wall Falling Head-Rising Tail Method

Job name: Montgomery & Associates
Job number: LB13.0271.00
Sample number: MW-117 (95.5-96) Horizontal
Project: Lisbon, 1350.21
Depth: 95.5-96

Date	Time	Temp (°C)	Influent Pipette Reading	Effluent Pipette Reading	Gradient (ΔH/ΔL)	Average Flow (cm^3)	Elapsed Time (s)	Ratio (outflow to inflow)	Change in Head (Not to exceed 25%)	k_{sat} T°C (cm/s)	k_{sat} Corrected (cm/s)
Test # 1:											
04-Dec-13	10:57:24	19.6	8.90	15.85	1.72	0.17	14	1.00	6%	3.92E-04	3.96E-04
04-Dec-13	10:57:38	19.6	9.10	15.65	1.62						
Test # 2:											
04-Dec-13	10:57:38	19.6	9.10	15.65	1.62	0.17	16	1.00	6%	3.64E-04	3.68E-04
04-Dec-13	10:57:54	19.6	9.30	15.45	1.52						
Test # 3:											
04-Dec-13	10:57:54	19.6	9.30	15.45	1.52	0.17	17	1.00	7%	3.66E-04	3.70E-04
04-Dec-13	10:58:11	19.6	9.50	15.25	1.42						
Test # 4:											
04-Dec-13	10:58:11	19.6	9.50	15.25	1.42	0.17	17	1.00	7%	3.92E-04	3.96E-04
04-Dec-13	10:58:28	19.6	9.70	15.05	1.32						

***Average Ksat* (cm/sec):** **3.82E-04**
Calculated Gravel Corrected Average Ksat (cm/sec): NA



ASTM Required Range (+/- 25%)

Ksat (-25%) (cm/s): 2.87E-04

Ksat (+25%) (cm/s): 4.78E-04

Saturated Hydraulic Conductivity
Flexible Wall Falling Head-Rising Tail Method

Job name: Montgomery & Associates
Job number: LB13.0271.00
Sample number: MW-117 (118 - 118.5) Vertical
Project: Lisbon, 1350.21
Depth: 118-118.5

Remolded or Initial Sample Properties		Post Permeation Sample Properties		Test and Sample Conditions	
Initial Mass (g):	316.8	*Saturated Mass (g):*	318.43	*Permeant liquid used:*	Tap Water
Diameter (cm):	7.314	*Dry Mass (g):*	286.18	*Sample Preparation:*	☑ In situ sample, extruded
Length (cm):	3.427	*Diameter (cm):*	7.264		☐ Remolded Sample
Area (cm^2):	42.01	*Length (cm):*	3.424	*Number of Lifts:*	NA
Volume (cm^3):	143.98	*Deformation (%)**:*	0.10	*Split:*	NA
Dry Density (g/cm^3):	1.99	*Area (cm^2):*	41.44	*Percent Coarse Material (%):*	NA
Dry Density (pcf):	124.08	*Volume (cm^3):*	141.89	*Particle Density(g/cm^3):*	2.62 ☑ Assumed ☐ Measured
Water Content (%, g/g):	10.7	*Dry Density (g/cm^3):*	2.02	*Cell pressure (PSI):*	82.0
Water Content (%, vol):	21.3	*Dry Density (pcf):*	125.92	*Influent pressure (PSI):*	80.0
Void Ratio (e):	0.32	*Water Content (%, g/g):*	11.3	*Effluent pressure (PSI):*	80.0
Porosity (%, vol):	24.1	*Water Content (%, vol):*	22.7	*Panel Used:*	☑ A ☐ B ☐ C
Saturation (%):	88.1	*Void Ratio(e):*	0.30	*Reading:*	☐ Annulus ☑ Pipette
		Porosity (%, vol):	23.0		Date/Time
		Saturation (%):*	98.8	B-Value (% saturation) prior to test*:	0.98 11/13/13 935
				B-Value (% saturation) post to test:	0.98 11/13/13 1009

* Per ASTM D5084 percent saturation is ensured (B-Value ≥ 95%) prior to testing, as post test saturation values may be exaggerated or skewed during depressurizing and sample removal.
**Percent Deformation: based on initial sample length and post permeation sample length.

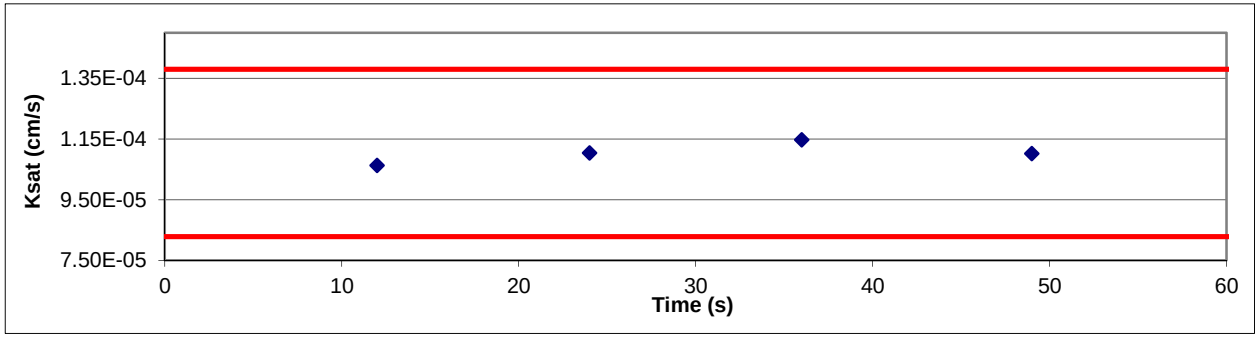
Laboratory analysis by: D. O'Dowd
Data entered by: D. O'Dowd
Checked by: J. Hines

Saturated Hydraulic Conductivity
Flexible Wall Falling Head-Rising Tail Method

Job name: Montgomery & Associates
Job number: LB13.0271.00
Sample number: MW-117 (118 - 118.5) Vertical
Project: Lisbon, 1350.21
Depth: 118-118.5

Date	Time	Temp (°C)	Influent Pipette Reading	Effluent Pipette Reading	Gradient (DH/DL)	Average Flow (cm^3)	Elapsed Time (s)	Ratio (outflow to inflow)	Change in Head (Not to exceed 25%)	k_{sat} T°C (cm/s)	k_{sat} Corrected (cm/s)
Test # 1:											
13-Nov-13	09:37:12	20.8	7.80	19.00	3.78	0.17	12	1.00	4%	1.08E-04	1.06E-04
13-Nov-13	09:37:24	20.8	8.00	18.80	3.64						
Test # 2:											
13-Nov-13	09:37:24	20.8	8.00	18.80	3.64	0.17	12	1.00	4%	1.13E-04	1.10E-04
13-Nov-13	09:37:36	20.8	8.20	18.60	3.51						
Test # 3:											
13-Nov-13	09:37:36	20.8	8.20	18.60	3.51	0.17	12	1.00	4%	1.17E-04	1.15E-04
13-Nov-13	09:37:48	20.8	8.40	18.40	3.37						
Test # 4:											
13-Nov-13	09:37:48	20.8	8.40	18.40	3.37	0.17	13	1.00	4%	1.12E-04	1.10E-04
13-Nov-13	09:38:01	20.8	8.60	18.20	3.24						

***Average Ksat* (cm/sec):** **1.10E-04**
Calculated Gravel Corrected Average Ksat (cm/sec): NA



ASTM Required Range (+/- 25%)

Ksat (-25%) (cm/s): 8.28E-05

Ksat (+25%) (cm/s): 1.38E-04

Saturated Hydraulic Conductivity
Flexible Wall Falling Head-Rising Tail Method

Job name: Montgomery & Associates
Job number: LB13.0271.00
Sample number: MW-117 (118 - 118.5) Horizontal
Project: Lisbon, 1350.21
Depth: 118-118.5

Remolded or Initial Sample Properties		Post Permeation Sample Properties		Test and Sample Conditions	
Initial Mass (g):	230.1	*Saturated Mass (g):*	230.81	*Permeant liquid used:*	Tap Water
Diameter (cm):	5.172	*Dry Mass (g):*	208.43	*Sample Preparation:*	☑ In situ sample, extruded
Length (cm):	4.960	*Diameter (cm):*	5.161		☐ Remolded Sample
Area (cm^2):	21.01	*Length (cm):*	4.952	*Number of Lifts:*	NA
Volume (cm^3):	104.21	*Deformation (%)**:*	0.16	*Split:*	NA
Dry Density (g/cm^3):	2.00	*Area (cm^2):*	20.92	*Percent Coarse Material (%):*	NA
Dry Density (pcf):	124.87	*Volume (cm^3):*	103.59	*Particle Density(g/cm^3):*	2.62 ☑ Assumed ☐ Measured
Water Content (%, g/g):	10.4	*Dry Density (g/cm^3):*	2.01	*Cell pressure (PSI):*	82.0
Water Content (%, vol):	20.8	*Dry Density (pcf):*	125.60	*Influent pressure (PSI):*	80.0
Void Ratio (e):	0.31	*Water Content (%, g/g):*	10.7	*Effluent pressure (PSI):*	80.0
Porosity (%, vol):	23.7	*Water Content (%, vol):*	21.6	*Panel Used:*	☑ D ☐ E ☐ F
Saturation (%):	87.9	*Void Ratio(e):*	0.30	*Reading:*	☐ Annulus ☑ Pipette
		Porosity (%, vol):	23.2		Date/Time
		Saturation (%):*	93.1	B-Value (% saturation) prior to test*:	0.95 12/4/13 1028
				B-Value (% saturation) post to test:	0.95 12/4/13 1048

* Per ASTM D5084 percent saturation is ensured (B-Value ≥ 95%) prior to testing, as post test saturation values may be exaggerated during depressurizing and sample removal.

**Percent Deformation: based on initial sample length and post permeation sample length.

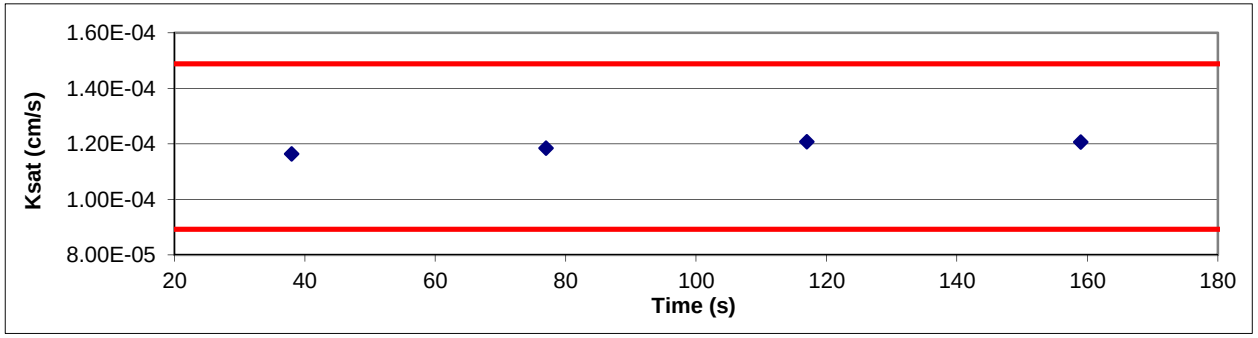
Laboratory analysis by: D. O'Dowd
Data entered by: D. O'Dowd
Checked by: J. Hines

Saturated Hydraulic Conductivity
Flexible Wall Falling Head-Rising Tail Method

Job name: Montgomery & Associates
Job number: LB13.0271.00
Sample number: MW-117 (118 - 118.5) Horizontal
Project: Lisbon, 1350.21
Depth: 118-118.5

Date	Time	Temp (°C)	Influent Pipette Reading	Effluent Pipette Reading	Gradient (DH/DL)	Average Flow (cm^3)	Elapsed Time (s)	Ratio (outflow to inflow)	Change in Head (Not to exceed 25%)	k_{sat} T°C (cm/s)	k_{sat} Corrected (cm/s)
Test # 1:											
04-Dec-13	10:44:29	19.6	10.00	19.60	2.24	0.17	38	1.00	4%	1.15E-04	1.16E-04
04-Dec-13	10:45:07	19.6	10.20	19.40	2.15						
Test # 2:											
04-Dec-13	10:45:07	19.6	10.20	19.40	2.15	0.17	39	1.00	4%	1.17E-04	1.18E-04
04-Dec-13	10:45:46	19.6	10.40	19.20	2.05						
Test # 3:											
04-Dec-13	10:45:46	19.6	10.40	19.20	2.05	0.17	40	1.00	5%	1.20E-04	1.21E-04
04-Dec-13	10:46:26	19.6	10.60	19.00	1.96						
Test # 4:											
04-Dec-13	10:46:26	19.6	10.60	19.00	1.96	0.17	42	1.00	5%	1.19E-04	1.21E-04
04-Dec-13	10:47:08	19.6	10.80	18.80	1.87						

***Average Ksat* (cm/sec):** **1.19E-04**
Calculated Gravel Corrected Average Ksat (cm/sec): NA



ASTM Required Range (+/- 25%)

Ksat (-25%) (cm/s): 8.93E-05

Ksat (+25%) (cm/s): 1.49E-04

Saturated Hydraulic Conductivity
Flexible Wall Falling Head-Rising Tail Method

Job name: Montgomery & Associates
Job number: LB13.0271.00
Sample number: MW-117 (169 - 169.5) Vertical
Project: Lisbon, 1350.21
Depth: 169-169.5

Remolded or Initial Sample Properties		Post Permeation Sample Properties		Test and Sample Conditions	
Initial Mass (g):	383.9	*Saturated Mass (g):*	395.33	*Permeant liquid used:*	Tap Water
Diameter (cm):	7.279	*Dry Mass (g):*	355.15	*Sample Preparation:*	☑ In situ sample, extruded
Length (cm):	4.196	*Diameter (cm):*	7.268		☐ Remolded Sample
Area (cm^2):	41.61	*Length (cm):*	4.200	*Number of Lifts:*	NA
Volume (cm^3):	174.61	*Deformation (%)**:*	0.09	*Split:*	NA
Dry Density (g/cm^3):	2.03	*Area (cm^2):*	41.49	*Percent Coarse Material (%):*	NA
Dry Density (pcf):	126.98	*Volume (cm^3):*	174.24	*Particle Density(g/cm^3):*	2.65 ☑ Assumed ☐ Measured
Water Content (%, g/g):	8.1	*Dry Density (g/cm^3):*	2.04	*Cell pressure (PSI):*	82.0
Water Content (%, vol):	16.5	*Dry Density (pcf):*	127.25	*Influent pressure (PSI):*	80.0
Void Ratio (e):	0.30	*Water Content (%, g/g):*	11.3	*Effluent pressure (PSI):*	80.0
Porosity (%, vol):	23.2	*Water Content (%, vol):*	23.1	*Panel Used:*	☐ A ☑ B ☐ C
Saturation (%):	70.8	*Void Ratio(e):*	0.30	*Reading:*	☐ Annulus ☑ Pipette
		Porosity (%, vol):	23.1		Date/Time
		Saturation (%):*	99.9	B-Value (% saturation) prior to test*:	0.95 11/13/13 940
				B-Value (% saturation) post to test:	0.95 11/13/13 1002

* Per ASTM D5084 percent saturation is ensured (B-Value ≥ 95%) prior to testing, as post test saturation values may be exaggerated or skewed during depressurizing and sample removal.
**Percent Deformation: based on initial sample length and post permeation sample length.

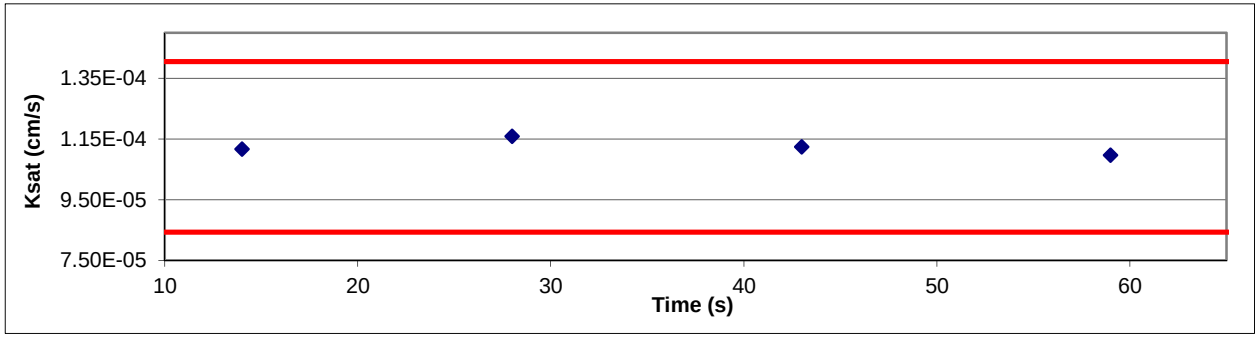
Laboratory analysis by: D. O'Dowd
Data entered by: D. O'Dowd
Checked by: J. Hines

Saturated Hydraulic Conductivity
Flexible Wall Falling Head-Rising Tail Method

Job name: Montgomery & Associates
Job number: LB13.0271.00
Sample number: MW-117 (169 - 169.5) Vertical
Project: Lisbon, 1350.21
Depth: 169-169.5

Date	Time	Temp (°C)	Influent Pipette Reading	Effluent Pipette Reading	Gradient (DH/DL)	Average Flow (cm^3)	Elapsed Time (s)	Ratio (outflow to inflow)	Change in Head (Not to exceed 25%)	k_{sat} T°C (cm/s)	k_{sat} Corrected (cm/s)
Test # 1:											
13-Nov-13	09:44:36	20.8	7.80	19.00	3.08	0.17	14	1.00	4%	1.14E-04	1.12E-04
13-Nov-13	09:44:50	20.8	8.00	18.80	2.97						
Test # 2:											
13-Nov-13	09:44:50	20.8	8.00	18.80	2.97	0.17	14	1.00	4%	1.18E-04	1.16E-04
13-Nov-13	09:45:04	20.8	8.20	18.60	2.86						
Test # 3:											
13-Nov-13	09:45:04	20.8	8.20	18.60	2.86	0.17	15	1.00	4%	1.15E-04	1.12E-04
13-Nov-13	09:45:19	20.8	8.40	18.40	2.75						
Test # 4:											
13-Nov-13	09:45:19	20.8	8.40	18.40	2.75	0.17	16	1.00	4%	1.12E-04	1.10E-04
13-Nov-13	09:45:35	20.8	8.60	18.20	2.64						

***Average Ksat* (cm/sec):** **1.12E-04**
Calculated Gravel Corrected Average Ksat (cm/sec): NA



ASTM Required Range (+/- 25%)

Ksat (-25%) (cm/s): 8.43E-05

Ksat (+25%) (cm/s): 1.41E-04

Saturated Hydraulic Conductivity
Flexible Wall Falling Head-Rising Tail Method

Job name: Montgomery & Associates
Job number: LB13.0271.00
Sample number: MW-117 (169 - 169.5) Horizontal
Project: Lisbon, 1350.21
Depth: 169-169.5

Remolded or Initial Sample Properties		Post Permeation Sample Properties		Test and Sample Conditions	
Initial Mass (g):	278.67	*Saturated Mass (g):*	292.24	*Permeant liquid used:*	Tap Water
Diameter (cm):	5.265	*Dry Mass (g):*	265	*Sample Preparation:*	☑ In situ sample, extruded
Length (cm):	6.019	*Diameter (cm):*	5.196		☐ Remolded Sample
Area (cm^2):	21.77	*Length (cm):*	6.017	*Number of Lifts:*	NA
Volume (cm^3):	131.04	*Deformation (%)**:*	0.03	*Split:*	NA
Dry Density (g/cm^3):	2.02	*Area (cm^2):*	21.20	*Percent Coarse Material (%):*	NA
Dry Density (pcf):	126.24	*Volume (cm^3):*	127.59	*Particle Density(g/cm^3):*	2.65 ☑ Assumed ☐ Measured
Water Content (%, g/g):	5.2	*Dry Density (g/cm^3):*	2.08	*Cell pressure (PSI):*	82.0
Water Content (%, vol):	10.4	*Dry Density (pcf):*	129.66	*Influent pressure (PSI):*	80.0
Void Ratio (e):	0.31	*Water Content (%, g/g):*	10.3	*Effluent pressure (PSI):*	80.0
Porosity (%, vol):	23.7	*Water Content (%, vol):*	21.4	*Panel Used:*	☑ A ☐ B ☐ C
Saturation (%):	44.0	*Void Ratio(e):*	0.28	*Reading:*	☐ Annulus ☑ Pipette
		Porosity (%, vol):	21.6		Date/Time
		Saturation (%):*	98.7	B-Value (% saturation) prior to test*:	1.00 12/4/13 1025
				B-Value (% saturation) post to test:	1.00 12/4/13 1053

* Per ASTM D5084 percent saturation is ensured (B-Value ≥ 95%) prior to testing, as post test saturation values may be exaggerated or skewed during depressurizing and sample removal.
**Percent Deformation: based on initial sample length and post permeation sample length.

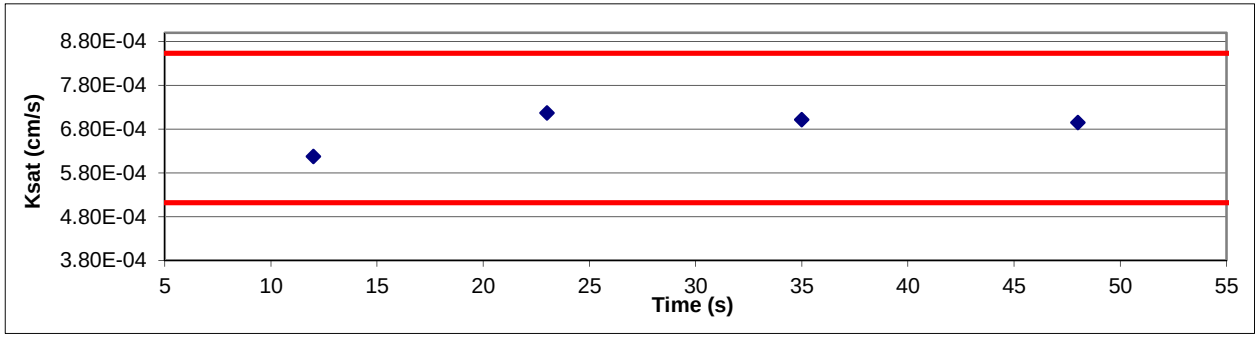
Laboratory analysis by: D. O'Dowd
Data entered by: D. O'Dowd
Checked by: J. Hines

Saturated Hydraulic Conductivity
Flexible Wall Falling Head-Rising Tail Method

Job name: Montgomery & Associates
Job number: LB13.0271.00
Sample number: MW-117 (169 - 169.5) Horizontal
Project: Lisbon, 1350.21
Depth: 169-169.5

Date	Time	Temp (°C)	Influent Pipette Reading	Effluent Pipette Reading	Gradient (DH/DL)	Average Flow (cm^3)	Elapsed Time (s)	Ratio (outflow to inflow)	Change in Head (Not to exceed 25%)	k_{sat} T°C (cm/s)	k_{sat} Corrected (cm/s)
Test # 1:											
04-Dec-13	10:49:47	19.6	9.30	16.20	1.32	0.17	12	1.00	6%	6.11E-04	6.18E-04
04-Dec-13	10:49:59	19.6	9.50	16.00	1.25						
Test # 2:											
04-Dec-13	10:49:59	19.6	9.50	16.00	1.25	0.17	11	1.00	6%	7.09E-04	7.17E-04
04-Dec-13	10:50:10	19.6	9.70	15.80	1.17						
Test # 3:											
04-Dec-13	10:50:10	19.6	9.70	15.80	1.17	0.17	12	1.00	7%	6.94E-04	7.01E-04
04-Dec-13	10:50:22	19.6	9.90	15.60	1.09						
Test # 4:											
04-Dec-13	10:50:22	19.6	9.90	15.60	1.09	0.17	13	1.00	7%	6.88E-04	6.95E-04
04-Dec-13	10:50:35	19.6	10.10	15.40	1.02						

***Average Ksat* (cm/sec):** **6.83E-04**
Calculated Gravel Corrected Average Ksat (cm/sec): NA



ASTM Required Range (+/- 25%)

Ksat (-25%) (cm/s): 5.12E-04

Ksat (+25%) (cm/s): 8.53E-04

Saturated Hydraulic Conductivity
Flexible Wall Falling Head-Rising Tail Method

Job name: Montgomery & Associates
Job number: LB13.0271.00
Sample number: MW-117 (211-211.6) Vertical
Project: Lisbon, 1350.21
Depth: 211-211.6

Remolded or Initial Sample Properties		Post Permeation Sample Properties		Test and Sample Conditions	
Initial Mass (g):	338.84	*Saturated Mass (g):*	344.71	*Permeant liquid used:*	Tap Water
Diameter (cm):	7.433	*Dry Mass (g):*	323.64	*Sample Preparation:*	☑ In situ sample, extruded
Length (cm):	3.207	*Diameter (cm):*	7.506		☐ Remolded Sample
Area (cm^2):	43.39	*Length (cm):*	3.188	*Number of Lifts:*	NA
Volume (cm^3):	139.16	*Deformation (%)**:*	0.61	*Split:*	NA
Dry Density (g/cm^3):	2.33	*Area (cm^2):*	44.25	*Percent Coarse Material (%):*	NA
Dry Density (pcf):	145.19	*Volume (cm^3):*	141.05	*Particle Density(g/cm^3):*	2.7 ☑ Assumed ☐ Measured
Water Content (%, g/g):	4.7	*Dry Density (g/cm^3):*	2.29	*Cell pressure (PSI):*	86.0
Water Content (%, vol):	10.9	*Dry Density (pcf):*	143.24	*Influent pressure (PSI):*	85.0
Void Ratio (e):	0.16	*Water Content (%, g/g):*	6.5	*Effluent pressure (PSI):*	80.0
Porosity (%, vol):	13.9	*Water Content (%, vol):*	14.9	*Panel Used:*	☑ A ☐ B ☐ C
Saturation (%):	78.8	*Void Ratio(e):*	0.18	*Reading:*	☐ Annulus ☑ Pipette
		Porosity (%, vol):	15.0		Date/Time
		Saturation (%):*	99.5	B-Value (% saturation) prior to test*:	1.00 11/17/13 1105
				B-Value (% saturation) post to test:	1.00 11/22/13 01205

* Per ASTM D5084 percent saturation is ensured (B-Value ≥ 95%) prior to testing, as post test saturation values may be exaggerated or skewed during depressurizing and sample removal.
**Percent Deformation: based on initial sample length and post permeation sample length.

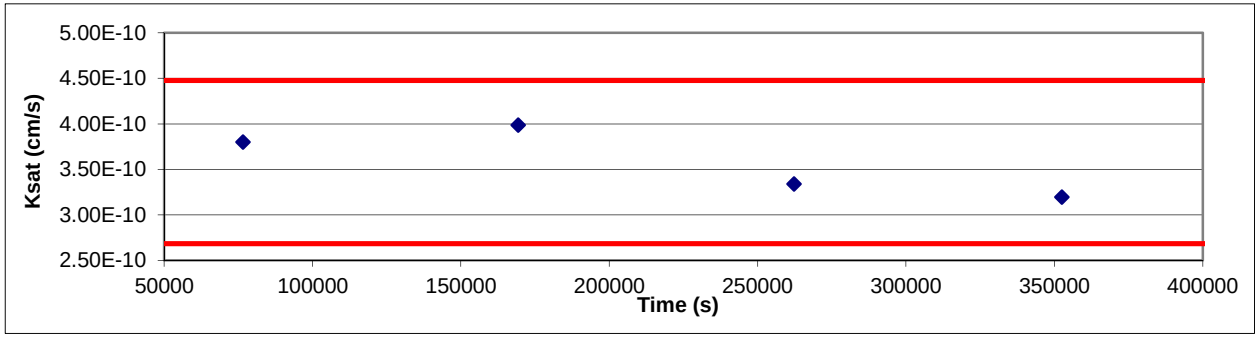
Laboratory analysis by: D. O'Dowd
Data entered by: D. O'Dowd
Checked by: J. Hines

Saturated Hydraulic Conductivity
Flexible Wall Falling Head-Rising Tail Method

Job name: Montgomery & Associates
Job number: LB13.0271.00
Sample number: MW-117 (211-211.6) Vertical
Project: Lisbon, 1350.21
Depth: 211-211.6

Date	Time	Temp (°C)	Influent Pipette Reading	Effluent Pipette Reading	Gradient (ΔH/ΔL)	Average Flow (cm^3)	Elapsed Time (s)	Ratio (outflow to inflow)	Change in Head (Not to exceed 25%)	k_{sat} T°C (cm/s)	k_{sat} Corrected (cm/s)
Test # 1:											
17-Nov-13	11:05:40	20.00	5.65	23.75	116.89	0.13	76550	1.00	0%	3.79E-10	3.80E-10
18-Nov-13	08:21:30	19.80	5.80	23.60	116.78						
Test # 4:											
18-Nov-13	08:21:30	19.80	5.80	23.60	116.78	0.16	92790	1.11	0%	3.96E-10	3.99E-10
19-Nov-13	10:08:00	19.75	5.98	23.40	116.64						
Test # 4:											
19-Nov-13	10:08:00	19.75	5.98	23.40	116.64	0.14	92874	0.88	0%	3.34E-10	3.34E-10
20-Nov-13	11:55:54	20.30	6.15	23.25	116.53						
Test # 4:											
20-Nov-13	11:55:54	20.30	6.15	23.25	116.53	0.13	90326	1.00	0%	3.22E-10	3.20E-10
21-Nov-13	13:01:20	20.40	6.30	23.10	116.42						

***Average Ksat* (cm/sec):** **3.58E-10**
Calculated Gravel Corrected Average Ksat (cm/sec): NA



ASTM Required Range (+/- 25%)

Ksat (-25%) (cm/s): 2.69E-10

Ksat (+25%) (cm/s): 4.48E-10

Saturated Hydraulic Conductivity
Flexible Wall Falling Head-Rising Tail Method

Job name: Montgomery & Associates
Job number: LB13.0271.00
Sample number: MW-117 (211-211.6) Horizontal
Project: Lisbon, 1350.21
Depth: 211-211.6

Remolded or Initial Sample Properties		Post Permeation Sample Properties		Test and Sample Conditions	
Initial Mass (g):	239.51	*Saturated Mass (g):*	243.75	*Permeant liquid used:*	Tap Water
Diameter (cm):	5.163	*Dry Mass (g):*	228.39	*Sample Preparation:*	☑ In situ sample, extruded
Length (cm):	4.767	*Diameter (cm):*	5.175		☐ Remolded Sample
Area (cm^2):	20.94	*Length (cm):*	4.763	*Number of Lifts:*	NA
Volume (cm^3):	99.80	*Deformation (%)**:*	0.08	*Split:*	NA
Dry Density (g/cm^3):	2.29	*Area (cm^2):*	21.03	*Percent Coarse Material (%):*	NA
Dry Density (pcf):	142.86	*Volume (cm^3):*	100.18	*Particle Density(g/cm^3):*	2.7 ☑ Assumed ☐ Measured
Water Content (%, g/g):	4.9	*Dry Density (g/cm^3):*	2.28	*Cell pressure (PSI):*	83.0
Water Content (%, vol):	11.1	*Dry Density (pcf):*	142.32	*Influent pressure (PSI):*	82.0
Void Ratio (e):	0.18	*Water Content (%, g/g):*	6.7	*Effluent pressure (PSI):*	78.0
Porosity (%, vol):	15.2	*Water Content (%, vol):*	15.3	*Panel Used:*	☐ A ☑ B ☐ C
Saturation (%):	73.1	*Void Ratio(e):*	0.18	*Reading:*	☐ Annulus ☑ Pipette
		Porosity (%, vol):	15.6		Date/Time
		Saturation (%):*	98.5	B-Value (% saturation) prior to test*:	0.95 12/3/13 1350
				B-Value (% saturation) post to test:	0.95 12/4/13 1530

* Per ASTM D5084 percent saturation is ensured (B-Value ≥ 95%) prior to testing, as post test saturation values may be exaggerated or skewed during depressurizing and sample removal.
**Percent Deformation: based on initial sample length and post permeation sample length.

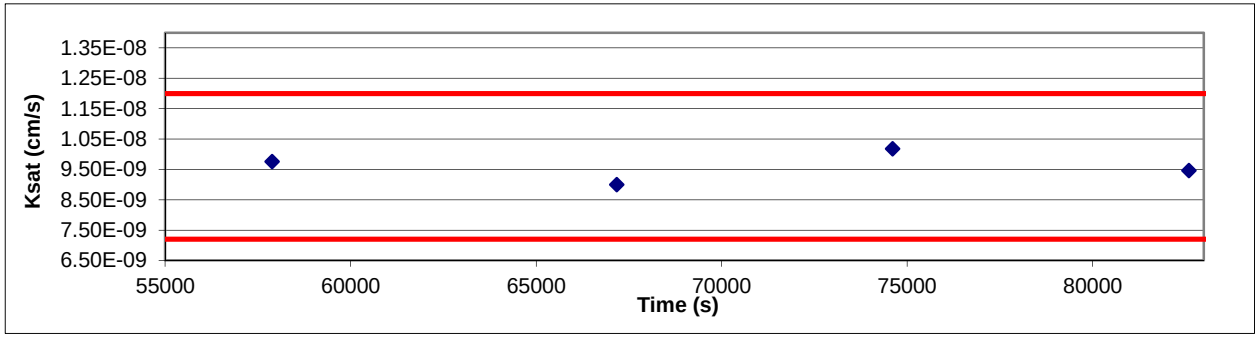
Laboratory analysis by: D. O'Dowd
Data entered by: D. O'Dowd
Checked by: J. Hines

Saturated Hydraulic Conductivity
Flexible Wall Falling Head-Rising Tail Method

Job name: Montgomery & Associates
Job number: LB13.0271.00
Sample number: MW-117 (211-211.6) Horizontal
Project: Lisbon, 1350.21
Depth: 211-211.6

Date	Time	Temp (°C)	Influent Pipette Reading	Effluent Pipette Reading	Gradient (ΔH/ΔL)	Average Flow (cm^3)	Elapsed Time (s)	Ratio (outflow to inflow)	Change in Head (Not to exceed 25%)	k_{sat} T°C (cm/s)	k_{sat} Corrected (cm/s)
Test # 1:											
03-Dec-13	16:30:00	19.10	4.65	22.55	63.41	0.64	57885	1.03	1%	9.61E-09	9.76E-09
04-Dec-13	08:34:45	19.70	5.38	21.80	63.05						
Test # 4:											
04-Dec-13	08:34:45	19.70	5.38	21.80	63.05	0.10	9285	0.83	0%	8.94E-09	9.00E-09
04-Dec-13	11:09:30	19.75	5.50	21.70	63.00						
Test # 4:											
04-Dec-13	11:09:30	19.75	5.50	21.70	63.00	0.09	7440	1.00	0%	1.01E-08	1.02E-08
04-Dec-13	13:13:30	20.00	5.60	21.60	62.95						
Test # 4:											
04-Dec-13	13:13:30	20.00	5.60	21.60	62.95	0.09	7985	1.00	0%	9.46E-09	9.46E-09
04-Dec-13	15:26:35	20.00	5.70	21.50	62.90						

***Average Ksat* (cm/sec):** **9.60E-09**
Calculated Gravel Corrected Average Ksat (cm/sec): NA



ASTM Required Range (+/- 25%)

Ksat (-25%) (cm/s): 7.20E-09

Ksat (+25%) (cm/s): 1.20E-08

Saturated Hydraulic Conductivity
Flexible Wall Falling Head-Rising Tail Method

Job name: Montgomery & Associates
Job number: LB13.0271.00
Sample number: MW-118 (46.5-47) Vertical
Project: Lisbon, 1350.21
Depth: 46.5-47

Remolded or Initial Sample Properties		Post Permeation Sample Properties		Test and Sample Conditions	
Initial Mass (g):	287.42	*Saturated Mass (g):*	293.98	*Permeant liquid used:*	Tap Water
Diameter (cm):	7.430	*Dry Mass (g):*	275.86	*Sample Preparation:*	☑ In situ sample, extruded
Length (cm):	2.892	*Diameter (cm):*	7.371		☐ Remolded Sample
Area (cm^2):	43.36	*Length (cm):*	2.892	*Number of Lifts:*	NA
Volume (cm^3):	125.39	*Deformation (%)**:*	0.00	*Split:*	NA
Dry Density (g/cm^3):	2.20	*Area (cm^2):*	42.67	*Percent Coarse Material (%):*	NA
Dry Density (pcf):	137.34	*Volume (cm^3):*	123.41	*Particle Density(g/cm^3):*	2.64 ☑ Assumed ☐ Measured
Water Content (%, g/g):	4.2	*Dry Density (g/cm^3):*	2.24	*Cell pressure (PSI):*	82.0
Water Content (%, vol):	9.2	*Dry Density (pcf):*	139.55	*Influent pressure (PSI):*	80.5
Void Ratio (e):	0.20	*Water Content (%, g/g):*	6.6	*Effluent pressure (PSI):*	80.0
Porosity (%, vol):	16.7	*Water Content (%, vol):*	14.7	*Panel Used:*	☑ D ☐ E ☐ F
Saturation (%):	55.3	*Void Ratio(e):*	0.18	*Reading:*	☐ Annulus ☑ Pipette
		Porosity (%, vol):	15.3		Date/Time
		Saturation (%):*	95.8	B-Value (% saturation) prior to test*:	0.95 11/13/13 945
				B-Value (% saturation) post to test:	0.95 11/13/13 1005

* Per ASTM D5084 percent saturation is ensured (B-Value ≥ 95%) prior to testing, as post test saturation values may be exaggerated during depressurizing and sample removal.

**Percent Deformation: based on initial sample length and post permeation sample length.

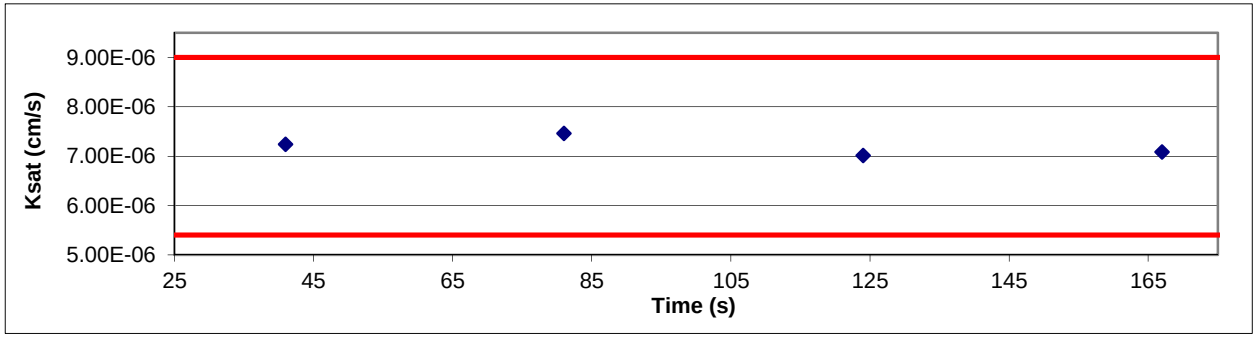
Laboratory analysis by: D. O'Dowd
Data entered by: D. O'Dowd
Checked by: J. Hines

Saturated Hydraulic Conductivity
Flexible Wall Falling Head-Rising Tail Method

Job name: Montgomery & Associates
Job number: LB13.0271.00
Sample number: MW-118 (46.5-47) Vertical
Project: Lisbon, 1350.21
Depth: 46.5-47

Date	Time	Temp (°C)	Influent Pipette Reading	Effluent Pipette Reading	Gradient (DH/DL)	Average Flow (cm^3)	Elapsed Time (s)	Ratio (outflow to inflow)	Change in Head (Not to exceed 25%)	k_{sat} T°C (cm/s)	k_{sat} Corrected (cm/s)
Test # 1:											
13-Nov-13	09:53:51	20.9	7.80	16.20	15.52	0.17	41	1.00	1%	7.43E-06	7.24E-06
13-Nov-13	09:54:32	21.3	8.00	16.00	15.36						
Test # 2:											
13-Nov-13	09:54:32	21.3	8.00	16.00	15.36	0.17	40	1.00	1%	7.70E-06	7.46E-06
13-Nov-13	09:55:12	21.3	8.20	15.80	15.20						
Test # 3:											
13-Nov-13	09:55:12	21.3	8.20	15.80	15.20	0.17	43	1.00	1%	7.24E-06	7.01E-06
13-Nov-13	09:55:55	21.3	8.40	15.60	15.04						
Test # 4:											
13-Nov-13	09:55:55	21.3	8.40	15.60	15.04	0.17	43	1.00	1%	7.31E-06	7.09E-06
13-Nov-13	09:56:38	21.3	8.60	15.40	14.88						

***Average Ksat* (cm/sec):** **7.20E-06**
Calculated Gravel Corrected Average Ksat (cm/sec): NA



ASTM Required Range (+/- 25%)

Ksat (-25%) (cm/s): 5.40E-06

Ksat (+25%) (cm/s): 9.00E-06

Saturated Hydraulic Conductivity
Flexible Wall Falling Head-Rising Tail Method

Job name: Montgomery & Associates
Job number: LB13.0271.00
Sample number: MW-118 (46.5-47) Horizontal
Project: Lisbon, 1350.21
Depth: 46.5-47

Remolded or Initial Sample Properties		Post Permeation Sample Properties		Test and Sample Conditions	
Initial Mass (g):	199.74	*Saturated Mass (g):*	202.01	*Permeant liquid used:*	Tap Water
Diameter (cm):	5.294	*Dry Mass (g):*	193.19	*Sample Preparation:*	☑ In situ sample, extruded
Length (cm):	3.755	*Diameter (cm):*	5.290		☐ Remolded Sample
Area (cm^2):	22.01	*Length (cm):*	3.756	*Number of Lifts:*	NA
Volume (cm^3):	82.65	*Deformation (%)**:*	0.03	*Split:*	NA
Dry Density (g/cm^3):	2.34	*Area (cm^2):*	21.98	*Percent Coarse Material (%):*	NA
Dry Density (pcf):	145.91	*Volume (cm^3):*	82.55	*Particle Density(g/cm^3):*	2.64 ☑ Assumed ☐ Measured
Water Content (%, g/g):	3.4	*Dry Density (g/cm^3):*	2.34	*Cell pressure (PSI):*	82.0
Water Content (%, vol):	7.9	*Dry Density (pcf):*	146.10	*Influent pressure (PSI):*	80.5
Void Ratio (e):	0.13	*Water Content (%, g/g):*	4.6	*Effluent pressure (PSI):*	80.0
Porosity (%, vol):	11.5	*Water Content (%, vol):*	10.7	*Panel Used:*	☑ D ☐ E ☐ F
Saturation (%):	69.1	*Void Ratio(e):*	0.13	*Reading:*	☐ Annulus ☑ Pipette
		Porosity (%, vol):	11.4		Date/Time
		Saturation (%):*	94.1	B-Value (% saturation) prior to test*:	0.95 12/3/13 1305
				B-Value (% saturation) post to test:	0.95 12/3/13 1414

* Per ASTM D5084 percent saturation is ensured (B-Value ≥ 95%) prior to testing, as post test saturation values may be exaggerated during depressurizing and sample removal.

**Percent Deformation: based on initial sample length and post permeation sample length.

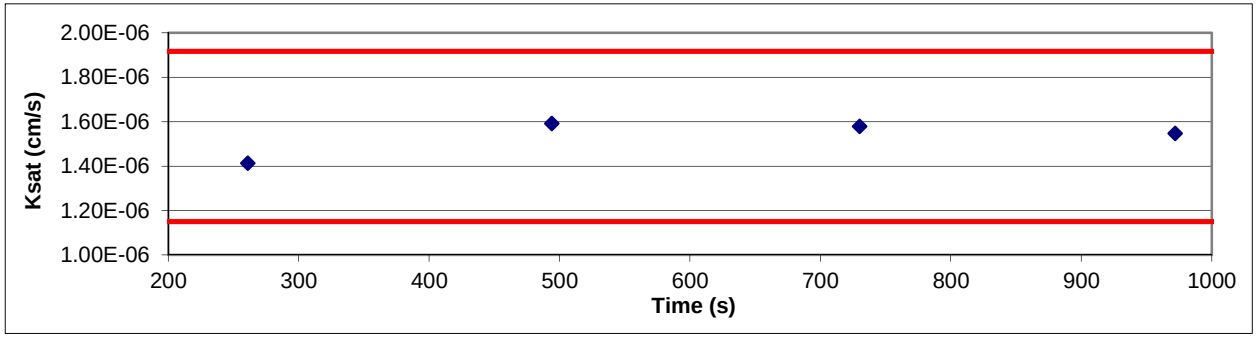
Laboratory analysis by: D. O'Dowd
Data entered by: D. O'Dowd
Checked by: J. Hines

Saturated Hydraulic Conductivity
Flexible Wall Falling Head-Rising Tail Method

Job name: Montgomery & Associates
Job number: LB13.0271.00
Sample number: MW-118 (46.5-47) Horizontal
Project: Lisbon, 1350.21
Depth: 46.5-47

Date	Time	Temp (°C)	Influent Pipette Reading	Effluent Pipette Reading	Gradient (DH/DL)	Average Flow (cm^3)	Elapsed Time (s)	Ratio (outflow to inflow)	Change in Head (Not to exceed 25%)	k_{sat} T°C (cm/s)	k_{sat} Corrected (cm/s)
Test # 1:											
03-Dec-13	13:55:22	19.1	10.90	21.70	12.68	0.09	261	1.00	0%	1.38E-06	1.41E-06
03-Dec-13	13:59:43	19.1	11.00	21.60	12.62						
Test # 2:											
03-Dec-13	13:59:43	19.1	11.00	21.60	12.62	0.09	233	1.00	0%	1.56E-06	1.59E-06
03-Dec-13	14:03:36	19.1	11.10	21.50	12.56						
Test # 3:											
03-Dec-13	14:03:36	19.1	11.10	21.50	12.56	0.09	236	1.00	0%	1.54E-06	1.58E-06
03-Dec-13	14:07:32	19.1	11.20	21.40	12.50						
Test # 4:											
03-Dec-13	14:07:32	19.1	11.20	21.40	12.50	0.09	242	1.00	0%	1.51E-06	1.55E-06
03-Dec-13	14:11:34	19.1	11.30	21.30	12.44						

***Average Ksat* (cm/sec):** **1.53E-06**
Calculated Gravel Corrected Average Ksat (cm/sec): NA



ASTM Required Range (+/- 25%)

Ksat (-25%) (cm/s): 1.15E-06

Ksat (+25%) (cm/s): 1.92E-06

Saturated Hydraulic Conductivity
Flexible Wall Falling Head-Rising Tail Method

Job name: Montgomery & Associates
Job number: LB13.0271.00
Sample number: MW-118 (75-76.5) Vertical
Project: Lisbon, 1350.21
Depth: 75-76.5

Remolded or Initial Sample Properties		Post Permeation Sample Properties		Test and Sample Conditions	
Initial Mass (g):	353.18	*Saturated Mass (g):*	358.22	*Permeant liquid used:*	Tap Water
Diameter (cm):	7.349	*Dry Mass (g):*	334.12	*Sample Preparation:*	☑ In situ sample, extruded
Length (cm):	3.406	*Diameter (cm):*	7.435		☐ Remolded Sample
Area (cm^2):	42.42	*Length (cm):*	3.413	*Number of Lifts:*	NA
Volume (cm^3):	144.47	*Deformation (%)**:*	0.19	*Split:*	NA
Dry Density (g/cm^3):	2.31	*Area (cm^2):*	43.42	*Percent Coarse Material (%):*	NA
Dry Density (pcf):	144.37	*Volume (cm^3):*	148.16	*Particle Density(g/cm^3):*	2.7 ☑ Assumed ☐ Measured
Water Content (%, g/g):	5.7	*Dry Density (g/cm^3):*	2.26	*Cell pressure (PSI):*	82.0
Water Content (%, vol):	13.2	*Dry Density (pcf):*	140.78	*Influent pressure (PSI):*	81.0
Void Ratio (e):	0.17	*Water Content (%, g/g):*	7.2	*Effluent pressure (PSI):*	80.0
Porosity (%, vol):	14.3	*Water Content (%, vol):*	16.3	*Panel Used:*	☐ D ☑ E ☐ F
Saturation (%):	92.0	*Void Ratio(e):*	0.20	*Reading:*	☐ Annulus ☑ Pipette
		Porosity (%, vol):	16.5		Date/Time
		Saturation (%):*	98.7	B-Value (% saturation) prior to test*:	0.98 11/13/13 948
				B-Value (% saturation) post to test:	0.98 11/13/13 1455

* Per ASTM D5084 percent saturation is ensured (B-Value ≥ 95%) prior to testing, as post test saturation values may be exaggerated during depressurizing and sample removal.

**Percent Deformation: based on initial sample length and post permeation sample length.

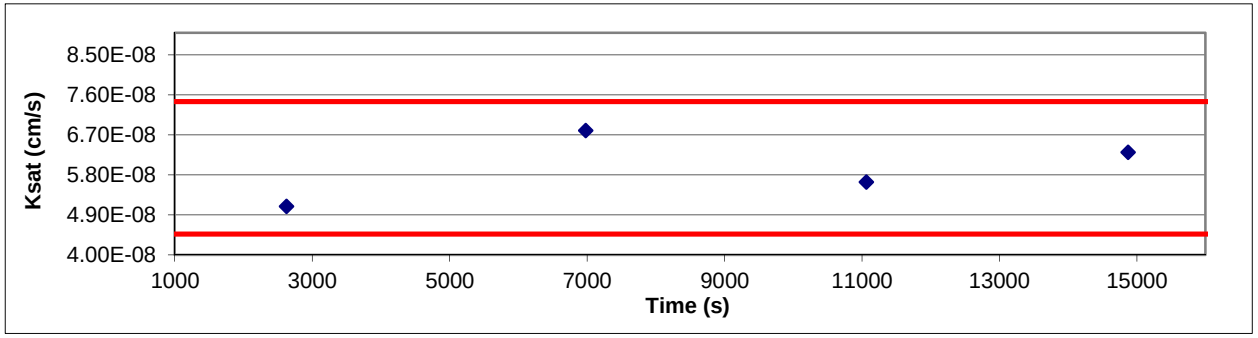
Laboratory analysis by: D. O'Dowd
Data entered by: D. O'Dowd
Checked by: J. Hines

Saturated Hydraulic Conductivity
Flexible Wall Falling Head-Rising Tail Method

Job name: Montgomery & Associates
Job number: LB13.0271.00
Sample number: MW-118 (75-76.5) Vertical
Project: Lisbon, 1350.21
Depth: 75-76.5

Date	Time	Temp (°C)	Influent Pipette Reading	Effluent Pipette Reading	Gradient (DH/DL)	Average Flow (cm^3)	Elapsed Time (s)	Ratio (outflow to inflow)	Change in Head (Not to exceed 25%)	k_{sat} T°C (cm/s)	k_{sat} Corrected (cm/s)
Test # 1:											
13-Nov-13	10:42:30	20.2	4.30	19.70	25.82	0.13	2627	1.00	0%	5.12E-08	5.09E-08
13-Nov-13	11:26:17	20.3	4.45	19.55	25.72						
Test # 2:											
13-Nov-13	11:26:17	20.3	4.45	19.55	25.72	0.29	4353	1.00	1%	6.84E-08	6.80E-08
13-Nov-13	12:38:50	20.3	4.78	19.22	25.50						
Test # 3:											
13-Nov-13	12:38:50	20.3	4.78	19.22	25.50	0.22	4084	0.89	1%	5.68E-08	5.64E-08
13-Nov-13	13:46:54	20.4	5.05	18.98	25.33						
Test # 4:											
13-Nov-13	13:46:54	20.4	5.05	18.98	25.33	0.23	3811	1.12	1%	6.37E-08	6.31E-08
13-Nov-13	14:50:25	20.4	5.30	18.70	25.15						

***Average Ksat* (cm/sec):** **5.96E-08**
Calculated Gravel Corrected Average Ksat (cm/sec): NA



ASTM Required Range (+/- 25%)

Ksat (-25%) (cm/s): 4.47E-08

Ksat (+25%) (cm/s): 7.45E-08

Saturated Hydraulic Conductivity
Flexible Wall Falling Head-Rising Tail Method

Job name: Montgomery & Associates
Job number: LB13.0271.00
Sample number: MW-118 (75-76.5) Horizontal
Project: Lisbon, 1350.21
Depth: 75-76.5

Remolded or Initial Sample Properties		Post Permeation Sample Properties		Test and Sample Conditions	
Initial Mass (g):	137.98	*Saturated Mass (g):*	139.14	*Permeant liquid used:*	Tap Water
Diameter (cm):	5.174	*Dry Mass (g):*	132	*Sample Preparation:*	☑ In situ sample, extruded
Length (cm):	2.655	*Diameter (cm):*	5.182		☐ Remolded Sample
Area (cm^2):	21.03	*Length (cm):*	2.667	*Number of Lifts:*	NA
Volume (cm^3):	55.82	*Deformation (%)**:*	0.45	*Split:*	NA
Dry Density (g/cm^3):	2.36	*Area (cm^2):*	21.09	*Percent Coarse Material (%):*	NA
Dry Density (pcf):	147.62	*Volume (cm^3):*	56.25	*Particle Density(g/cm^3):*	2.7 ☑ Assumed ☐ Measured
Water Content (%, g/g):	4.5	*Dry Density (g/cm^3):*	2.35	*Cell pressure (PSI):*	82.0
Water Content (%, vol):	10.7	*Dry Density (pcf):*	146.51	*Influent pressure (PSI):*	81.0
Void Ratio (e):	0.14	*Water Content (%, g/g):*	5.4	*Effluent pressure (PSI):*	79.0
Porosity (%, vol):	12.4	*Water Content (%, vol):*	12.7	*Panel Used:*	☐ A ☐ B ☑ C
Saturation (%):	86.2	*Void Ratio(e):*	0.15	*Reading:*	☐ Annulus ☑ Pipette
		Porosity (%, vol):	13.1		Date/Time
		Saturation (%):*	97.0	B-Value (% saturation) prior to test*:	0.98 12/3/13 1345
				B-Value (% saturation) post to test:	0.98 12/3/13 1453

* Per ASTM D5084 percent saturation is ensured (B-Value ≥ 95%) prior to testing, as post test saturation values may be exaggerated or skewed during depressurizing and sample removal.
**Percent Deformation: based on initial sample length and post permeation sample length.

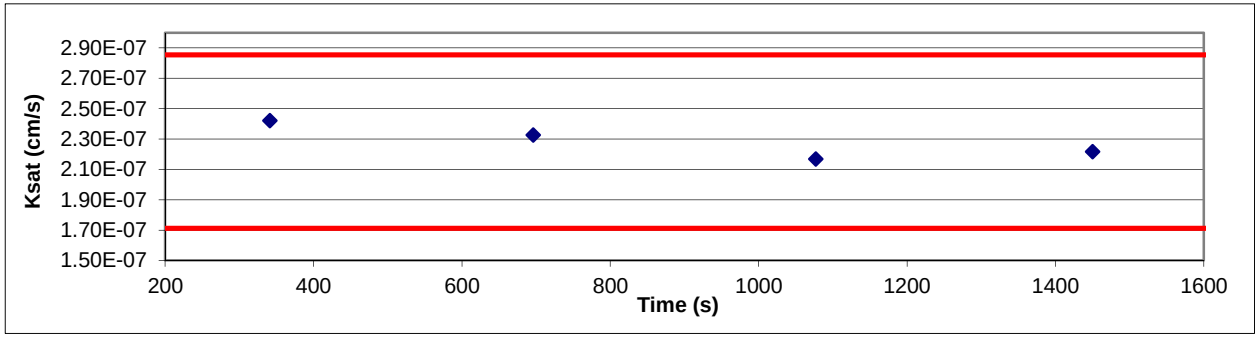
Laboratory analysis by: D. O'Dowd
Data entered by: D. O'Dowd
Checked by: J. Hines

Saturated Hydraulic Conductivity
Flexible Wall Falling Head-Rising Tail Method

Job name: Montgomery & Associates
Job number: LB13.0271.00
Sample number: MW-118 (75-76.5) Horizontal
Project: Lisbon, 1350.21
Depth: 75-76.5

Date	Time	Temp (°C)	Influent Pipette Reading	Effluent Pipette Reading	Gradient (ΔH/ΔL)	Average Flow (cm^3)	Elapsed Time (s)	Ratio (outflow to inflow)	Change in Head (Not to exceed 25%)	k_{sat} T°C (cm/s)	k_{sat} Corrected (cm/s)
Test # 1:											
03-Dec-13	14:27:39	19.40	7.40	20.25	58.31	0.09	341	1.00	0%	2.39E-07	2.42E-07
03-Dec-13	14:33:20	19.45	7.50	20.15	58.23						
Test # 4:											
03-Dec-13	14:33:20	19.45	7.50	20.15	58.23	0.09	355	1.00	0%	2.30E-07	2.33E-07
03-Dec-13	14:39:15	19.50	7.60	20.05	58.14						
Test # 4:											
03-Dec-13	14:39:15	19.50	7.60	20.05	58.14	0.09	381	1.00	0%	2.14E-07	2.17E-07
03-Dec-13	14:45:36	19.50	7.70	19.95	58.05						
Test # 4:											
03-Dec-13	14:45:36	19.50	7.70	19.95	58.05	0.09	373	1.00	0%	2.19E-07	2.22E-07
03-Dec-13	14:51:49	19.60	7.80	19.85	57.97						

***Average Ksat* (cm/sec):** **2.28E-07**
Calculated Gravel Corrected Average Ksat (cm/sec): NA



ASTM Required Range (+/- 25%)

Ksat (-25%) (cm/s): 1.71E-07

Ksat (+25%) (cm/s): 2.85E-07

Laboratory Tests and Methods

Tests and Methods

Dry Bulk Density:	ASTM D7263
Moisture Content:	ASTM D7263
Calculated Porosity:	ASTM D7263
Saturated Hydraulic Conductivity:	
Falling Head Rising Tail: (Flexible Wall)	ASTM D5084

APPENDIX D

INVESTIGATION DERIVED WASTE DISPOSAL MANIFESTS

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Analytical Report

October 01, 2012

Report to:
Tim Leo
Montgomery and Associates
1550 E. Prince Rd.
Tuscon, AZ 85719

Bill to:
Accounts Payable
Montgomery and Associates
1550 E Prince Rd
Tucson, AZ 85719

cc: John Laney

Project ID: 1350.13
ACZ Project ID: L96899

Tim Leo:

Enclosed are the analytical results for sample(s) submitted to ACZ Laboratories, Inc. (ACZ) on September 22, 2012. This project has been assigned to ACZ's project number, L96899. Please reference this number in all future inquiries.

All analyses were performed according to ACZ's Quality Assurance Plan. The enclosed results relate only to the samples received under L96899. Each section of this report has been reviewed and approved by the appropriate Laboratory Supervisor, or a qualified substitute.

Except as noted, the test results for the methods and parameters listed on ACZ's current NELAC certificate letter (#ACZ) meet all requirements of NELAC.

This report shall be used or copied only in its entirety. ACZ is not responsible for the consequences arising from the use of a partial report.

All samples and sub-samples associated with this project will be disposed of after November 01, 2012. If the samples are determined to be hazardous, additional charges apply for disposal (typically $11/sample). If you would like the samples to be held longer than ACZ's stated policy or to be returned, please contact your Project Manager or Customer Service Representative for further details and associated costs. ACZ retains analytical raw data reports for ten years.

If you have any questions or other needs, please contact your Project Manager.

S. Habermehl

Scott Habermehl has reviewed
and approved this report.

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Analytical Results

Montgomery and Associates
Project ID: 1350.13
Sample ID: DC-104

Drill Cuttings

ACZ Sample ID: ***L96899-01***
Date Sampled: *09/17/12 13:00*
Date Received: *09/22/12*
Sample Matrix: *Soil*

Inorganic Prep

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Total Hot Plate Digestion	M3010A ICP							09/27/12 15:29	jjc

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Arsenic (TCLP)	M6010B ICP		U	*	mg/L	0.06	0.3	09/28/12 10:55	jjc
Barium (TCLP)	M6010B ICP	2.550		*	mg/L	0.003	0.02	09/28/12 10:55	jjc
Cadmium (TCLP)	M6010B ICP		U	*	mg/L	0.005	0.02	09/28/12 10:55	jjc
Chromium (TCLP)	M6010B ICP		U	*	mg/L	0.01	0.05	09/28/12 10:55	jjc
Lead (TCLP)	M6010B ICP		U	*	mg/L	0.04	0.2	09/28/12 10:55	jjc
Mercury (TCLP)	M7470 CVAA		U	*	mg/L	0.0002	0.001	09/27/12 16:07	mfm
Selenium (TCLP)	M6010B ICP		U	*	mg/L	0.06	0.3	09/28/12 10:55	jjc
Silver (TCLP)	M6010B ICP		U	*	mg/L	0.01	0.03	09/28/12 10:55	jjc

Soil Preparation

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
TCLP Metal Extraction	M1311							09/25/12 20:13	njj/mss

Arizona license number: AZ0102

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Analytical Results

Montgomery and Associates
Project ID: 1350.13
Sample ID: DC-100-105

Drill Cuttings

ACZ Sample ID: ***L96899-02***
Date Sampled: *09/19/12 13:00*
Date Received: *09/22/12*
Sample Matrix: *Soil*

Inorganic Prep

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Total Hot Plate Digestion	M3010A ICP							09/27/12 17:16	jjc

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Arsenic (TCLP)	M6010B ICP		U	*	mg/L	0.06	0.3	09/28/12 11:04	jjc
Barium (TCLP)	M6010B ICP	1.180		*	mg/L	0.003	0.02	09/28/12 11:04	jjc
Cadmium (TCLP)	M6010B ICP	0.008	B	*	mg/L	0.005	0.02	09/28/12 11:04	jjc
Chromium (TCLP)	M6010B ICP		U	*	mg/L	0.01	0.05	09/28/12 11:04	jjc
Lead (TCLP)	M6010B ICP		U	*	mg/L	0.04	0.2	09/28/12 11:04	jjc
Mercury (TCLP)	M7470 CVAA		U	*	mg/L	0.0002	0.001	09/27/12 16:14	mfm
Selenium (TCLP)	M6010B ICP		U	*	mg/L	0.06	0.3	09/28/12 11:04	jjc
Silver (TCLP)	M6010B ICP		U	*	mg/L	0.01	0.03	09/28/12 11:04	jjc

Soil Preparation

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
TCLP Metal Extraction	M1311							09/26/12 4:03	njj/mss

Arizona license number: AZ0102

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Analytical Results

Montgomery and Associates
Project ID: 1350.13
Sample ID: DC-101-102

Drill Cuttings

ACZ Sample ID: ***L96899-03***
Date Sampled: *09/21/12 12:40*
Date Received: *09/22/12*
Sample Matrix: *Soil*

Inorganic Prep

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Total Hot Plate Digestion	M3010A ICP							09/27/12 18:28	jjc

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Arsenic (TCLP)	M6010B ICP	0.08	B	*	mg/L	0.06	0.3	09/28/12 11:11	jjc
Barium (TCLP)	M6010B ICP	1.660		*	mg/L	0.003	0.02	09/28/12 11:11	jjc
Cadmium (TCLP)	M6010B ICP		U	*	mg/L	0.005	0.02	09/28/12 11:11	jjc
Chromium (TCLP)	M6010B ICP		U	*	mg/L	0.01	0.05	09/28/12 11:11	jjc
Lead (TCLP)	M6010B ICP		U	*	mg/L	0.04	0.2	09/28/12 11:11	jjc
Mercury (TCLP)	M7470 CVAA		U	*	mg/L	0.0002	0.001	09/27/12 16:18	mfm
Selenium (TCLP)	M6010B ICP		U	*	mg/L	0.06	0.3	09/28/12 11:11	jjc
Silver (TCLP)	M6010B ICP		U	*	mg/L	0.01	0.03	09/28/12 11:11	jjc

Soil Preparation

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
TCLP Metal Extraction	M1311							09/26/12 9:16	njj/mss

Arizona license number: AZ0102

Report Header Explanations

Batch	A distinct set of samples analyzed at a specific time
Found	Value of the QC Type of interest
Limit	Upper limit for RPD, in %.
Lower	Lower Recovery Limit, in % (except for LCSS, mg/Kg)
MDL	Method Detection Limit. Same as Minimum Reporting Limit. Allows for instrument and annual fluctuations.
PCN/SCN	A number assigned to reagents/standards to trace to the manufacturer's certificate of analysis
PQL	Practical Quantitation Limit, typically 5 times the MDL.
QC	True Value of the Control Sample or the amount added to the Spike
Rec	Recovered amount of the true value or spike added, in % (except for LCSS, mg/Kg)
RPD	Relative Percent Difference, calculation used for Duplicate QC Types
Upper	Upper Recovery Limit, in % (except for LCSS, mg/Kg)
Sample	Value of the Sample of interest

QC Sample Types

AS	Analytical Spike (Post Digestion)	*LCSWD*	Laboratory Control Sample - Water Duplicate
ASD	Analytical Spike (Post Digestion) Duplicate	*LFB*	Laboratory Fortified Blank
CCB	Continuing Calibration Blank	*LFM*	Laboratory Fortified Matrix
CCV	Continuing Calibration Verification standard	*LFMD*	Laboratory Fortified Matrix Duplicate
DUP	Sample Duplicate	*LRB*	Laboratory Reagent Blank
ICB	Initial Calibration Blank	*MS*	Matrix Spike
ICV	Initial Calibration Verification standard	*MSD*	Matrix Spike Duplicate
ICSAB	Inter-element Correction Standard - A plus B solutions	*PBS*	Prep Blank - Soil
LCSS	Laboratory Control Sample - Soil	*PBW*	Prep Blank - Water
LCSSD	Laboratory Control Sample - Soil Duplicate	*PQV*	Practical Quantitation Verification standard
LCSW	Laboratory Control Sample - Water	*SDL*	Serial Dilution

QC Sample Type Explanations

Blanks	Verifies that there is no or minimal contamination in the prep method or calibration procedure.
Control Samples	Verifies the accuracy of the method, including the prep procedure.
Duplicates	Verifies the precision of the instrument and/or method.
Spikes/Fortified Matrix	Determines sample matrix interferences, if any.
Standard	Verifies the validity of the calibration.

ACZ Qualifiers (Qual)

B	Analyte concentration detected at a value between MDL and PQL. The associated value is an estimated quantity.
H	Analysis exceeded method hold time. pH is a field test with an immediate hold time.
L	Target analyte response was below the laboratory defined negative threshold.
U	The material was analyzed for, but was not detected above the level of the associated value. The associated value is either the sample quantitation limit or the sample detection limit.

Method References

(1) EPA 600/4-83-020. Methods for Chemical Analysis of Water and Wastes, March 1983.
(2) EPA 600/R-93-100. Methods for the Determination of Inorganic Substances in Environmental Samples, August 1993.
(3) EPA 600/R-94-111. Methods for the Determination of Metals in Environmental Samples - Supplement I, May 1994.
(4) EPA SW-846. Test Methods for Evaluating Solid Waste.
(5) Standard Methods for the Examination of Water and Wastewater.

Comments

(1) QC results calculated from raw data. Results may vary slightly if the rounded values are used in the calculations.
(2) Soil, Sludge, and Plant matrices for Inorganic analyses are reported on a dry weight basis.
(3) Animal matrices for Inorganic analyses are reported on an "as received" basis.
(4) An asterisk in the "XQ" column indicates there is an extended qualifier and/or certification qualifier associated with the result.
(5) If the MDL equals the PQL or the MDL column is omitted, the PQL is the reporting limit.

For a complete list of ACZ's Extended Qualifiers, please click: http://www.acz.com/public/extquallist.pdf

Montgomery and Associates

ACZ Project ID: ***L96899***

Arsenic (TCLP) M6010B ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG331081													
WG331081ICV	ICV	09/28/12 10:33	II120914-3	4		4.086	mg/L	102.2	90	110			
WG331081ICB	ICB	09/28/12 10:36				U	mg/L		-0.18	0.18			
WG330841PBS	PBS	09/28/12 10:48				U	mg/L		-0.18	0.18			
WG330841LFB	LFB	09/28/12 10:51	IITCLPSPIK	1		1.135	mg/L	113.5	85	115			
L96899-01MS	MS	09/28/12 10:58	IITCLPSPIK	1	U	1.078	mg/L	107.8	75	125			
L96899-01MSD	MSD	09/28/12 11:01	IITCLPSPIK	1	U	1.119	mg/L	111.9	75	125	3.73	20	
L96899-02DUP	DUP	09/28/12 11:08			U	U	mg/L				0	20	RA

Barium (TCLP) M6010B ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG331081													
WG331081ICV	ICV	09/28/12 10:33	II120914-3	2		1.982	mg/L	99.1	90	110			
WG331081ICB	ICB	09/28/12 10:36				.0032	mg/L		-0.009	0.009			
WG330841PBS	PBS	09/28/12 10:48				.0092	mg/L		-0.009	0.009			BA
WG330841LFB	LFB	09/28/12 10:51	IITCLPSPIK	20.5		19.22	mg/L	93.8	85	115			
L96899-01MS	MS	09/28/12 10:58	IITCLPSPIK	20.5	2.55	21.95	mg/L	94.6	75	125			
L96899-01MSD	MSD	09/28/12 11:01	IITCLPSPIK	20.5	2.55	21.47	mg/L	92.3	75	125	2.21	20	
L96899-02DUP	DUP	09/28/12 11:08			1.18	1.676	mg/L				34.7	20	RD

Cadmium (TCLP) M6010B ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG331081													
WG331081ICV	ICV	09/28/12 10:33	II120914-3	2		1.951	mg/L	97.6	90	110			
WG331081ICB	ICB	09/28/12 10:36				U	mg/L		-0.015	0.015			
WG330841PBS	PBS	09/28/12 10:48				U	mg/L		-0.015	0.015			
WG330841LFB	LFB	09/28/12 10:51	IITCLPSPIK	.5		.4986	mg/L	99.7	85	115			
L96899-01MS	MS	09/28/12 10:58	IITCLPSPIK	.5	U	.4955	mg/L	99.1	75	125			
L96899-01MSD	MSD	09/28/12 11:01	IITCLPSPIK	.5	U	.4902	mg/L	98	75	125	1.08	20	
L96899-02DUP	DUP	09/28/12 11:08			.008	.0077	mg/L				3.8	20	RA

Chromium (TCLP) M6010B ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG331081													
WG331081ICV	ICV	09/28/12 10:33	II120914-3	2		1.985	mg/L	99.3	90	110			
WG331081ICB	ICB	09/28/12 10:36				U	mg/L		-0.03	0.03			
WG330841PBS	PBS	09/28/12 10:48				U	mg/L		-0.03	0.03			
WG330841LFB	LFB	09/28/12 10:51	IITCLPSPIK	.5		.509	mg/L	101.8	85	115			
L96899-01MS	MS	09/28/12 10:58	IITCLPSPIK	.5	U	.503	mg/L	100.6	75	125			
L96899-01MSD	MSD	09/28/12 11:01	IITCLPSPIK	.5	U	.499	mg/L	99.8	75	125	0.8	20	
L96899-02DUP	DUP	09/28/12 11:08			U	U	mg/L				0	20	RA

Montgomery and Associates

ACZ Project ID: ***L96899***

Lead (TCLP) M6010B ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG331081													
WG331081ICV	ICV	09/28/12 10:33	II120914-3	4		4.02	mg/L	100.5	90	110			
WG331081ICB	ICB	09/28/12 10:36				U	mg/L		-0.12	0.12			
WG330841PBS	PBS	09/28/12 10:48				U	mg/L		-0.12	0.12			
WG330841LFB	LFB	09/28/12 10:51	IITCLPSPIK	1		1.049	mg/L	104.9	85	115			
L96899-01MS	MS	09/28/12 10:58	IITCLPSPIK	1	U	1.002	mg/L	100.2	75	125			
L96899-01MSD	MSD	09/28/12 11:01	IITCLPSPIK	1	U	1.022	mg/L	102.2	75	125	1.98	20	
L96899-02DUP	DUP	09/28/12 11:08			U	U	mg/L				0	20	RA

Mercury (TCLP) M7470 CVAA

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG330849													
WG330849ICV	ICV	09/27/12 9:43	II120921-1	.005025		.0051	mg/L	101.5	95	105			
WG330849ICB	ICB	09/27/12 9:46				U	mg/L		-0.0002	0.0002			
WG330977													
WG330841PBS	PBS	09/27/12 16:03				U	mg/Kg		-0.0006	0.0006			
WG330841LFB	LFB	09/27/12 16:05	II120831-3	.002002		.0019	mg/L	94.9	85	115			
L96899-01MS	MS	09/27/12 16:10	II120831-3	.002002	U	.00189	mg/L	94.4	85	115			
L96899-01MSD	MSD	09/27/12 16:12	II120831-3	.002002	U	.00194	mg/L	96.9	85	115	2.61	20	
L96899-02DUP	DUP	09/27/12 16:16			U	U	mg/L				0	20	RA

Selenium (TCLP) M6010B ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG331081													
WG331081ICV	ICV	09/28/12 10:33	II120914-3	4		4.115	mg/L	102.9	90	110			
WG331081ICB	ICB	09/28/12 10:36				.071	mg/L		-0.18	0.18			
WG330841PBS	PBS	09/28/12 10:48				U	mg/L		-0.18	0.18			
WG330841LFB	LFB	09/28/12 10:51	IITCLPSPIK	1		1.122	mg/L	112.2	85	115			
L96899-01MS	MS	09/28/12 10:58	IITCLPSPIK	1	U	1.106	mg/L	110.6	75	125			
L96899-01MSD	MSD	09/28/12 11:01	IITCLPSPIK	1	U	1.015	mg/L	101.5	75	125	8.58	20	
L96899-02DUP	DUP	09/28/12 11:08			U	U	mg/L				0	20	RA

Silver (TCLP) M6010B ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG331081													
WG331081ICV	ICV	09/28/12 10:33	II120914-3	.998		1.001	mg/L	100.3	90	110			
WG331081ICB	ICB	09/28/12 10:36				U	mg/L		-0.03	0.03			
WG330841PBS	PBS	09/28/12 10:48				U	mg/L		-0.03	0.03			
WG330841LFB	LFB	09/28/12 10:51	IITCLPSPIK	.5		.459	mg/L	91.8	85	115			
L96899-01MS	MS	09/28/12 10:58	IITCLPSPIK	.5	U	.472	mg/L	94.4	75	125			
L96899-01MSD	MSD	09/28/12 11:01	IITCLPSPIK	.5	U	.476	mg/L	95.2	75	125	0.84	20	
L96899-02DUP	DUP	09/28/12 11:08			U	U	mg/L				0	20	RA

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Extended Qualifier Report

Montgomery and Associates

ACZ Project ID: ***L96899***

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L96899-01	WG331081	Arsenic (TCLP)	M6010B ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Barium (TCLP)	M6010B ICP	BA	Target analyte detected in prep / method blank at or above acceptance limit. Sample value is > 20X the concentration in the method blank.
			M6010B ICP	RD	For a solid matrix, the duplicate RPD (spike or matrix) exceeded the control limit, which is attributable to the non-homogeneity of the sample.
		Cadmium (TCLP)	M6010B ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Chromium (TCLP)	M6010B ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Lead (TCLP)	M6010B ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG330977	Mercury (TCLP)	M7470 CVAA	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG331081	Selenium (TCLP)	M6010B ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Silver (TCLP)	M6010B ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
L96899-02	WG331081	Arsenic (TCLP)	M6010B ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Barium (TCLP)	M6010B ICP	BA	Target analyte detected in prep / method blank at or above acceptance limit. Sample value is > 20X the concentration in the method blank.
			M6010B ICP	RD	For a solid matrix, the duplicate RPD (spike or matrix) exceeded the control limit, which is attributable to the non-homogeneity of the sample.
		Cadmium (TCLP)	M6010B ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Chromium (TCLP)	M6010B ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Lead (TCLP)	M6010B ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG330977	Mercury (TCLP)	M7470 CVAA	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG331081	Selenium (TCLP)	M6010B ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Silver (TCLP)	M6010B ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Extended Qualifier Report

Montgomery and Associates

ACZ Project ID: ***L96899***

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L96899-03	WG331081	Arsenic (TCLP)	M6010B ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Barium (TCLP)	M6010B ICP	BA	Target analyte detected in prep / method blank at or above acceptance limit. Sample value is > 20X the concentration in the method blank.
			M6010B ICP	RD	For a solid matrix, the duplicate RPD (spike or matrix) exceeded the control limit, which is attributable to the non-homogeneity of the sample.
		Cadmium (TCLP)	M6010B ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Chromium (TCLP)	M6010B ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Lead (TCLP)	M6010B ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG330977	Mercury (TCLP)	M7470 CVAA	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG331081	Selenium (TCLP)	M6010B ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
		Silver (TCLP)	M6010B ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).

Montgomery and Associates

ACZ Project ID: ***L96899***

No certification qualifiers associated with this analysis

ACZ Laboratories, Inc. L96899

2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

CHAIN OF CUSTODY

Name: Tim Leo	Address: 1550 E Prince Rd
Company: Montgomery & Assoc.	Tucson AZ 85719
E-mail: tleo@elmontgomery.com	Telephone: 520-881-4912

Name: John Laney	E-mail: jlaney@elmontgomery.com
Company: Montgomery	Telephone: SAA

Name: Tim Leo	Address: SAA
Company: SAA	
E-mail: SAA	Telephone: SAA

If sample(s) received past holding time (HT), or if insufficient HT remains to complete analysis before expiration, shall ACZ proceed with requested short HT analyses? YES [X] NO [ ]

If "NO" then ACZ will contact client for further instruction. If neither "YES" nor "NO" is indicated, ACZ will proceed with the requested analyses, even if HT is expired, and data will be qualified.

Are samples for SDWA Compliance Monitoring? Yes [ ] No [X]

If yes, please include state forms. Results will be reported to PQL for Colorado.

Sampler's Name: _____ Sampler's site information State [ ] Zip code [ ] Time Zone [ ]

Quote #: LISBON - 50

Project/PO #: 1350.13

Reporting state for compliance testing: UTAH

Check box if samples include NRC licensed material? [ ]

				# of Containers	LISBON-50							
DC-104	9/17/12	1300	SO	1	X							
DC-100-105	9/19/12	1300	SO	1	X							
DC-101-102	9/21/12	1240	SO	1	X							

Matrix: SW (Surface Water) · GW (Ground Water) · WW (Waste Water) · DW (Drinking Water) · SL (Sludge) · SO (Soil) · OL (Oil) · Other (Specify)

(*) 5 day turn around time

Please refer to ACZ's terms & conditions located on the reverse side of this COC.

	9/21/2012/14:00		9/22/12 10:24

L96899 Chain of Custody

FRMAD050.02.11.11 White - Return with sample. Yellow - Retain for your records.

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Analytical Report

December 14, 2012

Report to:
Tim Leo
Montgomery and Associates
1550 E. Prince Rd.
Tuscon, AZ 85719

Bill to:
Accounts Payable
Montgomery and Associates
1550 E. Prince Rd.
Tucson, AZ 85719

cc: John Laney

Project ID: 1350.13
ACZ Project ID: L97797

Tim Leo:

Enclosed are the analytical results for sample(s) submitted to ACZ Laboratories, Inc. (ACZ) on November 09, 2012. This project has been assigned to ACZ's project number, L97797. Please reference this number in all future inquiries.

All analyses were performed according to ACZ's Quality Assurance Plan. The enclosed results relate only to the samples received under L97797. Each section of this report has been reviewed and approved by the appropriate Laboratory Supervisor, or a qualified substitute.

Except as noted, the test results for the methods and parameters listed on ACZ's current NELAC certificate letter (#ACZ) meet all requirements of NELAC.

This report shall be used or copied only in its entirety. ACZ is not responsible for the consequences arising from the use of a partial report.

All samples and sub-samples associated with this project will be disposed of after January 14, 2013. If the samples are determined to be hazardous, additional charges apply for disposal (typically $11/sample). If you would like the samples to be held longer than ACZ's stated policy or to be returned, please contact your Project Manager or Customer Service Representative for further details and associated costs. ACZ retains analytical raw data reports for ten years.

If you have any questions or other needs, please contact your Project Manager.

S. Habermehl

Scott Habermehl has reviewed
and approved this report.

Montgomery and Associates

December 14, 2012

Project ID: 1350.13
ACZ Project ID: L97797

Sample Receipt

ACZ Laboratories, Inc. (ACZ) received 6 soil samples from Montgomery and Associates on November 9, 2012. The samples were received in good condition. Upon receipt, the sample custodian removed the samples from the cooler, inspected the contents, and logged the samples into ACZ's computerized Laboratory Information Management System (LIMS). The samples were assigned ACZ LIMS project number L97797. The custodian verified the sample information entered into the computer against the chain of custody (COC) forms and sample bottle labels.

Holding Times

All analyses were performed within EPA recommended holding times.

Sample Analysis

These samples were analyzed for inorganic, radiochemistry parameters. The individual methods are referenced on both, the ACZ invoice and the analytical reports. The extended qualifier reports may contain footnotes qualifying specific elements due to QC failures. In addition the following has been noted with this specific project:

1. The Ba-133 data on L97797-02 and -03 has been qualified with the N1 flag. The chemist noted that the data can't be confimed due to the primary and secondary peaks could not be identified.

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Analytical Results

Montgomery and Associates
Project ID: 1350.13
Sample ID: 6017

ACZ Sample ID: ***L97797-01***
Date Sampled: *11/06/12 08:00*
Date Received: *11/09/12*
Sample Matrix: *Soil*

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Uranium, total (3050)	M6020 ICP-MS	0.57		*	mg/Kg	0.05	0.3	11/21/12 20:11	msh

Soil Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
pH, Corrosivity	M9045D/M9040C								
pH		9.7			units	0.1	0.1	11/20/12 0:00	nrc
pH measured at		22.3			C	0.1	0.1	11/20/12 0:00	nrc
Solids, Percent	CLPSOW390, PART F, D-98	84.3		*	%	0.1	0.5	11/22/12 20:41	mss2/cd

Soil Preparation

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972			*				11/15/12 15:14	zsh
Digestion - Hot Plate	M3050B ICP-MS			*				11/20/12 14:00	mss2
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2			*				11/19/12 12:00	zsh

Arizona license number: AZ0102

Montgomery and Associates
Project ID: 1350.13
Sample ID: 6077

ACZ Sample ID: ***L97797-02***
Date Sampled: *11/06/12 08:15*
Date Received: *11/09/12*
Sample Matrix: *Soil*

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Uranium, total (3050)	M6020 ICP-MS	0.58		*	mg/Kg	0.05	0.3	11/21/12 20:14	msh

Soil Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
pH, Corrosivity	M9045D/M9040C								
pH		8.8			units	0.1	0.1	11/20/12 0:00	nrc
pH measured at		22.5			C	0.1	0.1	11/20/12 0:00	nrc
Solids, Percent	CLPSOW390, PART F, D-98	96.7		*	%	0.1	0.5	11/23/12 2:18	mss2/cd

Soil Preparation

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972			*				11/15/12 15:17	zsh
Digestion - Hot Plate	M3050B ICP-MS			*				11/20/12 14:15	mss2
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2			*				11/19/12 12:03	zsh

Arizona license number: AZ0102

Montgomery and Associates
Project ID: 1350.13
Sample ID: 6103

ACZ Sample ID: ***L97797-03***
Date Sampled: *11/06/12 08:30*
Date Received: *11/09/12*
Sample Matrix: *Soil*

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Uranium, total (3050)	M6020 ICP-MS	1.85		*	mg/Kg	0.05	0.3	11/21/12 20:18	msh

Soil Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
pH, Corrosivity	M9045D/M9040C								
pH		9.2			units	0.1	0.1	11/20/12 0:00	nrc
pH measured at		22.3			C	0.1	0.1	11/20/12 0:00	nrc
Solids, Percent	CLPSOW390, PART F, D-98	90.4		*	%	0.1	0.5	11/23/12 7:55	mss2/cd

Soil Preparation

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972			*				11/15/12 15:20	zsh
Digestion - Hot Plate	M3050B ICP-MS			*				11/20/12 14:30	mss2
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2			*				11/19/12 12:06	zsh

Arizona license number: AZ0102

Montgomery and Associates
Project ID: 1350.13
Sample ID: 6061

ACZ Sample ID: ***L97797-04***
Date Sampled: *11/06/12 08:40*
Date Received: *11/09/12*
Sample Matrix: *Soil*

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Uranium, total (3050)	M6020 ICP-MS	5.43		*	mg/Kg	0.05	0.3	11/21/12 20:21	msh

Soil Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
pH, Corrosivity	M9045D/M9040C								
pH		8.8			units	0.1	0.1	11/20/12 0:00	nrc
pH measured at		22.1			C	0.1	0.1	11/20/12 0:00	nrc
Solids, Percent	CLPSOW390, PART F, D-98	91.6		*	%	0.1	0.5	11/23/12 13:32	mss2/cd

Soil Preparation

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972			*				11/15/12 15:23	zsh
Digestion - Hot Plate	M3050B ICP-MS			*				11/20/12 14:45	mss2
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2			*				11/19/12 12:09	zsh

Arizona license number: AZ0102

Montgomery and Associates
Project ID: 1350.13
Sample ID: 6182

ACZ Sample ID: ***L97797-05***
Date Sampled: *11/06/12 08:50*
Date Received: *11/09/12*
Sample Matrix: *Soil*

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Uranium, total (3050)	M6020 ICP-MS	0.36		*	mg/Kg	0.05	0.3	11/21/12 20:25	msh

Soil Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
pH, Corrosivity	M9045D/M9040C								
pH		9.1			units	0.1	0.1	11/20/12 0:00	nrc
pH measured at		22.1			C	0.1	0.1	11/20/12 0:00	nrc
Solids, Percent	CLPSOW390, PART F, D-98	84.8		*	%	0.1	0.5	11/23/12 19:09	mss2/cd

Soil Preparation

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972			*				11/15/12 15:26	zsh
Digestion - Hot Plate	M3050B ICP-MS			*				11/20/12 15:00	mss2
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2			*				11/19/12 12:12	zsh

Arizona license number: AZ0102

Montgomery and Associates
Project ID: 1350.13
Sample ID: 6185

ACZ Sample ID: ***L97797-06***
Date Sampled: *11/06/12 09:05*
Date Received: *11/09/12*
Sample Matrix: *Soil*

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Uranium, total (3050)	M6020 ICP-MS	16.90		*	mg/Kg	0.05	0.3	11/21/12 20:28	msh

Soil Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
pH, Corrosivity	M9045D/M9040C								
pH		12.6			units	0.1	0.1	11/20/12 0:00	nrc
pH measured at		22.4			C	0.1	0.1	11/20/12 0:00	nrc
Solids, Percent	CLPSOW390, PART F, D-98	32.8		*	%	0.1	0.5	11/24/12 0:46	mss2/cd

Soil Preparation

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972			*				11/15/12 15:29	zsh
Digestion - Hot Plate	M3050B ICP-MS			*				11/20/12 15:15	mss2
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2			*				11/19/12 12:15	zsh

Arizona license number: AZ0102

Report Header Explanations

Batch	A distinct set of samples analyzed at a specific time
Found	Value of the QC Type of interest
Limit	Upper limit for RPD, in %.
Lower	Lower Recovery Limit, in % (except for LCSS, mg/Kg)
MDL	Method Detection Limit. Same as Minimum Reporting Limit. Allows for instrument and annual fluctuations.
PCN/SCN	A number assigned to reagents/standards to trace to the manufacturer's certificate of analysis
PQL	Practical Quantitation Limit, typically 5 times the MDL.
QC	True Value of the Control Sample or the amount added to the Spike
Rec	Recovered amount of the true value or spike added, in % (except for LCSS, mg/Kg)
RPD	Relative Percent Difference, calculation used for Duplicate QC Types
Upper	Upper Recovery Limit, in % (except for LCSS, mg/Kg)
Sample	Value of the Sample of interest

QC Sample Types

AS	Analytical Spike (Post Digestion)	*LCSWD*	Laboratory Control Sample - Water Duplicate
ASD	Analytical Spike (Post Digestion) Duplicate	*LFB*	Laboratory Fortified Blank
CCB	Continuing Calibration Blank	*LFM*	Laboratory Fortified Matrix
CCV	Continuing Calibration Verification standard	*LFMD*	Laboratory Fortified Matrix Duplicate
DUP	Sample Duplicate	*LRB*	Laboratory Reagent Blank
ICB	Initial Calibration Blank	*MS*	Matrix Spike
ICV	Initial Calibration Verification standard	*MSD*	Matrix Spike Duplicate
ICSAB	Inter-element Correction Standard - A plus B solutions	*PBS*	Prep Blank - Soil
LCSS	Laboratory Control Sample - Soil	*PBW*	Prep Blank - Water
LCSSD	Laboratory Control Sample - Soil Duplicate	*PQV*	Practical Quantitation Verification standard
LCSW	Laboratory Control Sample - Water	*SDL*	Serial Dilution

QC Sample Type Explanations

Blanks	Verifies that there is no or minimal contamination in the prep method or calibration procedure.
Control Samples	Verifies the accuracy of the method, including the prep procedure.
Duplicates	Verifies the precision of the instrument and/or method.
Spikes/Fortified Matrix	Determines sample matrix interferences, if any.
Standard	Verifies the validity of the calibration.

ACZ Qualifiers (Qual)

B	Analyte concentration detected at a value between MDL and PQL. The associated value is an estimated quantity.
H	Analysis exceeded method hold time. pH is a field test with an immediate hold time.
L	Target analyte response was below the laboratory defined negative threshold.
U	The material was analyzed for, but was not detected above the level of the associated value. The associated value is either the sample quantitation limit or the sample detection limit.

Method References

(1) EPA 600/4-83-020. Methods for Chemical Analysis of Water and Wastes, March 1983.
(2) EPA 600/R-93-100. Methods for the Determination of Inorganic Substances in Environmental Samples, August 1993.
(3) EPA 600/R-94-111. Methods for the Determination of Metals in Environmental Samples - Supplement I, May 1994.
(4) EPA SW-846. Test Methods for Evaluating Solid Waste.
(5) Standard Methods for the Examination of Water and Wastewater.

Comments

(1) QC results calculated from raw data. Results may vary slightly if the rounded values are used in the calculations.
(2) Soil, Sludge, and Plant matrices for Inorganic analyses are reported on a dry weight basis.
(3) Animal matrices for Inorganic analyses are reported on an "as received" basis.
(4) An asterisk in the "XQ" column indicates there is an extended qualifier and/or certification qualifier associated with the result.
(5) If the MDL equals the PQL or the MDL column is omitted, the PQL is the reporting limit.

For a complete list of ACZ's Extended Qualifiers, please click: http://www.acz.com/public/extquallist.pdf

Montgomery and Associates

ACZ Project ID: ***L97797***

Ph M9045D/M9040C

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG334427													
WG334427ICV	ICV	11/20/12 11:05	PCN38642	4		4.03	units	100.8	97	103			
L97797-06DUP	DUP	11/20/12 13:38			12.6	12.61	units				0.1	20	

Solids, Percent CLPSOW390, PART F, D-98

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG334540													
WG334540PBS	PBS	11/21/12 11:00				U	%		99.9	100.1			
L97806-01DUP	DUP	11/24/12 11:59			21.5	21.32	%				0.8	20	

Uranium, total (3050) M6020 ICP-MS

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG334520													
WG334520ICV	ICV	11/21/12 19:04	MS121001-5	.05		.05256	mg/L	105.1	90	110			
WG334520ICB	ICB	11/21/12 19:07				U	mg/L		-0.0003	0.0003			
WG334439PBS	PBS	11/21/12 19:21				U	mg/Kg		-0.15	0.15			
WG334439LCSS2	LCSS	11/21/12 19:31	PCN39904	6.18		5.005	mg/Kg		4.13	7.04			
WG334439LCSSD2	LCSSD	11/21/12 19:35	PCN39904	6.18		4.576	mg/Kg		4.13	7.04	9	20	
L97538-01MS	MS	11/21/12 19:41	MS120820-3	13	3.78	13.156	mg/Kg	72.1	75	125			M2
L97538-01MSD	MSD	11/21/12 19:45	MS120820-3	13	3.78	13.026	mg/Kg	71.1	75	125	0.99	20	M2

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Extended Qualifier Report

Montgomery and Associates

ACZ Project ID: ***L97797***

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L97797-01	WG334520	Uranium, total (3050)	M6020 ICP-MS	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
L97797-02	WG334520	Uranium, total (3050)	M6020 ICP-MS	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
L97797-03	WG334520	Uranium, total (3050)	M6020 ICP-MS	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
L97797-04	WG334520	Uranium, total (3050)	M6020 ICP-MS	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
L97797-05	WG334520	Uranium, total (3050)	M6020 ICP-MS	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
L97797-06	WG334520	Uranium, total (3050)	M6020 ICP-MS	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

RadioChemistry Analytical Results

Montgomery and Associates
Project ID: 1350.13
Sample ID: 6017
Locator:

ACZ Sample ID: ***L97797-01***
Date Sampled: *11/06/12 8:00*
Date Received: *11/09/12*
Sample Matrix: *Soil*

Gamma Emitting Nuclides — Prep Method:
EPA 901.1

Parameter	Measure Date	Prep Date	Result	Error(+/-)	LLD	Units	XQ	Analyst
Ac-228	12/06/12 10:39		0.95	0.27	0.61	pCi/g	*	mhm
Ba-133	12/06/12 10:39		0.0	0.0615	0.0376	pCi/g	*	mhm
Bi-212	12/06/12 10:39		0.81	0.49	1.14	pCi/g	*	mhm
Bi-214	12/06/12 10:39		0.61	0.18	0.38	pCi/g	*	mhm
Cd-109	12/06/12 10:39		-0.22	0.7	0.1	pCi/g	*	mhm
Ce-139	12/06/12 10:39		0.0	0.0378	0.0807	pCi/g	*	mhm
Co-56	12/06/12 10:39		-0.23	0.5	0.22	pCi/g	*	mhm
Co-57	12/06/12 10:39		0.0	0.0532	0.0125	pCi/g	*	mhm
Co-58	12/06/12 10:39		-0.01	2.23	1.15	pCi/g	*	mhm
Co-60	12/06/12 10:39		-0.03	0.08	0.03	pCi/g	*	mhm
Cs-134	12/06/12 10:39		-0.05	0.07	0.01	pCi/g	*	mhm
Cs-137	12/06/12 10:39		0.03	0.05	0.1	pCi/g	*	mhm
I-131	12/06/12 10:39		-0.01	0.04	0.01	pCi/g	*	mhm
K-40	12/06/12 10:39		18.1	2.25	4.47	pCi/g	*	mhm
Pb-210	12/06/12 10:39		1.46	1.01	1.7	pCi/g	*	mhm
PB-212	12/06/12 10:39		1.43	0.16	0.29	pCi/g	*	mhm
PB-214	12/06/12 10:39		0.62	0.15	0.31	pCi/g	*	mhm
Th-227	12/06/12 10:39		0.08	0.2	0.46	pCi/g	*	mhm
Th-234	12/06/12 10:39		1.38	0.93	1.69	pCi/g	*	mhm
Tl-201	12/06/12 10:39		-0.02	0.03	0	pCi/g	*	mhm
U-235	12/06/12 10:39		0.11	0.06	0.12	pCi/g	*	mhm
Zn-65	12/06/12 10:39		-0.01	0.16	0.29	pCi/g	*	mhm

Gross Alpha & Beta (3050) — Prep Method:
M9310

Parameter	Measure Date	Prep Date	Result	Error(+/-)	LLD	Units	XQ	Analyst
Gross Alpha	12/03/12 20:23		4.3	0.97	0.4	pCi/g		zsh
Gross Beta	12/03/12 20:23		6.4	0.85	0.8	pCi/g		zsh

Uranium, Isotopic (3050) — Prep Method:
Eichrom ACW03

Parameter	Measure Date	Prep Date	Result	Error(+/-)	LLD	Units	XQ	Analyst
Uranium 234	11/29/12 0:02		-0.08	0.47	0.23	pCi/g	*	jjg
Uranium 235	11/29/12 0:02		0.06	0.36	0.23	pCi/g	*	jjg
Uranium 238	11/29/12 0:02		-0.02	0.48	0.23	pCi/g	*	jjg

Arizona license number: AZ0102

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

RadioChemistry Analytical Results

Montgomery and Associates
Project ID: 1350.13
Sample ID: 6077
Locator:

ACZ Sample ID: ***L97797-02***
Date Sampled: *11/06/12 8:15*
Date Received: *11/09/12*
Sample Matrix: *Soil*

Gamma Emitting Nuclides — Prep Method:
EPA 901.1

Parameter	Measure Date	Prep Date	Result	Error(+/-)	LLD	Units	XQ	Analyst
Ac-228	12/06/12 12:57		0.83	0.17	0.37	pCi/g	*	mhm
Ba-133	12/06/12 12:57		0.02	0.02	0	pCi/g	*	mhm
Bi-212	12/06/12 12:57		0.7	0.27	0.62	pCi/g	*	mhm
Bi-214	12/06/12 12:57		0.55	0.11	0.23	pCi/g	*	mhm
Cd-109	12/06/12 12:57		-0.12	0.44	0.06	pCi/g	*	mhm
Ce-139	12/06/12 12:57		0.0	0.0213	0.0496	pCi/g	*	mhm
Co-56	12/06/12 12:57		-0.14	0.31	0.11	pCi/g	*	mhm
Co-57	12/06/12 12:57		0.0	0.017	0.0343	pCi/g	*	mhm
Co-58	12/06/12 12:57		0.0	0.0245	0.019	pCi/g	*	mhm
Co-60	12/06/12 12:57		0.0	0.0334	0.126	pCi/g	*	mhm
Cs-134	12/06/12 12:57		0.0	0.0036	0.0033	pCi/g	*	mhm
Cs-137	12/06/12 12:57		0.0	0.0914	0.061	pCi/g	*	mhm
I-131	12/06/12 12:57		0.0	0.024	0.0154	pCi/g	*	mhm
K-40	12/06/12 12:57		11.87	1.31	2.53	pCi/g	*	mhm
Pb-210	12/06/12 12:57		0.75	0.45	0.76	pCi/g	*	mhm
PB-212	12/06/12 12:57		0.87	0.09	0.16	pCi/g	*	mhm
PB-214	12/06/12 12:57		0.64	0.1	0.21	pCi/g	*	mhm
Th-227	12/06/12 12:57		-0.42	0.27	0.01	pCi/g	*	mhm
Th-234	12/06/12 12:57		0.88	0.57	1.1	pCi/g	*	mhm
Tl-201	12/06/12 12:57		-0.06	0.06	0	pCi/g	*	mhm
U-235	12/06/12 12:57		0.1	0.04	0.08	pCi/g	*	mhm
Zn-65	12/06/12 12:57		-0.04	0.09	0.02	pCi/g	*	mhm

Gross Alpha & Beta (3050) — Prep Method:
M9310

Parameter	Measure Date	Prep Date	Result	Error(+/-)	LLD	Units	XQ	Analyst
Gross Alpha	12/03/12 20:24		5.6	1.3	0.5	pCi/g		zsh
Gross Beta	12/03/12 20:24		4	0.78	0.81	pCi/g		zsh

Uranium, Isotopic (3050) — Prep Method:
Eichrom ACW03

Parameter	Measure Date	Prep Date	Result	Error(+/-)	LLD	Units	XQ	Analyst
Uranium 234	11/29/12 0:04		0.39	0.51	0.28	pCi/g	*	jjg
Uranium 235	11/29/12 0:04		-0.1	0.3	0.28	pCi/g	*	jjg
Uranium 238	11/29/12 0:04		0.16	0.43	0.28	pCi/g	*	jjg

Arizona license number: AZ0102

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

RadioChemistry Analytical Results

Montgomery and Associates
Project ID: 1350.13
Sample ID: 6103
Locator:

ACZ Sample ID: ***L97797-03***
Date Sampled: *11/06/12 8:30*
Date Received: *11/09/12*
Sample Matrix: *Soil*

Gamma Emitting Nuclides — Prep Method:
EPA 901.1

Parameter	Measure Date	Prep Date	Result	Error(+/-)	LLD	Units	XQ	Analyst
Ac-228	12/06/12 14:03		1.53	0.31	0.69	pCi/g	*	mhm
Ba-133	12/06/12 14:03		0.05	0.04	0	pCi/g	*	mhm
Bi-212	12/06/12 14:03		1.35	0.61	1.41	pCi/g	*	mhm
Bi-214	12/06/12 14:03		1.57	0.21	0.43	pCi/g	*	mhm
Cd-109	12/06/12 14:03		0.05	0.68	1.58	pCi/g	*	mhm
Ce-139	12/06/12 14:03		0.01	0.03	0.08	pCi/g	*	mhm
Co-56	12/06/12 14:03		-0.29	0.47	0.12	pCi/g	*	mhm
Co-57	12/06/12 14:03		0.01	0.03	0.06	pCi/g	*	mhm
Co-58	12/06/12 14:03		-0.02	0.06	0.01	pCi/g	*	mhm
Co-60	12/06/12 14:03		-0.01	0.06	0.03	pCi/g	*	mhm
Cs-134	12/06/12 14:03		-0.07	0.07	0	pCi/g	*	mhm
Cs-137	12/06/12 14:03		0.01	0.05	0.09	pCi/g	*	mhm
I-131	12/06/12 14:03		0.0	0.0351	2.65	pCi/g	*	mhm
K-40	12/06/12 14:03		14.6	1.69	3.31	pCi/g	*	mhm
Pb-210	12/06/12 14:03		1.61	0.73	1.34	pCi/g	*	mhm
PB-212	12/06/12 14:03		1.55	0.15	0.26	pCi/g	*	mhm
PB-214	12/06/12 14:03		1.73	0.21	0.4	pCi/g	*	mhm
Th-227	12/06/12 14:03		-0.8	0.5	0.01	pCi/g	*	mhm
Th-234	12/06/12 14:03		3.06	1.16	2.41	pCi/g	*	mhm
Tl-201	12/06/12 14:03		-0.08	0.1	0	pCi/g	*	mhm
U-235	12/06/12 14:03		0.27	0.08	0.17	pCi/g	*	mhm
Zn-65	12/06/12 14:03		0.0	0.1176	0.834	pCi/g	*	mhm

Gross Alpha & Beta (3050) — Prep Method:
M9310

Parameter	Measure Date	Prep Date	Result	Error(+/-)	LLD	Units	XQ	Analyst
Gross Alpha	12/03/12 20:26		7.9	1.3	0.4	pCi/g		zsh
Gross Beta	12/03/12 20:26		9.1	0.99	0.79	pCi/g		zsh

Uranium, Isotopic (3050) — Prep Method:
Eichrom ACW03

Parameter	Measure Date	Prep Date	Result	Error(+/-)	LLD	Units	XQ	Analyst
Uranium 234	11/29/12 0:05		1.4	0.53	0.26	pCi/g	*	jjg
Uranium 235	11/29/12 0:05		-0.03	0.19	0.26	pCi/g	*	jjg
Uranium 238	11/29/12 0:05		0.9	0.41	0.26	pCi/g	*	jjg

Arizona license number: AZ0102

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

RadioChemistry Analytical Results

Montgomery and Associates
Project ID: 1350.13
Sample ID: 6061
Locator:

ACZ Sample ID: ***L97797-04***
Date Sampled: *11/06/12 8:40*
Date Received: *11/09/12*
Sample Matrix: *Soil*

Gamma Emitting Nuclides — Prep Method:
EPA 901.1

Parameter	Measure Date	Prep Date	Result	Error(+/-)	LLD	Units	XQ	Analyst
Ac-228	12/06/12 15:09		0.61	0.16	0.35	pCi/g	*	mhm
Ba-133	12/06/12 15:09		0.02	0.02	0.02	pCi/g	*	mhm
Bi-212	12/06/12 15:09		0.23	0.23	0.53	pCi/g	*	mhm
Bi-214	12/06/12 15:09		0.35	0.09	0.19	pCi/g	*	mhm
Cd-109	12/06/12 15:09		0.21	0.37	0.86	pCi/g	*	mhm
Ce-139	12/06/12 15:09		0.0	0.0189	0.00417	pCi/g	*	mhm
Co-56	12/06/12 15:09		-0.15	0.35	0.12	pCi/g	*	mhm
Co-57	12/06/12 15:09		0.0	0.0342	0.00878	pCi/g	*	mhm
Co-58	12/06/12 15:09		0.01	0.02	0.04	pCi/g	*	mhm
Co-60	12/06/12 15:09		-0.01	0.03	0.02	pCi/g	*	mhm
Cs-134	12/06/12 15:09		0.02	0.02	0.05	pCi/g	*	mhm
Cs-137	12/06/12 15:09		-0.01	0.05	0.02	pCi/g	*	mhm
I-131	12/06/12 15:09		0.0	0.0166	0.0388	pCi/g	*	mhm
K-40	12/06/12 15:09		5.11	0.82	1.67	pCi/g	*	mhm
Pb-210	12/06/12 15:09		0.53	0.53	0.8	pCi/g	*	mhm
PB-212	12/06/12 15:09		0.52	0.07	0.13	pCi/g	*	mhm
PB-214	12/06/12 15:09		0.3	0.07	0.15	pCi/g	*	mhm
Th-227	12/06/12 15:09		-0.19	0.22	0.01	pCi/g	*	mhm
Th-234	12/06/12 15:09		1.69	0.65	1.32	pCi/g	*	mhm
Tl-201	12/06/12 15:09		-0.02	0.07	0.01	pCi/g	*	mhm
U-235	12/06/12 15:09		0.12	0.04	0.08	pCi/g	*	mhm
Zn-65	12/06/12 15:09		-0.04	0.08	0.02	pCi/g	*	mhm

Gross Alpha & Beta (3050) — Prep Method:
M9310

Parameter	Measure Date	Prep Date	Result	Error(+/-)	LLD	Units	XQ	Analyst
Gross Alpha	12/03/12 20:27		2.8	0.84	0.39	pCi/g		zsh
Gross Beta	12/03/12 20:27		3.2	0.69	0.78	pCi/g		zsh

Uranium, Isotopic (3050) — Prep Method:
Eichrom ACW03

Parameter	Measure Date	Prep Date	Result	Error(+/-)	LLD	Units	XQ	Analyst
Uranium 234	11/29/12 0:07		1.9	0.55	0.23	pCi/g	*	jjg
Uranium 235	11/29/12 0:07		0.08	0.22	0.23	pCi/g	*	jjg
Uranium 238	11/29/12 0:07		1.67	0.48	0.23	pCi/g	*	jjg

Arizona license number: AZ0102

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

RadioChemistry Analytical Results

Montgomery and Associates
Project ID: 1350.13
Sample ID: 6182
Locator:

ACZ Sample ID: ***L97797-05***
Date Sampled: *11/06/12 8:50*
Date Received: *11/09/12*
Sample Matrix: *Soil*

Gamma Emitting Nuclides — Prep Method:
EPA 901.1

Parameter	Measure Date	Prep Date	Result	Error(+/-)	LLD	Units	XQ	Analyst
Ac-228	12/06/12 16:18		0.6	0.2	0.44	pCi/g	*	mhm
Ba-133	12/06/12 16:18		-0.01	0.04	0.01	pCi/g	*	mhm
Bi-212	12/06/12 16:18		0.41	0.3	0.7	pCi/g	*	mhm
Bi-214	12/06/12 16:18		0.61	0.12	0.25	pCi/g	*	mhm
Cd-109	12/06/12 16:18		0.1	0.5	1.16	pCi/g	*	mhm
Ce-139	12/06/12 16:18		-0.01	0.02	0.01	pCi/g	*	mhm
Co-56	12/06/12 16:18		-0.1	0.34	0.24	pCi/g	*	mhm
Co-57	12/06/12 16:18		-0.01	0.03	0	pCi/g	*	mhm
Co-58	12/06/12 16:18		0.0	0.1823	0.0918	pCi/g	*	mhm
Co-60	12/06/12 16:18		0.0	0.032	0.077	pCi/g	*	mhm
Cs-134	12/06/12 16:18		0.01	0.02	0.22	pCi/g	*	mhm
Cs-137	12/06/12 16:18		0.0	0.2086	0.12	pCi/g	*	mhm
I-131	12/06/12 16:18		-0.01	0.03	0.01	pCi/g	*	mhm
K-40	12/06/12 16:18		4.79	0.94	1.91	pCi/g	*	mhm
Pb-210	12/06/12 16:18		0.6	0.43	0.62	pCi/g	*	mhm
PB-212	12/06/12 16:18		0.51	0.1	0.2	pCi/g	*	mhm
PB-214	12/06/12 16:18		0.52	0.11	0.23	pCi/g	*	mhm
Th-227	12/06/12 16:18		-0.17	0.26	0.02	pCi/g	*	mhm
Th-234	12/06/12 16:18		1.27	0.67	1.27	pCi/g	*	mhm
Tl-201	12/06/12 16:18		-0.04	0.07	0	pCi/g	*	mhm
U-235	12/06/12 16:18		0.11	0.05	0.09	pCi/g	*	mhm
Zn-65	12/06/12 16:18		-0.03	0.09	0.04	pCi/g	*	mhm

Gross Alpha & Beta (3050) — Prep Method:
M9310

Parameter	Measure Date	Prep Date	Result	Error(+/-)	LLD	Units	XQ	Analyst
Gross Alpha	12/03/12 20:29		2.5	0.75	0.37	pCi/g		zsh
Gross Beta	12/03/12 20:29		2	0.63	0.77	pCi/g		zsh

Uranium, Isotopic (3050) — Prep Method:
Eichrom ACW03

Parameter	Measure Date	Prep Date	Result	Error(+/-)	LLD	Units	XQ	Analyst
Uranium 234	11/29/12 0:08		-0.03	0.33	0.24	pCi/g	*	jjg
Uranium 235	11/29/12 0:08		-0.05	0.18	0.24	pCi/g	*	jjg
Uranium 238	11/29/12 0:08		0.03	0.25	0.24	pCi/g	*	jjg

Arizona license number: AZ0102

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

RadioChemistry Analytical Results

Montgomery and Associates
Project ID: 1350.13
Sample ID: 6185
Locator:

ACZ Sample ID: ***L97797-06***
Date Sampled: *11/06/12 9:05*
Date Received: *11/09/12*
Sample Matrix: *Soil*

Gamma Emitting Nuclides — Prep Method:
EPA 901.1

Parameter	Measure Date	Prep Date	Result	Error(+/-)	LLD	Units	XQ	Analyst
Ac-228	12/06/12 17:23		1.25	0.44	0.96	pCi/g	*	mhm
Ba-133	12/06/12 17:23		-0.03	0.1	0.02	pCi/g	*	mhm
Bi-212	12/06/12 17:23		0.92	0.71	1.64	pCi/g	*	mhm
Bi-214	12/06/12 17:23		1.08	0.31	0.65	pCi/g	*	mhm
Cd-109	12/06/12 17:23		1.3	1.44	3.34	pCi/g	*	mhm
Ce-139	12/06/12 17:23		0.04	0.05	0.11	pCi/g	*	mhm
Co-56	12/06/12 17:23		-0.29	0.95	0.66	pCi/g	*	mhm
Co-57	12/06/12 17:23		0.0	0.1184	0.0584	pCi/g	*	mhm
Co-58	12/06/12 17:23		-0.01	0.53	0.27	pCi/g	*	mhm
Co-60	12/06/12 17:23		0.0	0.0966	0.827	pCi/g	*	mhm
Cs-134	12/06/12 17:23		0.04	0.04	0.06	pCi/g	*	mhm
Cs-137	12/06/12 17:23		-0.04	0.17	0.05	pCi/g	*	mhm
I-131	12/06/12 17:23		0.0	0.0677	0.158	pCi/g	*	mhm
K-40	12/06/12 17:23		9.84	2.22	4.39	pCi/g	*	mhm
Pb-210	12/06/12 17:23		1.23	1.46	1.83	pCi/g	*	mhm
PB-212	12/06/12 17:23		1.08	0.25	0.52	pCi/g	*	mhm
PB-214	12/06/12 17:23		0.92	0.23	0.48	pCi/g	*	mhm
Th-227	12/06/12 17:23		-0.55	0.71	0.05	pCi/g	*	mhm
Th-234	12/06/12 17:23		5.84	2.31	4.62	pCi/g	*	mhm
Tl-201	12/06/12 17:23		-0.12	0.18	0.01	pCi/g	*	mhm
U-235	12/06/12 17:23		0.49	0.13	0.27	pCi/g	*	mhm
Zn-65	12/06/12 17:23		-0.04	0.27	0.22	pCi/g	*	mhm

Gross Alpha & Beta (3050) — Prep Method:
M9310

Parameter	Measure Date	Prep Date	Result	Error(+/-)	LLD	Units	XQ	Analyst
Gross Alpha	12/03/12 20:30		9.5	2.6	1.2	pCi/g		zsh
Gross Beta	12/03/12 20:30		12	2	2	pCi/g		zsh

Uranium, Isotopic (3050) — Prep Method:
Eichrom ACW03

Parameter	Measure Date	Prep Date	Result	Error(+/-)	LLD	Units	XQ	Analyst
Uranium 234	11/29/12 0:10		5.5	0.85	0.24	pCi/g	*	jjg
Uranium 235	11/29/12 0:10		0.17	0.27	0.24	pCi/g	*	jjg
Uranium 238	11/29/12 0:10		5.37	0.86	0.24	pCi/g	*	jjg

Arizona license number: AZ0102

Report Header Explanations

Batch	A distinct set of samples analyzed at a specific time
Error(+/-)	Calculated sample specific uncertainty
Found	Value of the QC Type of interest
Limit	Upper limit for RPD, in %.
LCL	Lower Control Limit, in % (except for LCSS, mg/Kg)
LLD	Calculated sample specific Lower Limit of Detection
PCN/SCN	A number assigned to reagents/standards to trace to the manufacturer's certificate of analysis
PQL	Practical Quantitation Limit
QC	True Value of the Control Sample or the amount added to the Spike
Rec	Amount of the true value or spike added recovered, in % (except for LCSS, mg/Kg)
RER	Relative Error Ratio, calculation used for Dup. QC taking into account the error factor.
RPD	Relative Percent Difference, calculation used for Duplicate QC Types
UCL	Upper Control Limit, in % (except for LCSS, mg/Kg)
Sample	Value of the Sample of interest

QC Sample Types

DUP	Sample Duplicate	*MS/MSD*	Matrix Spike/Matrix Spike Duplicate
LCSS	Laboratory Control Sample - Soil	*PBS*	Prep Blank - Soil
LCSW	Laboratory Control Sample - Water	*PBW*	Prep Blank - Water

QC Sample Type Explanations

Blanks	Verifies that there is no or minimal contamination in the prep method procedure.
Control Samples	Verifies the accuracy of the method, including the prep procedure.
Duplicates	Verifies the precision of the instrument and/or method.
Matrix Spikes	Determines sample matrix interferences, if any.

ACZ Qualifiers (Qual)

H	Analysis exceeded method hold time.

Method Prefix Reference

M	EPA methodology, including those under SDWA, CWA, and RCRA
SM	Standard Methods for the Examination of Water and Wastewater.
D	ASTM
RP	DOE
ESM	DOE/ESM

Comments

(1)	Solid matrices are reported on a dry weight basis.
(2)	Preparation method: "Method" indicates preparation defined in analytical method.
(3)	QC results calculated from raw data. Results may vary slightly if the rounded values are used in the calculations.
(4)	An asterisk in the "XQ" column indicates there is an extended qualifier and/or certification qualifier associated with the result.

For a complete list of ACZ's Extended Qualifiers, please click: http://www.acz.com/public/extquallist.pdf

Montgomery and Associates

ACZ Project ID: ***L97797***

Alpha M9310 **Units:** pCi/g

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Error	LLD	Found	Error	LLD	Rec	Lower	Upper	RPD/RER	Limit	Qual
WG335239																
WG335001PBS	PBS	12/03/12						.18	0.23	0.29			0.58			
WG335001LCSS	LCSS	12/03/12	RC121002-2	16.21				15	1.5	0.28	92.5	83	133			
L97797-01DUP	DUP-RER	12/03/12			4.3	0.97	0.4	2.9	0.89	0.42				1.06	2	
L97797-02MS	MS	12/03/12	RC121002-2	16.21	5.6	1.3	0.5	25	2.5	0.47	119.7	83	133			

Beta M9310 **Units:** pCi/g

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Error	LLD	Found	Error	LLD	Rec	Lower	Upper	RPD/RER	Limit	Qual
WG335239																
WG335001PBS	PBS	12/03/12						-.28	0.5	0.78			1.56			
WG335001LCSS	LCSS	12/03/12	PCN40507	20				18	1.2	0.75	90	70	129			
L97797-01DUP	DUP-RER	12/03/12			6.4	0.85	0.8	6.6	0.9	0.79				0.16	2	
L97797-03MS	MS	12/03/12	PCN40507	20.41	9.1	0.99	0.79	30	1.5	0.79	102.4	70	129			

Uranium 234 Eichrom ACW03 **Units:** pCi/g

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Error	LLD	Found	Error	LLD	Rec	Lower	Upper	RPD/RER	Limit	Qual
WG335056																
WG334438PBS	PBS	11/29/12						.05	0.25	0.2			0.4			
WG334438LCSS	LCSS	11/29/12	RC121130-10	39.28				42	2.9	0.37	106.9	77	122			
L97797-01DUP	DUP-RER	11/29/12			-0.08	0.47	0.23	0	0.27	0.22				0.15	2	
L97797-06MS	MS	11/29/12	RC121130-10	40.92	5.5	0.85	0.24	46	3.4	0.47	99	77	122			

Montgomery and Associates

ACZ Project ID: ***L97797***

Uranium 235 Eichrom ACW03 **Units:** pCi/g

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Error	LLD	Found	Error	LLD	Rec	Lower	Upper	RPD/RER	Limit	Qual
WG335056																
WG334438PBS	PBS	11/29/12						-.02	0.11	0.2			0.4			
WG334438LCSS	LCSS	11/29/12	RC121130-10	1.79				1.4	0.7	0.37	78.2	42	136			
L97797-01DUP	DUP-RER	11/29/12			0.06	0.36	0.23	-.13	0.18	0.22				0.47	2	
L97797-06MS	MS	11/29/12	RC121130-10	1.87	0.17	0.27	0.24	1.2	0.61	0.47	55.1	42	136			

Uranium 238 Eichrom ACW03 **Units:** pCi/g

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Error	LLD	Found	Error	LLD	Rec	Lower	Upper	RPD/RER	Limit	Qual
WG335056																
WG334438PBS	PBS	11/29/12						.01	0.19	0.2			0.4			
WG334438LCSS	LCSS	11/29/12	RC121130-10	38.96				40.8	2.8	0.37	104.7	87	124			
L97797-01DUP	DUP-RER	11/29/12			-0.02	0.48	0.23	-.02	0.22	0.22				0	2	
L97797-06MS	MS	11/29/12	RC121130-10	40.58	5.37	0.86	0.24	50.3	3.5	0.47	110.7	87	124			

Montgomery and Associates

ACZ Project ID: ***L97797***

Method: EPA 901.1
Workgroup: WG335385
Units: pCi/L

L97797-01DUP

Analysis Date: 12/06/12

Nuclide	Type	PCN/SCN	QC	Sample	Error	LLD	Found	Error	LLD	Rec	Lower	Upper	RPD/RER	Limit	Qual
Ac-228	DUP-RER	NONE		0.95	0.27	0.61	1.54	0.36	0.8				1.3	2	
Ba-133	DUP-RER	NONE		0	0.06	0.04	.02	0.03	0.01				0.28	2	
Bi-212	DUP-RER	NONE		0.81	0.49	1.14	1.55	0.63	1.46				0.92	2	
Bi-214	DUP-RER	NONE		0.61	0.18	0.38	.71	0.18	0.37				0.4	2	
Cd-109	DUP-RER	NONE		-0.22	0.7	0.1	.06	0.66	1.55				0.29	2	
Ce-139	DUP-RER	NONE		0	0.04	0.08	-.01	0.04	0.01				0.19	2	
Co-56	DUP-RER	NONE		-0.23	0.5	0.22	-.15	0.47	0.31				0.12	2	
Co-57	DUP-RER	NONE		0	0.05	0.01	0	0.14	0.06				0	2	
Co-58	DUP-RER	NONE		-0.01	2.23	1.15	-.01	0.32	0.14				0	2	
Co-60	DUP-RER	NONE		-0.03	0.08	0.03	-.01	0.06	0.09				0.2	2	
Cs-134	DUP-RER	NONE		-0.05	0.07	0.01	-.05	0.05	0.01				0	2	
Cs-137	DUP-RER	NONE		0.03	0.05	0.1	-.01	0.11	0.04				0.32	2	
I-131	DUP-RER	NONE		-0.01	0.04	0.01	0	0.03	0.08				0.18	2	
K-40	DUP-RER	NONE		18.1	2.25	4.47	19.85	2.38	4.71				0.53	2	
Pb-210	DUP-RER	NONE		1.46	1.01	1.7	1.08	0.72	1.1				0.31	2	
PB-212	DUP-RER	NONE		1.43	0.16	0.29	1.4	0.15	0.29				0.14	2	
PB-214	DUP-RER	NONE		0.62	0.15	0.31	.64	0.14	0.31				0.1	2	
Th-227	DUP-RER	NONE		0.08	0.2	0.46	-.01	0.55	1.12				0.15	2	
Th-234	DUP-RER	NONE		1.38	0.93	1.69	1.33	0.91	1.65				0.04	2	
Tl-201	DUP-RER	NONE		-0.02	0.03	0	-.05	0.1	0				0.28	2	
U-235	DUP-RER	NONE		0.11	0.06	0.12	.11	0.07	0.14				0	2	
Zn-65	DUP-RER	NONE		-0.01	0.16	0.29	-.02	0.15	0.12				0.04	2	

Method: EPA 901.1
Workgroup: WG335385
Units: pCi/g

WG335385LCSS

Analysis Date: 12/06/12

Nuclide	Type	PCN/SCN	QC	Sample	Error	LLD	Found	Error	LLD	Rec	Lower	Upper	RPD/RER	Limit	Qual
Co-60	LCSS	PCN29506	99.73				100.43	3.28	5.43	100.7	90	110			
Cs-137	LCSS	PCN29506	85.05				81.22	3.29	2.9	95.5	90	110			

Method: EPA 901.1
Workgroup: WG335385
Units: pCi/g

WG335385PBS

Analysis Date: 12/06/12

Nuclide	Type	PCN/SCN	QC	Sample	Error	LLD	Found	Error	LLD	Rec	Lower	Upper	RPD/RER	Limit	Qual
Ac-228	PBS						-.01	0.2	0.11			0.218			
Ba-133	PBS						.01	0.03	0.06			0.1184			
Bi-212	PBS						.03	0.15	0.35			0.7			
Bi-214	PBS						-.01	0.13	0.02			0.0412			
Cd-109	PBS						-.04	0.25	0.11			0.214			
Ce-139	PBS						.01	0.01	0.02			0.0488			
Co-56	PBS						0	0.02	1.22			2.44			

Montgomery and Associates

ACZ Project ID: ***L97797***

Co-57	PBS	0	0.01	0.01	0.0179
Co-58	PBS	0	0.07	0.04	0.0882
Co-60	PBS	0	0.02	0.08	0.164
Cs-134	PBS	0	0.02	0.02	0.031
Cs-137	PBS	0	0.21	0.12	0.248
I-131	PBS	.01	0.01	0.03	0.0688
K-40	PBS	-.27	1.27	0.14	0.27
Pb-210	PBS	.2	0.31	0.28	0.562
PB-212	PBS	0	0.03	0.01	0.0199
PB-214	PBS	.01	0.03	0.02	0.0398
Th-227	PBS	.07	0.07	0.16	0.324
Th-234	PBS	.15	0.25	0.24	0.474
Tl-201	PBS	0	0.05	0.01	0.025
U-235	PBS	0	0.02	0	0.0065
Zn-65	PBS	0	0.05	0.18	0.358

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

RadChem Extended Qualifier Report

Montgomery and Associates

ACZ Project ID: ***L97797***

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L97797-02	WG335385	Ba-133	EPA 901.1	N1	See Case Narrative.
L97797-03	WG335385	Ba-133	EPA 901.1	N1	See Case Narrative.

Metals Analysis

The following parameters are not offered for certification or are not covered by AZ certificate #AZ0102.

Uranium, total (3050)	M6020 ICP-MS

Radiochemistry

The following parameters are not offered for certification or are not covered by AZ certificate #AZ0102.

Ac-228	EPA 901.1
Ba-133	EPA 901.1
Bi-212	EPA 901.1
Bi-214	EPA 901.1
Cd-109	EPA 901.1
Ce-139	EPA 901.1
Co-56	EPA 901.1
Co-57	EPA 901.1
Co-58	EPA 901.1
Co-60	EPA 901.1
Cs-134	EPA 901.1
Cs-137	EPA 901.1
I-131	EPA 901.1
K-40	EPA 901.1
Pb-210	EPA 901.1
PB-212	EPA 901.1
PB-214	EPA 901.1
Th-227	EPA 901.1
Th-234	EPA 901.1
Tl-201	EPA 901.1
U-235	EPA 901.1
Uranium 234	Eichrom ACW03
Uranium 235	Eichrom ACW03
Uranium 238	Eichrom ACW03
Zn-65	EPA 901.1

The following parameters are not offered for certification or are not covered by NELAC certificate #ACZ.

Ac-228	EPA 901.1
Ba-133	EPA 901.1
Bi-212	EPA 901.1
Bi-214	EPA 901.1
Cd-109	EPA 901.1
Ce-139	EPA 901.1
Co-56	EPA 901.1
Co-57	EPA 901.1
Co-58	EPA 901.1
Co-60	EPA 901.1
Cs-134	EPA 901.1
Cs-137	EPA 901.1
I-131	EPA 901.1
K-40	EPA 901.1
Pb-210	EPA 901.1
PB-212	EPA 901.1
PB-214	EPA 901.1

Th-227	EPA 901.1
Th-234	EPA 901.1
Tl-201	EPA 901.1
U-235	EPA 901.1
Uranium 234	Eichrom ACW03
Uranium 235	Eichrom ACW03
Uranium 238	Eichrom ACW03
Zn-65	EPA 901.1

Soil Analysis

The following parameters are not offered for certification or are not covered by AZ certificate #AZ0102.

Solids, Percent	CLPSOW390, PART F, D-98

The following parameters are not offered for certification or are not covered by NELAC certificate #ACZ.

Solids, Percent	CLPSOW390, PART F, D-98

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Sample Receipt

Montgomery and Associates
1350.13

ACZ Project ID: L97797
Date Received: 11/09/2012 09:47
Received By: ksj
Date Printed: 11/12/2012

Receipt Verification

	YES	NO	NA
1) Is a foreign soil permit included for applicable samples?			X
2) Is the Chain of Custody or other directive shipping papers present?	X		
3) Does this project require special handling procedures such as CLP protocol?			X
4) Are any samples NRC licensable material?			X
5) If samples are received past hold time, proceed with requested short hold time analyses?	X		
6) Is the Chain of Custody complete and accurate?	X		
7) Were any changes made to the Chain of Custody prior to ACZ receiving the samples?		X	

Samples/Containers

	YES	NO	NA
8) Are all containers intact and with no leaks?	X		
9) Are all labels on containers and are they intact and legible?	X		
10) Do the sample labels and Chain of Custody match for Sample ID, Date, and Time?	X		
11) For preserved bottle types, was the pH checked and within limits?			X
12) Is there sufficient sample volume to perform all requested work?	X		
13) Is the custody seal intact on all containers?			X
14) Are samples that require zero headspace acceptable?			X
15) Are all sample containers appropriate for analytical requirements?	X		
16) Is there an Hg-1631 trip blank present?			X
17) Is there a VOA trip blank present?			X
18) Were all samples received within hold time?	X		

Chain of Custody Related Remarks

Client Contact Remarks

Shipping Containers

Cooler Id	Temp (°C)	Rad (µR/Hr)	Custody Seal Intact?
NA16543	16.7	13	Yes

Client must contact an ACZ Project Manager if analysis should not proceed for samples received outside of their thermal preservation acceptance criteria.

ACZ Laboratories, Inc. L97797

2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

CHAIN OF CUSTODY

Name: Tim Leo	Address: 1550. E. Prince Rd
Company: Montgomery & Assoc.	Tucson AZ 85719
E-mail: tleo@elmontgomery.com	Telephone: 520-881-4912

Name: John Laney	E-mail: jlaney@elmontgomery.com
Company: M & A	Telephone:

Name: SAA	Address:
Company:	
E-mail:	Telephone:

If sample(s) received past holding time (HT), or if insufficient HT remains to complete analysis before expiration, shall ACZ proceed with requested short HT analyses? YES [X] NO [ ]

If "NO" then ACZ will contact client for further instruction. If neither "YES" nor "NO" is indicated, ACZ will proceed with the requested analyses, even if HT is expired, and data will be qualified.

Are samples for SDWA Compliance Monitoring? Yes [ ] No [X]

If yes, please include state forms. Results will be reported to PQL for Colorado.

Sampler's Name: John Laney Sampler's site Information State [ ] Zip code [ ] Time Zone [ ]

Quote #:

Project/PO #:

Reporting state for compliance testing:

Check box if samples include NRC licensed material? [ ]

Sample ID	Date	Time	# of Containers		U, total	U, Isotopic	Gamma Emitting Nuclides	Gross alpha Beta	pH			
6017	11/6/2012	800	1	SO	X	X	X	X	X			
6077		815	1	SO	X	X	X	X	X			
6103		830	1	SO	X	X	X	X	X			
60061		840	1	SO	X	X	X	X	X			
6182		850	1	SO	X	X	X	X	X			
6185	↓	905	1	SO	X	X	X	X	X			
6-BIN-COMPOSITE	11/6/2012	915	1	SO	~~X~~ HOLD							

Matrix: SW (Surface Water) · GW (Ground Water) · WW (Waste Water) · DW (Drinking Water) · SL (Sludge) · SO (Soil) · OL (Oil) · Other (Specify)

Contact Tim Leo before running analyses

LISBON - SO

Please refer to ACZ's terms & conditions located on the reverse side of this COC.

	11/8/12 1430	ACZ 11/9/12	0940

L97797 Chain of Custody

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Analytical Report

December 14, 2012

Report to:
Tim Leo
Montgomery and Associates
1550 E. Prince Rd.
Tuscon, AZ 85719

Bill to:
Accounts Payable
Montgomery and Associates
1550 E. Prince Rd.
Tucson, AZ 85719

cc: Leilani Bew

Project ID: 1350
ACZ Project ID: L97754

Tim Leo:

Enclosed are the analytical results for sample(s) submitted to ACZ Laboratories, Inc. (ACZ) on November 08, 2012. This project has been assigned to ACZ's project number, L97754. Please reference this number in all future inquiries.

All analyses were performed according to ACZ's Quality Assurance Plan. The enclosed results relate only to the samples received under L97754. Each section of this report has been reviewed and approved by the appropriate Laboratory Supervisor, or a qualified substitute.

Except as noted, the test results for the methods and parameters listed on ACZ's current NELAC certificate letter (#ACZ) meet all requirements of NELAC.

This report shall be used or copied only in its entirety. ACZ is not responsible for the consequences arising from the use of a partial report.

All samples and sub-samples associated with this project will be disposed of after January 14, 2013. If the samples are determined to be hazardous, additional charges apply for disposal (typically $11/sample). If you would like the samples to be held longer than ACZ's stated policy or to be returned, please contact your Project Manager or Customer Service Representative for further details and associated costs. ACZ retains analytical raw data reports for ten years.

If you have any questions or other needs, please contact your Project Manager.

S. Habermehl

Scott Habermehl has reviewed
and approved this report.

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Analytical Results

Montgomery and Associates
Project ID: 1350
Sample ID: 6294

ACZ Sample ID: ***L97754-01***
Date Sampled: *11/07/12 11:00*
Date Received: *11/08/12*
Sample Matrix: *Waste Water*

Inorganic Prep

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Total Hot Plate Digestion	M200.2 ICP-MS							12/10/12 9:57	las
Total Hot Plate Digestion	M200.2 ICP							11/12/12 19:59	jjc

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Arsenic, dissolved	M200.8 ICP-MS	0.0609			mg/L	0.0002	0.001	11/15/12 6:07	pmc
Arsenic, total	M200.8 ICP-MS	0.0639			mg/L	0.0002	0.001	11/15/12 3:01	pmc
Barium, dissolved	M200.7 ICP	0.090			mg/L	0.003	0.02	11/14/12 12:35	aeb
Barium, total	M200.7 ICP	0.084			mg/L	0.003	0.02	11/13/12 23:47	jjc
Cadmium, dissolved	M200.7 ICP		U		mg/L	0.005	0.02	11/14/12 12:35	aeb
Cadmium, total	M200.7 ICP		U		mg/L	0.005	0.02	11/13/12 23:47	jjc
Chromium, dissolved	M200.7 ICP		U		mg/L	0.01	0.05	11/14/12 15:30	aeb
Chromium, total	M200.7 ICP		U		mg/L	0.01	0.05	11/13/12 23:47	jjc
Lead, dissolved	M200.8 ICP-MS	0.0030			mg/L	0.0001	0.0005	12/08/12 5:06	pmc
Lead, total	M200.8 ICP-MS	0.0002	B		mg/L	0.0001	0.0005	12/11/12 22:04	pmc
Mercury, dissolved	M245.1 CVAA		U	*	mg/L	0.0002	0.001	11/15/12 15:44	mfm
Mercury, total	M245.1 CVAA		U		mg/L	0.0002	0.001	11/14/12 13:17	mfm
Molybdenum, dissolved	M200.8 ICP-MS	1.41			mg/L	0.03	0.1	11/17/12 1:48	pmc
Molybdenum, total	M200.8 ICP-MS	1.42			mg/L	0.03	0.1	11/15/12 21:29	pmc
Selenium, dissolved	M200.8 ICP-MS	0.012			mg/L	0.005	0.01	11/17/12 1:48	pmc
Selenium, total	M200.8 ICP-MS	0.0128			mg/L	0.0001	0.0003	11/15/12 3:01	pmc
Silver, dissolved	M200.7 ICP		U	*	mg/L	0.01	0.03	11/14/12 12:35	aeb
Silver, total	M200.7 ICP		U		mg/L	0.01	0.03	11/13/12 23:47	jjc
Uranium, dissolved	M200.8 ICP-MS	5.020			mg/L	0.005	0.03	11/17/12 1:48	pmc
Uranium, total	M200.8 ICP-MS	5.140			mg/L	0.005	0.03	11/15/12 21:29	pmc

Soil Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Ignitability (Flashpoint)	M1010, Pensky-Martens Closed Cup	no flash to 99.3			C			11/18/12 22:21	mss2

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Lab Filtration (0.45um) & Acidification	M200.7/200.8							11/12/12 12:53	jjc
pH (lab)	M9045D/M9040C								
pH		8.6	H		units	0.1	0.1	11/10/12 0:00	las
pH measured at		21.0			C	0.1	0.1	11/10/12 0:00	las

Arizona license number: AZ0102

Report Header Explanations

Batch	A distinct set of samples analyzed at a specific time
Found	Value of the QC Type of interest
Limit	Upper limit for RPD, in %.
Lower	Lower Recovery Limit, in % (except for LCSS, mg/Kg)
MDL	Method Detection Limit. Same as Minimum Reporting Limit. Allows for instrument and annual fluctuations.
PCN/SCN	A number assigned to reagents/standards to trace to the manufacturer's certificate of analysis
PQL	Practical Quantitation Limit, typically 5 times the MDL.
QC	True Value of the Control Sample or the amount added to the Spike
Rec	Recovered amount of the true value or spike added, in % (except for LCSS, mg/Kg)
RPD	Relative Percent Difference, calculation used for Duplicate QC Types
Upper	Upper Recovery Limit, in % (except for LCSS, mg/Kg)
Sample	Value of the Sample of interest

QC Sample Types

AS	Analytical Spike (Post Digestion)	*LCSWD*	Laboratory Control Sample - Water Duplicate
ASD	Analytical Spike (Post Digestion) Duplicate	*LFB*	Laboratory Fortified Blank
CCB	Continuing Calibration Blank	*LFM*	Laboratory Fortified Matrix
CCV	Continuing Calibration Verification standard	*LFMD*	Laboratory Fortified Matrix Duplicate
DUP	Sample Duplicate	*LRB*	Laboratory Reagent Blank
ICB	Initial Calibration Blank	*MS*	Matrix Spike
ICV	Initial Calibration Verification standard	*MSD*	Matrix Spike Duplicate
ICSAB	Inter-element Correction Standard - A plus B solutions	*PBS*	Prep Blank - Soil
LCSS	Laboratory Control Sample - Soil	*PBW*	Prep Blank - Water
LCSSD	Laboratory Control Sample - Soil Duplicate	*PQV*	Practical Quantitation Verification standard
LCSW	Laboratory Control Sample - Water	*SDL*	Serial Dilution

QC Sample Type Explanations

Blanks	Verifies that there is no or minimal contamination in the prep method or calibration procedure.
Control Samples	Verifies the accuracy of the method, including the prep procedure.
Duplicates	Verifies the precision of the instrument and/or method.
Spikes/Fortified Matrix	Determines sample matrix interferences, if any.
Standard	Verifies the validity of the calibration.

ACZ Qualifiers (Qual)

B	Analyte concentration detected at a value between MDL and PQL. The associated value is an estimated quantity.
H	Analysis exceeded method hold time. pH is a field test with an immediate hold time.
L	Target analyte response was below the laboratory defined negative threshold.
U	The material was analyzed for, but was not detected above the level of the associated value. The associated value is either the sample quantitation limit or the sample detection limit.

Method References

(1) EPA 600/4-83-020. Methods for Chemical Analysis of Water and Wastes, March 1983.

(2) EPA 600/R-93-100. Methods for the Determination of Inorganic Substances in Environmental Samples, August 1993.

(3) EPA 600/R-94-111. Methods for the Determination of Metals in Environmental Samples - Supplement I, May 1994.

(4) EPA SW-846. Test Methods for Evaluating Solid Waste.

(5) Standard Methods for the Examination of Water and Wastewater.

Comments

(1) QC results calculated from raw data. Results may vary slightly if the rounded values are used in the calculations.

(2) Soil, Sludge, and Plant matrices for Inorganic analyses are reported on a dry weight basis.

(3) Animal matrices for Inorganic analyses are reported on an "as received" basis.

(4) An asterisk in the "XQ" column indicates there is an extended qualifier and/or certification qualifier associated with the result.

(5) If the MDL equals the PQL or the MDL column is omitted, the PQL is the reporting limit.

For a complete list of ACZ's Extended Qualifiers, please click: http://www.acz.com/public/extquallist.pdf

Montgomery and Associates

ACZ Project ID: ***L97754***

Arsenic, dissolved M200.8 ICP-MS

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG334066													
WG334066ICV	ICV	11/15/12 5:36	MS121001-5	.05		.0549	mg/L	109.8	90	110			
WG334066ICB	ICB	11/15/12 5:39				U	mg/L		-0.0006	0.0006			
WG334066LFB	LFB	11/15/12 5:42	MS121009-6	.05005		.04692	mg/L	93.7	85	115			
L97743-01AS	AS	11/15/12 6:01	MS121009-6	.05005	U	.05218	mg/L	104.3	70	130			
L97743-01ASD	ASD	11/15/12 6:04	MS121009-6	.05005	U	.05348	mg/L	106.9	70	130	2.46	20	

Arsenic, total M200.8 ICP-MS

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG334150													
WG334150ICV	ICV	11/15/12 1:29	MS121001-5	.05		.05079	mg/L	101.6	90	110			
WG334150ICB	ICB	11/15/12 1:32				U	mg/L		-0.0006	0.0006			
WG334049LRB	LRB	11/15/12 1:36				U	mg/L		-0.00044	0.00044			
WG334049LFB	LFB	11/15/12 1:39	MS121009-6	.05005		.05093	mg/L	101.8	85	115			
L97747-05LFM	LFM	11/15/12 2:55	MS121009-6	.05005	.0081	.05528	mg/L	94.3	70	130			
L97747-05LFMD	LFMD	11/15/12 2:58	MS121009-6	.05005	.0081	.05768	mg/L	99.1	70	130	4.25	20	

Barium, dissolved M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG334092													
WG334092ICV	ICV	11/14/12 11:14	II120914-1	2		1.9546	mg/L	97.7	95	105			
WG334092ICB	ICB	11/14/12 11:18				.0032	mg/L		-0.009	0.009			
WG334092LFB	LFB	11/14/12 11:30	II121029-3	.5		.491	mg/L	98.2	85	115			
L97746-04AS	AS	11/14/12 12:20	II121029-3	.5	.045	.536	mg/L	98.2	85	115			
L97746-04ASD	ASD	11/14/12 12:23	II121029-3	.5	.045	.5388	mg/L	98.8	85	115	0.52	20	

Barium, total M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG334003													
WG334003ICV	ICV	11/13/12 22:04	II120914-3	2		2.0125	mg/L	100.6	95	105			
WG334003ICB	ICB	11/13/12 22:11				U	mg/L		-0.009	0.009			
WG333964LRB	LRB	11/13/12 22:26				U	mg/L		-0.0066	0.0066			
WG333964LFB	LFB	11/13/12 22:29	II121029-3	.5		.4966	mg/L	99.3	85	115			
L97747-01LFM	LFM	11/13/12 23:22	II121029-3	.5	.029	.5422	mg/L	102.6	70	130			
L97747-01LFMD	LFMD	11/13/12 23:25	II121029-3	.5	.029	.5461	mg/L	103.4	70	130	0.72	20	

Cadmium, dissolved M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG334092													
WG334092ICV	ICV	11/14/12 11:14	II120914-1	2		1.894	mg/L	94.7	95	105			
WG334092ICB	ICB	11/14/12 11:18				U	mg/L		-0.015	0.015			
WG334092LFB	LFB	11/14/12 11:30	II121029-3	.5		.5085	mg/L	101.7	85	115			
L97746-04AS	AS	11/14/12 12:20	II121029-3	.5	U	.5174	mg/L	103.5	85	115			
L97746-04ASD	ASD	11/14/12 12:23	II121029-3	.5	U	.5147	mg/L	102.9	85	115	0.52	20	

Montgomery and Associates

ACZ Project ID: ***L97754***

Cadmium, total M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG334003													
WG334003ICV	ICV	11/13/12 22:04	II120914-3	2		1.9768	mg/L	98.8	95	105			
WG334003ICB	ICB	11/13/12 22:11				U	mg/L		-0.015	0.015			
WG333964LRB	LRB	11/13/12 22:26				U	mg/L		-0.011	0.011			
WG333964LFB	LFB	11/13/12 22:29	II121029-3	.5		.5112	mg/L	102.2	85	115			
L97747-01LFM	LFM	11/13/12 23:22	II121029-3	.5	U	.5168	mg/L	103.4	70	130			
L97747-01LFMD	LFMD	11/13/12 23:25	II121029-3	.5	U	.5165	mg/L	103.3	70	130	0.06	20	

Chromium, dissolved M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG334130													
WG334130ICV	ICV	11/14/12 14:52	II120914-1	2		2.055	mg/L	102.8	95	105			
WG334130ICB	ICB	11/14/12 14:56				U	mg/L		-0.03	0.03			
WG334130LFB	LFB	11/14/12 15:08	II121029-3	.5		.525	mg/L	105	85	115			
L97746-04AS	AS	11/14/12 15:23	II121029-3	.5	U	.546	mg/L	109.2	85	115			
L97746-04ASD	ASD	11/14/12 15:27	II121029-3	.5	U	.542	mg/L	108.4	85	115	0.74	20	

Chromium, total M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG334003													
WG334003ICV	ICV	11/13/12 22:04	II120914-3	2		1.999	mg/L	100	95	105			
WG334003ICB	ICB	11/13/12 22:11				U	mg/L		-0.03	0.03			
WG333964LRB	LRB	11/13/12 22:26				U	mg/L		-0.022	0.022			
WG333964LFB	LFB	11/13/12 22:29	II121029-3	.5		.5	mg/L	100	85	115			
L97747-01LFM	LFM	11/13/12 23:22	II121029-3	.5	U	.512	mg/L	102.4	70	130			
L97747-01LFMD	LFMD	11/13/12 23:25	II121029-3	.5	U	.522	mg/L	104.4	70	130	1.93	20	

Conductivity M9045D/M9040C

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG333858													
WG333858LCSW1	LCSW	11/09/12 15:48	PCN40827	1408.8		1418.1	µmhos/cm	100.7	90	110			
WG333858LCSW4	LCSW	11/09/12 19:39	PCN40827	1408.8		1364.8	µmhos/cm	96.9	90	110			
WG333858LCSW7	LCSW	11/09/12 22:56	PCN40827	1408.8		1348.4	µmhos/cm	95.7	90	110			
WG333858LCSW10	LCSW	11/10/12 2:21	PCN40827	1408.8		1304.2	µmhos/cm	92.6	90	110			
WG333858LCSW13	LCSW	11/10/12 4:38	PCN40827	1408.8		1302.2	µmhos/cm	92.4	90	110			

Lead, dissolved M200.8 ICP-MS

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG335522													
WG335522ICV	ICV	12/08/12 4:57	MS121001-5	.05		.052	mg/L	104	90	110			
WG335522ICB	ICB	12/08/12 5:00				U	mg/L		-0.0003	0.0003			
WG335522LFB	LFB	12/08/12 5:03	MS121130-3	.05005		.05037	mg/L	100.6	85	115			
L98046-01AS	AS	12/08/12 5:13	MS121130-3	.05005	U	.05221	mg/L	104.3	70	130			
L98046-01ASD	ASD	12/08/12 5:16	MS121130-3	.05005	U	.05148	mg/L	102.9	70	130	1.41	20	

Montgomery and Associates

ACZ Project ID: ***L97754***

Lead, total M200.8 ICP-MS

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG335598													
WG335598ICV	ICV	12/11/12 21:51	MS121001-5	.05		.0509	mg/L	101.8	90	110			
WG335598ICB	ICB	12/11/12 21:54				U	mg/L		-0.0003	0.0003			
WG335538LRB	LRB	12/11/12 21:58				U	mg/L		-0.00022	0.00022			
WG335538LFB	LFB	12/11/12 22:01	MS121130-3	.05005		.04776	mg/L	95.4	85	115			
L98247-03LFM	LFM	12/11/12 22:45	MS121130-3	.05005	.0041	.05134	mg/L	94.4	70	130			
L98247-03LFMD	LFMD	12/11/12 22:48	MS121130-3	.05005	.0041	.05078	mg/L	93.3	70	130	1.1	20	

Mercury, dissolved M245.1 CVAA

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG333984													
WG333984ICV	ICV	11/15/12 13:19	II121107-3	.005025		.005	mg/L	99.5	95	105			
WG333984ICB	ICB	11/15/12 13:21				U	mg/L		-0.0002	0.0002			
WG334104													
WG334104LRB	LRB	11/15/12 14:45				U	mg/L		-0.00044	0.00044			
WG334104LFB	LFB	11/15/12 14:47	II121030-3	.002002		.00175	mg/L	87.4	85	115			
L97739-01LFM	LFM	11/15/12 15:35	II121030-3	.002002	U	.00178	mg/L	88.9	85	115			
L97739-01LFMD	LFMD	11/15/12 15:37	II121030-3	.002002	U	.00162	mg/L	80.9	85	115	9.41	20	MA

Mercury, total M245.1 CVAA

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG334007													
WG334007ICV	ICV	11/14/12 10:19	II121107-3	.005025		.00523	mg/L	104.1	90	110			
WG334007ICB	ICB	11/14/12 10:21				U	mg/L		-0.0006	0.0006			
WG334011													
WG334011LRB	LRB	11/14/12 11:35				U	mg/L		-0.00044	0.00044			
WG334011LFB	LFB	11/14/12 11:37	II121030-3	.002002		.00195	mg/L	97.4	85	115			
L97729-03LFM	LFM	11/14/12 12:58	II121030-3	.002002	U	.00205	mg/L	102.4	85	115			
L97729-03LFMD	LFMD	11/14/12 13:04	II121030-3	.002002	U	.00211	mg/L	105.4	85	115	2.88	20	

Molybdenum, dissolved M200.8 ICP-MS

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG334247													
WG334247ICV	ICV	11/17/12 1:32	MS121001-5	.02004		.01988	mg/L	99.2	90	110			
WG334247ICB	ICB	11/17/12 1:35				U	mg/L		-0.0015	0.0015			
WG334247LFB	LFB	11/17/12 1:39	MS121009-6	.05		.05086	mg/L	101.7	85	115			
L97836-02AS	AS	11/17/12 2:04	MS121009-6	.05	U	.0526	mg/L	105.2	70	130			
L97836-02ASD	ASD	11/17/12 2:13	MS121009-6	.05	U	.05144	mg/L	102.9	70	130	2.23	20	

Montgomery and Associates

ACZ Project ID: ***L97754***

Molybdenum, total M200.8 ICP-MS

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG334240													
WG334240ICV	ICV	11/15/12 21:04	MS121001-5	.02004		.02011	mg/L	100.3	90	110			
WG334240ICB	ICB	11/15/12 21:06				U	mg/L		-0.0015	0.0015			
WG334049LRB	LRB	11/15/12 21:09				U	mg/L		-0.0011	0.0011			
WG334049LFB	LFB	11/15/12 21:12	MS121009-6	.05		.05081	mg/L	101.6	85	115			
L97747-05LFM	LFM	11/15/12 21:24	MS121009-6	.05	.0011	.05049	mg/L	98.8	70	130			
L97747-05LFMD	LFMD	11/15/12 21:27	MS121009-6	.05	.0011	.0509	mg/L	99.6	70	130	0.81	20	

Ph M9045D/M9040C

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG333858													
WG333858LCSW3	LCSW	11/09/12 16:03	PCN39825	6		6.04	units	100.7	98	102			
WG333858LCSW6	LCSW	11/09/12 19:54	PCN39825	6		6.04	units	100.7	98	102			
WG333858LCSW9	LCSW	11/09/12 23:11	PCN39825	6		6.04	units	100.7	98	102			
L97780-01DUP	DUP	11/10/12 2:20			7	6.95	units				0.7	20	
WG333858LCSW12	LCSW	11/10/12 2:37	PCN39825	6		6.04	units	100.7	98	102			
WG333858LCSW15	LCSW	11/10/12 4:53	PCN39825	6		6.03	units	100.5	98	102			

Selenium, dissolved M200.8 ICP-MS

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG334247													
WG334247ICV	ICV	11/17/12 1:32	MS121001-5	.05		.05008	mg/L	100.2	90	110			
WG334247ICB	ICB	11/17/12 1:35				U	mg/L		-0.0003	0.0003			
WG334247LFB	LFB	11/17/12 1:39	MS121009-6	.05005		.04792	mg/L	95.7	85	115			
L97836-02AS	AS	11/17/12 2:04	MS121009-6	.05005	.0001	.0615	mg/L	122.7	70	130			
L97836-02ASD	ASD	11/17/12 2:13	MS121009-6	.05005	.0001	.05986	mg/L	119.4	70	130	2.7	20	

Selenium, total M200.8 ICP-MS

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG334150													
WG334150ICV	ICV	11/15/12 1:29	MS121001-5	.05		.05177	mg/L	103.5	90	110			
WG334150ICB	ICB	11/15/12 1:32				U	mg/L		-0.0003	0.0003			
WG334049LRB	LRB	11/15/12 1:36				U	mg/L		-0.00022	0.00022			
WG334049LFB	LFB	11/15/12 1:39	MS121009-6	.05005		.04897	mg/L	97.8	85	115			
L97747-05LFM	LFM	11/15/12 2:55	MS121009-6	.05005	.0004	.0494	mg/L	97.9	70	130			
L97747-05LFMD	LFMD	11/15/12 2:58	MS121009-6	.05005	.0004	.05005	mg/L	99.2	70	130	1.31	20	

Silver, dissolved M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG334092													
WG334092ICV	ICV	11/14/12 11:14	II120914-1	.998		.956	mg/L	95.8	95	105			
WG334092ICB	ICB	11/14/12 11:18				U	mg/L		-0.03	0.03			
WG334092LFB	LFB	11/14/12 11:30	II121029-3	.5		.476	mg/L	95.2	85	115			
L97746-04AS	AS	11/14/12 12:20	II121029-3	.5	U	.389	mg/L	77.8	85	115			M2 ZA
L97746-04ASD	ASD	11/14/12 12:23	II121029-3	.5	U	.357	mg/L	71.4	85	115	8.58	20	M2 ZA

Montgomery and Associates

ACZ Project ID: ***L97754***

Silver, total M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG334003													
WG334003ICV	ICV	11/13/12 22:04	II120914-3	.998		1.005	mg/L	100.7	95	105			
WG334003ICB	ICB	11/13/12 22:11				U	mg/L		-0.03	0.03			
WG333964LRB	LRB	11/13/12 22:26				U	mg/L		-0.022	0.022			
WG333964LFB	LFB	11/13/12 22:29	II121029-3	.5		.486	mg/L	97.2	85	115			
L97747-01LFM	LFM	11/13/12 23:22	II121029-3	.5	U	.492	mg/L	98.4	70	130			
L97747-01LFMD	LFMD	11/13/12 23:25	II121029-3	.5	U	.493	mg/L	98.6	70	130	0.2	20	

Uranium, dissolved M200.8 ICP-MS

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG334247													
WG334247ICV	ICV	11/17/12 1:32	MS121001-5	.05		.0519	mg/L	103.8	90	110			
WG334247ICB	ICB	11/17/12 1:35				U	mg/L		-0.0003	0.0003			
WG334247LFB	LFB	11/17/12 1:39	MS121009-6	.05		.05011	mg/L	100.2	85	115			
L97836-02AS	AS	11/17/12 2:04	MS121009-6	.05	U	.0526	mg/L	105.2	70	130			
L97836-02ASD	ASD	11/17/12 2:13	MS121009-6	.05	U	.05206	mg/L	104.1	70	130	1.03	20	

Uranium, total M200.8 ICP-MS

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG334240													
WG334240ICV	ICV	11/15/12 21:04	MS121001-5	.05		.05151	mg/L	103	90	110			
WG334240ICB	ICB	11/15/12 21:06				U	mg/L		-0.0003	0.0003			
WG334049LRB	LRB	11/15/12 21:09				U	mg/L		-0.00022	0.00022			
WG334049LFB	LFB	11/15/12 21:12	MS121009-6	.05		.05152	mg/L	103	85	115			
L97747-05LFM	LFM	11/15/12 21:24	MS121009-6	.05	.0009	.05307	mg/L	104.3	70	130			
L97747-05LFMD	LFMD	11/15/12 21:27	MS121009-6	.05	.0009	.05382	mg/L	105.8	70	130	1.4	20	

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Extended Qualifier Report

Montgomery and Associates

ACZ Project ID: ***L97754***

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L97754-01	WG334104	Mercury, dissolved	M245.1 CVAA	MA	Recovery for either the spike or spike duplicate was outside of the acceptance limits; the RPD was within the acceptance limits.
	WG334092	Silver, dissolved	M200.7 ICP	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
			M200.7 ICP	ZA	Poor recovery for Silver quality control is accepted due to low Silver solubility in samples, digestates, or extracts that do not contain sufficient Hydrochloric acid.

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

RadioChemistry Analytical Results

Montgomery and Associates
Project ID: 1350
Sample ID: 6294
Locator:

ACZ Sample ID: ***L97754-01***
Date Sampled: *11/07/12 11:00*
Date Received: *11/08/12*
Sample Matrix: *Waste Water*

Gross Alpha & Beta, total — Prep Method:
M9310

Parameter	Measure Date	Prep Date	Result	Error(+/-)	LLD	Units	XQ	Analyst
Gross Alpha	11/27/12 16:02		2600	89	6	pCi/L		mla
Gross Beta	11/27/12 16:02		1200	31	8.7	pCi/L	*	mla

Uranium, Isotopic Total — Prep Method:
Eichrom ACW03

Parameter	Measure Date	Prep Date	Result	Error(+/-)	LLD	Units	XQ	Analyst
Uranium 234, total	11/29/12 0:02		1700	90	9	pCi/L	*	jjg
Uranium 235, total	11/29/12 0:02		57	21	9	pCi/L	*	jjg
Uranium 238, total	11/29/12 0:02		1700	90	9	pCi/L	*	jjg

Arizona license number: AZ0102

Report Header Explanations

Batch	A distinct set of samples analyzed at a specific time
Error(+/-)	Calculated sample specific uncertainty
Found	Value of the QC Type of interest
Limit	Upper limit for RPD, in %.
LCL	Lower Control Limit, in % (except for LCSS, mg/Kg)
LLD	Calculated sample specific Lower Limit of Detection
PCN/SCN	A number assigned to reagents/standards to trace to the manufacturer's certificate of analysis
PQL	Practical Quantitation Limit
QC	True Value of the Control Sample or the amount added to the Spike
Rec	Amount of the true value or spike added recovered, in % (except for LCSS, mg/Kg)
RER	Relative Error Ratio, calculation used for Dup. QC taking into account the error factor.
RPD	Relative Percent Difference, calculation used for Duplicate QC Types
UCL	Upper Control Limit, in % (except for LCSS, mg/Kg)
Sample	Value of the Sample of interest

QC Sample Types

DUP	Sample Duplicate	*MS/MSD*	Matrix Spike/Matrix Spike Duplicate
LCSS	Laboratory Control Sample - Soil	*PBS*	Prep Blank - Soil
LCSW	Laboratory Control Sample - Water	*PBW*	Prep Blank - Water

QC Sample Type Explanations

Blanks	Verifies that there is no or minimal contamination in the prep method procedure.
Control Samples	Verifies the accuracy of the method, including the prep procedure.
Duplicates	Verifies the precision of the instrument and/or method.
Matrix Spikes	Determines sample matrix interferences, if any.

ACZ Qualifiers (Qual)

H	Analysis exceeded method hold time.

Method Prefix Reference

M	EPA methodology, including those under SDWA, CWA, and RCRA
SM	Standard Methods for the Examination of Water and Wastewater.
D	ASTM
RP	DOE
ESM	DOE/ESM

Comments

(1)	Solid matrices are reported on a dry weight basis.
(2)	Preparation method: "Method" indicates preparation defined in analytical method.
(3)	QC results calculated from raw data. Results may vary slightly if the rounded values are used in the calculations.
(4)	An asterisk in the "XQ" column indicates there is an extended qualifier and/or certification qualifier associated with the result.

For a complete list of ACZ's Extended Qualifiers, please click: http://www.acz.com/public/extquallist.pdf

Montgomery and Associates

ACZ Project ID: ***L97754***

Alpha M9310 **Units:** pCi/L

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Error	LLD	Found	Error	LLD	Rec	Lower	Upper	RPD/RER	Limit	Qual
WG334953																
WG333905PBW	PBW	11/27/12						2.7	1.8	1.4			2.8			
WG333905LCSW	LCSW	11/27/12	RC121002-2	81.06				75	7.5	1.4	92.5	83	133			
L97752-02DUP	DUP-RER	11/27/12			340	26	3.9	320	24	3.4				0.57	2	
L97779-01DUP	DUP-RER	11/27/12			790	31	2.4	880	33	2.4				1.99	2	
L97752-02MS	MS	11/27/12	RC121002-2	115.8	340	26	3.9	450	29	3.7	95	83	133			

Beta M9310 **Units:** pCi/L

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Error	LLD	Found	Error	LLD	Rec	Lower	Upper	RPD/RER	Limit	Qual
WG334953																
WG333905PBW	PBW	11/27/12						1	2.7	3.9			7.8			
WG333905LCSW	LCSW	11/27/12	PCN40504	100				87	6	3.8	87	70	129			
L97752-02DUP	DUP-RER	11/27/12			180	11	5.8	210	11	5.7				1.93	2	
L97779-01MS	MS	11/27/12	PCN40504	100	370	12	4	500	14	4	130	70	129			M1

Uranium 234 Eichrom ACW03 **Units:** pCi/L

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Error	LLD	Found	Error	LLD	Rec	Lower	Upper	RPD/RER	Limit	Qual
WG335162																
WG334724PBW	PBW	11/29/12						1.5	1.6	1.1			2.2			
WG334724LCSW	LCSW	11/29/12	RC121130-10	196.4				210	14	1.8	106.9	77	122			
L97972-01DUP	DUP-RER	11/29/12			2.5	2.1	1.1	-.68	1.5	1.2				1.23	2	
L97972-01MS	MS	11/29/12	RC121130-10	196.4	2.5	2.1	1.1	190	14	1.9	95.5	77	122			

Montgomery and Associates

ACZ Project ID: ***L97754***

Uranium 235 Eichrom ACW03 **Units:** pCi/L

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Error	LLD	Found	Error	LLD	Rec	Lower	Upper	RPD/RER	Limit	Qual
WG335162																
WG334724PBW	PBW	11/29/12						-.25	0.52	1.1			2.2			
WG334724LCSW	LCSW	11/29/12	RC121130-10	8.96				7.9	3.5	1.8	88.2	42	136			
L97972-01DUP	DUP-RER	11/29/12			-0.62	1.1	1.1	-.41	0.86	1.2				0.15	2	
L97972-01MS	MS	11/29/12	RC121130-10	8.96	-0.62	1.1	1.1	6.8	3.2	1.9	82.8	42	136			

Uranium 238 Eichrom ACW03 **Units:** pCi/L

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Error	LLD	Found	Error	LLD	Rec	Lower	Upper	RPD/RER	Limit	Qual
WG335162																
WG334724PBW	PBW	11/29/12						1.5	1.4	1.1			2.2			
WG334724LCSW	LCSW	11/29/12	RC121130-10	194.8				214	14	1.8	109.9	87	124			
L97972-01DUP	DUP-RER	11/29/12			1.8	1.9	1.1	1.22	1.5	1.2				0.24	2	
L97972-01MS	MS	11/29/12	RC121130-10	194.8	1.8	1.9	1.1	213	15	1.9	108.4	87	124			

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

RadChem Extended Qualifier Report

Montgomery and Associates

ACZ Project ID: ***L97754***

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L97754-01	WG334953	Gross Beta	M9310	M1	Matrix spike recovery was high, the recovery of the associated control sample (LCS or LFB) was acceptable.

Radiochemistry

The following parameters are not offered for certification or are not covered by AZ certificate #AZ0102.	
Uranium 234, total	Eichrom ACW03
Uranium 235, total	Eichrom ACW03
Uranium 238, total	Eichrom ACW03
The following parameters are not offered for certification or are not covered by NELAC certificate #ACZ.	
Uranium 234, total	Eichrom ACW03
Uranium 235, total	Eichrom ACW03
Uranium 238, total	Eichrom ACW03

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Sample Receipt

Montgomery and Associates
1350

ACZ Project ID: L97754
Date Received: 11/08/2012 09:49
Received By: ksj
Date Printed: 11/9/2012

Receipt Verification

	YES	NO	NA
1) Is a foreign soil permit included for applicable samples?			X
2) Is the Chain of Custody or other directive shipping papers present?	X		
3) Does this project require special handling procedures such as CLP protocol?			X
4) Are any samples NRC licensable material?			X
5) If samples are received past hold time, proceed with requested short hold time analyses?	X		
6) Is the Chain of Custody complete and accurate?	X		
7) Were any changes made to the Chain of Custody prior to ACZ receiving the samples?		X	

Samples/Containers

	YES	NO	NA
8) Are all containers intact and with no leaks?	X		
9) Are all labels on containers and are they intact and legible?	X		
10) Do the sample labels and Chain of Custody match for Sample ID, Date, and Time?	X		
11) For preserved bottle types, was the pH checked and within limits?	X		
12) Is there sufficient sample volume to perform all requested work?	X		
13) Is the custody seal intact on all containers?			X
14) Are samples that require zero headspace acceptable?			X
15) Are all sample containers appropriate for analytical requirements?		X	

```
L97754-01 : A green (filt-ac) container was not received and a
new container was created from the raw .
```

16) Is there an Hg-1631 trip blank present?			X
17) Is there a VOA trip blank present?			X
18) Were all samples received within hold time?	X		

Chain of Custody Related Remarks

Client Contact Remarks

Shipping Containers

Cooler Id	Temp (°C)	Rad (µR/Hr)	Custody Seal Intact?
NA16537	0.5	15	Yes

Client must contact an ACZ Project Manager if analysis should not proceed for samples received outside of their thermal preservation acceptance criteria.

ACZ Laboratories, Inc. L97754

2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

CHAIN OF CUSTODY

Name: Tim Leo	Address: 1550 E. Price Rd
Company: Montgomery & Assoc.	Tucson AZ 85719
E-mail: tleo@elmontgomery.com	Telephone: 520-881-4912

Name: Leilani Bew	E-mail: lbew@elmontgomery.com
Company: M&A	Telephone:

Name: SAA	Address:
Company:	
E-mail:	Telephone:

If sample(s) received past holding time (HT), or if insufficient HT remains to complete analysis before expiration, shall ACZ proceed with requested short HT analyses? YES [X] NO [ ]

If "NO" then ACZ will contact client for further instruction. If neither "YES" nor "NO" is indicated, ACZ will proceed with the requested analyses, even if HT is expired, and data will be qualified.

Are samples for SDWA Compliance Monitoring? Yes [ ] No [X]

If yes, please include state forms. Results will be reported to PQL for Colorado.

Sampler's Name: Brandon Nyce Sampler's site Information: State: UT Zip code: Time Zone:

Quote #: LISBON - WW

Project/PO #: 1350

Reporting state for compliance testing: Utah

Check box if samples include NRC licensed material? [ ]

			# of Containers	LISBON-WW						
6294	11/7/12 11:00	W	4	X						

Matrix: SW (Surface Water) · GW (Ground Water) · WW (Waste Water) · DW (Drinking Water) · SL (Sludge) · SO (Soil) · OL (Oil) · Other (Specify)

(*) Collected double volume amount of sample; additional analyses may be requested; please contact Tim Leo for additional analyses

Please refer to ACZ's terms & conditions located on the reverse side of this COC.

	11/7/12 1200	ICE	11.8 12.9

L97754 Chain of Custody

FRMAD050.02.11.11 White - Return with sample. Yellow - Retain for your records.

Please print or type
(Form designed for use on elite (12-pitch) typewriter.)

130121000612 10yds 10tons 2020

F

NON-HAZARDOUS WASTE MANIFEST

1. Generator ID Number	2. Page 1 of 1	3. Emergency Response Phone	4. Waste Tracking Number
		(520) 531-6961	011813-03

GENERATOR

5. Generator's Name and Mailing Address
RIO ALGOM MINING, LLC
8950 N. ORACLE ROAD, SUITE 150
TUCSON AZ 85704
Generator's Phone: (520) 531-6951

Generator's Site Address (if different than mailing address)
RIO ALGOM MINING, LLC
LISBON VALLEY ROAD AND WEST COYOTE CREEK ROAD
LA SAL UT 84530

6. Transporter 1 Company Name
MP ENVIRONMENTAL
U.S. EPA ID Number
CAT000624247

7. Transporter 2 Company Name
U.S. EPA ID Number

8. Designated Facility Name and Site Address
U.S. ECOLOGY IDAHO, INC.
20400 LEMLEY ROAD
GRAND VIEW ID 83624
Facility's Phone: (800) 274-1515
U.S. EPA ID Number
IDD073114654

	9. Waste Shipping Name and Description	10. Containers No.	10. Containers Type	11. Total Quantity	12. Unit Wt./Vol.	
1.	MATERIAL NOT REGULATED BY D.O.T.	1	CM	9	T	
2.						
3.						
4.						

13. Special Handling Instructions and Additional Information
WSID#29927

Bin #6185

14. GENERATOR'S/OFFEROR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations.

Generator's/Offeror's Printed/Typed Name: William Ray | Signature | Month 1 | Day 15 | Year 13

INT'L

15. International Shipments ☐ Import to U.S. ☐ Export from U.S. Port of entry/exit:
Transporter Signature (for exports only): Date leaving U.S.:

TRANSPORTER

16. Transporter Acknowledgment of Receipt of Materials

Transporter 1 Printed/Typed Name | Signature | Month | Day | Year

Transporter 2 Printed/Typed Name: George Peterson | Signature | Month 1 | Day 18 | Year 13

DESIGNATED FACILITY

17. Discrepancy

17a. Discrepancy Indication Space ☐ Quantity ☐ Type ☐ Residue ☐ Partial Rejection ☐ Full Rejection

Manifest Reference Number:

17b. Alternate Facility (or Generator) U.S. EPA ID Number

Facility's Phone:

17c. Signature of Alternate Facility (or Generator) | Month | Day | Year

18. Designated Facility Owner or Operator: Certification of receipt of materials covered by the manifest except as noted in Item 17a

Printed/Typed Name: Orion Kastner | Signature: Orion Kastner | Month 1 | Day 21 | Year 13

GC Labels • Printed in the USA
1-800-997-6966

DESIGNATED FACILITY TO GENERATOR

Reorder Part# MANIFEST-C6NHWC
913-897-6966

CERTIFICATE OF DISPOSAL

January 28,2013

RIO ALGOM MINING, LLC
LISBON VALLEY ROAD AND WEST COYOTE CREEK ROAD
LA SAL, UT 84530

This is to certify that waste as defined on Waste Manifest number **011813-03/** was received by U.S. Ecology, Inc., on **01/21/2013**.The waste(s) were subsequently treated, if required by 40 CFR Part 268 and U.S. Ecology's permits and disposed of by **01/21/2013** in accordance with permits and laws regulating this facility.

Reference Number: 13012100612-011813-03-1-1
Material: 1 ROLL-OFF
Process: Direct Landfill
Management Code:
Facility: U.S. ECOLOGY IDAHO, INC.
20400 LEMLEY ROAD
GRAND VIEW, ID 83624
EPA ID: IDD073114654
Waste Type: NON HAZARDOUS WASTE
Customer: MP ENVIRONMENTAL SERVICES

Printed Name: DONNA PULLEN

Signature: Donna Pullen

Title: RECEIVING SUPERVISOR

Please print or type
(Form designed for use on elite (12-pitch) typewriter.)

130201009C6 104+ 7.72T 15440

NON-HAZARDOUS WASTE MANIFEST

1. Generator ID Number	2. Page 1 of 1	3. Emergency Response Phone	4. Waste Tracking Number
		(520) 531-6961	01R113-01

GENERATOR

5. Generator's Name and Mailing Address
RIO ALGOM MINING, LLC
8950 N ORACLE ROAD, SUITE 150
TUCSON AZ 85704
Generator's Phone: (520) 531-6961

Generator's Site Address (if different than mailing address)
RIO ALGOM MINING, LLC
LISBON VALLEY ROAD AND WEST COYOTE CREEK ROAD
LA SAL UT 84530

6. Transporter 1 Company Name
MP ENVIRONMENTAL
U.S. EPA ID Number
CAT000624247

7. Transporter 2 Company Name
U.S. EPA ID Number

8. Designated Facility Name and Site Address
U.S. ECOLOGY IDAHO, INC.
20400 LEMLEY ROAD
GRAND VIEW ID 83624
Facility's Phone: (800) 274-1516
U.S. EPA ID Number
IDD073114654

	9. Waste Shipping Name and Description	10. Containers No.	10. Containers Type	11. Total Quantity	12. Unit Wt./Vol.
1.	MATERIAL NOT REGULATED BY D.O.T.	1	CM	8	T
2.					
3.					
4.					

13. Special Handling Instructions and Additional Information
WSID# 29927

Bin # 6077

14. GENERATOR'S/OFFEROR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations.

Generator's/Offeror's Printed/Typed Name: William Ray
Signature:
Month: 1 Day: 15 Year: 13

INT'L

15. International Shipments ☐ Import to U.S. ☐ Export from U.S. Port of entry/exit:
Transporter Signature (for exports only): Date leaving U.S.:

TRANSPORTER

16. Transporter Acknowledgment of Receipt of Materials

Transporter 1 Printed/Typed Name: GARY HILL
Signature:
Month: 01 Day: 21 Year: 13

Transporter 2 Printed/Typed Name:
Signature:
Month: Day: Year:

DESIGNATED FACILITY

17. Discrepancy

17a. Discrepancy Indication Space ☐ Quantity ☐ Type ☐ Residue ☐ Partial Rejection ☐ Full Rejection

Manifest Reference Number:

17b. Alternate Facility (or Generator)
U.S. EPA ID Number
Facility's Phone:

17c. Signature of Alternate Facility (or Generator)
Month: Day: Year:

18. Designated Facility Owner or Operator: Certification of receipt of materials covered by the manifest except as noted in Item 17a

Printed/Typed Name: Jane McCarthy
Signature: Jane McCarthy
Month: 2 Day: 7 Year: 13

DESIGNATED FACILITY TO GENERATOR

GC Labels • Printed in the USA
1-800-997-6966

Reorder Part# MANIFEST-C6NHWC
913-897-6966

CERTIFICATE OF DISPOSAL

February 05,2013

RIO ALGOM MINING, LLC
LISBON VALLEY ROAD AND WEST COYOTE CREEK ROAD
LA SAL, UT 84530

This is to certify that waste as defined on Waste Manifest number **012113-01/** was received by U.S. Ecology, Inc., on **02/01/2013** .The waste(s) were subsequently treated, if required by 40 CFR Part 268 and U.S. Ecology's permits and disposed of by **02/01/2013** in accordance with permits and laws regulating this facility.

Reference Number: 13020100966-012113-01-1-1
Material: 1 ROLL-OFF
Process: Direct Landfill
Management Code:
Facility: U.S. ECOLOGY IDAHO, INC.
20400 LEMLEY ROAD
GRAND VIEW, ID 83624
EPA ID: IDD073114654
Waste Type: NON HAZARDOUS WASTE
Customer: MP ENVIRONMENTAL SERVICES

Printed Name: DONNA PULLEN

Signature: Donna Pullen

Title: RECEIVING SUPERVISOR

Please print or type
(Form designed for use on elite (12-pitch) typewriter.)

10 yds 8.31 tons
130121006012 16620

B

NON-HAZARDOUS WASTE MANIFEST

1. Generator ID Number	2. Page 1 of 1	3. Emergency Response Phone	4. Waste Tracking Number
		(520) 531-6961	011813-04

GENERATOR

5. Generator's Name and Mailing Address
RIO ALGOM MINING, LLC
8950 N ORACLE ROAD, SUITE 150
TUCSON AZ 85704
Generator's Phone: (520) 531-6961

Generator's Site Address (if different than mailing address)
RIO ALGOM MINING, LLC
LISBON VALLEY ROAD AND WEST COYOTE CREEK ROAD
LA SAL UT 84530

6. Transporter 1 Company Name
MP ENVIRONMENTAL
U.S. EPA ID Number
CAT000624247

7. Transporter 2 Company Name
U.S. EPA ID Number

8. Designated Facility Name and Site Address
U.S. ECOLOGY IDAHO, INC.
20400 LEMLEY ROAD
GRAND VIEW ID 83624
Facility's Phone: (800) 274-1515
U.S. EPA ID Number
IDD073114654

	9. Waste Shipping Name and Description	10. Containers No.	10. Containers Type	11. Total Quantity	12. Unit Wt./Vol.
1.	MATERIAL NOT REGULATED BY D.O.T.	1	CM	9	T
2.					
3.					
4.					

13. Special Handling Instructions and Additional Information
WSID#29927

Bin #6017

14. GENERATOR'S/OFFEROR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations.

Generator's/Offeror's Printed/Typed Name: William Ray
Signature:
Month 1 Day 15 Year 13

INT'L

15. International Shipments ☐ Import to U.S. ☐ Export from U.S. Port of entry/exit:
Transporter Signature (for exports only): Date leaving U.S.:

TRANSPORTER

16. Transporter Acknowledgment of Receipt of Materials

Transporter 1 Printed/Typed Name: George Peterson
Signature:
Month 1 Day 18 Year 13

Transporter 2 Printed/Typed Name:
Signature:
Month Day Year

DESIGNATED FACILITY

17. Discrepancy

17a. Discrepancy Indication Space ☐ Quantity ☐ Type ☐ Residue ☐ Partial Rejection ☐ Full Rejection

Manifest Reference Number:

17b. Alternate Facility (or Generator)
U.S. EPA ID Number
Facility's Phone:

17c. Signature of Alternate Facility (or Generator)
Month Day Year

18. Designated Facility Owner or Operator: Certification of receipt of materials covered by the manifest except as noted in Item 17a

Printed/Typed Name: Corian Kastner
Signature: Corian Kastner
Month 1 Day 21 Year 13

GC Labels • Printed in the USA
1-800-997-6966

Reorder Part# MANIFEST-C6NHWC
913-897-6966

DESIGNATED FACILITY TO GENERATOR

CERTIFICATE OF DISPOSAL

January 28,2013

RIO ALGOM MINING, LLC
LISBON VALLEY ROAD AND WEST COYOTE CREEK ROAD
LA SAL, UT 84530

This is to certify that waste as defined on Waste Manifest number **011813-04/** was received by U.S. Ecology, Inc., on **01/21/2013**.The waste(s) were subsequently treated, if required by 40 CFR Part 268 and U.S. Ecology's permits and disposed of by **01/21/2013** in accordance with permits and laws regulating this facility.

Reference Number: 13012100612-011813-04-1-1
Material: 1 ROLL-OFF
Process: Direct Landfill
Management Code:
Facility: U.S. ECOLOGY IDAHO, INC.
20400 LEMLEY ROAD
GRAND VIEW, ID 83624
EPA ID: IDD073114654
Waste Type: NON HAZARDOUS WASTE
Customer: MP ENVIRONMENTAL SERVICES

Printed Name: DONNA PULLEN

Signature: Donna Pullen

Title: RECEIVING SUPERVISOR

Please print or type
(Form designed for use on elite (12-pitch) typewriter.)

130122220672 12pt 10 tons 2013

NON-HAZARDOUS WASTE MANIFEST

1. Generator ID Number	2. Page 1 of 1	3. Emergency Response Phone	4. Waste Tracking Number
		(520) 531-6961	011813-01

GENERATOR

5. Generator's Name and Mailing Address
RIO ALGOM MINING, LLC
8950 N ORACLE ROAD, SUITE 150
TUCSON AZ 85704
Generator's Phone: (520) 531-6961

Generator's Site Address (if different than mailing address)
RIO ALGOM MINING, LLC
LISBON VALLEY ROAD AND WEST COYOTE CREEK ROAD
LA SAL UT 84530

6. Transporter 1 Company Name: MP ENVIRONMENTAL — U.S. EPA ID Number: CAT000624247

7. Transporter 2 Company Name — U.S. EPA ID Number:

8. Designated Facility Name and Site Address
U.S. ECOLOGY IDAHO, INC.
20400 LEMLEY ROAD
GRAND VIEW ID 83624
Facility's Phone: (800) 274-1516
U.S. EPA ID Number: IDD073114654

	9. Waste Shipping Name and Description	10. Containers No.	10. Containers Type	11. Total Quantity	12. Unit Wt./Vol.	
1.	MATERIAL NOT REGULATED BY D.O.T.	1	CM	9	T	
2.						
3.						
4.						

13. Special Handling Instructions and Additional Information
WSID# 29927

Bin # 6061

14. GENERATOR'S/OFFEROR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations.

Generator's/Offeror's Printed/Typed Name: William Roy — Signature — Month 1 Day 15 Year 13

INT'L

15. International Shipments ☐ Import to U.S. ☐ Export from U.S. Port of entry/exit:
Transporter Signature (for exports only): Date leaving U.S.:

TRANSPORTER

16. Transporter Acknowledgment of Receipt of Materials

Transporter 1 Printed/Typed Name: GARY HILL — Signature: Gary Hill — Month 01 Day 15 Year 13

Transporter 2 Printed/Typed Name — Signature — Month Day Year

DESIGNATED FACILITY

17. Discrepancy

17a. Discrepancy Indication Space ☐ Quantity ☐ Type ☐ Residue ☐ Partial Rejection ☐ Full Rejection

Manifest Reference Number:

17b. Alternate Facility (or Generator) — U.S. EPA ID Number
Facility's Phone:

17c. Signature of Alternate Facility (or Generator) — Month Day Year

18. Designated Facility Owner or Operator: Certification of receipt of materials covered by the manifest except as noted in Item 17a

Printed/Typed Name: Steven McCauley — Signature: Steven McCauley — Month 1 Day 23 Year 13

GC Labels • Printed in the USA
1-800-997-6966

DESIGNATED FACILITY TO GENERATOR

Reorder Part# MANIFEST-C6NHWC
913-897-6966

CERTIFICATE OF DISPOSAL

January 28,2013

RIO ALGOM MINING, LLC
LISBON VALLEY ROAD AND WEST COYOTE CREEK ROAD
LA SAL, UT 84530

This is to certify that waste as defined on Waste Manifest number **011813-01/** was received by U.S. Ecology, Inc., on **01/22/2013**.The waste(s) were subsequently treated, if required by 40 CFR Part 268 and U.S. Ecology's permits and disposed of by **01/22/2013** in accordance with permits and laws regulating this facility.

Reference Number: 13012200672-011813-01-1-1
Material: 1 ROLL-OFF
Process: Direct Landfill
Management Code:
Facility: U.S. ECOLOGY IDAHO, INC.
20400 LEMLEY ROAD
GRAND VIEW, ID 83624
EPA ID: IDD073114654
Waste Type: NON HAZARDOUS WASTE
Customer: MP ENVIRONMENTAL SERVICES

Printed Name: DONNA PULLEN

Signature: Donna Pullen

Title: RECEIVING SUPERVISOR

Please print or type
(Form designed for use on elite (12-pitch) typewriter.)

13012200672 84t 2tons 5440

NON-HAZARDOUS WASTE MANIFEST

1. Generator ID Number	2. Page 1 of	3. Emergency Response Phone	4. Waste Tracking Number
	1	(520) 531-6961	011813-02

GENERATOR

5. Generator's Name and Mailing Address
RIO ALGOM MINING, LLC
8950 N ORACLE ROAD, SUITE 150
TUCSON AZ 85704
Generator's Phone: (520) 531-6961

Generator's Site Address (if different than mailing address)
RIO ALGOM MINING, LLC
LISBON VALLEY ROAD AND WEST COYOTE CREEK ROAD
LA SAL UT 84530

6. Transporter 1 Company Name
MR ENVIRONMENTAL
U.S. EPA ID Number
CAT000624247

7. Transporter 2 Company Name
U.S. EPA ID Number

8. Designated Facility Name and Site Address
U.S. ECOLOGY IDAHO, INC.
20400 LEMLEY ROAD
GRAND VIEW ID 83624
Facility's Phone: (800) 274-1516
U.S. EPA ID Number
IDD073114654

	9. Waste Shipping Name and Description	10. Containers No.	10. Containers Type	11. Total Quantity	12. Unit Wt./Vol.	
1.	MATERIAL NOT REGULATED BY D.O.T.	1	CM	5	T	
2.						
3.						
4.						

13. Special Handling Instructions and Additional Information
WSID#29927

Bin #6103

14. GENERATOR'S/OFFEROR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations.

Generator's/Offeror's Printed/Typed Name	Signature	Month	Day	Year
William Ray		1	15	13

INT'L

15. International Shipments ☐ Import to U.S. ☐ Export from U.S. Port of entry/exit:
Transporter Signature (for exports only): Date leaving U.S.:

TRANSPORTER

16. Transporter Acknowledgment of Receipt of Materials

Transporter 1 Printed/Typed Name	Signature	Month	Day	Year
GARY HILL	Gary Hill	01	18	13
Transporter 2 Printed/Typed Name	Signature	Month	Day	Year

DESIGNATED FACILITY

17. Discrepancy

17a. Discrepancy Indication Space ☒ Quantity ☐ Type ☐ Residue ☐ Partial Rejection ☐ Full Rejection
Actual Recieved ~~2 tons~~ 2.72 tons, WTOK per Jenny ORR via email 1/23/13 CK
Manifest Reference Number:

17b. Alternate Facility (or Generator) U.S. EPA ID Number
Facility's Phone:

17c. Signature of Alternate Facility (or Generator)	Month	Day	Year

18. Designated Facility Owner or Operator: Certification of receipt of materials covered by the manifest except as noted in Item 17a

Printed/Typed Name	Signature	Month	Day	Year
Jamey McCarty	Jamey McCarty	1	22	13

DESIGNATED FACILITY TO GENERATOR

GC Labels • Printed in the USA
1-800-997-6966
Reorder Part# MANIFEST-C6NHWC
913-897-6966

CERTIFICATE OF DISPOSAL

January 28,2013

RIO ALGOM MINING, LLC
LISBON VALLEY ROAD AND WEST COYOTE CREEK ROAD
LA SAL, UT 84530

This is to certify that waste as defined on Waste Manifest number **011813-02/** was received by U.S. Ecology, Inc., on **01/22/2013**.The waste(s) were subsequently treated, if required by 40 CFR Part 268 and U.S. Ecology's permits and disposed of by **01/22/2013** in accordance with permits and laws regulating this facility.

Reference Number: 13012200672-011813-02-1-1
Material: 1 ROLL-OFF
Process: Direct Landfill
Management Code:
Facility: U.S. ECOLOGY IDAHO, INC.
20400 LEMLEY ROAD
GRAND VIEW, ID 83624
EPA ID: IDD073114654
Waste Type: NON HAZARDOUS WASTE
Customer: MP ENVIRONMENTAL SERVICES

Printed Name: DONNA PULLEN

Signature: Donna Pullen

Title: RECEIVING SUPERVISOR

Please print or type
(Form designed for use on elite (12-pitch) typewriter.)

13012300707 11.70 Ton 23380 134yds

NON-HAZARDOUS WASTE MANIFEST

1. Generator ID Number	2. Page 1 of 1	3. Emergency Response Phone	4. Waste Tracking Number
		(520) 531-6961	012113-02

GENERATOR

5. Generator's Name and Mailing Address
RIO ALGOM MINING, LLC
8950 N ORACLE ROAD, SUITE 150
TUCSON AZ 85704
Generator's Phone: (520) 531-6961

Generator's Site Address (if different than mailing address)
RIO ALGOM MINING, LLC
LISBON VALLEY ROAD AND WEST COYOTE CREEK ROAD
LA SAL UT 84530

6. Transporter 1 Company Name: MP ENVIRONMENTAL — U.S. EPA ID Number: CAT000824247

7. Transporter 2 Company Name — U.S. EPA ID Number:

8. Designated Facility Name and Site Address
U.S. ECOLOGY IDAHO, INC.
20400 LEMLEY ROAD
GRAND VIEW ID 83624
Facility's Phone: (800) 274-1516
U.S. EPA ID Number: IDD073114654

	9. Waste Shipping Name and Description	10. Containers No.	10. Containers Type	11. Total Quantity	12. Unit Wt./Vol.	
1.	MATERIAL NOT REGULATED BY D.O.T.	1	CM	13	T	
2.						
3.						
4.						

13. Special Handling Instructions and Additional Information
WSID#29927

Bin #6182

14. GENERATOR'S/OFFEROR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations.

Generator's/Offeror's Printed/Typed Name: William Ray — Signature — Month 1 Day 15 Year 13

INT'L

15. International Shipments ☐ Import to U.S. ☐ Export from U.S. Port of entry/exit:
Transporter Signature (for exports only): Date leaving U.S.:

TRANSPORTER

16. Transporter Acknowledgment of Receipt of Materials

Transporter 1 Printed/Typed Name: Jeffrey Moore — Signature — Month 1 Day 21 Year 13

Transporter 2 Printed/Typed Name — Signature — Month Day Year

DESIGNATED FACILITY

17. Discrepancy

17a. Discrepancy Indication Space ☐ Quantity ☐ Type ☐ Residue ☐ Partial Rejection ☐ Full Rejection

Manifest Reference Number:

17b. Alternate Facility (or Generator) — U.S. EPA ID Number

Facility's Phone:

17c. Signature of Alternate Facility (or Generator) — Month Day Year

18. Designated Facility Owner or Operator: Certification of receipt of materials covered by the manifest except as noted in Item 17a

Printed/Typed Name: Corian Kastner — Signature: Corian Kastner — Month 1 Day 23 Year 13

CERTIFICATE OF DISPOSAL

January 28,2013

RIO ALGOM MINING, LLC
LISBON VALLEY ROAD AND WEST COYOTE CREEK ROAD
LA SAL, UT 84530

This is to certify that waste as defined on Waste Manifest number **012113-02/** was received by U.S. Ecology, Inc., on **01/23/2013**.The waste(s) were subsequently treated, if required by 40 CFR Part 268 and U.S. Ecology's permits and disposed of by **01/23/2013** in accordance with permits and laws regulating this facility.

Reference Number: 13012300707-012113-02-1-1
Material: 1 ROLL-OFF
Process: Direct Landfill
Management Code:
Facility: U.S. ECOLOGY IDAHO, INC.
20400 LEMLEY ROAD
GRAND VIEW, ID 83624
EPA ID: IDD073114654
Waste Type: NON HAZARDOUS WASTE
Customer: MP ENVIRONMENTAL SERVICES

Printed Name: DONNA PULLEN

Signature: Donna Pullen

Title: RECEIVING SUPERVISOR

Please print or type.
(Form designed for use on elite (12-pitch) typewriter.)

NON-HAZARDOUS WASTE MANIFEST	1. Generator ID Number	2. Page 1 of	3. Emergency Response Phone	4. Waste Tracking Number
	N/A	1		41714

GENERATOR

5. Generator's Name and Mailing Address
Rio Algom Mining, LLC
6440 S Cirrus Road, Suite 150
Tucson, Arizona 85704
Generator's Phone: 520-731-6361

Generator's Site Address (if different than mailing address)
Rio Algom Mining, LLC
Lisbon Valley Road and West Canyon Creek Road
La Sal, Utah 84530

6. Transporter 1 Company Name: MP ENVIRONMENTAL — U.S. EPA ID Number: CAT000626242

7. Transporter 2 Company Name: / — U.S. EPA ID Number:

8. Designated Facility Name and Site Address
US Ecology Idaho, Inc
21400 Lemley Road
Grand View, ID 83624
800 274-1516
U.S. EPA ID Number: IDD 073 114 654
Facility's Phone:

	9. Waste Shipping Name and Description	10. Containers No.	10. Containers Type	11. Total Quantity	12. Unit Wt./Vol.	
1.	Material not regulated by DOT	1	TT	1300	G	
2.						
3.						
4.						

13. Special Handling Instructions and Additional Information
WMID # 70078

14. GENERATOR'S/OFFEROR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations.

Generator's/Offeror's Printed/Typed Name: Sean Black — Signature: [signature] — Month: 04 Day: 17 Year: 19

INT'L

15. International Shipments ☐ Import to U.S. ☐ Export from U.S. Port of entry/exit:
Transporter Signature (for exports only): Date leaving U.S.:

TRANSPORTER

16. Transporter Acknowledgment of Receipt of Materials

Transporter 1 Printed/Typed Name: Richard Ora — Signature: Richard Ora — Month: 04 Day: 17 Year: 19

Transporter 2 Printed/Typed Name: — Signature: — Month: Day: Year:

DESIGNATED FACILITY

17. Discrepancy

17a. Discrepancy Indication Space ☐ Quantity ☐ Type ☐ Residue ☐ Partial Rejection ☐ Full Rejection

Manifest Reference Number:

17b. Alternate Facility (or Generator) — U.S. EPA ID Number:
Facility's Phone:

17c. Signature of Alternate Facility (or Generator) — Month: Day: Year:

18. Designated Facility Owner or Operator: Certification of receipt of materials covered by the manifest except as noted in Item 17a

Printed/Typed Name: — Signature: — Month: Day: Year:

GC Labels • Printed in the USA
1-800-997-6966

GENERATOR'S/SHIPPER'S INITIAL COPY

Reorder Part# MANIFEST-C6NHWC
913-897-6966

Please print or type
(Form is designed for use on elite (12-pitch) typewriter.)

B0S09104144 4877gal 40180#

NON-HAZARDOUS WASTE MANIFEST

1. Generator ID Number	2. Page 1 of 1	3. Emergency Response Phone	4. Waste Tracking Number
		(520) 531-6961	2013851

GENERATOR

5. Generator's Name and Mailing Address
RIO ALGOM MINING, LLC
8950 N. ORACLE ROAD, SUITE 150
TUCSON AZ 85704
Generator's Phone: (520) 531-6961

Generator's Site Address (if different than mailing address)
RIO ALGOM MINING, LLC
LISBON VALLEY ROAD AND WEST COYOTE CREEK ROAD
LA SAL UT 84530

6. Transporter 1 Company Name: MP ENVIRONMENTAL — U.S. EPA ID Number: CAT000624247

7. Transporter 2 Company Name — U.S. EPA ID Number:

8. Designated Facility Name and Site Address
U.S. ECOLOGY IDAHO, INC.
20400 LEMLEY ROAD
GRAND VIEW ID 83624
Facility's Phone: (800) 274-1516
U.S. EPA ID Number: IDD073114654

	9. Waste Shipping Name and Description	10. Containers No.	10. Containers Type	11. Total Quantity	12. Unit Wt./Vol.
1.	MATERIAL NOT REGULATED BY D.O.T.	1	TT	5,400	G
2.					
3.					
4.					

13. Special Handling Instructions and Additional Information
WSID# 29926

Tanker 3275

14. GENERATOR'S/OFFEROR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations.

Generator's/Offeror's Printed/Typed Name: William Ray — Signature — Month 05 Day 08 Year 13

INT'L

15. International Shipments ☐ Import to U.S. ☐ Export from U.S. Port of entry/exit:
Transporter Signature (for exports only): Date leaving U.S.:

TRANSPORTER

16. Transporter Acknowledgment of Receipt of Materials

Transporter 1 Printed/Typed Name: Mathew LaRogue — Signature — Month 05 Day 08 Year 13

Transporter 2 Printed/Typed Name — Signature — Month Day Year

DESIGNATED FACILITY

17. Discrepancy

17a. Discrepancy Indication Space ☐ Quantity ☐ Type ☐ Residue ☐ Partial Rejection ☐ Full Rejection

Manifest Reference Number:

17b. Alternate Facility (or Generator) — U.S. EPA ID Number
Facility's Phone:

17c. Signature of Alternate Facility (or Generator) — Month Day Year

18. Designated Facility Owner or Operator: Certification of receipt of materials covered by the manifest except as noted in Item 17a

Printed/Typed Name: Corran Kastner — Signature: C. Kastner — Month 5 Day 9 Year 13

GC Labels • Printed in the USA
1-800-997-6966

DESIGNATED FACILITY TO GENERATOR

Reorder Part# MANIFEST-C6NHWC
913-897-6966

CERTIFICATE OF DISPOSAL

May 10,2013

RIO ALGOM MINING, LLC
LISBON VALLEY ROAD AND WEST COYOTE CREEK ROAD
LA SAL, UT 84530

This is to certify that waste as defined on Waste Manifest number **2013851/** was received by U.S. Ecology, Inc., on **5/9/2013** .The waste(s) were subsequently treated, if required by 40 CFR Part 268 and U.S. Ecology's permits and disposed of by **05/09/2013** in accordance with permits and laws regulating this facility.

Reference Number: 13050904144-2013851-1-1
Material: 1 TANKER
Process: Solidification
Management Code:
Facility: U.S. ECOLOGY IDAHO, INC.
20400 LEMLEY ROAD
GRAND VIEW, ID 83624
EPA ID: IDD073114654
Waste Type: NON HAZARDOUS WASTE
Customer: MP ENVIRONMENTAL SERVICES

Printed Name: DONNA PULLEN

Signature: Donna Pullen

Title: RECEIVING SUPERVISOR

Please print or type
(Form designed for use on elite (12-pitch) typewriter.)

13050904150 53579gl 44760

NON-HAZARDOUS WASTE MANIFEST

1. Generator ID Number	2. Page 1 of 1	3. Emergency Response Phone	4. Waste Tracking Number
		(520) 531-6961	2013852

GENERATOR

5. Generator's Name and Mailing Address
RIO ALGOM MINING, LLC
8950 N ORACLE ROAD, SUITE 150
TUCSON AZ 85704
Generator's Phone: (520) 531-6961

Generator's Site Address (if different than mailing address)
RIO ALGOM MINING, LLC
LISBON VALLEY ROAD AND WEST COYOTE CREEK ROAD
LA SAL UT 84530

6. Transporter 1 Company Name
MR. ENVIRONMENTAL
U.S. EPA ID Number
CAT000624247

7. Transporter 2 Company Name
U.S. EPA ID Number

8. Designated Facility Name and Site Address
U.S. ECOLOGY IDAHO, INC.
20400 LEMLEY ROAD
GRAND VIEW ID 83624
Facility's Phone: (800) 274-1516
U.S. EPA ID Number
IDD073114654

	9. Waste Shipping Name and Description	10. Containers No.	10. Containers Type	11. Total Quantity	12. Unit Wt./Vol.	
1.	MATERIAL NOT REGULATED BY D.O.T.	1	TT	5,700	G	
2.						
3.						
4.						

13. Special Handling Instructions and Additional Information
WSID#29928

TRK.#3258

14. GENERATOR'S/OFFEROR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations.

Generator's/Offeror's Printed/Typed Name: William Ray
Signature:
Month 05 Day 08 Year 13

INT'L

15. International Shipments ☐ Import to U.S. ☐ Export from U.S. Port of entry/exit:
Transporter Signature (for exports only): Date leaving U.S.:

TRANSPORTER

16. Transporter Acknowledgment of Receipt of Materials

Transporter 1 Printed/Typed Name: Richard ORR
Signature: Richard Orr
Month 05 Day 08 Year 13

Transporter 2 Printed/Typed Name:
Signature:
Month Day Year

DESIGNATED FACILITY

17. Discrepancy

17a. Discrepancy Indication Space ☐ Quantity ☐ Type ☐ Residue ☐ Partial Rejection ☐ Full Rejection

Manifest Reference Number:

17b. Alternate Facility (or Generator)
U.S. EPA ID Number
Facility's Phone:

17c. Signature of Alternate Facility (or Generator)
Month Day Year

18. Designated Facility Owner or Operator: Certification of receipt of materials covered by the manifest except as noted in Item 17a

Printed/Typed Name: Ciaran Kastner
Signature:
Month 5 Day 9 Year 13

GC Labels • Printed in the USA
1-800-997-6966

DESIGNATED FACILITY TO GENERATOR

Reorder Part# MANIFEST-C6NHWC
913-897-6966

CERTIFICATE OF DISPOSAL

May 10,2013

RIO ALGOM MINING, LLC
LISBON VALLEY ROAD AND WEST COYOTE CREEK ROAD
LA SAL, UT 84530

This is to certify that waste as defined on Waste Manifest number **2013852/** was received by U.S. Ecology, Inc., on **5/9/2013** .The waste(s) were subsequently treated, if required by 40 CFR Part 268 and U.S. Ecology's permits and disposed of by **05/09/2013** in accordance with permits and laws regulating this facility.

Reference Number: 13050904150-2013852-1-1
Material: 1 TANKER
Process: Solidification
Management Code:
Facility: U.S. ECOLOGY IDAHO, INC.
20400 LEMLEY ROAD
GRAND VIEW, ID 83624
EPA ID: IDD073114654
Waste Type: NON HAZARDOUS WASTE
Customer: MP ENVIRONMENTAL SERVICES

Printed Name: DONNA PULLEN

Signature: Donna Pullen

Title: RECEIVING SUPERVISOR

Please print or type
(Form designed for use on elite (12-pitch) typewriter)

13092508441 10yrds 7520

NON-HAZARDOUS WASTE MANIFEST

1. Generator ID Number	2. Page 1 of	3. Emergency Response Phone	4. Waste Tracking Number
NA	1		91913-1

GENERATOR

5. Generator's Name and Mailing Address
Rio Algom Mining, LLC
8950 N Oracle Road, Suite 150
Tucson, Arizona 85704
Generator's Phone: 520-531-6961

Generator's Site Address (if different than mailing address)
Rio Algom Mining, LLC
Lisbon Valley Road and West Coyote Creek Road
La Sal, Utah 84530

6. Transporter 1 Company Name: MP ENVIRONMENTAL — U.S. EPA ID Number: CAT000624247

7. Transporter 2 Company Name — U.S. EPA ID Number:

8. Designated Facility Name and Site Address
US Ecology Idaho, Inc
20400 Lemley Road
Grand View, ID 83624
Facility's Phone: 800-274-1516
U.S. EPA ID Number: IDD 073 114 654

	9. Waste Shipping Name and Description	10. Containers No.	10. Containers Type	11. Total Quantity	12. Unit Wt./Vol.	
1.	Material not regulated by D.O.T. B.W 5483	1	CM	10000	LBS	
2.						
3.						
4.						

13. Special Handling Instructions and Additional Information
WSID#20927

14. GENERATOR'S/OFFEROR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations.

Generator's/Offeror's Printed/Typed Name: Scott L. Johnson — Signature: Scott L Johnson — Month: 9 — Day: 18 — Year: 13

INT'L

15. International Shipments ☐ Import to U.S. ☐ Export from U.S. Port of entry/exit:
Transporter Signature (for exports only): Date leaving U.S.:

TRANSPORTER

16. Transporter Acknowledgment of Receipt of Materials

Transporter 1 Printed/Typed Name: Kent Green — Signature: — Month: 9 — Day: 18 — Year: 13

Transporter 2 Printed/Typed Name: James Hewett — Signature: James Hewett — Month: 9 — Day: 25 — Year: 13

DESIGNATED FACILITY

17. Discrepancy

17a. Discrepancy Indication Space ☒ Quantity ☐ Type ☐ Residue ☐ Partial Rejection ☐ Full Rejection
Actual Received 7520#, wt on per Jerry Orvis email 9/26/13 cm
Driver released pending resolution 9/25/13
Manifest Reference Number:

17b. Alternate Facility (or Generator) — U.S. EPA ID Number:
Facility's Phone:

17c. Signature of Alternate Facility (or Generator) — Month — Day — Year

18. Designated Facility Owner or Operator: Certification of receipt of materials covered by the manifest except as noted in Item 17a

Printed/Typed Name: Ciaran Kastner — Signature: Ciaran Kastner — Month: 9 — Day: 25 — Year: 13

CERTIFICATE OF DISPOSAL

September 27,2013

RIO ALGOM MINING, LLC
LISBON VALLEY ROAD AND WEST COYOTE CREEK ROAD
LA SAL, UT 84530

This is to certify that waste as defined on Waste Manifest number **91813-1/** was received by U.S. Ecology, Inc., on **9/25/2013** .The waste(s) were subsequently treated, if required by 40 CFR Part 268 and U.S. Ecology's permits and disposed of by **09/25/2013** in accordance with permits and laws regulating this facility.

Reference Number: 13092508441-91813-1-1-1
Material: 1 ROLL-OFF
Process: Direct Landfill
Management Code:
Facility: U.S. ECOLOGY IDAHO, INC.
20400 LEMLEY ROAD
GRAND VIEW, ID 83624
EPA ID: IDD073114654
Waste Type: NON HAZARDOUS WASTE
Customer: MP ENVIRONMENTAL SERVICES

Printed Name: DONNA PULLEN

Signature: Donna Pullen

Title: RECEIVING SUPERVISOR

Please print or type
(Form designed for use on elite (12-pitch) typewriter)

13092008398 35,300# 4,347 gals

NON-HAZARDOUS WASTE MANIFEST

1. Generator ID Number	2. Page 1 of	3. Emergency Response Phone	4. Waste Tracking Number
NA	1	520-419-2383	09192013-1

GENERATOR

5. Generator's Name and Mailing Address
Rio Algom Mining, LLC
8950 N Oracle Road, Suite 150
Tucson, Arizona 85704
Generator's Phone: 520-531-6961

Generator's Site Address (if different than mailing address)
Rio Algom Mining, LLC
Lisbon Valley Road and West Coyote Creek Road
La Sal, Utah 84530

6. Transporter 1 Company Name: MP ENVIRONMENTAL
U.S. EPA ID Number: CAT000624247

7. Transporter 2 Company Name
U.S. EPA ID Number

8. Designated Facility Name and Site Address
US Ecology Idaho, Inc
20400 Lemley Road
Grand View, ID 83624
Facility's Phone: 800-274-1516
U.S. EPA ID Number: IDD 073 114 654

	9. Waste Shipping Name and Description	10. Containers No.	10. Containers Type	11. Total Quantity	12. Unit Wt./Vol.	
1.	Material not regulated by D.O.T.	1	TT	4000	G	
2.						
3.						
4.						

13. Special Handling Instructions and Additional Information
WSID # 20928

14. GENERATOR'S/OFFEROR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations.

Generator's/Offeror's Printed/Typed Name: JOHN S. LANEY
Signature:
Month: 9 Day: 19 Year: 13

INT'L

15. International Shipments ☐ Import to U.S. ☐ Export from U.S. Port of entry/exit:
Transporter Signature (for exports only): Date leaving U.S.:

TRANSPORTER

16. Transporter Acknowledgment of Receipt of Materials

Transporter 1 Printed/Typed Name: Richard Orr
Signature: Richard Orr
Month: 09 Day: 19 Year: 13

Transporter 2 Printed/Typed Name
Signature
Month Day Year

DESIGNATED FACILITY

17. Discrepancy

17a. Discrepancy Indication Space ☐ Quantity ☐ Type ☐ Residue ☐ Partial Rejection ☐ Full Rejection

Manifest Reference Number:

17b. Alternate Facility (or Generator)
U.S. EPA ID Number
Facility's Phone:

17c. Signature of Alternate Facility (or Generator)
Month Day Year

18. Designated Facility Owner or Operator: Certification of receipt of materials covered by the manifest except as noted in Item 17a

Printed/Typed Name: Cynthia Rodriguez
Signature: Cynthia Rodriguez
Month: 09 Day: 20 Year: 13

GC Labels • Printed in the USA
1-800-997-6966

DESIGNATED FACILITY TO GENERATOR

Reorder Part# MANIFEST-C6NHWC
913-897-6966

CERTIFICATE OF DISPOSAL

September 23,2013

RIO ALGOM MINING, LLC
LISBON VALLEY ROAD AND WEST COYOTE CREEK ROAD
LA SAL, UT 84530

This is to certify that waste as defined on Waste Manifest number **09192013-1/** was received by U.S. Ecology, Inc., on **9/20/2013** .The waste(s) were subsequently treated, if required by 40 CFR Part 268 and U.S. Ecology's permits and disposed of by **09/20/2013** in accordance with permits and laws regulating this facility.

Reference Number: 13092008298-09192013-1-1-1
Material: 1 TANKER
Process: Solidification
Management Code:
Facility: U.S. ECOLOGY IDAHO, INC.
20400 LEMLEY ROAD
GRAND VIEW, ID 83624
EPA ID: IDD073114654
Waste Type: NON HAZARDOUS WASTE
Customer: MP ENVIRONMENTAL SERVICES

Printed Name: DONNA PULLEN

Signature: Donna Pullen

Title: RECEIVING SUPERVISOR

Please print or type.
(Form designed for use on elite (12-pitch) typewriter.)

13092608496 40,000lbs 4759gals

NON-HAZARDOUS WASTE MANIFEST

1. Generator ID Number	2. Page 1 of	3. Emergency Response Phone	4. Waste Tracking Number
N/A	1	520-419-2383	

GENERATOR

5. Generator's Name and Mailing Address
Rio Algom Mining, LLC
6950 N. Oracle Road, Suite 150
Tucson, Arizona 85704
Generator's Phone: 520-531-8961

Generator's Site Address (if different than mailing address)
Rio Algom Mining, LLC
Lisbon Valley Road and West Coyote Creek Road
La Sal, Utah 84530

6. Transporter 1 Company Name: MP ENVIRONMENTAL — U.S. EPA ID Number: CAT000624247

7. Transporter 2 Company Name — U.S. EPA ID Number:

8. Designated Facility Name and Site Address
US Ecology Idaho, Inc
20400 Lemley Road
Grand View, ID 83624
Facility's Phone: 800-274-1516
U.S. EPA ID Number: IDD 073 114 654

	9. Waste Shipping Name and Description	10. Containers No.	10. Containers Type	11. Total Quantity	12. Unit Wt./Vol.	
1.	Material not regulated by D.O.T.	1	TT	4800	G	
2.						
3.						
4.						

13. Special Handling Instructions and Additional Information
WSID #20928

14. GENERATOR'S/OFFEROR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations.

Generator's/Offeror's Printed/Typed Name: Scott Johnson — Signature: Scott Johnson — Month: 09 Day: 24 Year: 13

INT'L

15. International Shipments ☐ Import to U.S. ☐ Export from U.S. Port of entry/exit:
Transporter Signature (for exports only): Date leaving U.S.:

TRANSPORTER

16. Transporter Acknowledgment of Receipt of Materials

Transporter 1 Printed/Typed Name: Richard Orr — Signature: Richard Orr — Month: 09 Day: 24 Year: 13

Transporter 2 Printed/Typed Name — Signature — Month Day Year

DESIGNATED FACILITY

17. Discrepancy

17a. Discrepancy Indication Space ☐ Quantity ☐ Type ☐ Residue ☐ Partial Rejection ☐ Full Rejection
Sec 4 manifest shortage 09573-02 per Ron Porter via telecon 9/26/13 CA
Manifest Reference Number:

17b. Alternate Facility (or Generator) — U.S. EPA ID Number
Facility's Phone:

17c. Signature of Alternate Facility (or Generator) — Month Day Year

18. Designated Facility Owner or Operator: Certification of receipt of materials covered by the manifest except as noted in Item 17a

Printed/Typed Name: Kellea Rodriguez — Signature: Kellea Rodriguez — Month: 09 Day: 26 Year: 13

CERTIFICATE OF DISPOSAL

September 27,2013

RIO ALGOM MINING, LLC
LISBON VALLEY ROAD AND WEST COYOTE CREEK ROAD
LA SAL, UT 84530

This is to certify that waste as defined on Waste Manifest number **092513-02/** was received by U.S. Ecology, Inc., on **9/26/2013** .The waste(s) were subsequently treated, if required by 40 CFR Part 268 and U.S. Ecology's permits and disposed of by **09/26/2013** in accordance with permits and laws regulating this facility.

Reference Number: 13092608496-092513-02-1-1
Material: 1 TANKER
Process: Solidification
Management Code:
Facility: U.S. ECOLOGY IDAHO, INC.
20400 LEMLEY ROAD
GRAND VIEW, ID 83624
EPA ID: IDD073114654
Waste Type: NON HAZARDOUS WASTE
Customer: MP ENVIRONMENTAL SERVICES

Printed Name: DONNA PULLEN

Signature: Donna Pullen

Title: RECEIVING SUPERVISOR

Please print or type
(Form designed for use on elite (12-pitch) typewriter.)

4038 MT
13700168642 4823gals

NON-HAZARDOUS WASTE MANIFEST

1. Generator ID Number	2. Page 1 of	3. Emergency Response Phone	4. Waste Tracking Number
N/A	1	520-419-2383	092613-03

GENERATOR

5. Generator's Name and Mailing Address
Rio Algom Mining, LLC
8950 N Oracle Road, Suite 150
Tucson, Arizona 85704
Generator's Phone: 520-531-6961

Generator's Site Address (if different than mailing address)
Rio Algom Mining, LLC
Lisbon Valley Road and West Coyote Creek Road
La Sal, Utah 84530

6. Transporter 1 Company Name: MP ENVIRONMENTAL — U.S. EPA ID Number: CAT000624247

7. Transporter 2 Company Name — U.S. EPA ID Number:

8. Designated Facility Name and Site Address
US Ecology Idaho, Inc
20400 Lemley Road
Grand View, ID 83624
Facility's Phone: 800-274-1516
U.S. EPA ID Number: IDD 073 114 654

	9. Waste Shipping Name and Description	10. Containers No.	10. Containers Type	11. Total Quantity	12. Unit Wt./Vol.	
1.	Material not regulated by D.O.T.	1	TT	4800	G	
2.						
3.						
4.						

13. Special Handling Instructions and Additional Information

WSID # 29928

14. GENERATOR'S/OFFEROR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations.

Generator's/Offeror's Printed/Typed Name: Scott Johnsen — Signature: Scott Johnsen — Month: 09 — Day: 26 — Year: 13

INT'L

15. International Shipments ☐ Import to U.S. ☐ Export from U.S. Port of entry/exit:
Transporter Signature (for exports only): Date leaving U.S.:

TRANSPORTER

16. Transporter Acknowledgment of Receipt of Materials

Transporter 1 Printed/Typed Name: Richard Orr — Signature: Richard Orr — Month: 09 — Day: 26 — Year: 13

Transporter 2 Printed/Typed Name — Signature — Month — Day — Year

DESIGNATED FACILITY

17. Discrepancy

17a. Discrepancy Indication Space ☐ Quantity ☐ Type ☐ Residue ☐ Partial Rejection ☐ Full Rejection

Manifest Reference Number:

17b. Alternate Facility (or Generator) — U.S. EPA ID Number

Facility's Phone:

17c. Signature of Alternate Facility (or Generator) — Month — Day — Year

18. Designated Facility Owner or Operator: Certification of receipt of materials covered by the manifest except as noted in Item 17a

Printed/Typed Name: Jonathan Rodriguez — Signature: Jonathan Rodriguez — Month: 10 — Day: 1 — Year: 13

CERTIFICATE OF DISPOSAL

October 03,2013

RIO ALGOM MINING, LLC
LISBON VALLEY ROAD AND WEST COYOTE CREEK ROAD
LA SAL, UT 84530

This is to certify that waste as defined on Waste Manifest number **092613-03/** was received by U.S. Ecology, Inc., on **10/1/2013** .The waste(s) were subsequently treated, if required by 40 CFR Part 268 and U.S. Ecology's permits and disposed of by **10/01/2013** in accordance with permits and laws regulating this facility.

Reference Number: 13100108642-092613-03-1-1
Material: 1 TANKER
Process: Solidification
Management Code:
Facility: U.S. ECOLOGY IDAHO, INC.
20400 LEMLEY ROAD
GRAND VIEW, ID 83624
EPA ID: IDD073114654
Waste Type: NON HAZARDOUS WASTE
Customer: MP ENVIRONMENTAL SERVICES

Printed Name: DONNA PULLEN

Signature: Donna Pullen

Title: RECEIVING SUPERVISOR

back 13102309544 11580# 10yds

Please print or type — (Form designed for use on elite (12-pitch) typewriter.)

NON-HAZARDOUS WASTE MANIFEST	1. Generator ID Number	2. Page 1 of	3. Emergency Response Phone	4. Waste Tracking Number
	N/A	1	800-458-3036	093013-2

5. Generator's Name and Mailing Address
Rio Algom Mining, LLC
8950 N Oracle Road, Suite 150
Tucson, Arizona 85704
Generator's Phone: 520-531-6961

Generator's Site Address (if different than mailing address)
Rio Algom Mining, LLC
Lisbon Valley Road and West Coyote Creek Road
La Sal, Utah 84530

6. Transporter 1 Company Name: MP ENVIRONMENTAL — U.S. EPA ID Number: CAT000624247

7. Transporter 2 Company Name — U.S. EPA ID Number:

8. Designated Facility Name and Site Address
US Ecology Idaho, Inc
20400 Lemley Road
Grand View, ID 83624
Facility's Phone: 800-274-1516
U.S. EPA ID Number: IDD 073 114 654

	9. Waste Shipping Name and Description	10. Containers No.	10. Containers Type	11. Total Quantity	12. Unit Wt./Vol.	
1.	Material not regulated by D.O.T.	1	CM	~~20,000~~ 16,700	P	
2.						
3.						
4.						

13. Special Handling Instructions and Additional Information
WSID #29927
Bin # 6185

14. GENERATOR'S/OFFEROR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations.

Generator's/Offeror's Printed/Typed Name: William Ray — Signature — Month 9 Day 29 Year 13

15. International Shipments ☐ Import to U.S. ☐ Export from U.S. Port of entry/exit:
Transporter Signature (for exports only): Date leaving U.S.:

16. Transporter Acknowledgment of Receipt of Materials

Transporter 1 Printed/Typed Name: Mathew LaRogue — Signature — Month 9 Day 29 Year 13

Transporter 2 Printed/Typed Name: Sam Taulanga — Signature — Month 10 Day 23 Year 13

17. Discrepancy

17a. Discrepancy Indication Space ☐ Quantity ☐ Type ☐ Residue ☐ Partial Rejection ☐ Full Rejection
actual received 11580# ok per Jenny Orr via email
Manifest Reference Number:

17b. Alternate Facility (or Generator) — U.S. EPA ID Number
Facility's Phone:

17c. Signature of Alternate Facility (or Generator) — Month Day Year

18. Designated Facility Owner or Operator: Certification of receipt of materials covered by the manifest except as noted in Item 17a

Printed/Typed Name: Jenny Lyons — Signature — Month 10 Day 23 Year 13

GENERATOR | INT'L | TRANSPORTER | DESIGNATED FACILITY

CERTIFICATE OF DISPOSAL

October 25,2013

RIO ALGOM MINING, LLC
LISBON VALLEY ROAD AND WEST COYOTE CREEK ROAD
LA SAL, UT 84530

This is to certify that waste as defined on Waste Manifest number **093013-2/** was received by U.S. Ecology, Inc., on **10/23/2013** .The waste(s) were subsequently treated, if required by 40 CFR Part 268 and U.S. Ecology's permits and disposed of by **10/24/2013** in accordance with permits and laws regulating this facility.

Reference Number: 13102309544-093013-2-1-1
Material: 1 ROLL-OFF
Process: Direct Landfill
Management Code:
Facility: U.S. ECOLOGY IDAHO, INC.
20400 LEMLEY ROAD
GRAND VIEW, ID 83624
EPA ID: IDD073114654
Waste Type: NON HAZARDOUS WASTE
Customer: MP ENVIRONMENTAL SERVICES

Printed Name: DONNA PULLEN

Signature: Donna Pullen

Title: RECEIVING SUPERVISOR

From 13102309544 14720# 12yd

Please print or type
(Form designed for use on elite (12-pitch) typewriter)

NON-HAZARDOUS WASTE MANIFEST	1. Generator ID Number	2. Page 1 of	3. Emergency Response Phone	4. Waste Tracking Number
	N/A	1	800-458-3036	043013-3

GENERATOR

5. Generator's Name and Mailing Address
Rio Algom Mining, LLC
8950 N Oracle Road, Suite 150
Tucson, Arizona 85704
Generator's Phone: 520-531-6961

Generator's Site Address (if different than mailing address)
Rio Algom Mining, LLC
Lisbon Valley Road and West Coyote Creek Road
La Sal, Utah 84530

6. Transporter 1 Company Name: MP ENVIRONMENTAL — U.S. EPA ID Number: CAT000624247

7. Transporter 2 Company Name — U.S. EPA ID Number

8. Designated Facility Name and Site Address
US Ecology Idaho, Inc
20400 Lemley Road
Grand View, ID 83624
Facility's Phone: 800-274-1516
U.S. EPA ID Number: IDD 073 114 654

	9. Waste Shipping Name and Description	10. Containers No.	10. Containers Type	11. Total Quantity	12. Unit Wt./Vol.	
1.	Material not regulated by D.O.T.	1	CM	24,000	P	
2.						
3.						
4.						

13. Special Handling Instructions and Additional Information

WSID # 29927

Bin # 6137

14. GENERATOR'S/OFFEROR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations.

Generator's/Offeror's Printed/Typed Name: William Ray — Signature — Month: 9 — Day: 29 — Year: 13

INT'L

15. International Shipments ☐ Import to U.S. ☐ Export from U.S. Port of entry/exit:
Transporter Signature (for exports only): Date leaving U.S.:

TRANSPORTER

16. Transporter Acknowledgment of Receipt of Materials

Transporter 1 Printed/Typed Name: Sam Taulanga — Signature — Month: 9 — Day: 29 — Year: 13

Transporter 2 Printed/Typed Name: Sam Taulanga — Signature — Month: 10 — Day: 23 — Year: 13

DESIGNATED FACILITY

17. Discrepancy

17a. Discrepancy Indication Space ☐ Quantity ☐ Type ☐ Residue ☐ Partial Rejection ☐ Full Rejection
actual received 14720 ok per Jenny Orr via email
Manifest Reference Number:

17b. Alternate Facility (or Generator) — U.S. EPA ID Number
Facility's Phone:

17c. Signature of Alternate Facility (or Generator) — Month — Day — Year

18. Designated Facility Owner or Operator: Certification of receipt of materials covered by the manifest except as noted in Item 17a

Printed/Typed Name: Jenny Lyons — Signature: Jenny Lyons — Month: 10 — Day: 23 — Year: 13

CERTIFICATE OF DISPOSAL

October 25,2013

RIO ALGOM MINING, LLC
LISBON VALLEY ROAD AND WEST COYOTE CREEK ROAD
LA SAL, UT 84530

This is to certify that waste as defined on Waste Manifest number **093013-3/** was received by U.S. Ecology, Inc., on **10/23/2013** .The waste(s) were subsequently treated, if required by 40 CFR Part 268 and U.S. Ecology's permits and disposed of by **10/24/2013** in accordance with permits and laws regulating this facility.

Reference Number: 13102309544-093013-3-1-1
Material: 1 ROLL-OFF
Process: Direct Landfill
Management Code:
Facility: U.S. ECOLOGY IDAHO, INC.
20400 LEMLEY ROAD
GRAND VIEW, ID 83624
EPA ID: IDD073114654
Waste Type: NON HAZARDOUS WASTE
Customer: MP ENVIRONMENTAL SERVICES

Printed Name: DONNA PULLEN

Signature: Donna Pullen

Title: RECEIVING SUPERVISOR

Back

13108109964 12380# 10yds

Please print or type
(Form designed for use on elite (12-pitch) typewriter)

NON-HAZARDOUS WASTE MANIFEST	1. Generator ID Number: N/A	2. Page 1 of: 1	3. Emergency Response Phone: 520-419-2383	4. Waste Tracking Number: 100114-5

GENERATOR

5. Generator's Name and Mailing Address: RG Argon Mining, LLC, 8950 N Oracle Road, Suite 150, Tucson, Arizona 85704, 520-531-6961

Generator's Site Address (if different than mailing address): RG Argon Mining, LLC, Lisbon Valley Road and West Coyote Creek Road, La Sal, Utah 84530

Generator's Phone:

6. Transporter 1 Company Name: MP ENVIRONMENTAL — U.S. EPA ID Number: CAT000624247

7. Transporter 2 Company Name — U.S. EPA ID Number:

8. Designated Facility Name and Site Address: US Ecology Idaho, Inc, 20400 Lemley Road, Grand View, ID 83624, 800-274-1516 — U.S. EPA ID Number: IDD 073 114 654

Facility's Phone:

	9. Waste Shipping Name and Description	10. Containers No.	10. Containers Type	11. Total Quantity	12. Unit Wt./Vol.	
1.	Material not regulated by D.O.T.	1	CM	30.000	P	
2.						
3.						
4.						

13. Special Handling Instructions and Additional Information

WSID # 29927

Bin # 6100

14. GENERATOR'S/OFFEROR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations.

Generator's/Offeror's Printed/Typed Name: Scott Johnsen — Signature: Scott Johnsen — Month: 9 — Day: 30 — Year: 13

INT'L

15. International Shipments ☐ Import to U.S. ☐ Export from U.S. Port of entry/exit:

Transporter Signature (for exports only): Date leaving U.S.:

TRANSPORTER

16. Transporter Acknowledgment of Receipt of Materials

Transporter 1 Printed/Typed Name: Sam Taulanga — Signature: — Month: 09 — Day: 30 — Year: 13

Transporter 2 Printed/Typed Name: ~~Scott~~ SV — Signature: — Month: — Day: — Year:

DESIGNATED FACILITY

17. Discrepancy

17a. Discrepancy Indication Space ☒ Quantity ☐ Type ☐ Residue ☐ Partial Rejection ☐ Full Rejection

Weight ok per Jenny Lyons on 10-31-13. dp

Manifest Reference Number:

17b. Alternate Facility (or Generator) — U.S. EPA ID Number:

Facility's Phone:

17c. Signature of Alternate Facility (or Generator) — Month: — Day: — Year:

18. Designated Facility Owner or Operator: Certification of receipt of materials covered by the manifest except as noted in Item 17a

Printed/Typed Name: Jenny Lyons — Signature: Jenny Lyons — Month: 10 — Day: 31 — Year: 13

CERTIFICATE OF DISPOSAL

November 01,2013

RIO ALGOM MINING, LLC
LISBON VALLEY ROAD AND WEST COYOTE CREEK ROAD
LA SAL, UT 84530

This is to certify that waste as defined on Waste Manifest number **100114-5/** was received by U.S. Ecology, Inc., on **10/31/2013** .The waste(s) were subsequently treated, if required by 40 CFR Part 268 and U.S. Ecology's permits and disposed of by **10/31/2013** in accordance with permits and laws regulating this facility.

Reference Number: 13103109964-100114-5-1-1
Material: 1 ROLL-OFF
Process: Solidification
Management Code:
Facility: U.S. ECOLOGY IDAHO, INC.
20400 LEMLEY ROAD
GRAND VIEW, ID 83624
EPA ID: IDD073114654
Waste Type: NON HAZARDOUS WASTE
Customer: MP ENVIRONMENTAL SERVICES

Printed Name: DONNA PULLEN

Signature: Donna Pullen

Title: RECEIVING SUPERVISOR

Please print or type
(Form designed for use on elite (12-pitch) typewriter.)

13102209460 8q9 12680#

NON-HAZARDOUS WASTE MANIFEST	1. Generator ID Number	2. Page 1 of	3. Emergency Response Phone	4. Waste Tracking Number
	N/A	1	800-458-3036	100113-4

GENERATOR

5. Generator's Name and Mailing Address
Rio Algom Mining, LLC
8950 N Oracle Road, Suite 150
Tucson, Arizona 85704
Generator's Phone: 520-531-6961

Generator's Site Address (if different than mailing address)
Rio Algom Mining, LLC
Lisbon Valley Road and West Coyote Creek Road
La Sal, Utah 84530

6. Transporter 1 Company Name: MP ENVIRONMENTAL — U.S. EPA ID Number: CAT000624247

7. Transporter 2 Company Name — U.S. EPA ID Number

8. Designated Facility Name and Site Address
US Ecology Idaho, Inc
20400 Lemley Road
Grand View, ID 83624
Facility's Phone: 800-274-1516
U.S. EPA ID Number: IDD 073 114 654

	9. Waste Shipping Name and Description	10. Containers No.	10. Containers Type	11. Total Quantity	12. Unit Wt./Vol.	
1.	Material not regulated by D.O.T.	1	CM	18,000	P	
2.						
3.						
4.						

13. Special Handling Instructions and Additional Information

WSID # 29927

Bin # 6149

14. GENERATOR'S/OFFEROR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations.

Generator's/Offeror's Printed/Typed Name: William Ray — Signature — Month 10 Day 01 Year 13

INT'L

15. International Shipments ☐ Import to U.S. ☐ Export from U.S. Port of entry/exit:
Transporter Signature (for exports only): Date leaving U.S.:

TRANSPORTER

16. Transporter Acknowledgment of Receipt of Materials

Transporter 1 Printed/Typed Name: Ricardo Felix — Signature — Month 10 Day 01 Year 13

Transporter 2 Printed/Typed Name: Sam Taulanga — Signature — Month 10 Day 21 Year 13

DESIGNATED FACILITY

17. Discrepancy

17a. Discrepancy Indication Space
Actual received 12680#, wt ok per Jenny ORR 10/22/13 CK
☐ Quantity ☐ Type ☐ Residue ☐ Partial Rejection ☐ Full Rejection
Manifest Reference Number:

17b. Alternate Facility (or Generator) — U.S. EPA ID Number
Facility's Phone:

17c. Signature of Alternate Facility (or Generator) — Month Day Year

18. Designated Facility Owner or Operator: Certification of receipt of materials covered by the manifest except as noted in Item 17a

Printed/Typed Name: Jenny Lyons — Signature: Jenny Lyons — Month 10 Day 22 Year 13

CERTIFICATE OF DISPOSAL

October 24,2013

RIO ALGOM MINING, LLC
LISBON VALLEY ROAD AND WEST COYOTE CREEK ROAD
LA SAL, UT 84530

This is to certify that waste as defined on Waste Manifest number **100113-4/** was received by U.S. Ecology, Inc., on **10/22/2013** .The waste(s) were subsequently treated, if required by 40 CFR Part 268 and U.S. Ecology's permits and disposed of by **10/22/2013** in accordance with permits and laws regulating this facility.

Reference Number: 13102209460-100113-4-1-1
Material: 1 ROLL-OFF
Process: Direct Landfill
Management Code:
Facility: U.S. ECOLOGY IDAHO, INC.
20400 LEMLEY ROAD
GRAND VIEW, ID 83624
EPA ID: IDD073114654
Waste Type: NON HAZARDOUS WASTE
Customer: MP ENVIRONMENTAL SERVICES

Printed Name: DONNA PULLEN

Signature: Donna Pullen

Title: RECEIVING SUPERVISOR

Please print or type
(Form designed for use on elite (12-pitch) typewriter)

13103109916 14.570t 15yb F

NON-HAZARDOUS WASTE MANIFEST

1. Generator ID Number	2. Page 1 of	3. Emergency Response Phone	4. Waste Tracking Number
N/A	1	520-419-2383	100213-6

GENERATOR

5. Generator's Name and Mailing Address
Rio Algom Mining, LLC
8950 N Oracle Road, Suite 150
Tucson, Arizona 85704
Generator's Phone: 520-531-6961

Generator's Site Address (if different than mailing address)
Rio Algom Mining, LLC
Lisbon Valley Road and West Coyote Creek Road
La Sal, Utah 84530

6. Transporter 1 Company Name: MP ENVIRONMENTAL — U.S. EPA ID Number: CAT000624247

7. Transporter 2 Company Name — U.S. EPA ID Number:

8. Designated Facility Name and Site Address
US Ecology Idaho, Inc
20400 Lemley Road
Grand View, ID 83624
Facility's Phone: 800-274-1516
U.S. EPA ID Number: IDD 073 114 654

	9. Waste Shipping Name and Description	10. Containers No.	10. Containers Type	11. Total Quantity	12. Unit Wt./Vol.	
1.	Material not regulated by D.O.T.	1	CM	30.000	P	
2.						
3.						
4.						

13. Special Handling Instructions and Additional Information
WSID #29927
Bin # 6096

14. GENERATOR'S/OFFEROR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations.

Generator's/Offeror's Printed/Typed Name: Scott Johnson — Signature: Scott Johnson — Month: 10 — Day: 01 — Year: 13

INT'L

15. International Shipments ☐ Import to U.S. ☐ Export from U.S. Port of entry/exit:
Transporter Signature (for exports only): Date leaving U.S.:

TRANSPORTER

16. Transporter Acknowledgment of Receipt of Materials

Transporter 1 Printed/Typed Name: Sam Taulanga — Signature: [signature] — Month: 10 — Day: 1 — Year: 13

Transporter 2 Printed/Typed Name — Signature — Month — Day — Year

DESIGNATED FACILITY

17. Discrepancy

17a. Discrepancy Indication Space ☒ Quantity ☐ Type ☐ Residue ☐ Partial Rejection ☐ Full Rejection
USED W Dixon released pending resolution 10/31/13
wt ok per Jenny Orr via email on 10-31-13 dp
Manifest Reference Number:

17b. Alternate Facility (or Generator) — U.S. EPA ID Number:
Facility's Phone:

17c. Signature of Alternate Facility (or Generator) — Month — Day — Year

18. Designated Facility Owner or Operator: Certification of receipt of materials covered by the manifest except as noted in Item 17a

Printed/Typed Name: Jenny Lyons — Signature: Jenny Lyons — Month: 10 — Day: 31 — Year: 13

CERTIFICATE OF DISPOSAL

November 01,2013

RIO ALGOM MINING, LLC
LISBON VALLEY ROAD AND WEST COYOTE CREEK ROAD
LA SAL, UT 84530

This is to certify that waste as defined on Waste Manifest number **100213-6/** was received by U.S. Ecology, Inc., on **10/31/2013** .The waste(s) were subsequently treated, if required by 40 CFR Part 268 and U.S. Ecology's permits and disposed of by **10/31/2013** in accordance with permits and laws regulating this facility.

Reference Number: 13103109916-100213-6-1-1
Material: 1 ROLL-OFF
Process: Solidification
Management Code:
Facility: U.S. ECOLOGY IDAHO, INC.
20400 LEMLEY ROAD
GRAND VIEW, ID 83624
EPA ID: IDD073114654
Waste Type: NON HAZARDOUS WASTE
Customer: MP ENVIRONMENTAL SERVICES

Printed Name: DONNA PULLEN

Signature: Donna Pullen

Title: RECEIVING SUPERVISOR

Please print or type
(Form designed for use on elite (12-pitch) typewriter.)

13101709298 10yrcls 6300

NON-HAZARDOUS WASTE MANIFEST	1. Generator ID Number	2. Page 1 of	3. Emergency Response Phone	4. Waste Tracking Number
	N/A	1	520-419-2383	100213-7

GENERATOR

5. Generator's Name and Mailing Address
Rio Algom Mining, LLC
8950 N Oracle Road, Suite 150
Tucson, Arizona 85704
Generator's Phone: 520-531-6961

Generator's Site Address (if different than mailing address)
Rio Algom Mining, LLC
Lisbon Valley Road and West Coyote Creek Road
La Sal, Utah 84530

6. Transporter 1 Company Name: MP ENVIRONMENTAL — U.S. EPA ID Number: CAT000624247

7. Transporter 2 Company Name — U.S. EPA ID Number

8. Designated Facility Name and Site Address
US Ecology Idaho, Inc
20400 Lemley Road
Grand View, ID 83624
800-274-1516
Facility's Phone:
U.S. EPA ID Number: IDD 073 114 654

	9. Waste Shipping Name and Description	10. Containers No.	10. Containers Type	11. Total Quantity	12. Unit Wt./Vol.	
1.	Material not regulated by D.O.T.	1	CM	12000	P	
2.						
3.						
4.						

13. Special Handling Instructions and Additional Information

WSID #29927

Bin # 6055

14. GENERATOR'S/OFFEROR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations.

Generator's/Offeror's Printed/Typed Name: Scott Johnson — Signature: Scott Johnson — Month: 10 Day: 2 Year: 13

INT'L

15. International Shipments ☐ Import to U.S. ☐ Export from U.S. Port of entry/exit:
Transporter Signature (for exports only): Date leaving U.S.:

TRANSPORTER

16. Transporter Acknowledgment of Receipt of Materials

Transporter 1 Printed/Typed Name: Mathew LaRogue — Signature: Mathew LaRogue — Month: 10 Day: 2 Year: 13

Transporter 2 Printed/Typed Name: James Hewett — Signature: James Hewett — Month: 10 Day: 16 Year: 13

DESIGNATED FACILITY

17. Discrepancy

17a. Discrepancy Indication Space ☒ Quantity ☐ Type ☐ Residue ☐ Partial Rejection ☐ Full Rejection
Actual recieved 6300#, wt ok per Jenny OER via email 10/21/13-ck
Driver released pending resolution 10/17/13ck
Manifest Reference Number:

17b. Alternate Facility (or Generator) — U.S. EPA ID Number
Facility's Phone:

17c. Signature of Alternate Facility (or Generator) — Month Day Year

18. Designated Facility Owner or Operator: Certification of receipt of materials covered by the manifest except as noted in Item 17a

Printed/Typed Name: Jenny Lyons — Signature: Jenny Lyons — Month: 10 Day: 17 Year: 13

CERTIFICATE OF DISPOSAL

October 22,2013

RIO ALGOM MINING, LLC
LISBON VALLEY ROAD AND WEST COYOTE CREEK ROAD
LA SAL, UT 84530

This is to certify that waste as defined on Waste Manifest number **100213-7/** was received by U.S. Ecology, Inc., on **10/17/2013** .The waste(s) were subsequently treated, if required by 40 CFR Part 268 and U.S. Ecology's permits and disposed of by **10/17/2013** in accordance with permits and laws regulating this facility.

Reference Number: 13101709298-100213-7-1-1
Material: 1 ROLL-OFF
Process: Direct Landfill
Management Code:
Facility: U.S. ECOLOGY IDAHO, INC.
20400 LEMLEY ROAD
GRAND VIEW, ID 83624
EPA ID: IDD073114654
Waste Type: NON HAZARDOUS WASTE
Customer: MP ENVIRONMENTAL SERVICES

Printed Name: DONNA PULLEN

Signature: Donna Pullen

Title: RECEIVING SUPERVISOR

Document ID: 13703709924 11,580 # 12/25 B

NON-HAZARDOUS WASTE MANIFEST	1. Generator ID Number	2. Page 1 of 1	3. Emergency Response Phone	4. Waste Tracking Number
	N/A		520-419-2383	100313-8

5. Generator's Name and Mailing Address
Rio Algom Mining LLC
8950 N. Oracle Road, Suite 150
Tucson, Arizona 85704
Generator's Phone: 520-531-6961

Generator's Site Address (if different than mailing address)
Rio Algom Mining LLC
Lisbon Valley Road and West Coyote Creek Road
La Sal, Utah 84530

6. Transporter 1 Company Name: MP ENVIRONMENTAL — U.S. EPA ID Number: CAT000624247

7. Transporter 2 Company Name — U.S. EPA ID Number:

8. Designated Facility Name and Site Address
US Ecology Idaho, Inc
20400 Lemley Road
Grand View, ID 83624
Facility's Phone: 800-274-1516
U.S. EPA ID Number: IDD 073 114 654

	9. Waste Shipping Name and Description	10. Containers No.	10. Containers Type	11. Total Quantity	12. Unit Wt./Vol.	
1.	Material not regulated by D.O.T.	1	CM	30,000	P	
2.						
3.						
4.						

13. Special Handling Instructions and Additional Information
WSID#/29927
Bin # 6123

14. GENERATOR'S/OFFEROR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations.
Generator's/Offeror's Printed/Typed Name: Scott Johnson — Signature: Scott Johnson — Month 10 Day 02 Year 13

15. International Shipments ☐ Import to U.S. ☐ Export from U.S. Port of entry/exit:
Transporter Signature (for exports only): Date leaving U.S.:

16. Transporter Acknowledgment of Receipt of Materials
Transporter 1 Printed/Typed Name: Sam Taulanga — Signature — Month 10 Day 2 Year 13
Transporter 2 Printed/Typed Name: James Hewett — Signature: James Hewett — Month 10 Day 30 Year 13

17. Discrepancy
17a. Discrepancy Indication Space ☒ Quantity ☐ Type ☐ Residue ☐ Partial Rejection ☐ Full Rejection
Mill released pending resolution 10/31/13 CP
weight ok per Jeffrey Dirk see email on 10-31-13. dp
Manifest Reference Number:
17b. Alternate Facility (or Generator) — U.S. EPA ID Number
Facility's Phone:
17c. Signature of Alternate Facility (or Generator) — Month Day Year

18. Designated Facility Owner or Operator Certification of receipt of materials covered by the manifest except as noted in Item 17a
Printed/Typed Name: Cynthia Baldridge — Signature: Cynthia Baldridge — Month 10 Day 31 Year 13

GENERATOR — INT'L — TRANSPORTER — DESIGNATED FACILITY

CERTIFICATE OF DISPOSAL

November 01,2013

RIO ALGOM MINING, LLC
LISBON VALLEY ROAD AND WEST COYOTE CREEK ROAD
LA SAL, UT 84530

This is to certify that waste as defined on Waste Manifest number **100313-8/** was received by U.S. Ecology, Inc., on **10/31/2013** .The waste(s) were subsequently treated, if required by 40 CFR Part 268 and U.S. Ecology's permits and disposed of by **10/31/2013** in accordance with permits and laws regulating this facility.

Reference Number: 13103109924-100313-8-1-1
Material: 1 ROLL-OFF
Process: Solidification
Management Code:
Facility: U.S. ECOLOGY IDAHO, INC.
20400 LEMLEY ROAD
GRAND VIEW, ID 83624
EPA ID: IDD073114654
Waste Type: NON HAZARDOUS WASTE
Customer: MP ENVIRONMENTAL SERVICES

Printed Name: DONNA PULLEN

Signature: Donna Pullen

Title: RECEIVING SUPERVISOR

Please print or type
(Form designed for use on elite (12-pitch) typewriter.)

13100387621 4963901 41300

NON-HAZARDOUS WASTE MANIFEST

1. Generator ID Number	2. Page 1 of	3. Emergency Response Phone	4. Waste Tracking Number
N/A	1	800-458-3036	10012013-4

GENERATOR

5. Generator's Name and Mailing Address
Rio Algom Mining, LLC
8950 N. Oracle Road, Suite 150
Tucson, Arizona 85704
Generator's Phone: 520-531-6961

Generator's Site Address (if different than mailing address)
Rio Algom Mining, LLC
Lisbon Valley Road and West Coyote Creek Road
La Sal, Utah 84530

6. Transporter 1 Company Name: MP ENVIRONMENTAL — U.S. EPA ID Number: CAT000624247

7. Transporter 2 Company Name — U.S. EPA ID Number

8. Designated Facility Name and Site Address
US Ecology Idaho, Inc
20400 Lemley Road
Grand View, ID 83624
Facility's Phone: 800-274-1516
U.S. EPA ID Number: IDD 073 114 654

	9. Waste Shipping Name and Description	10. Containers No.	10. Containers Type	11. Total Quantity	12. Unit Wt./Vol.	
1.	Material not regulated by D.O.T.	1	TT	4800	G	
2.						
3.						
4.						

13. Special Handling Instructions and Additional Information
WSID #29928

14. GENERATOR'S/OFFEROR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations.

Generator's/Offeror's Printed/Typed Name: William Ray — Signature — Month: 10 Day: 02 Year: 13

INT'L

15. International Shipments ☐ Import to U.S. ☐ Export from U.S. Port of entry/exit:
Transporter Signature (for exports only): Date leaving U.S.:

TRANSPORTER

16. Transporter Acknowledgment of Receipt of Materials

Transporter 1 Printed/Typed Name: Richard Orr — Signature: Richard Orr — Month: 10 Day: 02 Year: 13

Transporter 2 Printed/Typed Name — Signature — Month — Day — Year

DESIGNATED FACILITY

17. Discrepancy

17a. Discrepancy Indication Space ☐ Quantity ☐ Type ☐ Residue ☐ Partial Rejection ☐ Full Rejection

Manifest Reference Number:

17b. Alternate Facility (or Generator) — U.S. EPA ID Number

Facility's Phone:

17c. Signature of Alternate Facility (or Generator) — Month — Day — Year

18. Designated Facility Owner or Operator: Certification of receipt of materials covered by the manifest except as noted in Item 17a

Printed/Typed Name: Corian Kastner — Signature: Corian Kastner — Month: 10 Day: 3 Year: 13

CERTIFICATE OF DISPOSAL

October 04,2013

RIO ALGOM MINING, LLC
LISBON VALLEY ROAD AND WEST COYOTE CREEK ROAD
LA SAL, UT 84530

This is to certify that waste as defined on Waste Manifest number **10012013-4/** was received by U.S. Ecology, Inc., on **10/3/2013** .The waste(s) were subsequently treated, if required by 40 CFR Part 268 and U.S. Ecology's permits and disposed of by **10/03/2013** in accordance with permits and laws regulating this facility.

Reference Number: 13100308762-10012013-4-1-1
Material: 1 TANKER
Process: Solidification
Management Code:
Facility: U.S. ECOLOGY IDAHO, INC.
20400 LEMLEY ROAD
GRAND VIEW, ID 83624
EPA ID: IDD073114654
Waste Type: NON HAZARDOUS WASTE
Customer: MP ENVIRONMENTAL SERVICES

Printed Name: DONNA PULLEN

Signature: Donna Pullen

Title: RECEIVING SUPERVISOR

Please print or type
(Form designed for use on elite (12-pitch) typewriter.)

131014091122 30 yrds. 25460#

NON-HAZARDOUS WASTE MANIFEST	1. Generator ID Number	2. Page 1 of	3. Emergency Response Phone	4. Waste Tracking Number
	N/A	1	800-458-3036	100313-10

GENERATOR

5. Generator's Name and Mailing Address
Rio Algom Mining, LLC
8950 N Oracle Road, Suite 150
Tucson, Arizona 85704
Generator's Phone: 520-531-6961

Generator's Site Address (if different than mailing address)
Rio Algom Mining, LLC
Lisbon Valley Road and West Coyote Creek Road
La Sal, Utah 84530

6. Transporter 1 Company Name: MP ENVIRONMENTAL — U.S. EPA ID Number: CAT000624247

7. Transporter 2 Company Name — U.S. EPA ID Number

8. Designated Facility Name and Site Address
US Ecology Idaho, Inc
20400 Lemley Road
Grand View, ID 83624
Facility's Phone: 800-274-1516
U.S. EPA ID Number: IDD 073 114 654

	9. Waste Shipping Name and Description	10. Containers No.	10. Containers Type	11. Total Quantity	12. Unit Wt./Vol.	
1.	Material not regulated by D.O.T.	2	CM	25000	P	
2.						
3.						
4.						

13. Special Handling Instructions and Additional Information
WSID #29927
Bin #6506 5988

14. GENERATOR'S/OFFEROR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations.

Generator's/Offeror's Printed/Typed Name: William Ray — Signature — Month 10 Day 3 Year 13

INT'L

15. International Shipments ☐ Import to U.S. ☐ Export from U.S. Port of entry/exit:
Transporter Signature (for exports only): Date leaving U.S.:

TRANSPORTER

16. Transporter Acknowledgment of Receipt of Materials
Transporter 1 Printed/Typed Name: Kent Gould — Signature — Month 10 Day 3 Year 13
Transporter 2 Printed/Typed Name — Signature — Month Day Year

DESIGNATED FACILITY

17. Discrepancy
17a. Discrepancy Indication Space ☒ Quantity ☐ Type ☐ Residue ☐ Partial Rejection ☐ Full Rejection
actual received 25460# driver released pending resolution
WT OK per Jenny Lyons - telecom 10/15/13 Manifest Reference Number:
17b. Alternate Facility (or Generator) — U.S. EPA ID Number
Facility's Phone:
17c. Signature of Alternate Facility (or Generator) — Month Day Year

18. Designated Facility Owner or Operator: Certification of receipt of materials covered by the manifest except as noted in Item 17a
Printed/Typed Name: Jenny Lyons — Signature: Jenny Lyons — Month 10 Day 14 Year 13

CERTIFICATE OF DISPOSAL

October 16,2013

RIO ALGOM MINING, LLC
LISBON VALLEY ROAD AND WEST COYOTE CREEK ROAD
LA SAL, UT 84530

This is to certify that waste as defined on Waste Manifest number **100313-10/** was received by U.S. Ecology, Inc., on **10/14/2013** .The waste(s) were subsequently treated, if required by 40 CFR Part 268 and U.S. Ecology's permits and disposed of by **10/14/2013** in accordance with permits and laws regulating this facility.

Reference Number: 13101409122-100313-10-1-1
Material: 2 ROLL-OFF
Process: Direct Landfill
Management Code:
Facility: U.S. ECOLOGY IDAHO, INC.
20400 LEMLEY ROAD
GRAND VIEW, ID 83624
EPA ID: IDD073114654
Waste Type: NON HAZARDOUS WASTE
Customer: MP ENVIRONMENTAL SERVICES

Printed Name: DONNA PULLEN

Signature: Donna Pullen

Title: RECEIVING SUPERVISOR

Please print or type.
(Form designed for use on elite (12-pitch) typewriter.)

13101709298 10yrds 13700# front

NON-HAZARDOUS WASTE MANIFEST	1. Generator ID Number	2. Page 1 of	3. Emergency Response Phone	4. Waste Tracking Number
	N/A	1	800-458-3036	100413-11

GENERATOR

5. Generator's Name and Mailing Address: Rio Argosa Mining, LLC, 8950 N Oracle Road, Suite 150, Tucson, Arizona 85704, 520-531-6961
Generator's Site Address (if different than mailing address): Rio Argosa Mining, LLC, Lisbon Valley Road and West Coyote Creek Road, La Sal, Utah 84530
Generator's Phone:

6. Transporter 1 Company Name: MP ENVIRONMENTAL — U.S. EPA ID Number: CAT000624247

7. Transporter 2 Company Name — U.S. EPA ID Number:

8. Designated Facility Name and Site Address: US Ecology Idaho, Inc, 20400 Lemley Road, Grand View, ID 83624 — U.S. EPA ID Number: IDD 073 114 654
Facility's Phone: 800-274-1516

	9. Waste Shipping Name and Description	10. Containers No.	10. Containers Type	11. Total Quantity	12. Unit Wt./Vol.	
1.	Material not regulated by D.O.T.	1	CM	30.000	P	
2.						
3.						
4.						

13. Special Handling Instructions and Additional Information

WSID # 29927

Bin # 5922

14. GENERATOR'S/OFFEROR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations.

Generator's/Offeror's Printed/Typed Name: William Ray — Signature — Month 10 Day 03 Year 13

INT'L

15. International Shipments ☐ Import to U.S. ☐ Export from U.S. Port of entry/exit:
Transporter Signature (for exports only): Date leaving U.S.:

TRANSPORTER

16. Transporter Acknowledgment of Receipt of Materials

Transporter 1 Printed/Typed Name: Sam Taulanga — Signature — Month 10 Day 3 Year 13

Transporter 2 Printed/Typed Name: James Hewett — Signature: James Hewett — Month 10 Day 16 Year 13

DESIGNATED FACILITY

17. Discrepancy

17a. Discrepancy Indication Space ☐ Quantity ☐ Type ☐ Residue ☐ Partial Rejection ☐ Full Rejection
Actual Received 13700#, not ok per Jerry Lee via email 10/21/13 ck
Driver released pending Resolution 10/17/13 ck Manifest Reference Number:

17b. Alternate Facility (or Generator) — U.S. EPA ID Number
Facility's Phone:

17c. Signature of Alternate Facility (or Generator) — Month Day Year

18. Designated Facility Owner or Operator: Certification of receipt of materials covered by the manifest except as noted in Item 17a

Printed/Typed Name: Jerry Lyons — Signature: Jerry Lyons — Month 10 Day 17 Year 13

CERTIFICATE OF DISPOSAL

October 22,2013

RIO ALGOM MINING, LLC
LISBON VALLEY ROAD AND WEST COYOTE CREEK ROAD
LA SAL, UT 84530

This is to certify that waste as defined on Waste Manifest number **100413-11/** was received by U.S. Ecology, Inc., on **10/17/2013** .The waste(s) were subsequently treated, if required by 40 CFR Part 268 and U.S. Ecology's permits and disposed of by **10/17/2013** in accordance with permits and laws regulating this facility.

Reference Number: 13101709298-100413-11-1-1
Material: 1 ROLL-OFF
Process: Direct Landfill
Management Code:
Facility: U.S. ECOLOGY IDAHO, INC.
20400 LEMLEY ROAD
GRAND VIEW, ID 83624
EPA ID: IDD073114654
Waste Type: NON HAZARDOUS WASTE
Customer: MP ENVIRONMENTAL SERVICES

Printed Name: DONNA PULLEN

Signature: Donna Pullen

Title: RECEIVING SUPERVISOR

Please print or type
(Form designed for use on elite (12-pitch) typewriter.)

13101709300 4960981 413160

NON-HAZARDOUS WASTE MANIFEST

1. Generator ID Number	2. Page 1 of	3. Emergency Response Phone	4. Waste Tracking Number
N/A	1	520-419-2383	10022013-5

GENERATOR

5. Generator's Name and Mailing Address
Rio Algom Mining, LLC
8950 N Oracle Road, Suite 150
Tucson, Arizona 85704
Generator's Phone: 520-531-6961

Generator's Site Address (if different than mailing address)
Rio Algom Mining, LLC
Lisbon Valley Road and West Coyote Creek Road
La Sal, Utah 84530

6. Transporter 1 Company Name: MP ENVIRONMENTAL — U.S. EPA ID Number: CAT000624247

7. Transporter 2 Company Name — U.S. EPA ID Number:

8. Designated Facility Name and Site Address
US Ecology Idaho, Inc
20400 Lemley Road
Grand View, ID 83624
Facility's Phone: 800-274-1516
U.S. EPA ID Number: IDD 073 114 654

	9. Waste Shipping Name and Description	10. Containers No.	10. Containers Type	11. Total Quantity	12. Unit Wt./Vol.	
1.	Material not regulated by D.O.T.	1	TT	4800	G	
2.						
3.						
4.						

13. Special Handling Instructions and Additional Information
WSID #29928

14. GENERATOR'S/OFFEROR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations.

Generator's/Offeror's Printed/Typed Name: Scott Johnson — Signature: Scott Johnson — Month 10 Day 04 Year 13

INT'L

15. International Shipments ☐ Import to U.S. ☐ Export from U.S. Port of entry/exit:
Transporter Signature (for exports only): Date leaving U.S.:

TRANSPORTER

16. Transporter Acknowledgment of Receipt of Materials

Transporter 1 Printed/Typed Name: Richard ORR — Signature: Richard Orr — Month 10 Day 04 Year 13

Transporter 2 Printed/Typed Name — Signature — Month Day Year

DESIGNATED FACILITY

17. Discrepancy

17a. Discrepancy Indication Space ☐ Quantity ☐ Type ☐ Residue ☐ Partial Rejection ☐ Full Rejection

Manifest Reference Number:

17b. Alternate Facility (or Generator) — U.S. EPA ID Number
Facility's Phone:

17c. Signature of Alternate Facility (or Generator) — Month Day Year

18. Designated Facility Owner or Operator: Certification of receipt of materials covered by the manifest except as noted in Item 17a

Printed/Typed Name: Corian Kastner — Signature: Corian Kastner — Month 10 Day 17 Year 13

CERTIFICATE OF DISPOSAL

October 22,2013

RIO ALGOM MINING, LLC
LISBON VALLEY ROAD AND WEST COYOTE CREEK ROAD
LA SAL, UT 84530

This is to certify that waste as defined on Waste Manifest number **10022013-5/** was received by U.S. Ecology, Inc., on **10/17/2013** .The waste(s) were subsequently treated, if required by 40 CFR Part 268 and U.S. Ecology's permits and disposed of by **10/17/2013** in accordance with permits and laws regulating this facility.

Reference Number: 13101709300-10022013-5-1-1
Material: 1 TANKER
Process: Solidification
Management Code:
Facility: U.S. ECOLOGY IDAHO, INC.
20400 LEMLEY ROAD
GRAND VIEW, ID 83624
EPA ID: IDD073114654
Waste Type: NON HAZARDOUS WASTE
Customer: MP ENVIRONMENTAL SERVICES

Printed Name: DONNA PULLEN

Signature: Donna Pullen

Title: RECEIVING SUPERVISOR

Please print or type
(Form designed for use on elite (12-pitch) typewriter.)

13700708902 34620# 41739gal

NON-HAZARDOUS WASTE MANIFEST	1. Generator ID Number: N/A	2. Page 1 of: 1	3. Emergency Response Phone: 800-458-3036	4. Waste Tracking Number: 100413-6

GENERATOR

5. Generator's Name and Mailing Address
Rio Algom Mining, LLC
8950 N Oracle Road, Suite 150
Tucson, Arizona 85704
520-531-6961
Generator's Phone:

Generator's Site Address (if different than mailing address)
Rio Algom Mining, LLC
Lisbon Valley Road and West Coyote Creek Road
La Sal, Utah 84530

6. Transporter 1 Company Name: MPE Environmental — U.S. EPA ID Number: CAT000624247

7. Transporter 2 Company Name — U.S. EPA ID Number:

8. Designated Facility Name and Site Address
US Ecology Idaho, Inc
20400 Lemley Road
Grand View, ID 83624
800-274-1516
Facility's Phone:
U.S. EPA ID Number: IDD 073 114 654

	9. Waste Shipping Name and Description	10. Containers No.	10. Containers Type	11. Total Quantity	12. Unit Wt./Vol.	
1.	Material not regulated by D.O.T.	1	TT	42500 LB	G	
2.						
3.						
4.						

13. Special Handling Instructions and Additional Information

WSID # 29928

14. GENERATOR'S/OFFEROR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations.

Generator's/Offeror's Printed/Typed Name: William Ray — Signature — Month: 10 Day: 4 Year: 13

INT'L

15. International Shipments ☐ Import to U.S. ☐ Export from U.S. Port of entry/exit:
Transporter Signature (for exports only): Date leaving U.S.:

TRANSPORTER

16. Transporter Acknowledgment of Receipt of Materials

Transporter 1 Printed/Typed Name: Richard Bogan — Signature: Richard Bogan — Month: 10 Day: 4 Year: 13

Transporter 2 Printed/Typed Name: Sam Taulanga — Signature — Month: 10 Day: 7 Year: 13

DESIGNATED FACILITY

17. Discrepancy

17a. Discrepancy Indication Space ☐ Quantity ☐ Type ☐ Residue ☐ Partial Rejection ☐ Full Rejection

Manifest Reference Number:

17b. Alternate Facility (or Generator) — U.S. EPA ID Number

Facility's Phone:

17c. Signature of Alternate Facility (or Generator) — Month Day Year

18. Designated Facility Owner or Operator: Certification of receipt of materials covered by the manifest except as noted in Item 17a

Printed/Typed Name: Melissa Rodriguez — Signature: Melissa Rodriguez — Month: 10 Day: 7 Year: 13

CERTIFICATE OF DISPOSAL

October 10,2013

RIO ALGOM MINING, LLC
LISBON VALLEY ROAD AND WEST COYOTE CREEK ROAD
LA SAL, UT 84530

This is to certify that waste as defined on Waste Manifest number **100413-6/** was received by U.S. Ecology, Inc., on **10/7/2013** .The waste(s) were subsequently treated, if required by 40 CFR Part 268 and U.S. Ecology's permits and disposed of by **10/07/2013** in accordance with permits and laws regulating this facility.

Reference Number: 13100708902-100413-6-1-1
Material: 1 TANKER
Process: Solidification
Management Code:
Facility: U.S. ECOLOGY IDAHO, INC.
20400 LEMLEY ROAD
GRAND VIEW, ID 83624
EPA ID: IDD073114654
Waste Type: NON HAZARDOUS WASTE
Customer: MP ENVIRONMENTAL SERVICES

Printed Name: DONNA PULLEN

Signature: Donna Pullen

Title: RECEIVING SUPERVISOR

10yds 12680#

Please Print or Type
(Form designed for use on elite (12-pitch) typewriter)

NON-HAZARDOUS WASTE MANIFEST	1. Generator ID Number	2. Page 1 of	3. Emergency Response Phone	4. Waste Tracking Number
	N/A	1	800-458-3036	106413-9

5. Generator's Name and Mailing Address
Rio Algom Mining, LLC
8950 N Oracle Road, Suite 150
Tucson, Arizona 85704
Generator's Phone: 520-531-6961

Generator's Site Address (if different than mailing address)
Rio Algom Mining, LLC
Lisbon Valley Road and West Coyote Creek Road
La Sal, Utah 84530

6. Transporter 1 Company Name: MP ENVIRONMENTAL — U.S. EPA ID Number: CAT000624247

7. Transporter 2 Company Name — U.S. EPA ID Number:

8. Designated Facility Name and Site Address
US Ecology Idaho, Inc
20400 Lemley Road
Grand View, ID 83624
Facility's Phone: 800-274-1516
U.S. EPA ID Number: IDD 073 114 654

	9. Waste Shipping Name and Description	10. Containers No.	10. Containers Type	11. Total Quantity	12. Unit Wt./Vol.	
1.	Material not regulated by D.O.T.	1	CM	18,000	P	
2.						
3.						
4.						

13. Special Handling Instructions and Additional Information
WSID #29927
Bin # 6062

14. GENERATOR'S/OFFEROR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations.

Generator's/Offeror's Printed/Typed Name: William Ro — Signature: [signature] — Month 10 Day 09 Year 13

15. International Shipments ☐ Import to U.S. ☐ Export from U.S. Port of entry/exit:
Transporter Signature (for exports only): Date leaving U.S.:

16. Transporter Acknowledgment of Receipt of Materials

Transporter 1 Printed/Typed Name: James Hewett — Signature: James Hewett — Month 10 Day 9 Year 13

Transporter 2 Printed/Typed Name: Sam Tardanza — Signature: [signature] — Month 10 Day 21 Year 13

17. Discrepancy

17a. Discrepancy Indication Space ☒ Quantity ☐ Type ☐ Residue ☐ Partial Rejection ☐ Full Rejection
Actual Received 12680#, wtok per Jenny ORK 10/22/13 cn
Manifest Reference Number:

17b. Alternate Facility (or Generator) — U.S. EPA ID Number
Facility's Phone:

17c. Signature of Alternate Facility (or Generator) — Month Day Year

18. Designated Facility Owner or Operator: Certification of receipt of materials covered by the manifest except as noted in Item 17a

Printed/Typed Name: Jenny Lyons — Signature: Jenny Lyons — Month 10 Day 22 Year 13

GENERATOR — INT'L — TRANSPORTER — DESIGNATED FACILITY

GC Labels • Printed in the USA 1-800-847-6966

DESIGNATED FACILITY TO GENERATOR

Reorder Part# MANIFEST CONHWC 913-897-6966

CERTIFICATE OF DISPOSAL

October 24,2013

RIO ALGOM MINING, LLC
LISBON VALLEY ROAD AND WEST COYOTE CREEK ROAD
LA SAL, UT 84530

This is to certify that waste as defined on Waste Manifest number **100413-9/** was received by U.S. Ecology, Inc., on **10/22/2013** .The waste(s) were subsequently treated, if required by 40 CFR Part 268 and U.S. Ecology's permits and disposed of by **10/22/2013** in accordance with permits and laws regulating this facility.

Reference Number: 13102209460-100413-9-1-1
Material: 1 ROLL-OFF
Process: Direct Landfill
Management Code:
Facility: U.S. ECOLOGY IDAHO, INC.
20400 LEMLEY ROAD
GRAND VIEW, ID 83624
EPA ID: IDD073114654
Waste Type: NON HAZARDOUS WASTE
Customer: MP ENVIRONMENTAL SERVICES

Printed Name: DONNA PULLEN

Signature: Donna Pullen

Title: RECEIVING SUPERVISOR

13111410453 12 yds 20120#

Please print or type
(Form designed for use on elite (12-pitch) typewriter)

NON-HAZARDOUS WASTE MANIFEST	1. Generator ID Number	2. Page 1 of	3. Emergency Response Phone	4. Waste Tracking Number
	N/A	1	800-458-3536	101413-12

GENERATOR

5. Generator's Name and Mailing Address
Rio Algom Mining, LLC
8950 N Oracle Road, Suite 150
Tucson, Arizona 85704
Generator's Phone: 520-531-6961

Generator's Site Address (if different than mailing address)
Rio Algom Mining, LLC
Lisbon Valley Road and West Coyote Creek Road
La Sal, Utah 84530

6. Transporter 1 Company Name: MP ENVIRONMENTAL — U.S. EPA ID Number: CAT000624247

7. Transporter 2 Company Name — U.S. EPA ID Number

8. Designated Facility Name and Site Address
US Ecology Idaho, Inc
20400 Lemley Road
Grand View, ID 83624
Facility's Phone: 800-274-1516
U.S. EPA ID Number: IDD 073 114 654

	9. Waste Shipping Name and Description	10. Containers No.	10. Containers Type	11. Total Quantity	12. Unit Wt./Vol.	
1.	Material not regulated by D.O.T.	1	CM	37.000	P	
2.						
3.						
4.						

13. Special Handling Instructions and Additional Information
WSID # 29927
BIN # 6158

14. GENERATOR'S/OFFEROR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations.

Generator's/Offeror's Printed/Typed Name: William Ray — Signature — Month 10 Day 14 Year 13

INT'L

15. International Shipments ☐ Import to U.S. ☐ Export from U.S. Port of entry/exit:
Transporter Signature (for exports only): Date leaving U.S.:

TRANSPORTER

16. Transporter Acknowledgment of Receipt of Materials

Transporter 1 Printed/Typed Name: Sam Taulanga — Signature — Month 10 Day 14 Year 13

Transporter 2 Printed/Typed Name — Signature — Month Day Year

DESIGNATED FACILITY

17. Discrepancy

17a. Discrepancy Indication Space ☒ Quantity ☐ Type ☐ Residue ☐ Partial Rejection ☐ Full Rejection
actual received 20120# ok per Jenny Orr via email
Manifest Reference Number:

17b. Alternate Facility (or Generator) — U.S. EPA ID Number
Facility's Phone:

17c. Signature of Alternate Facility (or Generator) — Month Day Year

18. Designated Facility Owner or Operator: Certification of receipt of materials covered by the manifest except as noted in Item 17a

Printed/Typed Name: Jenny Lyons — Signature: Jenny Lyons — Month 11 Day 14 Year 13

DESIGNATED FACILITY TO GENERATOR

GC Labels • Printed in the USA 1-800-997-6966
Reorder Part# MANIFEST-CGNHWC 913-897-6966

CERTIFICATE OF DISPOSAL

November 18,2013

RIO ALGOM MINING, LLC
LISBON VALLEY ROAD AND WEST COYOTE CREEK ROAD
LA SAL, UT 84530

This is to certify that waste as defined on Waste Manifest number **101413-12/** was received by U.S. Ecology, Inc., on **11/14/2013** .The waste(s) were subsequently treated, if required by 40 CFR Part 268 and U.S. Ecology's permits and disposed of by **11/14/2013** in accordance with permits and laws regulating this facility.

Reference Number: 13111410453-101413-12-1-1
Material: 1 ROLL-OFF
Process: Solidification
Management Code:
Facility: U.S. ECOLOGY IDAHO, INC.
20400 LEMLEY ROAD
GRAND VIEW, ID 83624
EPA ID: IDD073114654
Waste Type: NON HAZARDOUS WASTE
Customer: MP ENVIRONMENTAL SERVICES

Printed Name: DONNA PULLEN

Signature: Donna Pullen

Title: RECEIVING SUPERVISOR

13TDT09994 12720 3rd

Page 1 of 1 pages

NON-HAZARDOUS WASTE MANIFEST	1. Generator ID Number	2. Page 1 of	3. Emergency Response Phone	4. Waste Tracking Number
	N/A	1	800-468-3636	101413-13

GENERATOR

5. Generator's Name and Mailing Address
Rio Algom Mining LLC
8950 N Oracle Road, Suite 150
Tucson, Arizona 85704
Generator's Phone: 520-531-6961

Generator's Site Address (if different than mailing address)
Rio Algom Mining LLC
Lisbon Valley Road and West Coyote Creek Road
La Sal, Utah 84530

6. Transporter 1 Company Name: MP ENVIRONMENTAL — U.S. EPA ID Number: CAT000624247

7. Transporter 2 Company Name — U.S. EPA ID Number:

8. Designated Facility Name and Site Address
US Ecology Idaho, Inc
20400 Lemley Road
Grand View, ID 83624
Facility's Phone: 800-274-1516
U.S. EPA ID Number: IDD 073 114 654

	9. Waste Shipping Name and Description	10. Containers No.	10. Containers Type	11. Total Quantity	12. Unit Wt./Vol.	
1.	Material not regulated by D.O.T.	1	GM	14,000 est	P	
2.						
3.						
4.						

13. Special Handling Instructions and Additional Information
WSID # 29927
Bin 6505

14. GENERATOR'S/OFFEROR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations.

Generator's/Offeror's Printed/Typed Name: William Ray — Signature: [signature] — Month: 10 — Day: 14 — Year: 13

INT'L

15. International Shipments ☐ Import to U.S. ☐ Export from U.S. Port of entry/exit:
Transporter Signature (for exports only): Date leaving U.S.:

TRANSPORTER

16. Transporter Acknowledgment of Receipt of Materials

Transporter 1 Printed/Typed Name: Mathew LaRoque — Signature: [signature] — Month: 10 — Day: 14 — Year: 13

Transporter 2 Printed/Typed Name: James Hewett — Signature: James Hewett — Month: 10 — Day: 30 — Year: 13

DESIGNATED FACILITY

17. Discrepancy

17a. Discrepancy Indication Space ☐ Quantity ☐ Type ☐ Residue ☐ Partial Rejection ☐ Full Rejection

Manifest Reference Number:

17b. Alternate Facility (or Generator) — U.S. EPA ID Number:
Facility's Phone:

17c. Signature of Alternate Facility (or Generator) — Month — Day — Year

18. Designated Facility Owner or Operator: Certification of receipt of materials covered by the manifest except as noted in Item 17a

Printed/Typed Name: Andrea Rodriguez — Signature: [signature] — Month: 10 — Day: 31 — Year: 13

CERTIFICATE OF DISPOSAL

November 01,2013

RIO ALGOM MINING, LLC
LISBON VALLEY ROAD AND WEST COYOTE CREEK ROAD
LA SAL, UT 84530

This is to certify that waste as defined on Waste Manifest number **101413-13/** was received by U.S. Ecology, Inc., on **10/31/2013** .The waste(s) were subsequently treated, if required by 40 CFR Part 268 and U.S. Ecology's permits and disposed of by **10/31/2013** in accordance with permits and laws regulating this facility.

Reference Number: 13103109924-101413-13-1-1
Material: 1 ROLL-OFF
Process: Solidification
Management Code:
Facility: U.S. ECOLOGY IDAHO, INC.
20400 LEMLEY ROAD
GRAND VIEW, ID 83624
EPA ID: IDD073114654
Waste Type: NON HAZARDOUS WASTE
Customer: MP ENVIRONMENTAL SERVICES

Printed Name: DONNA PULLEN

Signature: Donna Pullen

Title: RECEIVING SUPERVISOR

Please print or type
(Form designed for use on elite (12-pitch) typewriter.)

13708709968 25020# 12yds

NON-HAZARDOUS WASTE MANIFEST	1. Generator ID Number	2. Page 1 of	3. Emergency Response Phone	4. Waste Tracking Number
	N/A	1	800-456-3036	10413-14

GENERATOR

5. Generator's Name and Mailing Address
Rio Algom Mining, LLC
8950 N Oracle Road, Suite 150
Tucson, Arizona 85704
Generator's Phone: 520-531-6961

Generator's Site Address (if different than mailing address)
Rio Algom Mining, LLC
Lisbon Valley Road and West Coyote Creek Road
La Sal, Utah 84530

6. Transporter 1 Company Name: MP ENVIRONMENTAL
U.S. EPA ID Number: CAT000624247

7. Transporter 2 Company Name
U.S. EPA ID Number

8. Designated Facility Name and Site Address
US Ecology Idaho, Inc
20400 Lemley Road
Grand View, ID 83624
Facility's Phone: 800-274-1516
U.S. EPA ID Number: IDD 073 114 654

	9. Waste Shipping Name and Description	10. Containers No.	10. Containers Type	11. Total Quantity	12. Unit Wt./Vol.	
1.	Material not regulated by D.O.T.	1	CM	26320	P	
2.						
3.						
4.						

13. Special Handling Instructions and Additional Information

WSID # 29927

Bin # 6139

14. GENERATOR'S/OFFEROR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations.

Generator's/Offeror's Printed/Typed Name: William Ray
Signature:
Month: 10 Day: 14 Year: 13

INT'L

15. International Shipments ☐ Import to U.S. ☐ Export from U.S. Port of entry/exit:
Transporter Signature (for exports only): Date leaving U.S.:

TRANSPORTER

16. Transporter Acknowledgment of Receipt of Materials

Transporter 1 Printed/Typed Name: Richard Orr
Signature: Richard Orr
Month: 10 Day: 14 Year: 13

Transporter 2 Printed/Typed Name
Signature
Month Day Year

DESIGNATED FACILITY

17. Discrepancy

17a. Discrepancy Indication Space ☐ Quantity ☐ Type ☐ Residue ☐ Partial Rejection ☐ Full Rejection

Manifest Reference Number:

17b. Alternate Facility (or Generator)
U.S. EPA ID Number
Facility's Phone:

17c. Signature of Alternate Facility (or Generator)
Month Day Year

18. Designated Facility Owner or Operator Certification of receipt of materials covered by the manifest except as noted in Item 17a

Printed/Typed Name: Althea Rodrigues
Signature: Althea Rodrigues
Month: 10 Day: 18 Year: 13

CERTIFICATE OF DISPOSAL

November 01,2013

RIO ALGOM MINING, LLC
LISBON VALLEY ROAD AND WEST COYOTE CREEK ROAD
LA SAL, UT 84530

This is to certify that waste as defined on Waste Manifest number **101413-14/** was received by U.S. Ecology, Inc., on **10/31/2013** .The waste(s) were subsequently treated, if required by 40 CFR Part 268 and U.S. Ecology's permits and disposed of by **10/31/2013** in accordance with permits and laws regulating this facility.

Reference Number: 13103109968-101413-14-1-1
Material: 1 ROLL-OFF
Process: Solidification
Management Code:
Facility: U.S. ECOLOGY IDAHO, INC.
20400 LEMLEY ROAD
GRAND VIEW, ID 83624
EPA ID: IDD073114654
Waste Type: NON HAZARDOUS WASTE
Customer: MP ENVIRONMENTAL SERVICES

Printed Name: DONNA PULLEN

Signature: Donna Pullen

Title: RECEIVING SUPERVISOR

Please print or type
(Form designed for use on elite (12-pitch) typewriter.)

13102809786 26660

NON-HAZARDOUS WASTE MANIFEST	1. Generator ID Number	2. Page 1 of	3. Emergency Response Phone	4. Waste Tracking Number
	N/A	1	800-468-3036	101413-15

GENERATOR

5. Generator's Name and Mailing Address
Rio Algom Mining, LLC
8950 N Oracle Road, Suite 150
Tucson, Arizona 85704
Generator's Phone: 520-531-6961

Generator's Site Address (if different than mailing address)
Rio Algom Mining, LLC
Lisbon Valley Road and West Coyote Creek Road
La Sal, Utah 84530

6. Transporter 1 Company Name: MP ENVIRONMENTAL — U.S. EPA ID Number: CAT000624247

7. Transporter 2 Company Name — U.S. EPA ID Number

8. Designated Facility Name and Site Address
US Ecology Idaho, Inc
20400 Lemley Road
Grand View, ID 83624
Facility's Phone: 800-274-1516
U.S. EPA ID Number: IDD 073 114 654

	9. Waste Shipping Name and Description	10. Containers No.	10. Containers Type	11. Total Quantity	12. Unit Wt./Vol.	
1.	Material not regulated by D.O.T.	1	CM	32,540	P 32,540	
2.						
3.						
4.						

13. Special Handling Instructions and Additional Information
WSID # 29927 Bin # 6127

14. GENERATOR'S/OFFEROR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations.

Generator's/Offeror's Printed/Typed Name: William Tracy — Signature — Month: 10 Day: 14 Year: 13

INT'L

15. International Shipments ☐ Import to U.S. ☐ Export from U.S. Port of entry/exit:
Transporter Signature (for exports only): Date leaving U.S.:

TRANSPORTER

16. Transporter Acknowledgment of Receipt of Materials
Transporter 1 Printed/Typed Name: James Hewett — Signature — Month: 10 Day: 14 Year: 13
Transporter 2 Printed/Typed Name — Signature — Month Day Year

DESIGNATED FACILITY

17. Discrepancy
17a. Discrepancy Indication Space ☒ Quantity ☐ Type ☐ Residue ☐ Partial Rejection ☐ Full Rejection
actual received 26660 ok per Jenny Orr via email
Manifest Reference Number:

17b. Alternate Facility (or Generator) — U.S. EPA ID Number
Facility's Phone:

17c. Signature of Alternate Facility (or Generator) — Month Day Year

18. Designated Facility Owner or Operator: Certification of receipt of materials covered by the manifest except as noted in Item 17a
Printed/Typed Name: Corian Kastner — Signature — Month: 10 Day: 28 Year: 13

CERTIFICATE OF DISPOSAL

October 30,2013

RIO ALGOM MINING, LLC
LISBON VALLEY ROAD AND WEST COYOTE CREEK ROAD
LA SAL, UT 84530

This is to certify that waste as defined on Waste Manifest number **101413-15/** was received by U.S. Ecology, Inc., on **10/28/2013** .The waste(s) were subsequently treated, if required by 40 CFR Part 268 and U.S. Ecology's permits and disposed of by **10/29/2013** in accordance with permits and laws regulating this facility.

Reference Number: 13102809786-101413-15-1-1
Material: 1 ROLL-OFF
Process: Direct Landfill
Management Code:
Facility: U.S. ECOLOGY IDAHO, INC.
20400 LEMLEY ROAD
GRAND VIEW, ID 83624
EPA ID: IDD073114654
Waste Type: NON HAZARDOUS WASTE
Customer: MP ENVIRONMENTAL SERVICES

Printed Name: DONNA PULLEN

Signature: Donna Pullen

Title: RECEIVING SUPERVISOR

Please print or type
(Form designed for use on elite (12 pitch) typewriter)

13708709966 24340# 15yds

NON-HAZARDOUS WASTE MANIFEST	1. Generator ID Number	2. Page 1 of	3. Emergency Response Phone	4. Waste Tracking Number
	N/A	1	800-468-3036	10161316

GENERATOR

5. Generator's Name and Mailing Address
Rio Algom Mining, LLC
8950 N Oracle Road, Suite 150
Tucson, Arizona 85704
Generator's Phone: 520-531-6961

Generator's Site Address (if different than mailing address)
Rio Algom Mining, LLC
Lisbon Valley Road and West Coyote Creek Road
La Sal, Utah 84530

6. Transporter 1 Company Name: MP ENVIRONMENTAL — U.S. EPA ID Number: CAT000624247

7. Transporter 2 Company Name — U.S. EPA ID Number

8. Designated Facility Name and Site Address
US Ecology Idaho, Inc
20400 Lemley Road
Grand View, ID 83624
Facility's Phone: 800-274-1516
U.S. EPA ID Number: IDD 073 114 654

	9. Waste Shipping Name and Description	10. Containers No.	10. Containers Type	11. Total Quantity	12. Unit Wt./Vol.
1.	Material not regulated by D.O.T.	1	CM	40,000	P
2.					
3.					
4.					

13. Special Handling Instructions and Additional Information
WSID # 29927
Bin # 6140

14. GENERATOR'S/OFFEROR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations.

Generator's/Offeror's Printed/Typed Name: William Ry — Signature — Month 10 Day 16 Year 13

INT'L

15. International Shipments ☐ Import to U.S. ☐ Export from U.S. Port of entry/exit:
Transporter Signature (for exports only): Date leaving U.S.:

TRANSPORTER

16. Transporter Acknowledgment of Receipt of Materials

Transporter 1 Printed/Typed Name: Sam Tanlanza — Signature — Month 10 Day 16 Year 13

Transporter 2 Printed/Typed Name — Signature — Month Day Year

DESIGNATED FACILITY

17. Discrepancy

17a. Discrepancy Indication Space ☒ Quantity ☐ Type ☐ Residue ☐ Partial Rejection ☐ Full Rejection
Weight ok per Jenny Orr via email - 10-31-13. dp
Manifest Reference Number:

17b. Alternate Facility (or Generator) — U.S. EPA ID Number
Facility's Phone:

17c. Signature of Alternate Facility (or Generator) — Month Day Year

18. Designated Facility Owner or Operator: Certification of receipt of materials covered by the manifest except as noted in Item 17a
Printed/Typed Name: Kathleen Rodriguez — Signature: Kathleen Rodriguez — Month 10 Day 31 Year 13

CERTIFICATE OF DISPOSAL

November 01,2013

RIO ALGOM MINING, LLC
LISBON VALLEY ROAD AND WEST COYOTE CREEK ROAD
LA SAL, UT 84530

This is to certify that waste as defined on Waste Manifest number **101613-16/** was received by U.S. Ecology, Inc., on **10/31/2013** .The waste(s) were subsequently treated, if required by 40 CFR Part 268 and U.S. Ecology's permits and disposed of by **10/31/2013** in accordance with permits and laws regulating this facility.

Reference Number: 13103109966-101613-16-1-1
Material: 1 ROLL-OFF
Process: Solidification
Management Code:
Facility: U.S. ECOLOGY IDAHO, INC.
20400 LEMLEY ROAD
GRAND VIEW, ID 83624
EPA ID: IDD073114654
Waste Type: NON HAZARDOUS WASTE
Customer: MP ENVIRONMENTAL SERVICES

Printed Name: DONNA PULLEN

Signature: Donna Pullen

Title: RECEIVING SUPERVISOR

Please print or type
(Form designed for use on elite (12-pitch) typewriter.)

13103109916 14,510 lbs 15,925 lbs

NON-HAZARDOUS WASTE MANIFEST

1. Generator ID Number	2. Page 1 of	3. Emergency Response Phone	4. Waste Tracking Number
N/A	1	800-458-3036	10613-17

GENERATOR

5. Generator's Name and Mailing Address
Rio Algom Mining LLC
8950 N Oracle Road, Suite 150
Tucson, Arizona 85704
520-531-6961
Generator's Phone:

Generator's Site Address (if different than mailing address)
Rio Algom Mining LLC
Lisbon Valley Road and West Coyote Creek Road
La Sal, Utah 84530

6. Transporter 1 Company Name: MP ENVIRONMENTAL — U.S. EPA ID Number: CAT000624247

7. Transporter 2 Company Name — U.S. EPA ID Number

8. Designated Facility Name and Site Address
US Ecology Idaho, Inc
20400 Lemley Road
Grand View, ID 83624
800-274-1516
Facility's Phone:
U.S. EPA ID Number: IDD 073 114 654

	9. Waste Shipping Name and Description	10. Containers No.	10. Containers Type	11. Total Quantity	12. Unit Wt./Vol.
1.	Material not regulated by D.O.T.	1	CM	15	P
2.					
3.					
4.					

13. Special Handling Instructions and Additional Information

WSID #29927

Bin # 6030

14. GENERATOR'S/OFFEROR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations.

Generator's/Offeror's Printed/Typed Name: William Tag — Signature — Month 10 Day 16 Year 13

INT'L

15. International Shipments ☐ Import to U.S. ☐ Export from U.S. Port of entry/exit:
Transporter Signature (for exports only): Date leaving U.S.:

TRANSPORTER

16. Transporter Acknowledgment of Receipt of Materials

Transporter 1 Printed/Typed Name: Richard Bogaw — Signature — Month 10 Day 16 Year 13

Transporter 2 Printed/Typed Name — Signature — Month Day Year

DESIGNATED FACILITY

17. Discrepancy

17a. Discrepancy Indication Space ☐ Quantity ☐ Type ☐ Residue ☐ Partial Rejection ☐ Full Rejection

Manifest Reference Number:

17b. Alternate Facility (or Generator) — U.S. EPA ID Number

Facility's Phone:

17c. Signature of Alternate Facility (or Generator) — Month Day Year

18. Designated Facility Owner or Operator: Certification of receipt of materials covered by the manifest except as noted in Item 17a

Printed/Typed Name: Jenny Lyons — Signature — Month 10 Day 31 Year 13

CERTIFICATE OF DISPOSAL

November 01,2013

RIO ALGOM MINING, LLC
LISBON VALLEY ROAD AND WEST COYOTE CREEK ROAD
LA SAL, UT 84530

This is to certify that waste as defined on Waste Manifest number **101613-17/** was received by U.S. Ecology, Inc., on **10/31/2013** .The waste(s) were subsequently treated, if required by 40 CFR Part 268 and U.S. Ecology's permits and disposed of by **10/31/2013** in accordance with permits and laws regulating this facility.

Reference Number: 13103109916-101613-17-1-1
Material: 1 ROLL-OFF
Process: Solidification
Management Code:
Facility: U.S. ECOLOGY IDAHO, INC.
20400 LEMLEY ROAD
GRAND VIEW, ID 83624
EPA ID: IDD073114654
Waste Type: NON HAZARDOUS WASTE
Customer: MP ENVIRONMENTAL SERVICES

Printed Name: DONNA PULLEN

Signature: Donna Pullen

Title: RECEIVING SUPERVISOR

Please print or type
(Form designed for use on elite (12-pitch) typewriter)

12380 ft 12yd Front

13103109964

NON-HAZARDOUS WASTE MANIFEST

1. Generator ID Number	2. Page 1 of	3. Emergency Response Phone	4. Waste Tracking Number
[illegible]	1	800-458-3036	101613-18

GENERATOR

5. Generator's Name and Mailing Address
Rio Algom Mining, LLC
8950 N Oracle Road, Suite 150
Tucson, Arizona 85704
Generator's Phone: 520-531-6961

Generator's Site Address (if different than mailing address)
Rio Algom Mining, LLC
Lisbon Valley Road and West Coyote Creek Road
La Sal, Utah 84530

6. Transporter 1 Company Name: MP ENVIRONMENTAL
U.S. EPA ID Number: CAT000624247

7. Transporter 2 Company Name
U.S. EPA ID Number

8. Designated Facility Name and Site Address
US Ecology Idaho, Inc
20400 Lemley Road
Grand View, ID 83624
Facility's Phone: 800-274-1516
U.S. EPA ID Number: IDD 073 114 654

	9. Waste Shipping Name and Description	10. Containers No.	10. Containers Type	11. Total Quantity	12. Unit Wt./Vol.	
1.	Material not regulated by D.O.T.	1	CM	15	Y	
2.						
3.						
4.						

13. Special Handling Instructions and Additional Information
WSID # 29927
Bin 6451

14. GENERATOR'S/OFFEROR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations.

Generator's/Offeror's Printed/Typed Name: William Ray
Signature:
Month 10 Day 16 Year 13

INT'L

15. International Shipments ☐ Import to U.S. ☐ Export from U.S. Port of entry/exit:
Transporter Signature (for exports only): Date leaving U.S.:

TRANSPORTER

16. Transporter Acknowledgment of Receipt of Materials

Transporter 1 Printed/Typed Name: Richard Bagaw
Signature: Richard Bagaw
Month 10 Day 16 Year 13

Transporter 2 Printed/Typed Name
Signature
Month Day Year

DESIGNATED FACILITY

17. Discrepancy

17a. Discrepancy Indication Space ☐ Quantity ☐ Type ☐ Residue ☐ Partial Rejection ☐ Full Rejection

Manifest Reference Number:

17b. Alternate Facility (or Generator)
U.S. EPA ID Number
Facility's Phone:

17c. Signature of Alternate Facility (or Generator)
Month Day Year

18. Designated Facility Owner or Operator: Certification of receipt of materials covered by the manifest except as noted in Item 17a

Printed/Typed Name: Jenny Lyons
Signature: Jenny Lyons
Month 10 Day 31 Year 13

CERTIFICATE OF DISPOSAL

November 01,2013

RIO ALGOM MINING, LLC
LISBON VALLEY ROAD AND WEST COYOTE CREEK ROAD
LA SAL, UT 84530

This is to certify that waste as defined on Waste Manifest number **101613-18/** was received by U.S. Ecology, Inc., on **10/31/2013** .The waste(s) were subsequently treated, if required by 40 CFR Part 268 and U.S. Ecology's permits and disposed of by **10/31/2013** in accordance with permits and laws regulating this facility.

Reference Number: 13103109964-101613-18-1-1
Material: 1 ROLL-OFF
Process: Solidification
Management Code:
Facility: U.S. ECOLOGY IDAHO, INC.
20400 LEMLEY ROAD
GRAND VIEW, ID 83624
EPA ID: IDD073114654
Waste Type: NON HAZARDOUS WASTE
Customer: MP ENVIRONMENTAL SERVICES

Printed Name: DONNA PULLEN

Signature: Donna Pullen

Title: RECEIVING SUPERVISOR

Please print or type
(Form designed for use on elite (12-pitch) typewriter.)

13102109389 40540# 491921

NON-HAZARDOUS WASTE MANIFEST

1. Generator ID Number	2. Page 1 of	3. Emergency Response Phone	4. Waste Tracking Number
N/A	1	800-458-3536	#01813-7

GENERATOR

5. Generator's Name and Mailing Address
Rio Algom Mining, LLC
8950 N Oracle Road, Suite 150
Tucson, Arizona 85704
Generator's Phone: 520-531-6961

Generator's Site Address (if different than mailing address)
Rio Algom Mining, LLC
Lisbon Valley Road and West Coyote Creek Road
La Sal, Utah 84530

6. Transporter 1 Company Name: MP Environmental Services — U.S. EPA ID Number: CAT000624247

7. Transporter 2 Company Name — U.S. EPA ID Number

8. Designated Facility Name and Site Address
US Ecology Idaho, Inc
20400 Lemley Road
Grand View, ID 83624
Facility's Phone: 800-274-1516
U.S. EPA ID Number: IDD 073 114 654

	9. Waste Shipping Name and Description	10. Containers No.	10. Containers Type	11. Total Quantity	12. Unit Wt./Vol.	
1.	Material not regulated by D.O.T.	1	TT	4800	G	
2.						
3.						
4.						

13. Special Handling Instructions and Additional Information
WSID #29928

14. GENERATOR'S/OFFEROR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations.

Generator's/Offeror's Printed/Typed Name: William Ray — Signature — Month: 10 Day: 18 Year: 13

INT'L

15. International Shipments ☐ Import to U.S. ☐ Export from U.S. Port of entry/exit:
Transporter Signature (for exports only): Date leaving U.S.:

TRANSPORTER

16. Transporter Acknowledgment of Receipt of Materials

Transporter 1 Printed/Typed Name: Richard Orr — Signature — Month: 10 Day: 18 Year: 13

Transporter 2 Printed/Typed Name: Sam Tawanga — Signature — Month: 10 Day: 20 Year: 13

DESIGNATED FACILITY

17. Discrepancy

17a. Discrepancy Indication Space ☐ Quantity ☐ Type ☐ Residue ☐ Partial Rejection ☐ Full Rejection

Manifest Reference Number:

17b. Alternate Facility (or Generator) — U.S. EPA ID Number

Facility's Phone:

17c. Signature of Alternate Facility (or Generator) — Month: Day: Year:

18. Designated Facility Owner or Operator: Certification of receipt of materials covered by the manifest except as noted in Item 17a

Printed/Typed Name: Corian Kastner — Signature — Month: 10 Day: 21 Year: 13

CERTIFICATE OF DISPOSAL

October 22,2013

RIO ALGOM MINING, LLC
LISBON VALLEY ROAD AND WEST COYOTE CREEK ROAD
LA SAL, UT 84530

This is to certify that waste as defined on Waste Manifest number **101813-7/** was received by U.S. Ecology, Inc., on **10/21/2013** .The waste(s) were subsequently treated, if required by 40 CFR Part 268 and U.S. Ecology's permits and disposed of by **10/21/2013** in accordance with permits and laws regulating this facility.

Reference Number: 13102109389-101813-7-1-1
Material: 1 TANKER
Process: Solidification
Management Code:
Facility: U.S. ECOLOGY IDAHO, INC.
20400 LEMLEY ROAD
GRAND VIEW, ID 83624
EPA ID: IDD073114654
Waste Type: NON HAZARDOUS WASTE
Customer: MP ENVIRONMENTAL SERVICES

Printed Name: DONNA PULLEN

Signature: Donna Pullen

Title: RECEIVING SUPERVISOR

Please print or type
(Form designed for use on elite (12-pitch) typewriter.)

13102909809 4874981 40720

NON-HAZARDOUS WASTE MANIFEST	1. Generator ID Number: N/A	2. Page 1 of: 1	3. Emergency Response Phone: 800-468-3036	4. Waste Tracking Number: 102513-9

GENERATOR

5. Generator's Name and Mailing Address
Rio Algom Mining, LLC
8950 N Oracle Road, Suite 150
Tucson, Arizona 85704
Generator's Phone: 520-531-6961

Generator's Site Address (if different than mailing address)
Rio Algom Mining, LLC
Lisbon Valley Road and West Coyote Creek Road
La Sal, Utah 84530

6. Transporter 1 Company Name: MP Environmental Services
U.S. EPA ID Number: CAT000624247

7. Transporter 2 Company Name
U.S. EPA ID Number

8. Designated Facility Name and Site Address
US Ecology Idaho, Inc
20400 Lemley Road
Grand View, ID 83624
Facility's Phone: 800-274-1516
U.S. EPA ID Number: IDD 073 114 654

	9. Waste Shipping Name and Description	10. Containers No.	10. Containers Type	11. Total Quantity	12. Unit Wt./Vol.	
1.	Material not regulated by D.O.T.	1	TT	4800	G	
2.						
3.						
4.						

13. Special Handling Instructions and Additional Information
WSID #29928

14. GENERATOR'S/OFFEROR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations.

Generator's/Offeror's Printed/Typed Name: William Ray
Signature:
Month: 10 Day: 25 Year: 13

INT'L

15. International Shipments ☐ Import to U.S. ☐ Export from U.S. Port of entry/exit:
Transporter Signature (for exports only): Date leaving U.S.:

TRANSPORTER

16. Transporter Acknowledgment of Receipt of Materials

Transporter 1 Printed/Typed Name: Richard Orr
Signature: Richard Orr
Month: 10 Day: 25 Year: 13

Transporter 2 Printed/Typed Name
Signature
Month: Day: Year:

DESIGNATED FACILITY

17. Discrepancy

17a. Discrepancy Indication Space ☐ Quantity ☐ Type ☐ Residue ☐ Partial Rejection ☐ Full Rejection

Manifest Reference Number:

17b. Alternate Facility (or Generator)
U.S. EPA ID Number
Facility's Phone:

17c. Signature of Alternate Facility (or Generator)
Month: Day: Year:

18. Designated Facility Owner or Operator: Certification of receipt of materials covered by the manifest except as noted in Item 17a

Printed/Typed Name: Corian Kastner
Signature: Corian Kastner
Month: 10 Day: 29 Year: 13

CERTIFICATE OF DISPOSAL

October 30,2013

RIO ALGOM MINING, LLC
LISBON VALLEY ROAD AND WEST COYOTE CREEK ROAD
LA SAL, UT 84530

This is to certify that waste as defined on Waste Manifest number **102513-9/** was received by U.S. Ecology, Inc., on **10/29/2013** .The waste(s) were subsequently treated, if required by 40 CFR Part 268 and U.S. Ecology's permits and disposed of by **10/29/2013** in accordance with permits and laws regulating this facility.

Reference Number: 13102909809-102513-9-1-1
Material: 1 TANKER
Process: Solidification
Management Code:
Facility: U.S. ECOLOGY IDAHO, INC.
20400 LEMLEY ROAD
GRAND VIEW, ID 83624
EPA ID: IDD073114654
Waste Type: NON HAZARDOUS WASTE
Customer: MP ENVIRONMENTAL SERVICES

Printed Name: DONNA PULLEN

Signature: Donna Pullen

Title: RECEIVING SUPERVISOR

Please print or type
(Form designed for use on elite (12-pitch) typewriter.)

B110110014 46806 39920

NON-HAZARDOUS WASTE MANIFEST	1. Generator ID Number: N/A	2. Page 1 of: 1	3. Emergency Response Phone: 800-458-3036	4. Waste Tracking Number: 163013-10

GENERATOR

5. Generator's Name and Mailing Address
Rio Algom Mining, LLC
8950 N Oracle Road, Suite 150
Tucson, Arizona 85704
520-531-6981
Generator's Phone:

Generator's Site Address (if different than mailing address)
Rio Algom Mining, LLC
Lisbon Valley Road and West Coyote Creek Road
La Sal, Utah 84530

6. Transporter 1 Company Name — U.S. EPA ID Number

7. Transporter 2 Company Name — U.S. EPA ID Number

8. Designated Facility Name and Site Address
US Ecology Idaho, Inc
20400 Lemley Road
Grand View, ID 83624
800-274-1516
Facility's Phone:
U.S. EPA ID Number: IDD 073 114 654

	9. Waste Shipping Name and Description	10. Containers No.	10. Containers Type	11. Total Quantity	12. Unit Wt./Vol.	
1.	Material not regulated by D.O.T.	1	TT	4800	G	
2.						
3.						
4.						

13. Special Handling Instructions and Additional Information

WSID #29928

14. GENERATOR'S/OFFEROR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations.

Generator's/Offeror's Printed/Typed Name: William Ray — Signature — Month: 10 Day: 30 Year: 13

INT'L

15. International Shipments ☐ Import to U.S. ☐ Export from U.S. Port of entry/exit:
Transporter Signature (for exports only): Date leaving U.S.:

TRANSPORTER

16. Transporter Acknowledgment of Receipt of Materials

Transporter 1 Printed/Typed Name: Richard Orr — Signature: Richard Orr — Month: 10 Day: 30 Year: 13

Transporter 2 Printed/Typed Name — Signature — Month — Day — Year

DESIGNATED FACILITY

17. Discrepancy

17a. Discrepancy Indication Space ☐ Quantity ☐ Type ☐ Residue ☐ Partial Rejection ☐ Full Rejection

Manifest Reference Number:

17b. Alternate Facility (or Generator) — U.S. EPA ID Number

Facility's Phone:

17c. Signature of Alternate Facility (or Generator) — Month — Day — Year

18. Designated Facility Owner or Operator: Certification of receipt of materials covered by the manifest except as noted in Item 17a

Printed/Typed Name: Jenny Lyons — Signature: Jenny Lyons — Month: 11 Day: 1 Year: 13

CERTIFICATE OF DISPOSAL

November 06,2013

RIO ALGOM MINING, LLC
LISBON VALLEY ROAD AND WEST COYOTE CREEK ROAD
LA SAL, UT 84530

This is to certify that waste as defined on Waste Manifest number **103013-10/** was received by U.S. Ecology, Inc., on **11/1/2013** .The waste(s) were subsequently treated, if required by 40 CFR Part 268 and U.S. Ecology's permits and disposed of by **11/01/2013** in accordance with permits and laws regulating this facility.

Reference Number: 13110110014-103013-10-1-1
Material: 1 TANKER
Process: Solidification
Management Code:
Facility: U.S. ECOLOGY IDAHO, INC.
20400 LEMLEY ROAD
GRAND VIEW, ID 83624
EPA ID: IDD073114654
Waste Type: NON HAZARDOUS WASTE
Customer: MP ENVIRONMENTAL SERVICES

Printed Name: DONNA PULLEN

Signature: Donna Pullen

Title: RECEIVING SUPERVISOR

Please print or type
(Form designed for use on elite (12 pitch) typewriter.)

13111410436 19720 lbs 2171 gals

NON-HAZARDOUS WASTE MANIFEST	1. Generator ID Number	2. Page 1 of	3. Emergency Response Phone	4. Waste Tracking Number
	N/A	1	866-458-3036	11112013-8

GENERATOR

5. Generator's Name and Mailing Address
Rio Algom Mining, LLC
8950 N Oracle Road, Suite 150
Tucson, Arizona 85704
Generator's Phone: 520-531-6961

Generator's Site Address (if different than mailing address)
Rio Algom Mining, LLC
Lisbon Valley Road and West Coyote Creek Road
La Sal, Utah 84530

6. Transporter 1 Company Name: MP Environmental Services
U.S. EPA ID Number: CAT000634247

7. Transporter 2 Company Name
U.S. EPA ID Number

8. Designated Facility Name and Site Address
US Ecology Idaho, Inc
20400 Lemley Road
Grand View, ID 83624
Facility's Phone: 800-274-1516
U.S. EPA ID Number: IDD 073 114 654

	9. Waste Shipping Name and Description	10. Containers No.	10. Containers Type	11. Total Quantity	12. Unit Wt./Vol.	
1.	Material not regulated by D.O.T.	1	TT	25po	G	
2.						
3.						
4.						

13. Special Handling Instructions and Additional Information

WSID # 29928

14. GENERATOR'S/OFFEROR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations.

Generator's/Offeror's Printed/Typed Name: William Ray | Signature | Month 11 | Day 12 | Year 13

INT'L

15. International Shipments ☐ Import to U.S. ☐ Export from U.S. Port of entry/exit:
Transporter Signature (for exports only): Date leaving U.S.:

TRANSPORTER

16. Transporter Acknowledgment of Receipt of Materials

Transporter 1 Printed/Typed Name: Mathew LaRoque | Signature | Month 11 | Day 12 | Year 13

Transporter 2 Printed/Typed Name | Signature | Month | Day | Year

DESIGNATED FACILITY

17. Discrepancy

17a. Discrepancy Indication Space ☐ Quantity ☐ Type ☐ Residue ☐ Partial Rejection ☐ Full Rejection
Wet weight OK per Jenny Orr 11/14/13 CR

Manifest Reference Number:

17b. Alternate Facility (or Generator)
U.S. EPA ID Number
Facility's Phone:

17c. Signature of Alternate Facility (or Generator) | Month | Day | Year

18. Designated Facility Owner or Operator: Certification of receipt of materials covered by the manifest except as noted in Item 17a

Printed/Typed Name: Jenny Lyons | Signature: Jenny Lyons | Month 11 | Day 14 | Year 13

GC Labels • Printed in the USA 1-800-997-6966

DESIGNATED FACILITY TO GENERATOR

Reorder Part# MANIFEST-C6NHWC 913-897-6966

CERTIFICATE OF DISPOSAL

November 15,2013

RIO ALGOM MINING, LLC
LISBON VALLEY ROAD AND WEST COYOTE CREEK ROAD
LA SAL, UT 84530

This is to certify that waste as defined on Waste Manifest number **11112013--8/** was received by U.S. Ecology, Inc., on **11/14/2013** .The waste(s) were subsequently treated, if required by 40 CFR Part 268 and U.S. Ecology's permits and disposed of by **11/14/2013** in accordance with permits and laws regulating this facility.

Reference Number: 13111410436-11112013--8-1-1
Material: 1 TANKER
Process: Solidification
Management Code:
Facility: U.S. ECOLOGY IDAHO, INC.
20400 LEMLEY ROAD
GRAND VIEW, ID 83624
EPA ID: IDD073114654
Waste Type: NON HAZARDOUS WASTE
Customer: MP ENVIRONMENTAL SERVICES

Printed Name: DONNA PULLEN

Signature: Donna Pullen

Title: RECEIVING SUPERVISOR

Please print or type
(Form designed for use on elite (12-pitch) typewriter.)

13111410443 3250.00 pds

NON-HAZARDOUS WASTE MANIFEST	1. Generator ID Number	2. Page 1 of	3. Emergency Response Phone	4. Waste Tracking Number
	N/A	1	800-458-3036	11112013-19

GENERATOR

5. Generator's Name and Mailing Address
Rio Algom Mining, LLC
8950 N. Oracle Road, Suite 150
Tucson, Arizona 85704
Generator's Phone: 520-531-6961

Generator's Site Address (if different than mailing address)
Rio Algom Mining, LLC
Lisbon Valley Road and West Coyote Creek Road
La Sal, Utah 84530

6. Transporter 1 Company Name: MP Environmental Services, U.S. EPA ID Number: CAT000624247

7. Transporter 2 Company Name: U.S. EPA ID Number:

8. Designated Facility Name and Site Address
US Ecology Idaho, Inc
20400 Lemley Road
Grand View, ID 83624
Facility's Phone: 800-274-1516
U.S. EPA ID Number: IDD 073 114 654

	9. Waste Shipping Name and Description	10. Containers No.	10. Containers Type	11. Total Quantity	12. Unit Wt./Vol.	
1.	Material not regulated by D.O.T.	1	~~TT~~ CM	22	~~T~~ Y	
2.						
3.						
4.						

13. Special Handling Instructions and Additional Information
~~WSID #28572~~ 29927
Bin # V954

14. GENERATOR'S/OFFEROR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations.

Generator's/Offeror's Printed/Typed Name: William Ray Signature: [signature] Month: 11 Day: 12 Year: 13

INT'L

15. International Shipments ☐ Import to U.S. ☐ Export from U.S. Port of entry/exit:
Transporter Signature (for exports only): Date leaving U.S.:

TRANSPORTER

16. Transporter Acknowledgment of Receipt of Materials

Transporter 1 Printed/Typed Name: James Hewett Signature: James Hewett Month: 11 Day: 12 Year: 13

Transporter 2 Printed/Typed Name: Signature: Month: Day: Year:

DESIGNATED FACILITY

17. Discrepancy

17a. Discrepancy Indication Space ☐ Quantity ☐ Type ☐ Residue ☐ Partial Rejection ☐ Full Rejection

Manifest Reference Number:

17b. Alternate Facility (or Generator) U.S. EPA ID Number:

Facility's Phone:

17c. Signature of Alternate Facility (or Generator) Month: Day: Year:

18. Designated Facility Owner or Operator: Certification of receipt of materials covered by the manifest except as noted in Item 17a

Printed/Typed Name: Jenny Lyons Signature: [signature] Month: 11 Day: 14 Year: 13

CERTIFICATE OF DISPOSAL

November 18,2013

RIO ALGOM MINING, LLC
LISBON VALLEY ROAD AND WEST COYOTE CREEK ROAD
LA SAL, UT 84530

This is to certify that waste as defined on Waste Manifest number **11112013-19/** was received by U.S. Ecology, Inc., on **11/14/2013** .The waste(s) were subsequently treated, if required by 40 CFR Part 268 and U.S. Ecology's permits and disposed of by **11/14/2013** in accordance with permits and laws regulating this facility.

Reference Number: 13111410443-11112013-19-1-1
Material: 1 ROLL-OFF
Process: Solidification
Management Code:
Facility: U.S. ECOLOGY IDAHO, INC.
20400 LEMLEY ROAD
GRAND VIEW, ID 83624
EPA ID: IDD073114654
Waste Type: NON HAZARDOUS WASTE
Customer: MP ENVIRONMENTAL SERVICES

Printed Name: DONNA PULLEN

Signature: Donna Pullen

Title: RECEIVING SUPERVISOR

Please print or type.
(Form designed for use on elite (12-pitch) typewriter.)

B1114044S 12760# 15 yds

NON-HAZARDOUS WASTE MANIFEST	1. Generator ID Number	2. Page 1 of	3. Emergency Response Phone	4. Waste Tracking Number
	N/A	1	800-458-3036	11132013-20

GENERATOR

5. Generator's Name and Mailing Address
Rio Algom Mining, LLC
8950 N Oracle Road, Suite 150
Tucson, Arizona 85704
Generator's Phone: 520-531-6961

Generator's Site Address (if different than mailing address)
Rio Algom Mining, LLC
Lisbon Valley Road and West Coyote Creek Road
La Sal, Utah 84530

6. Transporter 1 Company Name: MP ENVIRONMENTAL — U.S. EPA ID Number: CAT000624247

7. Transporter 2 Company Name — U.S. EPA ID Number

8. Designated Facility Name and Site Address
US Ecology Idaho, Inc
20400 Lemley Road
Grand View, ID 83624
Facility's Phone: 800-274-1516
U.S. EPA ID Number: IDD 073 114 654

	9. Waste Shipping Name and Description	10. Containers No.	10. Containers Type	11. Total Quantity	12. Unit Wt./Vol.	
1.	Material not regulated by D.O.T.	1	~~TM~~ CM	2400	~~G~~ P	
2.						
3.						
4.						

13. Special Handling Instructions and Additional Information
WSID # ~~29925~~ 29927
Bin # V955

14. GENERATOR'S/OFFEROR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations.

Generator's/Offeror's Printed/Typed Name: William Ray — Signature — Month 11 Day 13 Year 13

INT'L

15. International Shipments ☐ Import to U.S. ☐ Export from U.S. Port of entry/exit:
Transporter Signature (for exports only): Date leaving U.S.:

TRANSPORTER

16. Transporter Acknowledgment of Receipt of Materials
Transporter 1 Printed/Typed Name: James Hewett — Signature — Month 11 Day 13 Year 13
Transporter 2 Printed/Typed Name — Signature — Month Day Year

DESIGNATED FACILITY

17. Discrepancy
17a. Discrepancy Indication Space ☒ Quantity ☐ Type ☐ Residue ☐ Partial Rejection ☐ Full Rejection
actual received 12760# ok per Larry Or via email
Manifest Reference Number:

17b. Alternate Facility (or Generator) — U.S. EPA ID Number
Facility's Phone:

17c. Signature of Alternate Facility (or Generator) — Month Day Year

18. Designated Facility Owner or Operator: Certification of receipt of materials covered by the manifest except as noted in Item 17a
Printed/Typed Name: Jenny Lyons — Signature — Month 11 Day 14 Year 13

CERTIFICATE OF DISPOSAL

November 18,2013

RIO ALGOM MINING, LLC
LISBON VALLEY ROAD AND WEST COYOTE CREEK ROAD
LA SAL, UT 84530

This is to certify that waste as defined on Waste Manifest number **11132013-20/** was received by U.S. Ecology, Inc., on **11/14/2013** .The waste(s) were subsequently treated, if required by 40 CFR Part 268 and U.S. Ecology's permits and disposed of by **11/14/2013** in accordance with permits and laws regulating this facility.

Reference Number: 13111410445-11132013-20-1-1
Material: 1 ROLL-OFF
Process: Solidification
Management Code:
Facility: U.S. ECOLOGY IDAHO, INC.
20400 LEMLEY ROAD
GRAND VIEW, ID 83624
EPA ID: IDD073114654
Waste Type: NON HAZARDOUS WASTE
Customer: MP ENVIRONMENTAL SERVICES

Printed Name: DONNA PULLEN

Signature: Donna Pullen

Title: RECEIVING SUPERVISOR

MONTGOMERY & ASSOCIATES

APPENIDX E

SUMMARY OF GROUNDWATER SAMPLING METHODS, GROUNDWATER MONITORING FIELD DATA SHEETS, AND LABORATORY REPORTS

MONTGOMERY & ASSOCIATES

APPENDIX E

SUMMARY OF GROUNDWATER SAMPLING METHODS, GROUNDWATER MONITORING FIELD DATA SHEETS, AND LABORATORY REPORTS RIO ALGOM MINING LLC, LISBON FACILITY

During the Supplemental Site Assessment (SSA), comprehensive groundwater monitor events were conducted in the fall of 2012, the spring and fall of 2013, and the spring of 2014. During each monitoring event, groundwater samples were collected using HydraSleeve no-purge, modified low-flow minimal purge, and standard three-casing volume purge methods. In general, all three sample methods were used during the initial two monitoring events at each well location. After two sets of samples were collected at each well using all three methods, subsequent samples were collected using HydraSleeve no-purge and modified low-flow minimal purge methods. The prescribed sample method program was followed at all well locations, except at those where insufficient water or slow water level recovery prompted modified sampling procedures. **Table 2** summarizes the sample methods used at each well during each monitoring event.

Groundwater samples were collected by the HydraSleeve no-purge method, followed by the modified low-flow minimal purge method. When used, the volume-based purge method followed the other two methods. Sample method procedures are described in detail in the approved work plans. General procedures for each method are described in the following sections.

HYDRASLEEVE (NO PURGE) METHOD

A HydraSleeve consists of a disposable polyethylene tube-shaped bag, sealed at the bottom and flared open at the top with a check-valve (GeoInsight, 2006). During sampling, a

quick, upward pull on the tether causes the HydraSleeve to fill with groundwater from the screened interval before the check-valve closes. The closed check-valve prevents contact with overlying groundwater as the HydraSleeve is removed from the well. The HydraSleeves were deployed at least 24 hours prior to sample collection. HydraSleeves were deployed with a weight at the bottom via a disposable nylon line and placed approximately 1 to 2 feet below the midpoint of the saturated portion of the well screens.

MODIFIED LOW-FLOW (MINIMAL PURGE) METHOD

Groundwater samples were collected using modified low-flow sampling techniques in general accordance with the US EPA *Low-Flow (Minimal Drawdown) Ground-Water Monitoring Procedures* (Puls and Barcelona, 1996). The low-flow sampling method used at the Site is considered "modified" because US EPA prescribes that low-flow sampling should not be used in wells where the screened interval is greater than 10 feet (Yeskis and Zavala, 2002). With the exception of RL-6, screened intervals in all wells at the Site exceed 10 feet. All other sampling procedures were followed per guidance.

During modified low-flow sampling, a submersible pump was placed at the midpoint of the well screen interval. Wells were purged through disposable tubing at rates less than 500 milliliters per minute to minimize water level drawdown. During purging, field parameters (pH, specific conductance, temperature, oxidation-reduction potential [ORP], dissolved oxygen [DO], and turbidity) were monitored through a flow-through cell and recorded on field sampling data sheets at 3-minute intervals. With stable water levels in the well, groundwater samples were collected after field parameters had stabilized within ± 0.1 standard units for pH, ± 3 percent for specific conductance and temperature, ± 10 millivolts (mv) for ORP, and ± 10 percent for turbidity and DO.

VOLUME BASED (STANDARD PURGE) METHOD

Groundwater samples were collected using volume-based purge techniques in accordance with the US EPA *Ground-Water Sampling Guidelines for Superfund and RCRA Project Managers* (Yeskis and Zavala, 2002). Depth to water in the well was measured and used to calculate casing volumes for each well. A submersible pump and disposable tubing were used to purge the wells until at least three casing volumes were removed. During purging, purge rates and volumes were monitored using an in-line flowmeter and field parameters (pH, specific conductance, temperature, ORP, DO, and turbidity) were monitored through a flow-through cell after each purge volume was removed. Groundwater samples were collected after field parameters from three successive readings stabilized within ± 0.1 standard units for pH, ± 3 percent for specific conductance and temperature, ± 10 mv for ORP, and ± 10 percent for turbidity and DO. Several wells were purged dry before three casing volumes were removed. At these wells, samples were collected within a 24-hour period after 80 percent recovery.

MODIFIED SAMPLE METHODS

The sequence of prescribed sampling methods was not followed at wells MW-104, MW-106, MW-110, MW-111, MW-119, MW-121, and MW-122. Slow water level recovery rates in wells MW-104, MW-106, MW-111, and MW-119 prompted modifications to sample method procedures. Monitor wells MW-110, MW-121, and MW-122 were dry or contained an insufficient amount of water during monitoring events and have not been sampled. Sampling methods were modified at these wells as follows:

MW-104: During each event, groundwater samples were collected from MW-104 using a modified purge method. There is an insufficient amount of saturated screen interval in monitor well MW-104 for HydraSleeve sample collection, and water level is not stable

during low-flow purging at the lowest pumping rate. MW-104 was evacuated completely on the first day of each event, allowed to recover as long as possible to accumulate sufficient volume for sample collection. Samples were collected on the last day of the events, after water level had recovered approximately 20 to 60 percent. MW-104 was sampled again during the month following the fall 2012 and 2013 events, after recovery had exceeded the work plan criterion of 80 percent.

MW-106: Water level is not stable in MW-106 at the lowest pumping rate, preventing low-flow and HydraSleeve sampling. During each event, groundwater samples were collected using a modified purge method. MW-106 was evacuated completely on the first day of each event, allowed to recover as long as possible to accumulate sufficient volume for sample collection. Samples were collected on the last day of the events, after water level had recovered approximately 50 to 60 percent. MW-106 was sampled again during the month following the fall 2012 and 2013 events, after the well had recovered approximately 80 percent. For comparison, a sample was collected during the fall 2013 event using the HydraSleeve method.

MW-111: Monitor well MW-111 was dry at the time of the fall 2013 monitoring event. In November 2013, approximately 7 feet of saturated screen was observed in the well and a no-purge grab sample was collected using a bailer. Insufficient water in the well prevented additional sample collection by low-flow and purge methods during the November event. During the spring 2014 event, water level continued to recover. To limit disturbance and allow continued water level recovery monitoring, a no-purge grab sample was collected using a bailer, by removing as little water from the well as possible.

MW-119: During the fall 2013 event, there was an insufficient amount of saturated screen interval in monitor well MW-119 for HydraSleeve sample collection. During the spring 2014 event, a HydraSleeve sample was collected. During both events, water level was not stable at the lowest pumping rate, preventing sample collection by the low-flow sampling method. During both events, MW-119 was evacuated completely and sampled after the well had recovered 80 percent.

REFERENCES

GeoInsight, 2006, **HYDRASleeve Simple by Design** (US Patents No. 6,481,300; 6,837,120; others pending), Field Manual: 2006.

Puls, R. W. and Barcelona, M. J., 1996, **Low-Flow (Minimal Drawdown) Ground-Water Monitoring Procedures**: EPA/540/S-95/504, April 1996.

Yeskis, D. and B. Zavala, B., 2002, **Ground-Water Sampling Guidelines for Superfund and RCRA Project Managers:** EPA 542-S-02-001, May 2002.

Water Level Measurements

Job Number: 1350 Date: 10/29/12 Client: Montgomery & Assoc.

Site: Rio Algom Mine

Well I.D.	Time	Dia	Depth to NAPL	Thickness of NAPL	Depth to water (DTW)	Total Depth (measured)	Total Depth (historical)	Ref Point (TOC/ TOB)	Screen	Depth top of HS set
EF-3A	1016	4			82.37		215	TOC	173-203	190'
EF-6	910	4			71.40		137	TOC	105-135	122'
EF-8	847	4			74.38		244	TOC	212-242	229'
H-63	1511	5			135.84		172	TOC	140-170	157
LW-1	1417	4			146.15		233	TOC	203-233	220
ML-1	No upper screen (confirmed w/ camera)						157	TOC	20-60	
ML-1	950	4			41.31		157	TOC	150-165	148'
MW-13	1520	4			93.92		206	TOC	80-125	168'
MW-5	1725	4			153.36		197	TOC	165-195	182'
OW-UT-9	1743	5			122.90		142	TOC	118-138	132.5'
RL-1	814	5			116.05		124	TOC	104-124	121'
RL-3	1408	5			170.09		183	TOC	163-183	179'
RL-4	1328	5			156.40		178	TOC	137-177	169'
RL-5	1307	5			157.83		186	TOC	150-186	170'
RL-6	1345	5			15.37		20	TOC	7.7-18	18'
MW-100	1415	4			146.96		204.5 203	TOC	~~139.5-204.5~~ 138-203	178'
MW-101	1303	4			150.05	161.00	160.8 159	TOC	~~139.5-204.5~~ ~~148.8-160.8~~ 139-159	158'
MW-102	1757	4			125.28		137.8 136	TOC	~~146.8-160.8~~ ~~117.8-137.8~~ 116-136	133.5
MW-102DB	1754	4			122.08	~~177.30~~ 177.80	177.3 175	TOC	~~177.8-177.8~~ ~~147.3-177.3~~ 145-175	162'
MW-103	1530	4			83.44		113.2 111.5	TOC	83.2-113.2 81.5-111.5	100.5'

Water Level Measurements

Job Number: 1350 Date: 10/29/12 Client: Montgomery + Assoc.

Site: Rio Algom Mine

Well I.D.	Time	Dia	Depth to NAPL	Thickness of NAPL	Depth to water (DTW)	Total Depth (measured)	Total Depth (historical)	Ref Point (TOC/ TOB)	Screen	Depth top of HS set
MW-104	1241	4			97.64		108	TOC	68-98	
MW-105	1505	4			73.53	135 / 136.83	135	TOC	65-135	106
MW-106	1050	4			247.11	267.00	264.5	TOC	234.5-264.5	
11/2 UW-1	930	5			105.30	140.00		TOC	103-140	125 ~~115~~

Well Maintenance Inspection Form

Client: Montgomery Site: Rio Algom Mine Date: 10/29/12

Job #: 1380 Technician: BM Page 1 of 2

Inspection Point	Well Inspected - No Corrective Action Required	Entry Indicates Deficiency													Notes (Note any repairs made while on site)
		Cap non-functional	Lock non-functional	Lock missing	Bolts missing (# missing / # total tabs)	Tabs stripped (# stripped / # total tabs.)	Tabs broken (# broken / # of total tabs)	Annular seal incomplete	Apron damaged	Rim / Lid broken	Trip Hazard	Below Grade	Other (explain in notes)	Well Not Inspected (explain in notes)	
EF-3A	X														
EF-6	X														
EF-8	X														
H-63	X														
LW-1	X														
~~ML-1~~															
ML-1	X														
MW-13	X														
MW-5	X														
OW-UT-9	X														
RL-1	X														
RL-3	X														
RL-4	X														
RL-5	X														
RL-6	X														
MW-100	X														
MW-101	X														
MW-102	X														
MW-102DB	X														
MW-103	X														

Notes:

Repair codes: **rt**=retap/ bolts added or replaced **as**=annular seal repair,

Well Maintenance Inspection Form

Client: Montgomery Site: Rio Algom Mine Date: 10/24/12

Job #: 138 Technician: BM Page 2 of 2

Inspection Point	Well Inspected - No Corrective Action Required	Entry Indicates Deficiency												Well Not Inspected (explain in notes)	Notes (Note any repairs made while on site)
		Cap non-functional	Lock non-functional	Lock missing	Bolts missing (# missing / # total tabs)	Tabs stripped (# stripped / # total tabs.)	Tabs broken (# broken / # of total tabs)	Annular seal incomplete	Apron damaged	Rim / Lid broken	Trip Hazard	Below Grade	Other (explain in notes)		
MW-104	X														
MW-105	X														
MW-106	X														

Notes:

Repair codes: **rt**=retap/ bolts added or replaced **as**=annular seal repair,

Confluence Environmental, Inc 3308 El Camino Ave, Suite 300 #148, Sacramento CA, 95821, 916-760-7641

Confluence Environmental, Inc

Equipment Calibration Log

Equipment make/model	Equipment ID/ serial number	Date	Time	Calibration Standards	Equipment Reading	Equipment Calibrated	Temp (°C Y °F)	Tech init.	Comments
Pro Series	#3	10/30/12	600	4, 7, 10	4.0, 7.0, 10.0	Y	20	BH	
				1413	1413				
				100%	100%				
				237.5	237.5	Y	20	BH	
		10/31/12	600	4.0, 7.0, 10.0	4.0, 7.0, 10.0				
				1413	1413	Y	70	BH	
				100%	100%				
				237.5	237.5	Y	20	BH	
	#3	11/1/12	600	4.0, 7.0, 10.0	4.0, 7.0, 10.0				
				1413	1413	Y	20	BH	
				100%	100%				
				237.5	237.5	Y	20	BH	
	#1			4.0, 7.0, 10.0	4.0, 7.0, 10.0				
				1413	1413	Y	20	BH	
				100%	100%				
				237.5	237.5	Y	20	BH	
	#3	11/2/12	600	4, 7, 10	4.0, 7.0, 10.0				
				1413	1413	Y	70	BH	
				100%	100%				
				237.5	237.5	Y	70	BH	
	#1			4, 7, 10	4.0, 7.0, 10.0				
				1413	1413	Y	70	BH	
				100%	100%				
				237.5	237.5	X	70	BH	

Notes/comments:

Confluence Environmental, Inc

Equipment Calibration Log

Equipment make/model	Equipment ID/ serial number	Date	Time	Calibration Standards	Equipment Reading	Equipment Calibrated	Temp (°C / °F)	Tech init.	Comments
Pro Series	#3	11/3/12	600	4, 7, 10 1413	4.0, 7.0, 10.0 1413	X	70	BM	
				100% 237.5	100% 237.5	Y	70	BM	
	#1			4, 7, 10 1413	4.0, 7.0, 10.0 1413	Y	20	BM	
				100% 237.5	100% 237.5	Y	20	BM	
	#3	11/5/12	700	4, 7, 10 1413	4.0, 7.0, 10.0 1413	Y	20	BM	
				100% 237.5	100% 237.5	Y	20	BM	
	#3	11/6/12	530	4.0, 7.0, 10.0 1413	4.0, 7.0, 10.0 1413	Y	20	BM	
				100% 237.5	100% 237.5	Y	20	BM	
	#1			4.0, 7.0, 10.0 1413	4.0, 7.0, 10.0 1413	Y	20	BM	
				100% 237.5	100% 237.5	Y	20	BM	

Notes/comments:

Confluence Environmental, Inc

Equipment Calibration Log

Equipment make/model	Equipment ID/ serial number	Date	Time	Calibration Standards	Equipment Reading	Equipment Calibrated	Temp (°C)/ °F)	Tech init.	Comments
Pro Series	#3	11/7/12	530	4, 7, 10 1413	4.0, 7.0, 10.0 1413	Y	20	BM	
				100% 237.5	100% 237.5	Y	20	BM	
	#1			4, 7, 10 1413	4.0, 7.0, 10.0 1413	Y	20	BM	
				100% 237.5	100% 237.5	Y	20	BM	

Notes/comments:

Purging And Sampling Data Sheet

Job#: 1350	**Sampler:** J Kerns B Myers	**Client:** Montgomery & Associates
Well ID: EF-3A	**Date** (DDOct2012): 01NOV2012	**Site:** Rio Algom Mining, Lisbon, UT
Weather Conditions: cool	**Sampler Signature:**	
Well diam: 1/4" 1" 2" 3" 4" (6") Other:	**DTW:** 82.37 **Total Depth:** 215.00	
Purge equip: ES - diam: Bladder Peri Waterra Positive Air Displacement Ext. System		
disp bailer teflon bailer other: **Tubing:** OD: New Dedicated NA		
Purge method: 3-5 Case Volume Micro/Low-Flow Extraction Other: (1.5)		
Pump depth/ intake: 190' **Multipliers:** 1"= 0.04 2"= 0.16 3"= 0.37 4"= 0.65 5"=1.02 6"= 1.47 Radius² X 0.163		
(TD - DTW X Multiplier = 1 Volume	80% Recovery (TD - DTW X 0.20 + DTW)	

1 Volume = _____ X _____ = _____ (Total Purge) 80%=_____

Time	Temp (°C) °F)	pH	Cond (mS / (S))	Turbidity (NTU)	Purge Rate (gal or mL/ min)	Volume Removed (gal / L)	DO (mg/l)	ORP (mv)	DTW	Notes
945	10.8	7.3	7091	7	—	—	0.90	-165	82.37	

Did well dewater? YES (NO) Total volume removed: — (gal / L)

Sample method: Disp Bailer (Hydrasleeve) New Tubing Ext. Port Other:

Sample date: 11/1/12	Sample time: 945	DTW at sample: 82.37
Sample ID: 6226	Lab: Energy Labs	Number of bottles: 2
Analysis: 500 ml NP poly - Alkalinity, Cl, SO4, TDS, EC, pH 250 ml HNO3 poly *field filtered - Dissolved Metals		
Equipment blank ID @	Field blank ID @	
Duplicate ID:	Pre-purge DO:	Post purge DO:
$Fe2^{+}$:	Pre-purge ORP:	Post purge ORP:
NAPL depth:	Volume of NAPL:	Volume removed: ml

Purging And Sampling Data Sheet

Job#: 1350	**Sampler:** J Kerns (B Myers)	**Client:** Montgomery & Associates
Well ID: EF-3A	**Date** (DDOct2012): 01NOV2012	**Site:** Rio Algom Mining, Lisbon, UT
Weather Conditions: Cool	**Sampler Signature:**	
Well diam: 1/4" 1" 2" 3" 4" (6") Other:	**DTW:** 82.37	**Total Depth:** 215.00
Purge equip: (ES - diam:) Bladder Peri Waterra Positive Air Displacement Ext. System disp bailer teflon bailer other:	**Tubing:** OD: New Dedicated NA	
Purge method: 3-5 Case Volume (Micro/Low-Flow) Extraction Other:		
Pump depth/ intake: 180	**Multipliers:** 1"= 0.04 2"= 0.16 3"= 0.37 4"= 0.65 5"=1.02 6"= 1.47 Radius² X 0.163	
(TD - DTW X Multiplier = 1 Volume	80% Recovery (TD - DTW X 0.20 + DTW)	

1 Volume = _____ X _____ = _____ (Total Purge) 80%= _____

Time	Temp (°C) (°F)	pH	Cond (mS) (µS)	Turbidity (NTU)	Purge Rate (gal or mL) min	Volume Removed (gal) (L)	DO (mg/l)	ORP (mv)	DTW	Notes
1005	11.60	7.4	9134	7	400ml	1.2L	0.44	-225	82.30	
1008	11.7	7.2	10128	6		2.4L	0.41	-176	82.30	
1011	11.8	7.1	10078	6		3.6L	0.52	-154	82.30	
1014	11.9	7.1	10074	6		4.8L	0.53	-127	82.30	
1017	12.0	7.0	10096	5		6L	0.63	-100	82.30	
1020	12.0	7.0	10034	5		7.2L	0.77	-75	82.30	
1023	12.1	7.0	10112	5		8.4L	0.96	-54	82.30	
1026	12.2	7.0	10100	5		9.6L	1.13	-35	82.30	
1029	12.4	7.0	10104	4		10.8	1.30	-21	82.30	
1032	12.5	7.0	10080	4		12L	1.43	-12	82.30	
1035	12.5	7.0	10015	4	—	13.2L	1.56	-3	82.30	→ See page 2

Did well dewater? YES (NO)	Total volume removed: 18L	(gal) (L)
Sample method: Disp Bailer Hydrasleeve (New Tubing) Ext. Port Other:		
Sample date: 11/1/12	Sample time: 1050	DTW at sample: 82.30
Sample ID: 6227	Lab: Energy Labs	Number of bottles: 2
Analysis: 500 ml NP poly - Alkalinity, Cl, SO4, TDS, EC, pH 250 ml HNO3 poly *field filtered - Dissolved Metals		
Equipment blank ID @	Field blank ID @	
Duplicate ID: 6228 @ 1100	Pre-purge DO:	Post purge DO:
$Fe2^{+}$:	Pre-purge ORP:	Post purge ORP:
NAPL depth:	Volume of NAPL:	Volume removed: ml

Purging And Sampling Data Sheet

Job#: 1350	**Sampler:** J Kerns B Myers	**Client:** Montgomery & Associates
Well ID: EF-3A	**Date** (DDOct2012): 01NOV2012	**Site:** Rio Algom Mining, Lisbon, UT
Weather Conditions: Cool	**Sampler Signature:**	
Well diam: 1/4" 1" 2" 3" 4" (6") Other:	**DTW:** 82.37 **Total Depth:** 215.00	
Purge equip: (ES - diam:) Bladder Peri Waterra Positive Air Displacement Ext. System disp bailer teflon bailer other:	**Tubing:** OD: New Dedicated NA	
Purge method: 3-5 Case Volume (Micro/Low-Flow) Extraction Other:		
Pump depth/ intake:	**Multipliers:** 1"= 0.04 2"= 0.16 3"= 0.37 4"= 0.65 5"=1.02 6"= 1.47 Radius² X 0.163	
(TD - DTW X Multiplier = 1 Volume	80% Recovery (TD - DTW X 0.20 + DTW)	

1 Volume = _____ X _____ = _____ (Total Purge) 80%= _____

Time	Temp (°C)/°F)	pH	Cond (mS (µS))	Turbidity (NTU)	Purge Rate (gal or mL/ min)	Volume Removed (gal / L)	DO (mg/l)	ORP (mv)	DTW	Notes
1038	12.4	7.0	10010	4	400ml	14.4L	1.64	2	82.30	
1041	12.4	7.0	9996	4	↓	15.6L	1.72	6	82.30	
1044	12.4	7.0	9978	4	↓	16.8L	1.77	9	82.30	
1047	12.5	7.0	9995	4	↓	18L	1.78	12	82.30	

Did well dewater? YES (NO)	Total volume removed: 18L (gal (L))	
Sample method: Disp Bailer Hydrasleeve (New Tubing) Ext. Port Other:		
Sample date: 11/1/12	Sample time: 1050	DTW at sample: ~~83~~ 82.30
Sample ID: 1227	Lab: Energy Labs	Number of bottles: 2
Analysis: 500 ml NP poly - Alkalinity, Cl, SO4, TDS, EC, pH 250 ml HNO3 poly *field filtered - Dissolved Metals		
Equipment blank ID @	Field blank ID @	
Duplicate ID: 1228 @ 1100	Pre-purge DO:	Post purge DO:
$Fe2^{+}$:	Pre-purge ORP:	Post purge ORP:
NAPL depth:	Volume of NAPL:	Volume removed: ml

Purging And Sampling Data Sheet

Job#: 1350	**Sampler:** J Kerns (B Myers)	**Client:** Montgomery & Associates
Well ID: EF-3A	**Date** (DDOct2012): 01/10/2012	**Site:** Rio Algom Mining, Lisbon, UT
Weather Conditions: Cool	**Sampler Signature:**	
Well diam: 1/4" 1" 2" 3" 4" (6") Other:	**DTW:** 82.37	**Total Depth:** 215.00

Purge equip: (ES - diam:) Bladder Peri Waterra Positive Air Displacement Ext. System
disp bailer teflon bailer other: **Tubing:** OD: New Dedicated NA

Purge method: (3-5 Case Volume) Micro/Low-Flow Extraction Other:

Pump depth/ intake: **Multipliers:** 1"= 0.04 2"= 0.16 3"= 0.37 4"= 0.65 5"=1.02 6"= 1.47 Radius^2 X 0.163

(TD - DTW X Multiplier = 1 Volume | 80% Recovery (TD - DTW X 0.20 + DTW)

1 Volume = 195 X 3 = 585 (Total Purge) 80%=

Time	Temp (°C / °F)	pH	Cond (mS / µS)	Turbidity (NTU)	Purge Rate (gal or mL/ min)	Volume Removed (gal / L)	DO (mg/l)	ORP (mv)	DTW	Notes
1138	12.6	7.2	7907	6	4	195	1.65	-273	82.90	
1226	12.7	7.2	8027	5	|	390	1.64	-277	82.90	
1314	12.7	7.2	8000	5	|	585	1.63	-265	82.90	

Did well dewater? YES (NO) Total volume removed: 585 (gal / L)

Sample method: Disp Bailer Hydrasleeve (New Tubing) Ext. Port Other:

Sample date: 1/11/12	Sample time: 1315	DTW at sample: 82.90
Sample ID: 6229	Lab: Energy Labs	Number of bottles: 2
Analysis: 500 ml NP poly - Alkalinity, Cl, SO4, TDS, EC, pH	250 ml HNO3 poly *field filtered - Dissolved Metals	
Equipment blank ID @	Field blank ID @	
Duplicate ID:	Pre-purge DO:	Post purge DO:
$Fe2^+$:	Pre-purge ORP:	Post purge ORP:
NAPL depth:	Volume of NAPL:	Volume removed: ml

Purging And Sampling Data Sheet

Job#: 1350	**Sampler:** J Kerns (B Myers)	**Client:** Montgomery & Associates
Well ID: EF-6	**Date** (DDOct2012): 30 Oct 2012	**Site:** Rio Algom Mining, Lisbon, UT
Weather Conditions: Warm	**Sampler Signature:**	
Well diam: 1/4" 1" 2" 3" (4") 6" Other:	**DTW:** 7.40	**Total Depth:** 137
Purge equip: ES - diam: Bladder Peri Waterra Positive Air Displacement Ext. System disp bailer teflon bailer other:	**Tubing:** OD: New Dedicated NA	
Purge method: 3-5 Case Volume Micro/Low-Flow Extraction Other:		
Pump depth/ intake: 122	**Multipliers:** 1"= 0.04 2"= 0.16 3"= 0.37 4"= 0.65 5"=1.02 6"= 1.47 Radius² X 0.163	
(TD - DTW X Multiplier = 1 Volume	80% Recovery (TD - DTW X 0.20 + DTW)	

1 Volume = _____ X _____ = _____ (Total Purge) 80%= _____

Time	Temp (°C / °F)	pH	Cond (mS (µS))	Turbidity (NTU)	Purge Rate (gal or mL/ min)	Volume Removed (gal / L)	DO (mg/l)	ORP (mv)	DTW	Notes
1210	14.8	7.1	2970	14	—	—	6.7	2	—	

Did well dewater? YES (NO)	Total volume removed: — (gal / L)	
Sample method: Disp Bailer (Hydrasleeve) New Tubing Ext. Port Other:		
Sample date: 10/30/12	Sample time: 1210	DTW at sample: 7.40
Sample ID: 0214	Lab: Energy Labs	Number of bottles: 2
Analysis: 500 ml NP poly - Alkalinity, Cl, SO4, TDS, EC, pH 250 ml HNO3 poly *field filtered - Dissolved Metals		
Equipment blank ID @	Field blank ID @	
Duplicate ID:	Pre-purge DO:	Post purge DO:
$Fe2^{+}$:	Pre-purge ORP:	Post purge ORP:
NAPL depth:	Volume of NAPL:	Volume removed: ml

Purging And Sampling Data Sheet

Job#: 1350	**Sampler:** J Kerns, B Myers	**Client:** Montgomery & Associates
Well ID: EF-6	**Date** (DDOct2012): 30 Oct 2012	**Site:** Rio Algom Mining, Lisbon, UT
Weather Conditions: Warm	**Sampler Signature:**	
Well diam: 1/4" 1" 2" 3" (4") 6" Other:	**DTW:** 71.40 **Total Depth:** 137	
Purge equip: (ES - diam:) Bladder Peri Waterra Positive Air Displacement Ext. System disp bailer teflon bailer other: **Tubing:** OD: (New) Dedicated NA		
Purge method: 3-5 Case Volume (Micro/Low-Flow) Extraction Other:		
Pump depth/ intake: 120'	**Multipliers:** 1"= 0.04 2"= 0.16 3"= 0.37 4"= 0.65 5"=1.02 6"= 1.47 Radius² X 0.163	
(TD - DTW X Multiplier = 1 Volume	80% Recovery (TD - DTW X 0.20 + DTW)	

1 Volume = _____ X _____ = _____ (Total Purge) 80%= _____

Time	Temp (°C °F)	pH	Cond (mS / µS)	Turbidity (NTU)	Purge Rate (gal or (mL) / min)	Volume Removed (gal / (L))	DO (mg/l)	ORP (mv)	DTW	Notes
1231	13.8	7.1	2362	7	300	900ml	6.6	26	71.89	
1234	13.3	7.0	2614	>1000		1.8L	8.4	26	71.92	
1237	13.3	7.0	2618	>1000		2.7L	8.3	24	71.96	
1240	13.3	7.0	2643	>1000		3.6L	8.9	24	71.96	
1243	13.0	7.0	2728	>1000		4.5L	8.8	33	71.98	
1246	13.0	7.0	2699	249		5.4L	8.8	34	72.00	
1249	12.9	7.0	2665	31		6.3L	9.0	35	72.09	
1252	13.2	7.0	2673	11		7.2L	9.2	36	72.11	
1255	13.2	7.0	2672	8		8.1L	8.8	38	72.13 ~~72.12~~	
1258	13.5	7.0	2692	6		9L	8.7	37	72.14	
1301	13.4	7.0	2692	6	↓	9.9L	9.0	40	72.15	

Did well dewater? YES (NO)	Total volume removed: 9.9L (gal (L))	
Sample method: Disp Bailer Hydrasleeve (New Tubing) Ext. Port Other:		
Sample date: 10/30/12	Sample time: 1305	DTW at sample: 72.15
Sample ID: EF215	Lab: Energy Labs	Number of bottles: 2
Analysis: 500 ml NP poly - Alkalinity, Cl, SO4, TDS, EC, pH 250 ml HNO3 poly *field filtered - Dissolved Metals		
Equipment blank ID @	Field blank ID @	
Duplicate ID:	Pre-purge DO:	Post purge DO:
$Fe2^+$:	Pre-purge ORP:	Post purge ORP:
NAPL depth:	Volume of NAPL:	Volume removed: ml

Purging And Sampling Data Sheet

Job#: 1350	**Sampler:** J Kerns (B Myers)	**Client:** Montgomery & Associates
Well ID: EF-6	**Date** (DDOct2012): 30Oct2012	**Site:** Rio Algom Mining, Lisbon, UT
Weather Conditions: Warm	**Sampler Signature:**	
Well diam: 1/4" 1" 2" 3" (4") 6" Other:	**DTW:** 71.40 **Total Depth:** 137	
Purge equip: (ES - diam:) Bladder Peri Waterra Positive Air Displacement Ext. System disp bailer teflon bailer other: **Tubing:** OD: New Dedicated NA		
Purge method: (3-5 Case Volume) Micro/Low-Flow Extraction Other:		
Pump depth/ intake:	**Multipliers:** 1"= 0.04 2"= 0.16 3"= 0.37 4"= 0.65 5"=1.02 6"= 1.47 Radius² X 0.163	
(TD - DTW X Multiplier = 1 Volume	80% Recovery (TD - DTW X 0.20 + DTW)	

1 Volume = 43 X 3 = 129 (Total Purge) 80%= 84.52

Time	Temp (°C / °F)	pH	Cond (mS / µS)	Turbidity (NTU)	Purge Rate (gal or mL/ min)	Volume Removed (gal / L)	DO (mg/l)	ORP (mv)	DTW	Notes
1338	12.8	7.0	2577	5	2gpm	43	7.3	55	83.63	
1355	12.6	7.0	2577	5	2/3	86	7.5	69	90.00	
1410	12.7	7.0	2567	5	3	129	7.5	79	91.82	
	Wated briefly for 80%									

Did well dewater? YES (NO) Total volume removed: 129 (gal / L)

Sample method: Disp Bailer Hydrasleeve (New Tubing) Ext. Port Other:

Sample date: 10/30/12	Sample time: 1415	DTW at sample: 84.00
Sample ID: 10216	Lab: Energy Labs	Number of bottles: 2
Analysis: 500 ml NP poly - Alkalinity, Cl, SO4, TDS, EC, pH 250 ml HNO3 poly *field filtered - Dissolved Metals		
Equipment blank ID @	Field blank ID @	
Duplicate ID:	Pre-purge DO:	Post purge DO:
$Fe2^{+}$:	Pre-purge ORP:	Post purge ORP:
NAPL depth:	Volume of NAPL:	Volume removed: ml

Purging And Sampling Data Sheet

Job#: 1350	**Sampler:** J Kerns (B Myers)	**Client:** Montgomery & Associates
Well ID: EF-8	**Date** (DDOct2012): 31Oct2012	**Site:** Rio Algom Mining, Lisbon, UT
Weather Conditions: cool	**Sampler Signature:**	
Well diam: 1/4" 1" 2" 3" (4) 6" Other:	**DTW:** 74.38 **Total Depth:** 244.02	
Purge equip: ES - diam: Bladder Peri Waterra Positive Air Displacement Ext. System		
disp bailer teflon bailer other: **Tubing:** OD: New Dedicated NA		
Purge method: 3-5 Case Volume Micro/Low-Flow Extraction Other: (#5)		
Pump depth/ intake: (229') **Multipliers:** 1"= 0.04 2"= 0.16 3"= 0.37 4"= 0.65 5"=1.02 6"= 1.47 Radius² X 0.163		
(TD - DTW X Multiplier = 1 Volume	80% Recovery (TD - DTW X 0.20 + DTW)	

1 Volume = _____ X _____ = _____ (Total Purge) 80%= _____

Time	Temp (°C / °F)	pH	Cond (mS / µS)	Turbidity (NTU)	Purge Rate (gal or mL/ min)	Volume Removed (gal / L)	DO (mg/l)	ORP (mv)	DTW	Notes
1052	12.3	7.16	3041	9	—	—	4.4	-179	—	

Did well dewater? YES (NO) Total volume removed: — (gal / L)

Sample method: Disp Bailer (Hydrasleeve) New Tubing Ext. Port Other:

Sample date: 10/31/12 Sample time: 1052 DTW at sample: 74.38

Sample ID: 6022 Lab: Energy Labs Number of bottles: 2

Analysis: 500 ml NP poly - Alkalinity, Cl, SO4, TDS, EC, pH 250 ml HNO3 poly *field filtered - Dissolved Metals

Equipment blank ID @	Field blank ID @	
Duplicate ID:	Pre-purge DO:	Post purge DO:
$Fe2^{+}$:	Pre-purge ORP:	Post purge ORP:
NAPL depth:	Volume of NAPL:	Volume removed: ml

Purging And Sampling Data Sheet

Job#: 1350	**Sampler:** J Kerns (B Myers)	**Client:** Montgomery & Associates
Well ID: EF-8	**Date** (DDOct2012): 31Oct2012	**Site:** Rio Algom Mining, Lisbon, UT
Wewather Conditions: Cool	**Sampler Signature:**	
Well diam: 1/4" 1" 2" 3" (4") 6" Other:	**DTW:** 74.38 **Total Depth:** 244.00	
Purge equip: (ES - diam) Bladder Peri Waterra Positive Air Displacement Ext. System		
disp bailer teflon bailer other:	**Tubing:** OD: New Dedicated NA	
Purge method: 3-5 Case Volume (Micro/Low-Flow) Extraction Other:		
Pump depth/ intake:	**Multipliers:** 1"= 0.04 2"= 0.16 3"= 0.37 4"= 0.65 5"=1.02 6"= 1.47 Radius² X 0.163	
(TD - DTW X Multiplier = 1 Volume	80% Recovery (TD - DTW X 0.20 + DTW)	

1 Volume = _____ X _____ = _____ (Total Purge) 80%= _____

Time	Temp (°C) °F	pH	Cond (mS / µS)	Turbidity (NTU)	Purge Rate (gal or mL / min)	Volume Removed (gal (L))	DO (mg/l)	ORP (mv)	DTW	Notes
1111	12.0	7.4	1325	6	400	1.2L	7.0	-109	74.90	
1114	11.9	7.4	1906	6		2.4L	9.2	-126	74.92	
1117	11.9	7.4	1973	6		3.6	8.9	-115	74.91	
1120	11.9	7.4	2013	6		4.8	8.6	-107	74.91	
1123	11.9	7.4	2032	5		6L	8.5	-112	74.91	
1126	12.1	7.4	2025	5		7.2L	8.2	-129	74.91	
1129	12.0	7.4	2015	5		8.4L	8.1	-129	74.91	
1132	12.2	7.4	2006	5		9.6L	8.0	-128	74.91	

Did well dewater? YES (NO) Total volume removed: 9.6L (gal (L))

Sample method: Disp Bailer Hydrasleeve (New Tubing) Ext. Port Other:

Sample date: 10/31/12	Sample time: 1135	DTW at sample: 74.91
Sample ID: 6223	Lab: Energy Labs	Number of bottles: 2
Analysis: 500 ml NP poly - Alkalinity, Cl, SO4, TDS, EC, pH	250 ml HNO3 poly *field filtered - Dissolved Metals	
Equipment blank ID @	Field blank ID @	
Duplicate ID:	Pre-purge DO:	Post purge DO:
$Fe2^{+}$:	Pre-purge ORP:	Post purge ORP:
NAPL depth:	Volume of NAPL:	Volume removed: ml

Purging And Sampling Data Sheet

Job#: 1350	**Sampler:** J Kerns (B Myers)	**Client:** Montgomery & Associates
Well ID: EF-8	**Date** (DDOct2012): 31Oct2012	**Site:** Rio Algom Mining, Lisbon, UT
Weather Conditions: Cool	**Sampler Signature:**	
Well diam: 1/4" 1" 2" 3" (4") 6" Other:	**DTW:** 74.38 **Total Depth:** 244.00	
Purge equip: (ES - diam:) Bladder Peri Waterra Positive Air Displacement Ext. System		
disp bailer teflon bailer other: **Tubing:** OD: New Dedicated NA		
Purge method: (3-5 Case Volume) Micro/Low-Flow Extraction Other:		
Pump depth/ intake:	**Multipliers:** 1"= 0.04 2"= 0.16 3"= 0.37 4"= 0.65 5"=1.02 6"= 1.47 Radius² X 0.163	
(TD - DTW X Multiplier = 1 Volume	80% Recovery (TD - DTW X 0.20 + DTW)	

1 Volume = 110 X 3 = 330 (Total Purge) 80%= 108.30

Time	Temp (°C / °F)	pH	Cond (mS / µS)	Turbidity (NTU)	Purge Rate (gal or L / min)	Volume Removed (gal / L)	DO (mg/l)	ORP (mv)	DTW	Notes
1204	12.6	7.4	2075	4	4gpm	110	7.7	-99	87.58	
1232	12.7	7.4	2090	3	4	220	7.7	-64	87.65	
1300	12.7	7.4	2069	3	4	330	7.6	-54	87.80	

Did well dewater? YES (NO) Total volume removed: 330 (gal / L)

Sample method: Disp Bailer Hydrasleeve (New Tubing) Ext. Port Other:

Sample date: 10/31/12 Sample time: 1300 DTW at sample: 87.80

Sample ID: 6224 Lab: Energy Labs Number of bottles: 2

Analysis: 500 ml NP poly - Alkalinity, Cl, SO4, TDS, EC, pH 250 ml HNO3 poly *field filtered - Dissolved Metals

Equipment blank ID ~~6225~~ @ 1310 Field blank ID @

Duplicate ID: 6225 @ 1310 Pre-purge DO: Post purge DO:

$Fe2^{+}$: Pre-purge ORP: Post purge ORP:

NAPL depth: Volume of NAPL: Volume removed: ml

Purging And Sampling Data Sheet

Job#: 1350	**Sampler:** J Kerns (B Myers)	**Client:** Montgomery & Associates
Well ID: LW-1	**Date** (DDOct2012): 02NOV2012	**Site:** Rio Algom Mining, Lisbon, UT
Weather Conditions: ~~cool~~ warm	**Sampler Signature:**	
Well diam: 1/4" 1" 2" 3" (4") 6" Other:	**DTW:** 146.15 **Total Depth:** 233.00	
Purge equip: ES - diam: Bladder Peri Waterra Positive Air Displacement Ext. System		
disp bailer teflon bailer other: **Tubing:** OD: New Dedicated NA		
Purge method: 3-5 Case Volume Micro/Low-Flow Extraction Other: (HS)		
Pump depth/ intake: 220'	**Multipliers:** 1"= 0.04 2"= 0.16 3"= 0.37 4"= 0.65 5"=1.02 6"= 1.47 Radius^2 X 0.163	
(TD - DTW X Multiplier = 1 Volume	80% Recovery (TD - DTW X 0.20 + DTW)	

1 Volume = _____ X _____ = _____ (Total Purge) 80%=_____

Time	Temp (°C) °F	pH	Cond (mS) (µS)	Turbidity (NTU)	Purge Rate (gal or mL/ min)	Volume Removed (gal / L)	DO (mg/l)	ORP (mv)	DTW	Notes
1045	10.4	7.5	672	7	—	—	3.18	213	—	

Did well dewater? YES (NO)	Total volume removed: — (gal / L)	
Sample method: Disp Bailer (Hydrasleeve) New Tubing Ext. Port Other:		
Sample date: 02NOV2012	Sample time: 1045	DTW at sample: 146.15
Sample ID: 6230	Lab: Energy Labs	Number of bottles: 2
Analysis: 500 ml NP poly - Alkalinity, Cl, SO4, TDS, EC, pH 250 ml HNO3 poly *field filtered - Dissolved Metals		
Equipment blank ID @	Field blank ID @	
Duplicate ID:	Pre-purge DO:	Post purge DO:
$Fe2^+$:	Pre-purge ORP:	Post purge ORP:
NAPL depth:	Volume of NAPL:	Volume removed: ml

Purging And Sampling Data Sheet

Job#: 1350	**Sampler:** J Kerns (B Myers)	**Client:** Montgomery & Associates
Well ID: LW-1	**Date** (DDOct2012): 02NOV2012	**Site:** Rio Algom Mining, Lisbon, UT
Weather Conditions: warm	**Sampler Signature:**	
Well diam: 1/4" 1" 2" 3" (4") 6" Other:	**DTW:** 146.15 **Total Depth:** 233.02	
Purge equip: (ES - diam:) Bladder Peri Waterra Positive Air Displacement Ext. System		
disp bailer teflon bailer other:	**Tubing:** OD: New Dedicated NA	
Purge method: 3-5 Case Volume (Micro/Low-Flow) Extraction Other:		
Pump depth/ intake:	**Multipliers:** 1"= 0.04 2"= 0.16 3"= 0.37 4"= 0.65 5"=1.02 6"= 1.47 Radius² X 0.163	
(TD - DTW X Multiplier = 1 Volume	80% Recovery (TD - DTW X 0.20 + DTW)	

1 Volume = _____ X _____ = _____ (Total Purge) 80%= _____

Time	Temp (°C / °F)	pH	Cond (mS / µS)	Turbidity (NTU)	Purge Rate (gal or (ml) / min)	Volume Removed (gal / L)	DO (mg/l)	ORP (mv)	DTW	Notes
1106	11.4	7.4	639	7	400ml	1.2L	3.3	205	146.20	
1111	11.4	7.4	646	6		2.4L	4.3	205	146.20	
1114	11.4	7.4	630	6		3.6L	4.2	205	146.20	
1117	11.5	7.4	649	6		4.8L	4.2	197	146.20	
1120 HH2	11.6	7.4	638	6		6L	4.0	190	146.20	
1123	11.6	7.4	643	5		7.2L	4.0	184	146.20	
1126	12.0	7.4	633	5		8.4L	4.1	177	146.20	
1129	12.3	7.4	642	5		9.6L	4.1	172	146.20	
1132	12.5	7.4	651	5		10.8L	4.2	168	146.20	
1135	12.6	7.4	648	5	—	12L	4.2	166	146.20	

Did well dewater? YES (NO)	Total volume removed: 12L (gal / L)	
Sample method: Disp Bailer Hydrasleeve (New Tubing) Ext. Port Other:		
Sample date: 02NOV2012	Sample time: 1135	DTW at sample: 146.20
Sample ID: 6231	Lab: Energy Labs	Number of bottles: 2
Analysis: 500 ml NP poly - Alkalinity, Cl, SO4, TDS, EC, pH 250 ml HNO3 poly *field filtered - Dissolved Metals		
Equipment blank ID @	Field blank ID @	
Duplicate ID:	Pre-purge DO:	Post purge DO:
$Fe2^+$:	Pre-purge ORP:	Post purge ORP:
NAPL depth:	Volume of NAPL:	Volume removed: ml

Purging And Sampling Data Sheet

Job#: 1350	**Sampler:** J Kerns (B Myers)	**Client:** Montgomery & Associates
Well ID: LW-1	**Date** (DDOct2012): 02NOV2012	**Site:** Rio Algom Mining, Lisbon, UT
Weather Conditions: warm	**Sampler Signature:**	
Well diam: 1/4" 1" 2" 3" (4") 6" Other:	**DTW:** 146.15 **Total Depth:** 233.00	
Purge equip: (ES - diam) Bladder Peri Waterra Positive Air Displacement Ext. System disp bailer teflon bailer other:	**Tubing:** OD: New Dedicated NA	
Purge method: (3-5 Case Volume) Micro/Low-Flow Extraction Other:		
Pump depth/ intake:	**Multipliers:** 1"= 0.04 2"= 0.16 3"= 0.37 4"= 0.65 5"=1.02 6"= 1.47 Radius² X 0.163	
(TD - DTW X Multiplier = 1 Volume	80% Recovery (TD - DTW X 0.20 + DTW)	

1 Volume = 56.5 X 3 = 170 (Total Purge) 80%= 163.52

Time	Temp (°C/ °F)	pH	Cond (mS/µS)	Turbidity (NTU)	Purge Rate (gal or mL/ min)	Volume Removed (gal / L)	DO (mg/l)	ORP (mv)	DTW	Notes
1158	12.4	7.4	639	6	3/pm	56.5	3.6	113	149.10	
1218	12.4	7.3	640	6	1	113	3.8	31	149.30	
1238	12.4	7.3	639	5	1	170	3.7	-23	149.40	

Did well dewater? YES (NO)	Total volume removed: 170 (gal / L)	
Sample method: Disp Bailer Hydrasleeve (New Tubing) Ext. Port Other:		
Sample date: 02NOV2012	Sample time: 1240	DTW at sample: 149.40
Sample ID: 0232	Lab: Energy Labs	Number of bottles: 2
Analysis: 500 ml NP poly - Alkalinity, Cl, SO4, TDS, EC, pH 250 ml HNO3 poly *field filtered - Dissolved Metals		
Equipment blank ID @	Field blank ID @	
Duplicate ID:	Pre-purge DO:	Post purge DO:
$Fe2^+$:	Pre-purge ORP:	Post purge ORP:
NAPL depth:	Volume of NAPL:	Volume removed: ml

Purging And Sampling Data Sheet

Job#: 1350	**Sampler:** J Kerns B Myers	**Client:** Montgomery & Associates
Well ID: ML-1	**Date** (DDOct2012): 30Oct2012	**Site:** Rio Algom Mining, Lisbon, UT
Weather Conditions: Cold	**Sampler Signature:**	
Well diam: 1/4" 1" 2" 3" (4") 6" Other:	**DTW:** 41.31	**Total Depth:** 157.00
Purge equip: ES - diam: Bladder Peri Waterra Positive Air Displacement Ext. System disp bailer teflon bailer other: HS	**Tubing:** OD: New Dedicated NA	
Purge method: 3-5 Case Volume Micro/Low-Flow Extraction Other:		
Pump depth/ intake: 146	**Multipliers:** 1"= 0.04 2"= 0.16 3"= 0.37 4"= 0.65 5"=1.02 6"= 1.47 Radius² X 0.163	
(TD - DTW X Multiplier = 1 Volume	80% Recovery (TD - DTW X 0.20 + DTW)	

1 Volume = _____ X _____ = _____ (Total Purge) 80%= _____

Time	Temp (°C) °F)	pH	Cond (mS /(µS))	Turbidity (NTU)	Purge Rate (gal or mL/ min)	Volume Removed (gal / L)	DO (mg/l)	ORP (mv)	DTW	Notes
845	9.4	7.4	1138	21	—	—	4.7	248	—	
										hydrasleeve

Did well dewater? YES (NO) Total volume removed: — (gal / L)

Sample method: Disp Bailer (Hydrasleeve) New Tubing Ext. Port Other:

Sample date: 10/30/12	Sample time: 845	DTW at sample: 41.31
Sample ID: 6211	Lab: Energy Labs	Number of bottles: 2

Analysis: 500 ml NP poly - Alkalinity, Cl, SO4, TDS, EC, pH 250 ml HNO3 poly *field filtered - Dissolved Metals

Equipment blank ID @	Field blank ID @	
Duplicate ID:	Pre-purge DO:	Post purge DO:
$Fe2^{+}$:	Pre-purge ORP:	Post purge ORP:
NAPL depth:	Volume of NAPL:	Volume removed: ml

Purging And Sampling Data Sheet

Job#: 1350	**Sampler:** J Kerns (B Myers)	**Client:** Montgomery & Associates
Well ID: ML-1	**Date** (DDOct2012): 30/t/2012	**Site:** Rio Algom Mining, Lisbon, UT
Weather Conditions: Cool	**Sampler Signature:**	
Well diam: 1/4" 1" 2" 3" (4") 6" Other:	**DTW:** 41.31	**Total Depth:** 157.00

Purge equip: (ES - diam:) Bladder Peri Waterra Positive Air Displacement Ext. System
disp bailer teflon bailer other: **Tubing:** OD: (New) Dedicated NA

Purge method: 3-5 Case Volume (Micro/Low-Flow) Extraction Other:

Pump depth/ intake: 146' **Multipliers:** 1"= 0.04 2"= 0.16 3"= 0.37 4"= 0.65 5"=1.02 6"= 1.47 Radius² X 0.163

(TD - DTW X Multiplier = 1 Volume | 80% Recovery (TD - DTW X 0.20 + DTW)

1 Volume = _____ X _____ = _____ (Total Purge) 80%=_____

Time	Temp (°C / °F)	pH	Cond (mS / µS)	Turbidity (NTU)	Purge Rate (gal or mL/ min)	Volume Removed (gal / L)	DO (mg/l)	ORP (mv)	DTW	Notes
913	10.6	7.5	1167	15	300	900ml	5.6	243	41.60	
916	10.9	7.4	1158	7		1.8L	5.4	241	41.60	
919	11.0	7.4	1164	7		2.7L	5.3	239	41.60	
922	11.1	7.4	1158	7		3.6L	5.3	238	41.60	
925	11.0	7.4	1176	7		4.5L	5.3	235	41.60	

Did well dewater? YES (NO) Total volume removed: 4.5L (gal / L)

Sample method: Disp Bailer Hydrasleeve (New Tubing) Ext. Port Other:

Sample date: 10/31/12 Sample time: 925 DTW at sample: 41.60

Sample ID: 6212 Lab: Energy Labs Number of bottles: 2

Analysis: 500 ml NP poly - Alkalinity, Cl, SO4, TDS, EC, pH 250 ml HNO3 poly *field filtered - Dissolved Metals

Equipment blank ID @ Field blank ID @

Duplicate ID: Pre-purge DO: Post purge DO:

$Fe2^{+}$: Pre-purge ORP: Post purge ORP:

NAPL depth: Volume of NAPL: Volume removed: ml

Purging And Sampling Data Sheet

Job#: 1350	**Sampler:** J Kerns (B Myers)	**Client:** Montgomery & Associates
Well ID: ML-1	**Date** (DDOct2012): 30Oct2012	**Site:** Rio Algom Mining, Lisbon, UT
Weather Conditions: Warm	**Sampler Signature:**	
Well diam: 1/4" 1" 2" 3" (4") 6" Other:	**DTW:** 41.60 **Total Depth:** 157.00	
Purge equip: (ES - diam.) Bladder Peri Waterra Positive Air Displacement Ext. System disp bailer teflon bailer other:	**Tubing:** OD: New Dedicated NA	
Purge method: 3-5 Case Volume Micro/Low-Flow Extraction Other:		
Pump depth/ intake: (146') **Multipliers:** 1"= 0.04 2"= 0.16 3"= 0.37 4"= 0.65 5"=1.02 6"= 1.47 Radius² X 0.163		
(TD - DTW X Multiplier = 1 Volume	80% Recovery (TD - DTW X 0.20 + DTW)	

1 Volume = 75 X 3 = 225 (Total Purge) 80%= 64.68

Time	Temp (°C) (°F)	pH	Cond (mS (µS))	Turbidity (NTU)	Purge Rate (gal or mL/ min)	Volume Removed (gal / L)	DO (mg/l)	ORP (mv)	DTW	Notes
1014	11.8	7.4	1251	18	4gpm	75	9.0	83	61.85	
1033	11.8	7.4	1253	15	↓	150	10.3	-129	61.92	
1052	11.8	7.4	1250	14	↓	225	10.5	-144	62.30	

Did well dewater? YES (NO)	Total volume removed: 225 (gal/ L)		
Sample method: Disp Bailer Hydrasleeve (New Tubing) Ext. Port Other:			
Sample date: 10/31/12	Sample time: 1055	DTW at sample: 62.30	
Sample ID: 6213	Lab: Energy Labs	Number of bottles: 2	
Analysis: 500 ml NP poly - Alkalinity, Cl, SO4, TDS, EC, pH 250 ml HNO3 poly *field filtered - Dissolved Metals			
Equipment blank ID @	Field blank ID @		
Duplicate ID:	Pre-purge DO:	Post purge DO:	
$Fe2^+$:	Pre-purge ORP:	Post purge ORP:	
NAPL depth:	Volume of NAPL:	Volume removed: ml	

Purging And Sampling Data Sheet

Job#: 1350	**Sampler:** J Kerns (B Myers)	**Client:** Montgomery & Associates
Well ID: MW13	**Date** (DDOct2012): 03NOV2012	**Site:** Rio Algom Mining, Lisbon, UT
Weather Conditions: Cool	**Sampler Signature:**	
Well diam: 1/4" 1" 2" 3" (4") 6" Other:	**DTW:** 93.92	**Total Depth:** 206
Purge equip: ES - diam: Bladder Peri Waterra Positive Air Displacement Ext. System disp bailer teflon bailer other:	**Tubing:** OD: New Dedicated NA	
Purge method: 3-5 Case Volume Micro/Low-Flow Extraction Other: (HS)		
Pump depth/ intake: 148'	**Multipliers:** 1"= 0.04 2"= 0.16 3"= 0.37 4"= 0.65 5"=1.02 6"= 1.47 Radius² X 0.163	
(TD - DTW X Multiplier = 1 Volume	80% Recovery (TD - DTW X 0.20 + DTW)	

1 Volume = _____ X _____ = _____ (Total Purge) 80%= _____

Time	Temp (°C / °F)	pH	Cond (mS / µS)	Turbidity (NTU)	Purge Rate (gal or mL/ min)	Volume Removed (gal / L)	DO (mg/l)	ORP (mv)	DTW	Notes
845	9.6	7.3	1002	6	—	—	2.0	216	—	

Did well dewater? YES (NO) Total volume removed: — (gal / L)

Sample method: Disp Bailer (Hydrasleeve) New Tubing Ext. Port Other:

Sample date: 03NOV2012	Sample time: 845	DTW at sample: 93.92
Sample ID: 0235	Lab: Energy Labs	Number of bottles: 2
Analysis: 500 ml NP poly - Alkalinity, Cl, SO4, TDS, EC, pH 250 ml HNO3 poly *field filtered - Dissolved Metals		
Equipment blank ID @	Field blank ID @	
Duplicate ID:	Pre-purge DO:	Post purge DO:
$Fe2^+$:	Pre-purge ORP:	Post purge ORP:
NAPL depth:	Volume of NAPL:	Volume removed: ml

Purging And Sampling Data Sheet

Job#: 1350	**Sampler:** J Kerns B Myers	**Client:** Montgomery & Associates
Well ID: MW-13	**Date** (DDOct2012): 03NOV2012	**Site:** Rio Algom Mining, Lisbon, UT
Weather Conditions: Cool	**Sampler Signature:**	
Well diam: 1/4" 1" 2" 3" (4") 6" Other:	**DTW:** 93.92	**Total Depth:** 206.06
Purge equip: (ES - diam:) Bladder Peri Waterra Positive Air Displacement Ext. System disp bailer teflon bailer other:	**Tubing:** OD: New Dedicated NA	
Purge method: 3-5 Case Volume (Micro/Low-Flow) Extraction Other:		
Pump depth/ intake: 106'	**Multipliers:** 1"= 0.04 2"= 0.16 3"= 0.37 4"= 0.65 5"=1.02 6"= 1.47 Radius² X 0.163	
(TD - DTW X Multiplier = 1 Volume	80% Recovery (TD - DTW X 0.20 + DTW)	

1 Volume = _____ X _____ = _____ (Total Purge) 80%= _____

Time	Temp (°C / °F)	pH	Cond (mS / µS)	Turbidity (NTU)	Purge Rate (gal or mL/ min)	Volume Removed (gal / L)	DO (mg/l)	ORP (mv)	DTW	Notes
901	10.5	7.4	966	~~3~~ 5 ~~4~~	400	1.2L	3.3	202	93.95	
904	10.8	7.3	1027	5	|	2.4L	1.5	198	93.95	
907	11.0	7.3	1030	5	|	3.6L	1.2	192	93.95	
910	11.1	7.3	1038	5	|	4.8L	1.2	188	93.95	
913	11.3	7.2	1029	5	|	6L	1.1	181	93.95	
916	11.5	7.2	1030	5	|	7.2L	1.0	175	93.95	
919	11.7	7.2	1029	5	|	8.4L	1.0	168	93.95	
922	11.7	7.2	1027	5	|	9.6L	1.0	162	93.95	
925	11.7	7.2	1023	5	|	10.8L	1.0	157	93.95	
928	11.6	7.2	1030	5	|	12L	1.0	150	93.95	
931	11.6	7.2	1024	5	↓	13.2L	0.97	144	93.95	see next page

Did well dewater? YES (NO)	Total volume removed: 116.8L (gal / L)	
Sample method: Disp Bailer Hydrasleeve (New Tubing) Ext. Port Other:		
Sample date: 03NOV2012	Sample time: 940	DTW at sample: 93.95
Sample ID: 0236	Lab: Energy Labs	Number of bottles: 2
Analysis: 500 ml NP poly - Alkalinity, Cl, SO4, TDS, EC, pH 250 ml HNO3 poly *field filtered - Dissolved Metals		
Equipment blank ID @	Field blank ID @	
Duplicate ID:	Pre-purge DO:	Post purge DO:
$Fe2^+$:	Pre-purge ORP:	Post purge ORP:
NAPL depth:	Volume of NAPL:	Volume removed: ml

Purging And Sampling Data Sheet

Job#: 1350	**Sampler:** J Kerns (B Myers)	**Client:** Montgomery & Associates
Well ID: MW-13	**Date** (DDOct2012): 03NOV2012	**Site:** Rio Algom Mining, Lisbon, UT
Weather Conditions: Cool	**Sampler Signature:**	
Well diam: 1/4" 1" 2" 3" (4") 6" Other:	**DTW:** 93.92 **Total Depth:** 206.00	
Purge equip: (ES - diam) Bladder Peri Waterra Positive Air Displacement Ext. System disp bailer teflon bailer other: **Tubing:** OD: New Dedicated NA		
Purge method: 3-5 Case Volume (Micro/Low-Flow) Extraction Other:		
Pump depth/ intake: 106'	**Multipliers:** 1"= 0.04 2"= 0.16 3"= 0.37 4"= 0.65 5"=1.02 6"= 1.47 Radius² X 0.163	
(TD - DTW X Multiplier = 1 Volume	80% Recovery (TD - DTW X 0.20 + DTW)	

1 Volume = _____ X _____ = _____ (Total Purge) 80%=_____

Time	Temp (°C) °F	pH	Cond (mS) µS	Turbidity (NTU)	Purge Rate (gal or mL/ min)	Volume Removed (gal / L)	DO (mg/l)	ORP (mv)	DTW	Notes
934	11.8	7.2	1028	4	400ml	14.4	0.96	138	93.95	
937	11.9	7.2	1034	4	L	15.6 ~~16.0~~	0.97	134	93.95	
940	11.8	7.2	1025	4	L	16.8 ~~16.8~~	0.97	130	93.95	

Did well dewater? YES (NO)	Total volume removed: 16.8L (gal / L)	
Sample method: Disp Bailer Hydrasleeve (New Tubing) Ext. Port Other:		
Sample date: 03NOV2012	Sample time: 940	DTW at sample: 93.95
Sample ID: 623Co	Lab: Energy Labs	Number of bottles: 2
Analysis: 500 ml NP poly - Alkalinity, Cl, SO4, TDS, EC, pH 250 ml HNO3 poly *field filtered - Dissolved Metals		
Equipment blank ID @	Field blank ID @	
Duplicate ID:	Pre-purge DO:	Post purge DO:
$Fe2^+$:	Pre-purge ORP:	Post purge ORP:
NAPL depth:	Volume of NAPL:	Volume removed: ml

Purging And Sampling Data Sheet

Job#: 1350	**Sampler:** J Kerns (B Myers)	**Client:** Montgomery & Associates
Well ID: MW-13	**Date** (DDOct2012): 03Nov2012	**Site:** Rio Algom Mining, Lisbon, UT
Weather Conditions: cool	**Sampler Signature:**	
Well diam: 1/4" 1" 2" 3" (4") 6" Other:	**DTW:** 93.92 **Total Depth:** 266.08	
Purge equip: (ES - diam): Bladder Peri Waterra Positive Air Displacement Ext. System		
disp bailer teflon bailer other: **Tubing:** OD: New Dedicated NA		
Purge method: (3-5 Case Volume) Micro/Low-Flow Extraction Other:		
Pump depth/ intake:	**Multipliers:** 1"= 0.04 2"= 0.16 3"= 0.37 4"= 0.65 5"=1.02 6"= 1.47 Radius² X 0.163	
(TD - DTW X Multiplier = 1 Volume	80% Recovery (TD - DTW X 0.20 + DTW)	

1 Volume = 73 X 3 = 219 (Total Purge) 80%= 110.34

Time	Temp (°C / °F)	pH	Cond (mS / µS)	Turbidity (NTU)	Purge Rate (gal or mL/ min)	Volume Removed (gal / L)	DO (mg/l)	ORP (mv)	DTW	Notes
1008	12.1	7.3	981	3	3ypm	73	1.2	126	93.98	
1032	12.2	7.2	1023	3	↓	146	1.0	113	93.98	
1054	12.2	7.2	1019	3	↓	219	0.95	105	93.98	

Did well dewater? YES (NO)	Total volume removed: 219 (gal / L)		
Sample method: Disp Bailer Hydrasleeve (New Tubing) Ext. Port Other:			
Sample date: 03Nov2012	Sample time: 1100	DTW at sample: 93.98	
Sample ID: 6237	Lab: Energy Labs	Number of bottles: 2	
Analysis: 500 ml NP poly - Alkalinity, Cl, SO4, TDS, EC, pH 250 ml HNO3 poly *field filtered - Dissolved Metals			
Equipment blank ID @	Field blank ID @		
Duplicate ID:	Pre-purge DO:	Post purge DO:	
$Fe2^+$:	Pre-purge ORP:	Post purge ORP:	
NAPL depth:	Volume of NAPL:	Volume removed: ml	

Purging And Sampling Data Sheet

Job#: 1350	**Sampler:** J Kerns (B Myers)	**Client:** Montgomery & Associates
Well ID: MW-5	**Date** (DDOct2012):	**Site:** Rio Algom Mining, Lisbon, UT
Weather Conditions: Warm	**Sampler Signature:**	
Well diam: 1/4" 1" 2" 3" 4" (6") Other:	**DTW:** 153.36 **Total Depth:** 197.00	
Purge equip: ES - diam: Bladder Peri Waterra Positive Air Displacement Ext. System disp bailer teflon bailer other:	**Tubing:** OD: New Dedicated NA	
Purge method: 3-5 Case Volume Micro/Low-Flow Extraction Other: (HS)		
Pump depth/ intake: 1821	**Multipliers:** 1"= 0.04 2"= 0.16 3"= 0.37 4"= 0.65 5"=1.02 6"= 1.47 Radius² X 0.163	
(TD - DTW X Multiplier = 1 Volume	80% Recovery (TD - DTW X 0.20 + DTW)	

1 Volume = _____ X _____ = _____ (Total Purge) 80%=_____

Time	Temp (°C / °F)	pH	Cond (mS / µS)	Turbidity (NTU)	Purge Rate (gal or mL/ min)	Volume Removed (gal / L)	DO (mg/l)	ORP (mv)	DTW	Notes
1345	12.9	6.9	2992	8	—	—	1.4	101	—	

Did well dewater? YES (NO) Total volume removed: — (gal / L)

Sample method: Disp Bailer (Hydrasleeve) New Tubing Ext. Port Other:

Sample date: 02NOV2012	Sample time: 1345	DTW at sample: 153.36
Sample ID: 0233	Lab: Energy Labs	Number of bottles: 2
Analysis: 500 ml NP poly - Alkalinity, Cl, SO4, TDS, EC, pH	250 ml HNO3 poly *field filtered - Dissolved Metals	
Equipment blank ID @	Field blank ID @	
Duplicate ID:	Pre-purge DO:	Post purge DO:
$Fe2^+$:	Pre-purge ORP:	Post purge ORP:
NAPL depth:	Volume of NAPL:	Volume removed: ml

Purging And Sampling Data Sheet

Job#: 1350	**Sampler:** J Kerns B Myers	**Client:** Montgomery & Associates
Well ID: MW5	**Date** (DDOct2012): 02NOV2012	**Site:** Rio Algom Mining, Lisbon, UT
Weather Conditions: Cool	**Sampler Signature:**	
Well diam: 1/4" 1" 2" 3" 4" (6") Other:	**DTW:** 153.36 **Total Depth:** 197.00	
Purge equip: (ES - diam:) Bladder Peri Waterra Positive Air Displacement Ext. System		
disp bailer teflon bailer other:	**Tubing:** OD: New Dedicated NA	
Purge method: 3-5 Case Volume (Micro/Low-Flow) Extraction Other:		
Pump depth/ intake: 188'	**Multipliers:** 1"= 0.04 2"= 0.16 3"= 0.37 4"= 0.65 5"=1.02 6"= 1.47 Radius² X 0.163	
(TD - DTW X Multiplier = 1 Volume	80% Recovery (TD - DTW X 0.20 + DTW)	

1 Volume = _____ X _____ = _____ (Total Purge) 80%=_____

Time	Temp (°C / °F)	pH	Cond (mS / µS)	Turbidity (NTU)	Purge Rate (gal or mL/ min)	Volume Removed (gal / L)	DO (mg/l)	ORP (mv)	DTW	Notes
1406	12.4	6.9	3038	9	400	1.2L	0.92	117	154.62	
1409	12.6	6.8	3003	8		2.4L	0.72	123	154.68	
1412	12.4	6.8	3035	6		3.6L	0.12	127	154.75	
1415	12.5	6.8	3074	6		4.8L	0.74	129	154.81	
1418	12.6	6.8	3064	6		6L	0.82	129	154.86	
1421	12.6	6.9	3036	5	300	6.9L	0.84	131	154.92	
1424	12.8	6.8	3030	5		7.8L	0.82	130	155.00	
1427	12.8	6.9	3020	5		8.7L	0.84	124	155.09	
1430	12.7	6.9	3034	5		~~9.6L~~	0.82	120	155.16	
1433	13.3	6.9	3010	5		10.5	0.87	112	155.22	
1436	13.6	6.9	3084	5		11.4L	0.86	110	155.23	see next page

Did well dewater? YES (NO)	Total volume removed: 20.5 L (gal / L)	
Sample method: Disp Bailer Hydrasleeve (New Tubing) Ext. Port Other:		
Sample date: 02NOV2012	Sample time: 1570	DTW at sample: 155.77
Sample ID: 10234	Lab: Energy Labs	Number of bottles: 2
Analysis: 500 ml NP poly - Alkalinity, Cl, SO4, TDS, EC, pH 250 ml HNO3 poly *field filtered - Dissolved Metals		
Equipment blank ID @	Field blank ID @	
Duplicate ID:	Pre-purge DO:	Post purge DO:
$Fe2^+$:	Pre-purge ORP:	Post purge ORP:
NAPL depth:	Volume of NAPL:	Volume removed: ml

Purging And Sampling Data Sheet

Page 2 of 2

Job#: 1350	**Sampler:** J Kerns B Myers	**Client:** Montgomery & Associates
Well ID: MW5	**Date** (DDOct2012): 02NOV2012	**Site:** Rio Algom Mining, Lisbon, UT
Weather Conditions: Cool	**Sampler Signature:**	
Well diam: 1/4" 1" 2" 3" 4" (6") Other:	**DTW:** 153.34 **Total Depth:** 197.02	
Purge equip: (ES - diam:) Bladder Peri Waterra Positive Air Displacement Ext. System disp bailer teflon bailer other:	**Tubing:** OD: New Dedicated NA	
Purge method: 3-5 Case Volume (Micro/Low-Flow) Extraction Other:		
Pump depth/ intake:	**Multipliers:** 1"= 0.04 2"= 0.16 3"= 0.37 4"= 0.65 5"=1.02 6"= 1.47 Radius^2 X 0.163	
(TD - DTW X Multiplier = 1 Volume	80% Recovery (TD - DTW X 0.20 + DTW)	

1 Volume = _____ X _____ = _____ (Total Purge) 80%=_____

Time	Temp (°C °F)	pH	Cond (mS (µS))	Turbidity (NTU)	Purge Rate (gal or mL/ min)	Volume Removed (gal / L)	DO (mg/l)	ORP (mv)	DTW	Notes
1439	13.5	6.9	3038	5	300	12.3L	0.91	107	155.24	
1442	13.3	6.9	3041	5		13.2L	0.91	105	155.36	
1445	13.2	6.9	3071	4		14.1L	0.93	103	155.45	
1448	13.6	6.9	3051	4		15L	0.97	98	155.53	
1451	13.7	6.9	3041	4		15.9L	0.98	96	155.62	
1454	13.9	6.9	3069	4	250	16.75L	1.00	94	155.63	
1457	13.8	6.9	3051	4		17.5L	1.00	93	155.65	
1500	13.8	6.9	3029	4		18.25L	1.09	92	155.72	
1503	13.9	6.9	3023	4		19L	1.07	92	155.76	
1506	13.8	6.9	3088	4		19.75L	1.09	92	155.77	
1509	14.0	6.9	3082	4		20.5L	1.11	92	155.77	

Did well dewater? YES (NO) Total volume removed: 20.5L (gal / L)

Sample method: Disp Bailer Hydrasleeve (New Tubing) Ext. Port Other:

Sample date: 02NOV2012	Sample time: 1570	DTW at sample: 155.77
Sample ID: 0234	Lab: Energy Labs	Number of bottles: 2
Analysis: 500 ml NP poly - Alkalinity, Cl, SO4, TDS, EC, pH 250 ml HNO3 poly *field filtered - Dissolved Metals		

Equipment blank ID @	Field blank ID @	
Duplicate ID:	Pre-purge DO:	Post purge DO:
$Fe2^+$:	Pre-purge ORP:	Post purge ORP:
NAPL depth:	Volume of NAPL:	Volume removed: ml

Purging And Sampling Data Sheet

Job#: 1350	**Sampler:** J Kerns B Myers	**Client:** Montgomery & Associates
Well ID: MW5	**Date** (DDOct2012): 02NOV2012	**Site:** Rio Algom Mining, Lisbon, UT
Weather Conditions: Cool	**Sampler Signature:**	
Well diam: 1/4" 1" 2" 3" 4" (6") Other:	**DTW:** 153.36 **Total Depth:** 197.02	
Purge equip: (ES - diam: Bladder Peri Waterra Positive Air Displacement Ext. System		
disp bailer teflon bailer other:	**Tubing:** OD: New Dedicated NA	
Purge method: (3-5 Case Volume) Micro/Low-Flow Extraction Other:		
Pump depth/ intake:	**Multipliers:** 1"= 0.04 2"= 0.16 3"= 0.37 4"= 0.65 5"=1.02 6"= 1.47 Radius² X 0.163	
(TD - DTW X Multiplier = 1 Volume	80% Recovery (TD - DTW X 0.20 + DTW)	

1 Volume = 64 X ____ = ____ (Total Purge) 80%= 167.09

	Time	Temp (°C) °F	pH	Cond (mS / µS)	Turbidity (NTU)	Purge Rate (gal or mL/ min)	Volume Removed (gal / L)	DO (mg/l)	ORP (mv)	DTW	Notes
11/2/12	1555	13.2	6.9	3047	16	3gpm	64	1.14	112	182.50	Pump dropped to bottom, we dropping
		Well	dewatered	@ 105 gallons		return	next	day			
		to	collect	sample							
11/3	1440	13.2	7.2	2780	10	—	—	2.74	201	155.75	

Did well dewater? (YES) NO	Total volume removed: 105 (gal / L)		
Sample method: (Disp Bailer) Hydrasleeve New Tubing Ext. Port Other:			
Sample date: 11/3/12	Sample time: 1440	DTW at sample: 155.75 (>80%)	
Sample ID: 6251	Lab: Energy Labs	Number of bottles: 2	
Analysis: 500 ml NP poly - Alkalinity, Cl, SO4, TDS, EC, pH 250 ml HNO3 poly *field filtered - Dissolved Metals			
Equipment blank ID @	Field blank ID @		
Duplicate ID:	Pre-purge DO:	Post purge DO:	
$Fe2^+$:	Pre-purge ORP:	Post purge ORP:	
NAPL depth:	Volume of NAPL:	Volume removed: ml	

Purging And Sampling Data Sheet

Job#: 1350	**Sampler:** J Kerns B Myers	**Client:** Montgomery & Associates
Well ID: RL-1	**Date** (DDOct2012): 31Oct2012 ~~31OO~~	**Site:** Rio Algom Mining, Lisbon, UT
Weather Conditions: cold	**Sampler Signature:**	
Well diam: 1/4" 1" 2" 3" (4") 6" Other: 5"	**DTW:** 116.05	**Total Depth:** 124.00
Purge equip: ES - diam: Bladder Peri Waterra Positive Air Displacement Ext. System disp bailer teflon bailer other: **Tubing:** OD: New Dedicated NA		
Purge method: 3-5 Case Volume Micro/Low-Flow Extraction Other:		
Pump depth/ intake: 121'	**Multipliers:** 1"= 0.04 2"= 0.16 3"= 0.37 4"= 0.65 5"=1.02 6"= 1.47 Radius² X 0.163	
(TD - DTW X Multiplier = 1 Volume	80% Recovery (TD - DTW X 0.20 + DTW)	

1 Volume = _____ X _____ = _____ (Total Purge) 80%=_____

Time	Temp (°C) °F)	pH	Cond (mS / µS)	Turbidity (NTU)	Purge Rate (gal or mL/ min)	Volume Removed (gal / L)	DO (mg/l)	ORP (mv)	DTW	Notes
805	10.1	7.0	14577	11	—	—	3.7	164	—	

Did well dewater? YES (NO) Total volume removed: — (gal / L)

Sample method: Disp Bailer (Hydrasleeve) New Tubing Ext. Port Other:

Sample date: 10/31/12	Sample time: 805	DTW at sample: 116.05
Sample ID: C0217	Lab: Energy Labs	Number of bottles: 2
Analysis: 500 ml NP poly - Alkalinity, Cl, SO4, TDS, EC, pH 250 ml HNO3 poly *field filtered - Dissolved Metals		
Equipment blank ID @	Field blank ID @	
Duplicate ID:	Pre-purge DO:	Post purge DO:
$Fe2^{+}$:	Pre-purge ORP:	Post purge ORP:
NAPL depth:	Volume of NAPL:	Volume removed: ml

Purging And Sampling Data Sheet

Job#: 1350	**Sampler:** J Kerns (B Myers)	**Client:** Montgomery & Associates
Well ID: RL-1	**Date** (DDOct2012): 31Oct2012	**Site:** Rio Algom Mining, Lisbon, UT
Weather Conditions: Cool	**Sampler Signature:**	
Well diam: 1/4" 1" 2" 3" (4) 6" Other: (5)	**DTW:** 116.05 **Total Depth:** 124.00	
Purge equip: (ES - diam:) Bladder Peri Waterra Positive Air Displacement Ext. System		
disp bailer teflon bailer other: **Tubing:** OD: New Dedicated NA		
Purge method: 3-5 Case Volume (Micro/Low-Flow) Extraction Other:		
Pump depth/ intake: 120 **Multipliers:** 1"= 0.04 2"= 0.16 3"= 0.37 4"= 0.65 5"=1.02 6"= 1.47 Radius² X 0.163		
(TD - DTW X Multiplier = 1 Volume	80% Recovery (TD - DTW X 0.20 + DTW)	

1 Volume = _____ X _____ = _____ (Total Purge) 80%= _____

Time	Temp (°C) °F)	pH	Cond (mS / µS)	Turbidity (NTU)	Purge Rate (gal or mL/ min)	Volume Removed (gal / L)	DO (mg/l)	ORP (mv)	DTW	Notes
826	10.6	6.9	11506	285	400ml	1.2L	3.1	149	116.64	
831	11.3	6.9	11644	31	400	2.4L	3.3	138	116.70	
834	11.6	6.9	11577	22	300ml	3.3L	3.2	132	116.70	
837	12.2	6.9	11597	18	|	4.2L	3.2	125	116.70	
840	12.2	6.9	11592	16	|	5.1L	3.1	121	116.70	
843	12.4	6.9	11585	15	↓	6L	3.1	117 ~~118~~	116.70	

Did well dewater? YES (NO) Total volume removed: 6L (gal / L)

Sample method: Disp Bailer Hydrasleeve (New Tubing) Ext. Port Other:

Sample date: 10/31/12	Sample time: 845	DTW at sample: 116.70
Sample ID: 6218	Lab: Energy Labs	Number of bottles: 2
Analysis: 500 ml NP poly - Alkalinity, Cl, SO4, TDS, EC, pH 250 ml HNO3 poly *field filtered - Dissolved Metals		
Equipment blank ID @	Field blank ID @	
* Duplicate ID: 6219 @ 855	Pre-purge DO:	Post purge DO:
$Fe2^+$:	Pre-purge ORP:	Post purge ORP:
NAPL depth:	Volume of NAPL:	Volume removed: ml

Purging And Sampling Data Sheet

Job#: 1350	**Sampler:** J Kerns (B Myers)	**Client:** Montgomery & Associates
Well ID: RL-1	**Date** (DDOct2012): 31Oct2012	**Site:** Rio Algom Mining, Lisbon, UT
Weather Conditions: cool	**Sampler Signature:**	
Well diam: 1/4" 1" 2" 3" 4" 6" Other: (5")	**DTW:** 116.05 **Total Depth:** 124.00	
Purge equip: (ES - diam:) Bladder Peri Waterra Positive Air Displacement Ext. System		
disp bailer teflon bailer other: **Tubing:** OD: New Dedicated NA		
Purge method: (3-5 Case Volume) Micro/Low-Flow Extraction Other:		
Pump depth/ intake:	**Multipliers:** 1"= 0.04 2"= 0.16 3"= 0.37 4"= 0.65 5"=1.02 6"= 1.47 Radius² X 0.163	
(TD - DTW X Multiplier = 1 Volume	80% Recovery (TD - DTW X 0.20 + DTW)	

1 Volume = 8 X 3 = 24 (Total Purge) 80%= 117.64

Time	Temp (C) °F)	pH	Cond (mS / (µS))	Turbidity (NTU)	Purge Rate (gal or mL/ min)	Volume Removed (gal / L)	DO (mg/l)	ORP (mv)	DTW	Notes
904 ~~1455~~	14.5	6.9	11267	27	1gpm	8	3.8	128	119.60	lowered pump
924	14.9	7.1	11894	~~372~~	0.5gpm	16	6.3	114	121.00	
	shut pump down + let recover for 5 min prior to									
	purging 3rd case volume.									
940	14.9	7.1	12117	6.9	0.5	24	6.7	104	120.60	
	Waited for 80% before sampling									
	14			8						

Did well dewater? (YES) (NO) Total volume removed: 24 (gal / L)

Sample method: Disp Bailer Hydrasleeve New Tubing Ext. Port Other:

Sample date: 10/31/12	Sample time: 1000	DTW at sample: 117.64
Sample ID: 10220	Lab: Energy Labs	Number of bottles: 2
Analysis: 500 ml NP poly - Alkalinity, Cl, SO4, TDS, EC, pH 250 ml HNO3 poly *field filtered - Dissolved Metals		
Equipment blank ID 1224 @ 1015	Field blank ID @	
Duplicate ID:	Pre-purge DO:	Post purge DO:
$Fe2^+$:	Pre-purge ORP:	Post purge ORP:
NAPL depth:	Volume of NAPL:	Volume removed: ml

Purging And Sampling Data Sheet

Job#: 1350	**Sampler:** J Kerns (B Myers)	**Client:** Montgomery & Associates
Well ID: RL-3	**Date** (DDOct2012): 05NOV2012	**Site:** Rio Algom Mining, Lisbon, UT
Weather Conditions: warm	**Sampler Signature:**	
Well diam: 1/4" 1" 2" 3" 4" 6" Other: (5")	**DTW:** 170.09	**Total Depth:** 183.00
Purge equip: ES - diam: Bladder Peri Waterra Positive Air Displacement Ext. System		
disp bailer teflon bailer other: (HS)	**Tubing:** OD: New Dedicated NA	
Purge method: 3-5 Case Volume Micro/Low-Flow Extraction Other: (HS)		
Pump depth/ intake: (179')	**Multipliers:** 1"= 0.04 2"= 0.16 3"= 0.37 4"= 0.65 5"=1.02 6"= 1.47 Radius² X 0.163	
(TD - DTW X Multiplier = 1 Volume	80% Recovery (TD - DTW X 0.20 + DTW)	

1 Volume = _____ X _____ = _____ (Total Purge) 80%=_____

Time	Temp (°C/ °F)	pH	Cond (mS /(µS))	Turbidity (NTU)	Purge Rate (gal or mL/ min)	Volume Removed (gal / L)	DO (mg/l)	ORP (mv)	DTW	Notes
930	12.4	7.1	8087	6	—	—	4.3	22.1	—	

Did well dewater? YES (NO) Total volume removed: — (gal / L)

Sample method: Disp Bailer (Hydrasleeve) New Tubing Ext. Port Other:

Sample date: 05NOV2012	Sample time: 930	DTW at sample: — 170.09
Sample ID: 02.52	Lab: Energy Labs	Number of bottles: 2
Analysis: 500 ml NP poly - Alkalinity, Cl, SO4, TDS, EC, pH 250 ml HNO3 poly *field filtered - Dissolved Metals		
Equipment blank ID @	Field blank ID @	
Duplicate ID:	Pre-purge DO:	Post purge DO:
$Fe2^{+}$:	Pre-purge ORP:	Post purge ORP:
NAPL depth:	Volume of NAPL:	Volume removed: ml

Purging And Sampling Data Sheet

Job#: 1350	**Sampler:** J Kerns (B Myers)	**Client:** Montgomery & Associates
Well ID: RL-3	**Date** (DDOct2012): 05NOV2012	**Site:** Rio Algom Mining, Lisbon, UT
Weather Conditions: warm	**Sampler Signature:**	
Well diam: 1/4" 1" 2" 3" 4" 6" Other: (5")	**DTW:** 170.09	**Total Depth:** 183.00
Purge equip: (ES - diam:) Bladder Peri Waterra Positive Air Displacement Ext. System disp bailer teflon bailer other:	**Tubing:** OD: New Dedicated NA	
Purge method: 3-5 Case Volume (Micro/Low-Flow) Extraction Other:		
Pump depth/ intake: 177'	**Multipliers:** 1"= 0.04 2"= 0.16 3"= 0.37 4"= 0.65 5"=1.02 6"= 1.47 Radius² X 0.163	
(TD - DTW X Multiplier = 1 Volume	80% Recovery (TD - DTW X 0.20 + DTW)	

1 Volume = _____ X _____ = _____ (Total Purge) 80%=_____

Time	Temp (°C) °F	pH	Cond (mS / µS)	Turbidity (NTU)	Purge Rate (gal or mL/ min)	Volume Removed (gal / L)	DO (mg/l)	ORP (mv)	DTW	Notes
947	12.6	6.9	11433	11	400	1.2L	3.9	8	170.66	
950	12.4	6.9	11489	11		2.4L	4.0	96	170.80	
953	12.6	6.9	11458	10		3.6L	4.1	88	170.76	
956	12.8	6.9	11590	10		4.8L	3.8	59	170.76	
959	14.4	6.9	11833	8		6L	3.7	14	170.76	
1002	14.8	6.9	11893	7		7.2L	3.8	12	170.76	
1005	15.0	6.9	11967 ~~HCB~~	7		8.4L	3.9	8	170.76	

Did well dewater? YES (NO)	Total volume removed: 8.4L (gal / L)	
Sample method: Disp Bailer Hydrasleeve (New Tubing) Ext. Port Other:		
Sample date: 05NOV2012	Sample time: 1005	DTW at sample: 170.76
Sample ID: 0253	Lab: Energy Labs	Number of bottles: 2
Analysis: 500 ml NP poly - Alkalinity, Cl, SO4, TDS, EC, pH 250 ml HNO3 poly *field filtered - Dissolved Metals		
Equipment blank ID @	Field blank ID @	
Duplicate ID:	Pre-purge DO:	Post purge DO:
$Fe2^+$:	Pre-purge ORP:	Post purge ORP:
NAPL depth:	Volume of NAPL:	Volume removed: ml

Purging And Sampling Data Sheet

Job#: 1350	**Sampler:** J Kerns (B Myers)	**Client:** Montgomery & Associates
Well ID: RL-3	**Date** (DDOct2012): 05NOV2012	**Site:** Rio Algom Mining, Lisbon, UT
Weather Conditions: Warm	**Sampler Signature:**	
Well diam: 1/4" 1" 2" 3" 4" 6" Other: (5")	**DTW:** 170.09 **Total Depth:** 183.00	
Purge equip: (ES - diam:) Bladder Peri Waterra Positive Air Displacement Ext. System		
disp bailer teflon bailer other: **Tubing:** OD: New Dedicated NA		
Purge method: (3-5 Case Volume) Micro/Low-Flow Extraction Other:		
Pump depth/ intake: (177') **Multipliers:** 1"= 0.04 2"= 0.16 3"= 0.37 4"= 0.65 5"=1.02 6"= 1.47 Radius² X 0.163		
(TD - DTW X Multiplier = 1 Volume	80% Recovery (TD - DTW X 0.20 + DTW)	

1 Volume = 13 X 3 = 39 (Total Purge) 80%= 172.67

Time	Temp (°C) / °F	pH	Cond (mS / µS)	Turbidity (NTU)	Purge Rate (gal or mL/ min)	Volume Removed (gal / L)	DO (mg/l)	ORP (mv)	DTW	Notes
1014	14.1	7.0	9030	8	2	13	5.0	-5	174.95	
1021	13.9	7.0	9694	7	1	26	5.3	-1	176.24	
1027	13.9	7.0	10671	7	1	39	5.5	93	177.11	
	Waited	briefly	for	80%						

Did well dewater? YES (NO) Total volume removed: 39 (gal / L)

Sample method: Disp Bailer Hydrasleeve (New Tubing) Ext. Port Other:

Sample date: 05NOV2012	Sample time: 1035	DTW at sample: ~~EC~~ 172.67
Sample ID: 6254	Lab: Energy Labs	Number of bottles: 2
Analysis: 500 ml NP poly - Alkalinity, Cl, SO4, TDS, EC, pH	250 ml HNO3 poly *field filtered - Dissolved Metals	
Equipment blank ID @	Field blank ID @	
Duplicate ID:	Pre-purge DO:	Post purge DO:
$Fe2^{+}$:	Pre-purge ORP:	Post purge ORP:
NAPL depth:	Volume of NAPL:	Volume removed: ml

Purging And Sampling Data Sheet

Job#: 1350	**Sampler:** J Kerns B Myers	**Client:** Montgomery & Associates
Well ID: RL-4	**Date** (DDOct2012): 01NOV2012	**Site:** Rio Algom Mining, Lisbon, UT
Weather Conditions: BlueSky		**Sampler Signature:**
Well diam: 1/4" 1" 2" 3" (4") 6" Other: 5"		**DTW:** 156.40 **Total Depth:** 173
Purge equip: ES - diam: Bladder Peri Waterra Positive Air Displacement Ext. System		
disp bailer teflon bailer other:	**Tubing:** OD: New Dedicated NA	
Purge method: 3-5 Case Volume Micro/Low-Flow Extraction Other:		
Pump depth/ intake: —	**Multipliers:** 1"= 0.04 2"= 0.16 3"= 0.37 4"= 0.65 5"=1.02 6"= 1.47 Radius² X 0.163	
(TD - DTW X Multiplier = 1 Volume	80% Recovery (TD - DTW X 0.20 + DTW)	

1 Volume = — X — = — (Total Purge) 80%= —

Time	Temp (°C) °F)	pH	Cond (mS (µS)	Turbidity (NTU)	Purge Rate (gal or mL/ min)	Volume Removed (gal / L)	DO (mg/l)	ORP (mv)	DTW	Notes
1300	13.6	7.7	957	4.6	—	—	7.12	80.2	156.40	

Did well dewater? YES (NO) Total volume removed: — (gal / L)

Sample method: Disp Bailer (Hydrasleeve) New Tubing Ext. Port Other:

Sample date: 01NOV2012 Sample time: 1300 DTW at sample: 156.40

Sample ID: 6242 Lab: Energy Labs Number of bottles: (2)

Analysis: 500 ml NP poly - Alkalinity, Cl, SO4, TDS, EC, pH 250 ml HNO3 poly *field filtered - Dissolved Metals

Equipment blank ID @ Field blank ID @

Duplicate ID: Pre-purge DO: Post purge DO:

$Fe2^{+}$: Pre-purge ORP: Post purge ORP:

NAPL depth: Volume of NAPL: Volume removed: ml

Purging And Sampling Data Sheet

Job#: 1350	**Sampler:** J Kerns B Myers	**Client:** Montgomery & Associates
Well ID: RL-4	**Date** (DDOct2012): 01NOV2012	**Site:** Rio Algom Mining, Lisbon, UT
Weather Conditions: Blue Sky - Warm	**Sampler Signature:**	
Well diam: 1/4" 1" 2" 3" (4") 6" Other: 5"	**DTW:** 156.40 **Total Depth:** 179.60	
Purge equip: ~~ES - diam: 2"~~ Bladder Peri Waterra Positive Air Displacement Ext. System		
disp bailer teflon bailer other:	**Tubing:** OD: New Dedicated NA	
Purge method: 3-5 Case Volume Micro/Low-Flow Extraction Other:		
Pump depth/ intake: 167'	**Multipliers:** 1"= 0.04 2"= 0.16 3"= 0.37 4"= 0.65 5"=1.02 6"= 1.47 Radius² X 0.163	
(TD - DTW X Multiplier = 1 Volume	80% Recovery (TD - DTW X 0.20 + DTW)	

1 Volume = — X — = — (Total Purge) 80%= —

Time	Temp (°C / °F)	pH	Cond (mS / µS)	Turbidity (NTU)	Purge Rate (gal or ml / min)	Volume Removed (gal / L)	DO (mg/l)	ORP (mv)	DTW	Notes
1355	14.8	7.7	797	7.2	300	1.0	8.11	15.5	156.83	
1358	14.1	7.6	1054	7.4	300	1.9	9.03	14.3	156.81	
1401	13.7	7.6	958	7.9	300	2.8	9.52	17.3	156.82	
1404	13.7	7.6	902	9.5	300	3.7	9.92	15.1	156.82	
1407	13.9	7.6	927	7.1	300	4.6	9.67	16.8	156.82	
1410	14.2	7.6	922	6.9	300	5.5	9.60	15.3	156.82	
1413	15.3	7.6	921	7.1	300	6.4	9.26	11.7	156.82	
1416	16.0	7.6	933	7.0	300	7.3	9.14	10.0	156.82	
1419	16.1	7.6	938	6.9	300	8.2	9.13	11.3	156.82	
1422	16.1	7.6	940	6.9	300	9.1	9.12	11.5	156.82	

Did well dewater? YES (NO)	Total volume removed: 9.1 (gal (L))		
Sample method: Disp Bailer Hydrasleeve (New Tubing) Ext. Port Other:			
Sample date: 01NOV2012	Sample time: 1430	DTW at sample: 156.82	
Sample ID: 6243	Lab: Energy Labs	Number of bottles: 2	
Analysis: 500 ml NP poly - Alkalinity, Cl, SO4, TDS, EC, pH 250 ml HNO3 poly *field filtered - Dissolved Metals			
Equipment blank ID @	Field blank ID @		
Duplicate ID:	Pre-purge DO:	Post purge DO:	
$Fe2^+$:	Pre-purge ORP:	Post purge ORP:	
NAPL depth:	Volume of NAPL:	Volume removed: ml	

Purging And Sampling Data Sheet

Job#: 1350	**Sampler:** J Kerns B Myers	**Client:** Montgomery & Associates
Well ID: RL-4	**Date** (DDOct2012): 01NOV2012	**Site:** Rio Algom Mining, Lisbon, UT
Weather Conditions: Windy - warm	**Sampler Signature:**	
Well diam: 1/4" 1" 2" 3" 4" 6" Other: (5")	**DTW:** 156.40 **Total Depth:** 178.00	
Purge equip: (ES - diam: 2") Bladder Peri Waterra Positive Air Displacement Ext. System		
disp bailer teflon bailer other:	**Tubing:** OD: (New) Dedicated NA	
Purge method: (3-5 Case Volume) Micro/Low-Flow Extraction Other:		
Pump depth/ intake: 167 -	**Multipliers:** 1"= 0.04 2"= 0.16 3"= 0.37 4"= 0.65 5"=1.02 6"= 1.47 Radius² X 0.163	
(TD - DTW X Multiplier = 1 Volume	80% Recovery (TD - DTW X 0.20 + DTW)	

1 Volume = 22 X 3 = 66 (Total Purge) 80%= 160.72

Time	Temp (°C) °F	pH	Cond (mS (µS)	Turbidity (NTU)	Purge Rate (gal or mL/ min)	Volume Removed (gal / L)	DO (mg/l)	ORP (mv)	DTW	Notes
1435	14.1	7.6	928	7.4	2.5	22	8.87	14.1	161.82	
1444	13.1	7.6	931	23.0	2.5	44	8.31	13.3	163.93	
1453	13.0	7.6	932	25.0	2.5	66	8.06	11.9	164.91	

Did well dewater? YES (NO) Total volume removed: 66 (gal / L)

Sample method: Disp Bailer Hydrasleeve (New Tubing) Ext. Port Other:

Sample date: 01NOV2012 Sample time: 1500 DTW at sample:

Sample ID: 6244 Lab: Energy Labs Number of bottles: (2)

Analysis: 500 ml NP poly - Alkalinity, Cl, SO4, TDS, EC, pH 250 ml HNO3 poly *field filtered - Dissolved Metals

Equipment blank ID @ Field blank ID @

* Duplicate ID: 6245 @ 1510 Pre-purge DO: Post purge DO:

$Fe2^{+}$: Pre-purge ORP: Post purge ORP:

NAPL depth: Volume of NAPL: Volume removed: ml

Purging And Sampling Data Sheet

Job#: 1350	**Sampler:** J Kerns B Myers	**Client:** Montgomery & Associates
Well ID: ~~MW-5~~ RL-5 (3K)	**Date** (DDOct2012): 02NOV2012	**Site:** Rio Algom Mining, Lisbon, UT
Weather Conditions: Partly Cloudy - Brisk	**Sampler Signature:**	
Well diam: 1/4" 1" 2" 3" (4") 6" Other: 5"	**DTW:** 151.83	**Total Depth:** 186.00
Purge equip: ES - diam: Bladder Peri Waterra Positive Air Displacement Ext. System disp bailer teflon bailer other:	**Tubing:** OD: New Dedicated NA	
Purge method: 3-5 Case Volume Micro/Low-Flow Extraction Other:		
Pump depth/ intake:	**Multipliers:** 1"= 0.04 2"= 0.16 3"= 0.37 4"= 0.65 5"=1.02 6"= 1.47 Radius² X 0.163	
(TD - DTW X Multiplier = 1 Volume —	80% Recovery (TD - DTW X 0.20 + DTW)	

1 Volume = — X — = — (Total Purge) 80%= —

Time	Temp (°C) °F	pH	Cond (mS) µS	Turbidity (NTU)	Purge Rate (gal or mL/ min)	Volume Removed (gal / L)	DO (mg/l)	ORP (mv)	DTW	Notes
11.50	16.4	7.7	688	3.85	—	—	5.83	37.9	151.83	

Did well dewater? YES NO — Total volume removed: — (gal / L)

Sample method: Disp Bailer (Hydrasleeve) New Tubing Ext. Port Other:

Sample date: 02NOV2012	Sample time: 1150	DTW at sample: 151.83
Sample ID: 6246	Lab: Energy Labs	Number of bottles: 2
Analysis: 500 ml NP poly - Alkalinity, Cl, SO4, TDS, EC, pH 250 ml HNO3 poly *field filtered - Dissolved Metals		
Equipment blank ID @	Field blank ID @	
Duplicate ID:	Pre-purge DO:	Post purge DO:
$Fe2^{+}$:	Pre-purge ORP:	Post purge ORP:
NAPL depth:	Volume of NAPL:	Volume removed: ml

Purging And Sampling Data Sheet

Job#: 1350	**Sampler:** J Kerns B Myers	**Client:** Montgomery & Associates
Well ID: RL-5	**Date** (DDOct2012):	**Site:** Rio Algom Mining, Lisbon, UT
Weather Conditions: Partly Cloudy – Breezy	**Sampler Signature:**	
Well diam: 1/4" 1" 2" 3" 4" 6" Other: (5")	**DTW:** 151.63	**Total Depth:** 186.00
Purge equip: (ES - diam: 2") Bladder Peri Waterra Positive Air Displacement Ext. System		
disp bailer teflon bailer other:	**Tubing:** OD: (New) Dedicated NA	
Purge method: 3-5 Case Volume (Micro/Low-Flow) Extraction Other:		
Pump depth/ intake: 168'	**Multipliers:** 1"= 0.04 2"= 0.16 3"= 0.37 4"= 0.65 5"=1.02 6"= 1.47 Radius² X 0.163	
(TD - DTW X Multiplier = 1 Volume	80% Recovery (TD - DTW X 0.20 + DTW)	

1 Volume = ___ X ___ = ___ (Total Purge) 80%= ___

Time	Temp (°C / °F)	pH	Cond (mS / µS)	Turbidity (NTU)	Purge Rate (gal or (mL) min)	Volume Removed (gal / (L))	DO (mg/l)	ORP (mv)	DTW	Notes
1220	12.3	7.6	721	10.3	300	1.0	10.53 ~~47.37~~	47.2	151.80	
1223	12.3	7.6	721	7.2	300	1.9	10.36	49.3	151.80	
1226	12.3	7.6	720	8.1	300	2.8	10.26	50.1	151.80	
1229	12.3	7.6	719	8.0	300	3.7	10.24	51.0	151.80	
1232	12.5	7.6	721	8.0	300	4.6	10.00	52.6	151.80	
1235	12.5	7.6	721	8.5	300	5.4	9.64	54.2	151.80	
1238	12.5	7.6	721	8.3	300	6.3	9.64	54.9	151.80	
1241	12.5	7.6	719	8.5	300	7.2	9.22	55.5	151.80	

Did well dewater? YES (NO)	Total volume removed: 7.2 (gal / (L))	
Sample method: Disp Bailer Hydrasleeve (New Tubing) Ext. Port Other:		
Sample date: 02 NOV 2012	Sample time: 1245	DTW at sample: 151.80
Sample ID: 6247	Lab: Energy Labs	Number of bottles: (2)
Analysis: 500 ml NP poly - Alkalinity, Cl, SO4, TDS, EC, pH 250 ml HNO3 poly *field filtered - Dissolved Metals		
Equipment blank ID @	Field blank ID @	
Duplicate ID:	Pre-purge DO:	Post purge DO:
$Fe2^+$:	Pre-purge ORP:	Post purge ORP:
NAPL depth:	Volume of NAPL:	Volume removed: ml

Purging And Sampling Data Sheet

Job#: 1350	**Sampler:** J Kerns B Myers	**Client:** Montgomery & Associates
Well ID: RL-5	**Date** (DDOct2012): 02 NOV 2012	**Site:** Rio Algom Mining, Lisbon, UT
Weather Conditions: Partly Cloudy		**Sampler Signature:**
Well diam: 1/4" 1" 2" 3" 4" 6" Other: (5")		**DTW:** 152.80 **Total Depth:** 186.00
Purge equip: (ES - diam: 2") Bladder Peri Waterra Positive Air Displacement Ext. System		
disp bailer teflon bailer other:	**Tubing:** OD: (New) Dedicated NA	
Purge method: (3-5 Case Volume) Micro/Low-Flow Extraction Other:		
Pump depth/ intake: 168'	**Multipliers:** 1"= 0.04 2"= 0.16 3"= 0.37 4"= 0.65 5"=1.02 6"= 1.47 Radius² X 0.163	
(TD - DTW X Multiplier = 1 Volume	80% Recovery (TD - DTW X 0.20 + DTW)	

1 Volume = 35 X 3 = 105 (Total Purge) 80%=____

Time	Temp (°C/ °F)	pH	Cond (mS (µS))	Turbidity (NTU)	Purge Rate (gal or mL/ min)	Volume Removed ((gal) L)	DO (mg/l)	ORP (mv)	DTW	Notes
1311	12.7	7.6	713	6.3	1.5	35	11.09	64.3	152.75	
1334	12.6	7.6	712	5.0	1.5	70	11.21	66.6	152.80	
1357	12.6	7.6	713	5.3	1.5	105	11.18	67.7	152.80	

Did well dewater? YES (NO) Total volume removed: 105 ((gal) / L)

Sample method: Disp Bailer Hydrasleeve (New Tubing) Ext. Port Other:

Sample date: 02 NOV 2012 Sample time: 1400 DTW at sample: 152.80

Sample ID: 6248 Lab: Energy Labs Number of bottles: 2

Analysis: 500 ml NP poly - Alkalinity, Cl, SO4, TDS, EC, pH 250 ml HNO3 poly *field filtered - Dissolved Metals

Equipment blank ID @	Field blank ID @	
Duplicate ID:	Pre-purge DO:	Post purge DO:
$Fe2^{+}$:	Pre-purge ORP:	Post purge ORP:
NAPL depth:	Volume of NAPL:	Volume removed: ml

Purging And Sampling Data Sheet

Job#: 1350	**Sampler:** J Kerns B Myers	**Client:** Montgomery & Associates
Well ID: RL-6	**Date** (DDOct2012): 01NOV2012 ~~11OCT12~~ JK	**Site:** Rio Algom Mining, Lisbon, UT
Weather Conditions: Partly Cloudy		**Sampler Signature:**
Well diam: 1/4" 1" 2" 3" (4") 6" Other:		**DTW:** 15.39 **Total Depth:** 20.00
Purge equip: ES - diam: Bladder Peri Waterra Positive Air Displacement Ext. System disp bailer teflon bailer other:		**Tubing:** OD: New Dedicated NA
Purge method: 3-5 Case Volume Micro/Low-Flow Extraction Other:		
Pump depth/ intake: —	**Multipliers:** 1"= 0.04 2"= 0.16 3"= 0.37 4"= 0.65 5"=1.02 6"= 1.47 Radius² X 0.163	
(TD - DTW X Multiplier = 1 Volume	80% Recovery (TD - DTW X 0.20 + DTW)	

1 Volume = ___ X ___ = ___ (Total Purge) 80%= ___

Time	Temp (°C) °F	pH	Cond (mS) µS	Turbidity (NTU)	Purge Rate (gal or mL/ min)	Volume Removed (gal / L)	DO (mg/l)	ORP (mv)	DTW	Notes
1015	12.9	7.0	7081		—	—	1.90	-50.6	15.39	
~~10~~	~~13.3~~								~~15.39~~ JK	

Did well dewater? YES (NO) Total volume removed: — (gal / L)

Sample method: Disp Bailer (Hydrasleeve) New Tubing Ext. Port Other:

Sample date: 01NOV2012	Sample time: 1015	DTW at sample: 15.39
Sample ID: 6209	Lab: Energy Labs	Number of bottles: 2
Analysis: 500 ml NP poly - Alkalinity, Cl, SO4, TDS, EC, pH	250 ml HNO3 poly *field filtered - Dissolved Metals	
Equipment blank ID @	Field blank ID @	
Duplicate ID:	Pre-purge DO:	Post purge DO:
$Fe2^{+}$:	Pre-purge ORP:	Post purge ORP:
NAPL depth:	Volume of NAPL:	Volume removed: ml

Purging And Sampling Data Sheet

Job#: 1350	**Sampler:** J Kerns B Myers	**Client:** Montgomery & Associates
Well ID: RL-6	**Date** (DDOct2012): 01Nov2012	**Site:** Rio Algom Mining, Lisbon, UT
Weather Conditions: Partly Cloudy		**Sampler Signature:**
Well diam: 1/4" 1" 2" 3" 4" 6" Other:		**DTW:** 15.39 **Total Depth:** 20.60
Purge equip: ES - diam: 2" Bladder Peri Waterra Positive Air Displacement Ext. System		
disp bailer teflon bailer other:	**Tubing:** OD: New Dedicated NA	
Purge method: 3-5 Case Volume Micro/Low-Flow Extraction Other:		
Pump depth/ intake: 17.5	**Multipliers:** 1"= 0.04 2"= 0.16 3"= 0.37 4"= 0.65 5"=1.02 6"= 1.47 Radius^2 X 0.163	
(TD - DTW X Multiplier = 1 Volume	80% Recovery (TD - DTW X 0.20 + DTW)	

1 Volume = 3.0 X 3 = 9.0 (Total Purge) 80%= 16.31

Time	Temp (°C / °F)	pH	Cond (mS / µS)	Turbidity (NTU)	Purge Rate (gal or mL/ min)	Volume Removed (gal / L)	DO (mg/l)	ORP (mv)	DTW	Notes
1138	12.1	7.1	2075 ~~20.75~~	10.3	1.0	3.0	1.33	-39.3	15.42	
1144	12.0	7.1	2076	7.2	1.0	6.0	1.29	-38.3	15.40	
1148	12.0	7.1	2074	6.9	1.0	9.0	1.27	-36.4	15.40	

Did well dewater? YES NO	Total volume removed: 9.0 (gal / L)	
Sample method: Disp Bailer Hydrasleeve New Tubing Ext. Port Other:		
Sample date: 01Nov2012	Sample time: 1150	DTW at sample: 15.40
Sample ID: 6241	Lab: Energy Labs	Number of bottles: 2
Analysis: 500 ml NP poly - Alkalinity, Cl, SO4, TDS, EC, pH 250 ml HNO3 poly *field filtered - Dissolved Metals		
Equipment blank ID @	Field blank ID @	
Duplicate ID:	Pre-purge DO:	Post purge DO:
$Fe2^+$:	Pre-purge ORP:	Post purge ORP:
NAPL depth:	Volume of NAPL:	Volume removed: ml

Purging And Sampling Data Sheet

Job#: 1350	**Sampler:** J Kerns B Myers	**Client:** Montgomery & Associates
Well ID: RL-6	**Date** (DDOct2012): 01NOV2012	**Site:** Rio Algom Mining, Lisbon, UT
Weather Conditions: Partly Cloudy		**Sampler Signature:**
Well diam: 1/4" 1" 2" 3" (4") 6" Other:		**DTW:** 15.39 **Total Depth:** 20.0
Purge equip: (ES - diam: 2") Bladder Peri Waterra Positive Air Displacement Ext. System disp bailer teflon bailer other:		**Tubing:** OD: (New) Dedicated NA
Purge method: 3-5 Case Volume (Micro/Low-Flow) Extraction Other:		
Pump depth/ intake: 17.5	**Multipliers:** 1"= 0.04 2"= 0.16 3"= 0.37 4"= 0.65 5"=1.02 6"= 1.47 Radius² X 0.163	
(TD - DTW X Multiplier = 1 Volume —	80% Recovery (TD - DTW X 0.20 + DTW) —	

1 Volume = — X — = — (Total Purge) 80%= —

Time	Temp (°C) °F)	pH	Cond (mS (µS)	Turbidity (NTU)	Purge Rate (gal or (mL) min)	Volume Removed (gal (L)	DO (mg/l)	ORP (mv)	DTW	Notes
1104	12.6	7.0	2074	36.0	150	~~0.5~~ ~~5003K~~	1.69	-50.9	15.39	Initial
1107	13.4	7.0	2073	35.9	150	~~(1.5)~~ ~~0.950~~	1.53	-50.1	15.39	
1110	13.3	7.1	2073	36.3	150	1.40	1.45	-45.7	15.39	
1113	13.2	7.1	2072	21.7	150	1.85	1.40	-45.5	15.39	
1116	13.1	7.1	2076	20.2	150	2.30	1.31	-43.2	15.39	
1119	13.0	7.1	2077	20.1	150	2.75	1.30	-41.3	15.39	

Did well dewater? YES (NO)	Total volume removed: 2.75 (gal (L)	
Sample method: Disp Bailer Hydrasleeve (New Tubing) Ext. Port Other:		
Sample date: 01NOV2012	Sample time: 1125	DTW at sample: 15.39
Sample ID: 6210	Lab: Energy Labs	Number of bottles: 2
Analysis: 500 ml NP poly - Alkalinity, Cl, SO4, TDS, EC, pH 250 ml HNO3 poly *field filtered - Dissolved Metals		
Equipment blank ID @	Field blank ID @	
Duplicate ID:	Pre-purge DO:	Post purge DO:
$Fe2^+$:	Pre-purge ORP:	Post purge ORP:
NAPL depth:	Volume of NAPL:	Volume removed: ml

Purging And Sampling Data Sheet

Job#: 1350	**Sampler:** J Kerns (B Myers)	**Client:** Montgomery & Associates
Well ID: MW-1	**Date** (DDOct2012): 03NOV2012	**Site:** Rio Algom Mining, Lisbon, UT
Weather Conditions: Cool	**Sampler Signature:**	
Well diam: 1/4" 1" 2" 3" 4" 6" Other: (5")	**DTW:** 105.30	**Total Depth:** 140.00
Purge equip: (ES diam:) Bladder Peri Waterra Positive Air Displacement Ext. System		
disp bailer teflon bailer other:	**Tubing:** OD: New Dedicated NA	
Purge method: 3-5 Case Volume Micro/Low-Flow Extraction Other: (HS)		
Pump depth/ intake: 125'	**Multipliers:** 1"= 0.04 2"= 0.16 3"= 0.37 4"= 0.65 5"=1.02 6"= 1.47 Radius² X 0.163	
(TD - DTW X Multiplier = 1 Volume	80% Recovery (TD - DTW X 0.20 + DTW)	

1 Volume = _____ X _____ = _____ (Total Purge) 80%=_____

Time	Temp (C) (°F)	pH	Cond (mS) (µS)	Turbidity (NTU)	Purge Rate (gal or mL/ min)	Volume Removed (gal / L)	DO (mg/l)	ORP (mv)	DTW	Notes
1145	13.1	7.1	1835	12	—	—	6.0	107	105.30	

Did well dewater? YES (NO) Total volume removed: — (gal / L)

Sample method: Disp Bailer (Hydrasleeve) New Tubing Ext. Port Other:

Sample date: 03NOV2012	Sample time: 1145	DTW at sample: 105.30
Sample ID: G236	Lab: Energy Labs	Number of bottles: 2
Analysis: 500 ml NP poly - Alkalinity, Cl, SO4, TDS, EC, pH	250 ml HNO3 poly *field filtered - Dissolved Metals	
Equipment blank ID @	Field blank ID @	
Duplicate ID:	Pre-purge DO:	Post purge DO:
$Fe2^{+}$:	Pre-purge ORP:	Post purge ORP:
NAPL depth:	Volume of NAPL:	Volume removed: ml

Purging And Sampling Data Sheet

Job#: 1350	**Sampler:** J Kerns (B Myers)	**Client:** Montgomery & Associates
Well ID: MW-1	**Date** (DDOct2012): 03NOV2012	**Site:** Rio Algom Mining, Lisbon, UT
Weather Conditions: Warm	**Sampler Signature:**	
Well diam: 1/4" 1" 2" 3" 4" 6" Other: (5")	**DTW:** 105.34 **Total Depth:** 140.06	
Purge equip: (ES - diam) Bladder Peri Waterra Positive Air Displacement Ext. System		
disp bailer teflon bailer other: **Tubing:** OD: (New) Dedicated NA		
Purge method: 3-5 Case Volume (Micro/Low-Flow) Extraction Other:		
Pump depth/ intake: 123' **Multipliers:** 1"= 0.04 2"= 0.16 3"= 0.37 4"= 0.65 5"=1.02 6"= 1.47 Radius² X 0.163		
(TD - DTW X Multiplier = 1 Volume	80% Recovery (TD - DTW X 0.20 + DTW)	

1 Volume = _____ X _____ = _____ (Total Purge) 80%=_____

Time	Temp (°C/°F)	pH	Cond (mS/(µS))	Turbidity (NTU)	Purge Rate (gal or mL/ min)	Volume Removed (gal / L)	DO (mg/l)	ORP (mv)	DTW	Notes
1202	13.6	7.1	1809	251	400	1.2L	3.2	126	105.78	
1205	13.3	7.1	1206	89	|	2.4L	2.8	117	105.74	
1208	13.2	7.1	1220	32	|	3.6L	2.9	113	105.74	
1211	13.4	7.1	1227	27	|	4.8L	2.9	106	105.74	
1214	14.4	7.1	1219	29	|	6L	2.9	97	105.74	
1217	14.7	7.1	1219	30	|	7.2L	2.9	92	105.74	
1220	15.1	7.1	1217	30	↓	8.4L	2.9	88	105.74	

Did well dewater? YES (NO)	Total volume removed: 8.4L (gal / L)	
Sample method: Disp Bailer Hydrasleeve (New Tubing) Ext. Port Other:		
Sample date: 03NOV2012	Sample time: 1220	DTW at sample: 105.74
Sample ID: 6239	Lab: Energy Labs	Number of bottles: 2
Analysis: 500 ml NP poly - Alkalinity, Cl, SO4, TDS, EC, pH 250 ml HNO3 poly *field filtered - Dissolved Metals		
Equipment blank ID @	Field blank ID @	
Duplicate ID:	Pre-purge DO:	Post purge DO:
$Fe2^+$:	Pre-purge ORP:	Post purge ORP:
NAPL depth:	Volume of NAPL:	Volume removed: ml

Purging And Sampling Data Sheet

Job#: 1350	**Sampler:** J Kerns (B Myers)	**Client:** Montgomery & Associates
Well ID: MW-1	**Date** (DDOct2012): 03Nov2012	**Site:** Rio Algom Mining, Lisbon, UT
Weather Conditions: warm	**Sampler Signature:**	
Well diam: 1/4" 1" 2" 3" 4" 6" Other: (5")	**DTW:** 105.30	**Total Depth:** 140.02

Purge equip: (ES - diam:) Bladder Peri Waterra Positive Air Displacement Ext. System
disp bailer teflon bailer other: **Tubing:** OD: New Dedicated NA

Purge method: (3-5 Case Volume) Micro/Low-Flow Extraction Other:

Pump depth/ intake: 123' **Multipliers:** 1"= 0.04 2"= 0.16 3"= 0.37 4"= 0.65 5"=1.02 6"= 1.47 Radius² X 0.163

(TD - DTW X Multiplier = 1 Volume | 80% Recovery (TD - DTW X 0.20 + DTW)

1 Volume = 35.4 X 3 = 106.2 (Total Purge) 80%= 112.24

Time	Temp (°C) °F	pH	Cond (mS µS)	Turbidity (NTU)	Purge Rate (gal or mL/ min)	Volume Removed (gal / L)	DO (mg/l)	ORP (mv)	DTW	Notes
1239	13.1	7.1	1642	257	2gpm	35.5	5.6	65	113.82	
1259	12.9	7.2	1803	35	1	71	5.4	59	114.38	
1319	12.8	7.2	1747	33	L	107	5.4	30	114.66	
	Waited briefly for 80%									

Did well dewater? YES (NO) Total volume removed: 107 (gal / L)

Sample method: Disp Bailer Hydrasleeve (New Tubing) Ext. Port Other:

Sample date: 03Nov2012	Sample time: 1326	DTW at sample: 112.24
Sample ID: MW40	Lab: Energy Labs	Number of bottles: 2
Analysis: 500 ml NP poly - Alkalinity, Cl, SO4, TDS, EC, pH	250 ml HNO3 poly *field filtered - Dissolved Metals	
Equipment blank ID @	Field blank ID @	
Duplicate ID:	Pre-purge DO:	Post purge DO:
$Fe2^{+}$:	Pre-purge ORP:	Post purge ORP:
NAPL depth:	Volume of NAPL:	Volume removed: ml

Purging And Sampling Data Sheet

Job#: 1350	**Sampler:** J Kerns B Myers	**Client:** Montgomery & Associates
Well ID: OW-18T-9	**Date** (DDOct2012): 03NOV2012	**Site:** Rio Algom Mining, Lisbon, UT
Weather Conditions: Sunny	**Sampler Signature:**	
Well diam: 1/4" 1" 2" 3" 4" (6") Other:	**DTW:** 122.90 **Total Depth:** 142.00	
Purge equip: ES - diam: Bladder Peri Waterra Positive Air Displacement Ext. System disp bailer teflon bailer other:	**Tubing:** OD: New Dedicated NA	
Purge method: 3-5 Case Volume Micro/Low-Flow Extraction Other:		
Pump depth/ intake: 132.5	**Multipliers:** 1"= 0.04 2"= 0.16 3"= 0.37 4"= 0.65 5"=1.02 6"= 1.47 Radius² X 0.163	
(TD - DTW X Multiplier = 1 Volume —	80% Recovery (TD - DTW X 0.20 + DTW)	

1 Volume = — X ____ = — (Total Purge) 80%= —

Time	Temp (°C) °F	pH	Cond (mS) µS	Turbidity (NTU)	Purge Rate (gal or mL/ min)	Volume Removed (gal / L)	DO (mg/l)	ORP (mv)	DTW	Notes
1150	14.6	9.9	40145		—	—	1.68	-237.6	122.90	Brown/Tan Looks like Apple Juice
—	Reactive with HNO3 Preservative. Added 3 vials HNO3									
—	To Sample and 3 to Duplicate. pH dropped to 6.2									

Did well dewater? YES NO	Total volume removed: — (gal / L)	
Sample method: Disp Bailer (Hydrasleeve) New Tubing Ext. Port Other:		
Sample date: 03NOV2012	Sample time: 1150	DTW at sample: 122.90
Sample ID: 6262	Lab: Energy Labs	Number of bottles: 2 + 2
Analysis: 500 ml NP poly - Alkalinity, Cl, SO4, TDS, EC, pH 250 ml HNO3 poly *field filtered - Dissolved Metals		
Equipment blank ID @	Field blank ID @	
Duplicate ID: 6263 @ 1155	Pre-purge DO:	Post purge DO:
$Fe2^+$:	Pre-purge ORP:	Post purge ORP:
NAPL depth:	Volume of NAPL:	Volume removed: ml

Purging And Sampling Data Sheet

Job#: 1350	**Sampler:** J Kerns B Myers	**Client:** Montgomery & Associates
Well ID: MW-UT-9	**Date** (DDOct2012): 03NOV2012	**Site:** Rio Algom Mining, Lisbon, UT
Weather Conditions: Sunny - Breeze	**Sampler Signature:**	
Well diam: 1/4" 1" 2" 3" 4" (6") Other:	**DTW:** 122.90 **Total Depth:** 142.00	
Purge equip: (ES - diam:2") Bladder Peri Waterra Positive Air Displacement Ext. System disp bailer teflon bailer other:	**Tubing:** OD: (New) Dedicated NA	
Purge method: 3-5 Case Volume (Micro/Low-Flow) Extraction Other:		
Pump depth/ intake: 130.5	**Multipliers:** 1"= 0.04 2"= 0.16 3"= 0.37 4"= 0.65 5"=1.02 6"= 1.47 Radius² X 0.163	
(TD - DTW X Multiplier = 1 Volume	80% Recovery (TD - DTW X 0.20 + DTW)	

1 Volume = ___ X ___ = ___ (Total Purge) 80%= ___

Time	Temp (°C °F)	pH	Cond (mS / µS)	Turbidity (NTU)	Purge Rate (gal or (mL) / min)	Volume Removed (gal / (L))	DO (mg/l)	ORP (mv)	DTW	Notes
1233	13.9	9.9	44627	3.0	300	1.0	Ø.58	-395.6	123.21	Clear/Brown
1236	13.9	9.9	45847	3.0	300	1.9	Ø.56	-394.8	123.21	Looks like
1239	13.7	9.9	46073	3.6	300	2.8	Ø.58	-399.2	123.21	Apple Juice
1242	14.0	9.9	46165	3.7	300	3.7	Ø.48	-395.1	123.21	
1245	14.2	9.9	46166	3.2	300	4.6	Ø.44	-396.5	123.21	
1248	14.2	9.9	46218	3.2	300	5.5	Ø.42	-397.3	123.21	
1251	14.2	9.9	46224	3.5	300	6.4	Ø.40	-397.1	123.21	
—	Add (3) vials HNO_3 to				Metals Bottle		- pH @ 1.8			- Reactive w/ HNO3

Did well dewater? YES (NO)	Total volume removed: 6.4 (gal / (L))	
Sample method: Disp Bailer Hydrasleeve (New Tubing) Ext. Port Other:		
Sample date: 03NOV2012	Sample time: 1255	DTW at sample: 123.21
Sample ID: 6264	Lab: Energy Labs	Number of bottles: (2)
Analysis: 500 ml NP poly - Alkalinity, Cl, SO4, TDS, EC, pH 250 ml HNO3 poly *field filtered - Dissolved Metals		
Equipment blank ID @	Field blank ID @	
Duplicate ID:	Pre-purge DO:	Post purge DO:
$Fe2^+$:	Pre-purge ORP:	Post purge ORP:
NAPL depth:	Volume of NAPL:	Volume removed: ml

Purging And Sampling Data Sheet

Job#: 1350	**Sampler:** J Kerns B Myers	**Client:** Montgomery & Associates
Well ID: Ow-UT-9	**Date** (DDOct2012): 03Nov 2012	**Site:** Rio Algom Mining, Lisbon, UT
Weather Conditions: Sunny	**Sampler Signature:**	
Well diam: 1/4" 1" 2" 3" 4" (6") Other:	**DTW:** 122.90 **Total Depth:** 142.00	

Purge equip: (ES - diam: 2 '' Bladder) Peri Waterra Positive Air Displacement Ext. System
disp bailer teflon bailer other: **Tubing:** OD: (New) Dedicated NA

Purge method: (3-5 Case Volume) Micro/Low-Flow Extraction Other:

Pump depth/ intake: 130.5 **Multipliers:** 1"= 0.04 2"= 0.16 3"= 0.37 4"= 0.65 5"=1.02 6"= 1.47 Radius² X 0.163

(TD - DTW X Multiplier = 1 Volume | 80% Recovery (TD - DTW X 0.20 + DTW)

1 Volume = 28.1 X 3 = 84.2 (Total Purge) 80%=

Time	Temp (°C/°F)	pH	Cond (mS/µS)	Turbidity (NTU)	Purge Rate (gal/ or mL/ min)	Volume Removed (gal/ L)	DO (mg/l)	ORP (mv)	DTW	Notes
1319	13.3	9.9	44842	3.7	1.5	28	Ø.30	-324.8	125.90	
1338	13.1	9.9	44915	3.6	1.5	56	Ø.38	-277.8	126.50	
1356	13.3	9.9	45007	3.7	1.5	85	Ø.38	-267.8	125.00	
—	Added (3)	vials of	HNO3	to	sample	—	pH = 5.9			

Did well dewater? YES (NO) Total volume removed: 8.5 (gal / L)

Sample method: Disp Bailer Hydrasleeve (New Tubing) Ext. Port Other:

Sample date: 03Nov2012 Sample time: 1400 DTW at sample: 125.00

Sample ID: 6265 Lab: Energy Labs Number of bottles: 2

Analysis: 500 ml NP poly - Alkalinity, Cl, SO4, TDS, EC, pH 250 ml HNO3 poly *field filtered - Dissolved Metals

Equipment blank ID 6266@ 1430 Field blank ID @

Duplicate ID: Pre-purge DO: Post purge DO:

$Fe2^{+}$: Pre-purge ORP: Post purge ORP:

NAPL depth: Volume of NAPL: Volume removed: ml

Purging And Sampling Data Sheet

Job#: 1350	**Sampler:** J Kerns B Myers	**Client:** Montgomery & Associates
Well ID: H-63	**Date** (DDOct2012): 03NOV2012	**Site:** Rio Algom Mining, Lisbon, UT
Weather Conditions: Blue Sky - Cold	**Sampler Signature:**	
Well diam: 1/4" 1" 2" 3" 4" 6" Other: 5"	**DTW:** 135.84 **Total Depth:** 172.00	
Purge equip: ES - diam: Bladder Peri Waterra Positive Air Displacement Ext. System disp bailer teflon bailer other:	**Tubing:** OD: New Dedicated NA	
Purge method: 3-5 Case Volume Micro/Low-Flow Extraction Other:		
Pump depth/ intake: 157'	**Multipliers:** 1"= 0.04 2"= 0.16 3"= 0.37 4"= 0.65 5"=1.02 6"= 1.47 Radius² X 0.163	
(TD - DTW X Multiplier = 1 Volume	80% Recovery (TD - DTW X 0.20 + DTW)	

1 Volume = — X — = — (Total Purge) 80%= —

Time	Temp (°C / °F)	pH	Cond (mS (µS))	Turbidity (NTU)	Purge Rate (gal or mL/ min)	Volume Removed (gal / L)	DO (mg/l)	ORP (mv)	DTW	Notes
0835	9.4	8.3	1202	5.7	—	—	5.48	132.0	135.84	

Did well dewater? YES (NO) Total volume removed: — (gal / L)

Sample method: Disp Bailer (Hydrasleeve) New Tubing Ext. Port Other:

Sample date: 03NOV2012 Sample time: 0835 DTW at sample: 135.84

Sample ID: 6249 Lab: Energy Labs Number of bottles: (2)

Analysis: 500 ml NP poly - Alkalinity, Cl, SO4, TDS, EC, pH 250 ml HNO3 poly *field filtered - Dissolved Metals

Equipment blank ID @ Field blank ID @

Duplicate ID: Pre-purge DO: Post purge DO:

$Fe2^{+}$: Pre-purge ORP: Post purge ORP:

NAPL depth: Volume of NAPL: Volume removed: ml

Purging And Sampling Data Sheet

Job#: 1350	**Sampler:** J Kerns B Myers	**Client:** Montgomery & Associates
Well ID: 14-63	**Date** (DDOct2012): 03NOV2012	**Site:** Rio Algom Mining, Lisbon, UT
Weather Conditions: Sunny - Brisk	**Sampler Signature:**	
Well diam: 1/4" 1" 2" 3" 4" 6" Other: 5"	**DTW:** 135.84 **Total Depth:** 172.00	
Purge equip: (ES - diam: 2") Bladder Peri Waterra Positive Air Displacement Ext. System		
disp bailer teflon bailer other:	**Tubing:** OD: (New) Dedicated NA	
Purge method: 3-5 Case Volume Micro/Low-Flow Extraction Other:		
Pump depth/ intake: 159'	**Multipliers:** 1"= 0.04 2"= 0.16 3"= 0.37 4"= 0.65 5"=1.02 6"= 1.47 Radius² X 0.163	
(TD - DTW X Multiplier = 1 Volume	80% Recovery (TD - DTW X 0.20 + DTW)	

1 Volume = — X — = — (Total Purge) 80%= —

Time	Temp (°C) °F)	pH	Cond (mS µS)	Turbidity (NTU)	Purge Rate (gal or (ml) min)	Volume Removed (gal (L))	DO (mg/l)	ORP (mv)	DTW	Notes
0915	10.6	8.1	1252	5.8	300	1.0	4.98	42.0	136.11	
0918	10.6	8.3	1257	5.5	300	1.9	4.53	38.00	136.11	
0921	10.9	8.3	1204	5.1	300	2.8	4.49	33.00	136.11	
0924	11.0	8.3	1207	5.1	300	3.7	4.47	32.6	136.11	
0927	11.1	8.3	1203	5.3	300	4.6	4.46	32.9	136.11	
0930	11.1	8.3	1203	5.2	300	5.5	4.43	32.8	136.11	

Did well dewater? YES (NO)	Total volume removed: 5.5 (gal (L))	
Sample method: Disp Bailer Hydrasleeve (New Tubing) Ext. Port Other:		
Sample date: 03NOV2012	Sample time: 0935	DTW at sample: 136.11
Sample ID: 6250	Lab: Energy Labs	Number of bottles: 2
Analysis: 500 ml NP poly - Alkalinity, Cl, SO4, TDS, EC, pH 250 ml HNO3 poly *field filtered - Dissolved Metals		
Equipment blank ID @	Field blank ID @	
Duplicate ID:	Pre-purge DO:	Post purge DO:
$Fe2^+$:	Pre-purge ORP:	Post purge ORP:
NAPL depth:	Volume of NAPL:	Volume removed: ml

Purging And Sampling Data Sheet

Job#: 1350	**Sampler:** J Kerns B Myers	**Client:** Montgomery & Associates
Well ID: H63	**Date** (DDOct2012): 03NOV2017	**Site:** Rio Algom Mining, Lisbon, UT
Weather Conditions: Sunny - Warming	**Sampler Signature:**	
Well diam: 1/4" 1" 2" 3" 4" 6" Other: 5"	**DTW:** 135.84 **Total Depth:** 172.00	
Purge equip: (ES - diam:2") Bladder Peri Waterra Positive Air Displacement Ext. System		
disp bailer teflon bailer other:	**Tubing:** OD: (New) Dedicated NA	
Purge method: (3-5 Case Volume) Micro/Low-Flow Extraction Other:		
Pump depth/ intake: 159'	**Multipliers:** 1"= 0.04 2"= 0.16 3"= 0.37 4"= 0.65 5"=1.02 6"= 1.47 Radius² X 0.163	
(TD - DTW X Multiplier = 1 Volume	80% Recovery (TD - DTW X 0.20 + DTW)	

1 Volume = 36.9 X 3 = 111 (Total Purge) 80%=

Time	Temp (°C) °F)	pH	Cond (mS (µS))	Turbidity (NTU)	Purge Rate (gal or mL/ min)	Volume Removed (gal) L)	DO (mg/l)	ORP (mv)	DTW	Notes
0953	12.3	8.0	1137	8.9	2.5	37	7.11	25.6	139.81	
-	Pause purge to offload water						—	—	—	
1038	12.3	7.9	1119	9.3	2.5	74	7.78	-141.0	139.71	
1053	12.3	7.9	1121	9.0	2.5	111	7.53	-138.3	139.81	

Did well dewater? YES (NO) Total volume removed: 111 (gal / L)

Sample method: Disp Bailer Hydrasleeve (New Tubing) Ext. Port Other:

Sample date: 03NOV2017 Sample time: 1055 DTW at sample: 139.81

Sample ID: 6261 Lab: Energy Labs Number of bottles: (2)

Analysis: 500 ml NP poly - Alkalinity, Cl, SO4, TDS, EC, pH 250 ml HNO3 poly *field filtered - Dissolved Metals

Equipment blank ID @	Field blank ID @	
Duplicate ID:	Pre-purge DO:	Post purge DO:
$Fe2^+$:	Pre-purge ORP:	Post purge ORP:
NAPL depth:	Volume of NAPL:	Volume removed: ml

Purging And Sampling Data Sheet

Job#: 1350	**Sampler:** J Kerns (B Myers)	**Client:** Montgomery & Associates
Well ID: MW100	**Date** (DDOct2012): 07NOV2012	**Site:** Rio Algom Mining, Lisbon, UT
Weather Conditions: Cool	**Sampler Signature:**	
Well diam: 1/4" 1" 2" 3" (4") 6" Other:	**DTW:** 146.96 **Total Depth:** 204.5	
Purge equip: ES - diam: Bladder Peri Waterra Positive Air Displacement Ext. System disp bailer teflon bailer other:	**Tubing:** OD: New Dedicated NA	
Purge method: 3-5 Case Volume Micro/Low-Flow Extraction Other: (HS)		
Pump depth/ intake: 178'	**Multipliers:** 1"= 0.04 2"= 0.16 3"= 0.37 4"= 0.65 5"=1.02 6"= 1.47 Radius² X 0.163	
(TD - DTW X Multiplier = 1 Volume	80% Recovery (TD - DTW X 0.20 + DTW)	

1 Volume = _____ X _____ = _____ (Total Purge) 80%=_____

Time	Temp (°C) °F)	pH	Cond (mS / (uS))	Turbidity (NTU)	Purge Rate (gal or mL/ min)	Volume Removed (gal / L)	DO (mg/l)	ORP (mv)	DTW	Notes
855	10.6	7.3	932	8	—	—	1.71	131	—	

Did well dewater? YES (NO) Total volume removed: ~~146.96~~ (gal / L)

Sample method: Disp Bailer (Hydrasleeve) New Tubing Ext. Port Other:

Sample date: 07NOV2012	Sample time: 855	DTW at sample: 146.96
Sample ID: 60287	Lab: Energy Labs	Number of bottles: 2
Analysis: 500 ml NP poly - Alkalinity, Cl, SO4, TDS, EC, pH	250 ml HNO3 poly *field filtered - Dissolved Metals	
Equipment blank ID @	Field blank ID @	
Duplicate ID:	Pre-purge DO:	Post purge DO:
$Fe2^+$:	Pre-purge ORP:	Post purge ORP:
NAPL depth:	Volume of NAPL:	Volume removed: ml

Purging And Sampling Data Sheet

Job#: 1350	**Sampler:** J Kerns (B Myers)	**Client:** Montgomery & Associates
Well ID: MW100	**Date** (DDOct2012): 07Nov2012	**Site:** Rio Algom Mining, Lisbon, UT
Weather Conditions: Cool	**Sampler Signature:**	
Well diam: 1/4" 1" 2" 3" (4") 6" Other:	**DTW:** 146.86 **Total Depth:** 204.5	
Purge equip: (ES - diam:) Bladder Peri Waterra Positive Air Displacement Ext. System disp bailer teflon bailer other:	**Tubing:** OD: (New) Dedicated NA	
Purge method: 3-5 Case Volume (Micro/Low-Flow) Extraction Other:		
Pump depth/ intake: 176'	**Multipliers:** 1"= 0.04 2"= 0.16 3"= 0.37 4"= 0.65 5"=1.02 6"= 1.47 Radius² X 0.163	
(TD - DTW X Multiplier = 1 Volume	80% Recovery (TD - DTW X 0.20 + DTW)	

1 Volume = _____ X _____ = _____ (Total Purge) 80%= _____

Time	Temp (C / °F)	pH	Cond (mS / µS)	Turbidity (NTU)	Purge Rate (gal or mL/ min)	Volume Removed (gal / L)	DO (mg/l)	ORP (mv)	DTW	Notes
905	10.7	7.3	1373	27	400	1.2	1.9	131	147.20	
908	11.1	7.3	1381	10	↓	2.4	1.5	130	147.20	
911	11.2	7.3	1390	7	↓	3.6	1.5	129	147.18	
914	11.2	7.3	1397	6	↓	4.8	1.5	129	147.18	
917	11.2	7.3	1395	6	↓	6	1.5	129	147.18	

Did well dewater? YES (NO)	Total volume removed: 6L (gal / L)		
Sample method: Disp Bailer Hydrasleeve (New Tubing) Ext. Port Other:			
Sample date: 07Nov2012	Sample time: 920	DTW at sample: 147.18	
Sample ID: 07880	Lab: Energy Labs	Number of bottles: 2	
Analysis: 500 ml NP poly - Alkalinity, Cl, SO4, TDS, EC, pH 250 ml HNO3 poly *field filtered - Dissolved Metals			
Equipment blank ID @	Field blank ID @		
Duplicate ID:	Pre-purge DO:	Post purge DO:	
$Fe2^+$:	Pre-purge ORP:	Post purge ORP:	
NAPL depth:	Volume of NAPL:	Volume removed: ml	

Purging And Sampling Data Sheet

Job#: 1350	**Sampler:** J Kerns (B Myers)	**Client:** Montgomery & Associates
Well ID: MW-100	**Date** (DDOct2012): 07NOV2012	**Site:** Rio Algom Mining, Lisbon, UT
Weather Conditions: Cool	**Sampler Signature:**	
Well diam: 1/4" 1" 2" 3" (4") 6" Other:	**DTW:** 146.96 **Total Depth:** 201.5	
Purge equip: (ES - diam:) Bladder Peri Waterra Positive Air Displacement Ext. System		
disp bailer teflon bailer other:	**Tubing:** OD: (New) Dedicated NA	
Purge method: (3-5 Case Volume) Micro/Low-Flow Extraction Other:		
Pump depth/ intake: 176'	**Multipliers:** 1"= 0.04 2"= 0.16 3"= 0.37 4"= 0.65 5"=1.02 6"= 1.47 Radius² X 0.163	
(TD - DTW X Multiplier = 1 Volume	80% Recovery (TD - DTW X 0.20 + DTW)	

1 Volume = 37.4 X 3 = 112.2 (Total Purge) 80%= 158.47

Time	Temp (°C) °F)	pH	Cond (mS /(µS)	Turbidity (NTU)	Purge Rate (gal or mL/ min)	Volume Removed (gal / L)	DO (mg/l)	ORP (mv)	DTW	Notes
933	12.3	7.3	1404	25	3	37.5	1.2	125	149.83	
946	12.3	7.3	1396	13	↓	75	1.1	120 ~~200~~	150.05	
959	12.3	7.3	1391	11	↓	112.5	1.0	118	150.55	

Did well dewater? YES (NO) Total volume removed: 112.5 (gal / L)

Sample method: Disp Bailer Hydrasleeve (New Tubing) Ext. Port Other:

Sample date: 07NOV2012	Sample time: 1000	DTW at sample: 150.55
Sample ID: 6289	Lab: Energy Labs	Number of bottles: 2
Analysis: 500 ml NP poly - Alkalinity, Cl, SO4, TDS, EC, pH	250 ml HNO3 poly *field filtered - Dissolved Metals	
Equipment blank ID @	Field blank ID @	
Duplicate ID:	Pre-purge DO:	Post purge DO:
$Fe2^+$:	Pre-purge ORP:	Post purge ORP:
NAPL depth:	Volume of NAPL:	Volume removed: ml

Purging And Sampling Data Sheet

Job#: 1350	**Sampler:** J Kerns B Myers	**Client:** Montgomery & Associates
Well ID: MW-101	**Date** (DDOct2012): 06NOV2012	**Site:** Rio Algom Mining, Lisbon, UT
Weather Conditions: Blue Sky - Warm	**Sampler Signature:**	
Well diam: 1/4" 1" 2" 3" (4") 6" Other:	**DTW:** 151.93 **Total Depth:** 161.00	
Purge equip: ES - diam: Bladder Peri Waterra Positive Air Displacement Ext. System disp bailer teflon bailer other:	**Tubing:** OD: New Dedicated NA	
Purge method: 3-5 Case Volume Micro/Low-Flow Extraction Other:		
Pump depth/ intake: .	**Multipliers:** 1"= 0.04 2"= 0.16 3"= 0.37 4"= 0.65 5"=1.02 6"= 1.47 Radius^2 X 0.163	
(TD - DTW X Multiplier = 1 Volume	80% Recovery (TD - DTW X 0.20 + DTW)	

1 Volume = _____ X _____ = _____ (Total Purge) 80%= _____

Time	Temp (°C) °F	pH	Cond (mS) µS	Turbidity (NTU)	Purge Rate (gal or mL/ min)	Volume Removed (gal / L)	DO (mg/l)	ORP (mv)	DTW	Notes
1040	12.8	7.2	20031	23.2	—	—	5.29	-257.8	151.93	

Did well dewater? YES NO — Total volume removed: — (gal / L)

Sample method: Disp Bailer (Hydrasleeve) New Tubing Ext. Port Other:

Sample date: 06NOV2012 — Sample time: 1040 — DTW at sample: 151.93

Sample ID: 6271 — Lab: Energy Labs — Number of bottles: (2)

Analysis: 500 ml NP poly - Alkalinity, Cl, SO4, TDS, EC, pH 250 ml HNO3 poly *field filtered - Dissolved Metals

Equipment blank ID @	Field blank ID @	
Duplicate ID:	Pre-purge DO:	Post purge DO:
$Fe2^+$:	Pre-purge ORP:	Post purge ORP:
NAPL depth:	Volume of NAPL:	Volume removed: ml

Purging And Sampling Data Sheet

Job#: 1350	**Sampler:** J Kerns (B Myers)	**Client:** Montgomery & Associates
Well ID: MW-101	**Date** (DDOct2012): 06NOV2012	**Site:** Rio Algom Mining, Lisbon, UT
Weather Conditions: warm	**Sampler Signature:**	
Well diam: 1/4" 1" 2" 3" (4") 6" Other:	**DTW:** ~~150.65~~ 151.93	**Total Depth:** 161.00
Purge equip: (ES - diam:) Bladder Peri Waterra Positive Air Displacement Ext. System disp bailer teflon bailer other:	**Tubing:** OD: New Dedicated NA	
Purge method: 3-5 Case Volume (Micro/Low-Flow) Extraction Other:		
Pump depth/ intake: 156	**Multipliers:** 1"= 0.04 2"= 0.16 3"= 0.37 4"= 0.65 5"=1.02 6"= 1.47 Radius² X 0.163	
(TD - DTW X Multiplier = 1 Volume	80% Recovery (TD - DTW X 0.20 + DTW)	

1 Volume = _____ X _____ = _____ (Total Purge) 80%=_____

Time	Temp (°C) °F)	pH	Cond (mS (µS))	Turbidity (NTU)	Purge Rate (gal or mL/ min)	Volume Removed (gal / L)	DO (mg/l)	ORP (mv)	DTW	Notes
1054	13.1	7.1	19925	721	400	1.2L	4.5	64	151.35	
1057	12.2	7.0	22162	766		2.4L	4.5	67	151.39	
1100 1105	12.2	7.0	22428	836		3.6L	4.6	66	151.38	
1103	12.7	7.0	22372	811		4.8L	4.7	88	151.38	
1106	16.1	7.0	21882	831		6L	4.3	83	151.42	
1109	18.0	7.0	21703	755		7.2L	4.2	81	151.42	
1112	18.0	7.0	21717	731		8.4L	4.3	78	151.42	
1115	18.0	7.0	21706	724	↓	9.6L	4.4	75	151.42	

Did well dewater? YES (NO) Total volume removed: 9.6L (gal / L)

Sample method: Disp Bailer Hydrasleeve (New Tubing) Ext. Port Other:

Sample date: 06NOV2012	Sample time: 1115	DTW at sample: 151.42
Sample ID: 60259	Lab: Energy Labs	Number of bottles: 2
Analysis: 500 ml NP poly - Alkalinity, Cl, SO4, TDS, EC, pH 250 ml HNO3 poly *field filtered - Dissolved Metals		

Equipment blank ID @	Field blank ID @	
Duplicate ID:	Pre-purge DO:	Post purge DO:
$Fe2^{+}$:	Pre-purge ORP:	Post purge ORP:
NAPL depth:	Volume of NAPL:	Volume removed: ml

Purging And Sampling Data Sheet

Job#: 1350	**Sampler:** J Kerns (B Myers)	**Client:** Montgomery & Associates
Well ID: MW-101	**Date** (DDOct2012): 06NOV2012	**Site:** Rio Algom Mining, Lisbon, UT
Weather Conditions: warm	**Sampler Signature:**	
Well diam: 1/4" 1" 2" 3" (4") 6" Other:	**DTW:** 151.38 **Total Depth:** 161.00	
Purge equip: (ES - diam) Bladder Peri Waterra Positive Air Displacement Ext. System		
disp bailer teflon bailer other:	**Tubing:** OD: (New) Dedicated NA	
Purge method: (3-5 Case Volume) Micro/Low-Flow Extraction Other:		
Pump depth/ intake: 156	**Multipliers:** 1"= 0.04 2"= 0.16 3"= 0.37 4"= 0.65 5"=1.02 6"= 1.47 Radius² X 0.163	
(TD - DTW X Multiplier = 1 Volume	80% Recovery (TD - DTW X 0.20 + DTW)	

1 Volume = 6.3 X 3 = 18.9 (Total Purge) 80%= 153.30

Time	Temp (°C / °F)	pH	Cond (mS / µS)	Turbidity (NTU)	Purge Rate (gal or mL/ min)	Volume Removed (gal / L)	DO (mg/l)	ORP (mv)	DTW	Notes
1123	15.5	7.1	19928	256	1gpm	6.3	4.4	81	152.80	
1129	14.3	7.0	19879	71000	↓	12.6	4.1	76	153.30	
1135	14.0	7.0	19845	71000	↓	19	4.3	71	153.74	
	Wat-d	briefly	for	80%						

Did well dewater? YES (NO) Total volume removed: 19 ((gal) / L)

Sample method: Disp Bailer Hydrasleeve (New Tubing) Ext. Port Other:

Sample date: 06NOV2012	Sample time: 1140	DTW at sample: 153.30
Sample ID: 02(60)	Lab: Energy Labs	Number of bottles: 2
Analysis: 500 ml NP poly - Alkalinity, Cl, SO4, TDS, EC, pH	250 ml HNO3 poly *field filtered - Dissolved Metals	
Equipment blank ID 0282 @ 1215	Field blank ID @	
* Duplicate ID: 0281 @ 1150	Pre-purge DO:	Post purge DO:
$Fe2^+$:	Pre-purge ORP:	Post purge ORP:
NAPL depth:	Volume of NAPL:	Volume removed: ml

Purging And Sampling Data Sheet

Job#: 1350	**Sampler:** J Kerns B Myers	**Client:** Montgomery & Associates
Well ID: MW-102	**Date** (DDOct2012): 06 Nov 2012	**Site:** Rio Algom Mining, Lisbon, UT
Weather Conditions: Blue Sky - Cold	**Sampler Signature:**	
Well diam: 1/4" 1" 2" 3" (4") 6" Other:	**DTW:** 126.13 **Total Depth:** 138.10	
Purge equip: ES - diam: Bladder Peri Waterra Positive Air Displacement Ext. System		
disp bailer teflon bailer other: — **Tubing:** OD: New Dedicated NA		
Purge method: 3-5 Case Volume Micro/Low-Flow Extraction Other:		
Pump depth/ intake: — **Multipliers:** 1"= 0.04 2"= 0.16 3"= 0.37 4"= 0.65 5"=1.02 6"= 1.47 Radius² X 0.163		
(TD - DTW X Multiplier = 1 Volume	80% Recovery (TD - DTW X 0.20 + DTW)	

1 Volume = — X — = — (Total Purge) 80%= —

Time	Temp (°C/ °F)	pH	Cond (mS/ uS)	Turbidity (NTU)	Purge Rate (gal or mL/ min)	Volume Removed (gal / L)	DO (mg/l)	ORP (mv)	DTW	Notes
0735	7.5	9.0	20818	5.9	—	—	1.71	+220.2	126.13	

Did well dewater? ~~YES~~ ~~NO~~	Total volume removed: — (gal / L)		
Sample method: Disp Bailer (Hydrasleeve) New Tubing Ext. Port Other:			
Sample date: 06 Nov 2012	Sample time: 0735	DTW at sample:	
Sample ID: 6267	Lab: Energy Labs	Number of bottles: 2 + 2	
Analysis: 500 ml NP poly - Alkalinity, Cl, SO4, TDS, EC, pH 250 ml HNO3 poly *field filtered - Dissolved Metals			
Equipment blank ID @	Field blank ID @		
Duplicate ID: 6268 @ 0740	Pre-purge DO:	Post purge DO:	
$Fe2^{+}$:	Pre-purge ORP:	Post purge ORP:	
NAPL depth:	Volume of NAPL:	Volume removed: ml	

Purging And Sampling Data Sheet

Job#: 1350	**Sampler:** J Kerns B Myers	**Client:** Montgomery & Associates
Well ID: MW-102	**Date** (DDOct2012): 06NOV2012	**Site:** Rio Algom Mining, Lisbon, UT
Weather Conditions: Sunny – Brisk	**Sampler Signature:**	
Well diam: 1/4" 1" 2" 3" (4") 6" Other:	**DTW:** ~~125.38~~ 126.13 **Total Depth:** 138.10	
Purge equip: (ES - diam: 2") Bladder Peri Waterra Positive Air Displacement Ext. System		
disp bailer teflon bailer other:	**Tubing:** OD: (New) Dedicated NA	
Purge method: 3-5 Case Volume (Micro/Low-Flow) Extraction Other:		
Pump depth/ intake: 133.5	**Multipliers:** 1"= 0.04 2"= 0.16 3"= 0.37 4"= 0.65 5"=1.02 6"= 1.47 Radius² X 0.163	
(TD - DTW X Multiplier = 1 Volume	80% Recovery (TD - DTW X 0.20 + DTW)	

1 Volume = ____ X ____ = ____ (Total Purge) 80%= ____

Time	Temp (°C) °F	pH	Cond (mS /(µS))	Turbidity (NTU)	Purge Rate (gal or mL/ min)	Volume Removed (gal /(L))	DO (mg/l)	ORP (mv)	DTW	Notes
0815 ~~10.7~~	10.7	8.8	21891	6.3	300	1.0	1.69	-455.1	126.23	Yellow/Brown
0818	10.7	8.9	22008	9.3	300	1.9	1.63	-449.3	126.47	
0821	11.1	8.9	21907	8.7	300	2.8	1.49	-476.3	126.65	
0824	12.0	8.9	21853	8.8	300	3.7	1.37	-467.3	126.68	
0827	13.3	8.9	21804	8.5	300	4.6	1.27	-441.7	126.62	
0830	13.5	8.9	21789	8.7	300	5.5	1.26	-435.3	126.62	
0833	14.0	8.9	21759	8.7	300	6.4	1.23	-404.3	126.62	
0836	14.2	8.9	21736	8.6	300	7.3	1.21	-392.6	126.59	
0839	14.5	8.9	21724	8.5	300	8.2	1.18	-369.5	126.60	
0842	14.5	8.9	21651	8.5	300	9.1	1.16	-374.7	126.60	
0845	14.5	8.9	21623	8.7	300	10.0	1.14	-377.3	126.60	

Did well dewater? YES (NO)	Total volume removed:	(gal/(L))
Sample method: Disp Bailer Hydrasleeve (New Tubing) Ext. Port Other:		
Sample date: 06NOV2012	Sample time: 0850	DTW at sample:
Sample ID: 6269	Lab: Energy Labs	Number of bottles: 2
Analysis: 500 ml NP poly - Alkalinity, Cl, SO4, TDS, EC, pH 250 ml HNO3 poly *field filtered - Dissolved Metals		
Equipment blank ID @	Field blank ID @	
Duplicate ID:	Pre-purge DO:	Post purge DO:
$Fe2^{+}$:	Pre-purge ORP:	Post purge ORP:
NAPL depth:	Volume of NAPL:	Volume removed: ml

Purging And Sampling Data Sheet

Job#: 1350	**Sampler:** J Kerns B Myers	**Client:** Montgomery & Associates
Well ID: MW-102	**Date** (DDOct2012): 06NOV2012	**Site:** Rio Algom Mining, Lisbon, UT
Weather Conditions: Blue Sky - Brisk	**Sampler Signature:**	
Well diam: 1/4" 1" 2" 3" (4") 6" Other:	**DTW:** 126.13 **Total Depth:** 138.10	
Purge equip: ES - diam: 2" Bladder Peri Waterra Positive Air Displacement Ext. System disp bailer teflon bailer other:	**Tubing:** OD: New Dedicated NA	
Purge method: 3-5 Case Volume Micro/Low-Flow Extraction Other:		
Pump depth/ intake: Bottom	**Multipliers:** 1"= 0.04 2"= 0.16 3"= 0.37 4"= 0.65 5"=1.02 6"= 1.47 Radius² X 0.163	
(TD - DTW X Multiplier = 1 Volume	80% Recovery (TD - DTW X 0.20 + DTW)	

1 Volume = 7.7 X 3 = 23.3 (Total Purge) 80%= 178.52

Time	Temp (°C/°F)	pH	Cond (mS/µS)	Turbidity (NTU)	Purge Rate (gal or mL/ min)	Volume Removed (gal / L)	DO (mg/l)	ORP (mv)	DTW	Notes
0900	13.8	8.9	21389	10.3	1.0	8	1.18	-381.1	131.89	
0908	13.4	8.8	21924	993	1.0	16	1.18	-401.0	135.22	
0930	13.5	8.8	21875	>1000	0.5	24	1.18	-399.3	137.05	
—	Not @	80%	—	Wait to Collect	Sample					—

Did well dewater? YES (NO) Total volume removed: 24 (gal/ L)

Sample method: Disp Bailer Hydrasleeve (New Tubing) Ext. Port Other:

Sample date: 06NOV2012	Sample time: 1010	DTW at sample: 127.43
Sample ID: 6270	Lab: Energy Labs	Number of bottles: 2
Analysis: 500 ml NP poly - Alkalinity, Cl, SO4, TDS, EC, pH 250 ml HNO3 poly *field filtered - Dissolved Metals		

Equipment blank ID @	Field blank ID @	
Duplicate ID:	Pre-purge DO:	Post purge DO:
$Fe2^{+}$:	Pre-purge ORP:	Post purge ORP:
NAPL depth:	Volume of NAPL:	Volume removed: ml

Purging And Sampling Data Sheet

Job#: 1350	**Sampler:** J Kerns (B Myers)	**Client:** Montgomery & Associates
Well ID: MW-102DB	**Date** (DDOct2012): 06Nov2012	**Site:** Rio Algom Mining, Lisbon, UT
Weather Conditions: CLR	**Sampler Signature:**	
Well diam: 1/4" 1" 2" 3" (4") 6" Other:	**DTW:** 122.08 **Total Depth:** ~~178.30~~ 177.90	
Purge equip: ES - diam: Bladder Peri Waterra Positive Air Displacement Ext. System disp bailer teflon bailer other:	**Tubing:** OD: New Dedicated NA	
Purge method: 3-5 Case Volume Micro/Low-Flow Extraction Other: (HS)		
Pump depth/ intake: 160'	**Multipliers:** 1"= 0.04 2"= 0.16 3"= 0.37 4"= 0.65 5"=1.02 6"= 1.47 Radius² X 0.163	
(TD - DTW X Multiplier = 1 Volume	80% Recovery (TD - DTW X 0.20 + DTW)	

1 Volume = _____ X _____ = _____ (Total Purge) 80%= _____

Time	Temp (C° / °F)	pH	Cond (mS/µS)	Turbidity (NTU)	Purge Rate (gal or mL/ min)	Volume Removed (gal / L)	DO (mg/l)	ORP (mv)	DTW	Notes
745	8.6	8.0	8880	17	—	—	3.0	223	122.08	

Did well dewater? YES (NO) Total volume removed: — (gal / L)

Sample method: Disp Bailer (Hydrasleeve) New Tubing Ext. Port Other:

Sample date: 06Nov2012 Sample time: 745 DTW at sample: 177.90

Sample ID: 6255 / 6291 (Spl. F) Lab: Energy Labs + ATC Number of bottles: 2 + 3 (spl. F)

Analysis: 500 ml NP poly - Alkalinity, Cl, SO4, TDS, EC, pH 250 ml HNO3 poly *field filtered - Dissolved Metals

Equipment blank ID @	Field blank ID @	
Duplicate ID:	Pre-purge DO:	Post purge DO:
$Fe2^+$:	Pre-purge ORP:	Post purge ORP:

NAPL depth:	Volume of NAPL:	Volume removed: ml

Purging And Sampling Data Sheet

Job#: 1350	**Sampler:** J Kerns B Myers	**Client:** Montgomery & Associates
Well ID: MW-102D13	**Date** (DDOct2012): 06NOV2012	**Site:** Rio Algom Mining, Lisbon, UT
Weather Conditions: Cool	**Sampler Signature:**	
Well diam: 1/4" 1" 2" 3" (4") 6" Other:	**DTW:** 122.08 **Total Depth:** 177.90	
Purge equip: (ES - diam) Bladder Peri Waterra Positive Air Displacement Ext. System		
disp bailer teflon bailer other:	**Tubing:** OD: New Dedicated NA	
Purge method: 3-5 Case Volume (Micro/Low-Flow) Extraction Other:		
Pump depth/ intake: 160'	**Multipliers:** 1"= 0.04 2"= 0.16 3"= 0.37 4"= 0.65 5"=1.02 6"= 1.47 Radius² X 0.163	
(TD - DTW X Multiplier = 1 Volume	80% Recovery (TD - DTW X 0.20 + DTW)	

1 Volume = _____ X _____ = _____ (Total Purge) 80%= _____

Time	Temp (°C) °F	pH	Cond (mS) µS	Turbidity (NTU)	Purge Rate (gal or mL/ min)	Volume Removed (gal / L)	DO (mg/l)	ORP (mv)	DTW	Notes
803	10.5	8.1	1529	285	400	1.2L	0.30	161	124.35	
806	10.6	8.1	1406	278		2.4L	0.20	125	124.20	
809	10.8	8.1	1305	279		3.6L	0.22	111	124.26	
812	11.0	8.1	1368	278		4.8L	0.33	87	124.28	
815	11.4	8.1	1399	34		6L	0.29	58	124.29	
818	12.0	8.1	1375	35		7.2L	0.28	19	124.31	
821	12.5	8.1	1327	34		8.4L	0.27	-20	124.32	
824	13.0	8.1	1343	34		9.6L	0.26	-31	124.35	
827	13.1	8.1	1347	26		10.8L	0.27	-50	124.35	
830	13.3	8.1	1341	24		12L	0.26	-59	124.35	
833	13.4	8.1	1343	21		13.2L	0.25	-72	124.35	see pg 2

Did well dewater? YES (NO) Total volume removed: 18L (gal (L))

Sample method: Disp Bailer Hydrasleeve (New Tubing) Ext. Port Other:

Sample date: 06NOV2012	Sample time: 845	DTW at sample: 124.45
Sample ID: 6256/6292 (Split)	Lab: Energy Labs + ACZ	Number of bottles: 2+3 (split)
Analysis: 500 ml NP poly - Alkalinity, Cl, SO4, TDS, EC, pH 250 ml HNO3 poly *field filtered - Dissolved Metals		
Equipment blank ID @	Field blank ID @	
Duplicate ID: 6257 @ 855	Pre-purge DO:	Post purge DO:
$Fe2^+$:	Pre-purge ORP:	Post purge ORP:
NAPL depth:	Volume of NAPL:	Volume removed: ml

Purging And Sampling Data Sheet

Job#: 1350	**Sampler:** J Kerns (B Myers)	**Client:** Montgomery & Associates
Well ID: MW-102D(I)	**Date** (DDOct2012): 06NOV2012	**Site:** Rio Algom Mining, Lisbon, UT
Weather Conditions: cool	**Sampler Signature:**	
Well diam: 1/4" 1" 2" 3" (4") 6" Other:	**DTW:** 122.06 **Total Depth:** 177.90	
Purge equip: (S - diam): Bladder Peri Waterra Positive Air Displacement Ext. System		
disp bailer teflon bailer other:	**Tubing:** OD: New Dedicated NA	
Purge method: 3-5 Case Volume (Micro/Low-Flow) Extraction Other:		
Pump depth/ intake:	**Multipliers:** 1"= 0.04 2"= 0.16 3"= 0.37 4"= 0.65 5"=1.02 6"= 1.47 Radius² X 0.163	
(TD - DTW X Multiplier = 1 Volume	80% Recovery (TD - DTW X 0.20 + DTW)	

1 Volume = _____ X _____ = _____ (Total Purge) 80%= _____

Time	Temp (°C) / (F)	pH	Cond (mS / (uS))	Turbidity (NTU)	Purge Rate (gal or (ml) / min)	Volume Removed (gal / (L))	DO (mg/l)	ORP (mv)	DTW	Notes
836	13.5	8.1	1353	23	400	14.4L	0.24	-84	124.42	
839	13.4	8.1	1374	22	|	15.6L	0.23	-85	124.45	
842	13.5	8.1	1378	20	|	16.8L	0.23	-88	124.45	
845	13.4	8.1	1329	20	↓	18L	0.22	-87	124.45	

Did well dewater? YES (NO)		Total volume removed: 18L (gal (L))	
Sample method: Disp Bailer Hydrasleeve (New Tubing) Ext. Port Other:			
Sample date: 06NOV2012	Sample time: 845	DTW at sample: 124.45	
Sample ID: 60256 / sp.d. 6292	Lab: Energy Labs + ACZ	Number of bottles: 2 +3 (sp.d.)	
Analysis: 500 ml NP poly - Alkalinity, Cl, SO4, TDS, EC, pH 250 ml HNO3 poly *field filtered - Dissolved Metals			
Equipment blank ID @	Field blank ID @		
Duplicate ID: 60257 @ 855	Pre-purge DO:	Post purge DO:	
$Fe2^+$:	Pre-purge ORP:	Post purge ORP:	
NAPL depth:	Volume of NAPL:	Volume removed: ml	

Purging And Sampling Data Sheet

Job#: 1350	**Sampler:** J Kerns B Myers	**Client:** Montgomery & Associates
Well ID: MW-102DB	**Date** (DDOct2012): 06NOV2012	**Site:** Rio Algom Mining, Lisbon, UT
Weather Conditions: warm	**Sampler Signature:**	
Well diam: 1/4" 1" 2" 3" 4" 6" Other:	**DTW:** 122.08 **Total Depth:** 177.90	
Purge equip: ES - diam: Bladder Peri Waterra Positive Air Displacement Ext. System		
disp bailer teflon bailer other: **Tubing:** OD: New Dedicated NA		
Purge method: 3-5 Case Volume Micro/Low-Flow Extraction Other:		
Pump depth/ intake: 160' **Multipliers:** 1"= 0.04 2"= 0.16 3"= 0.37 4"= 0.65 5"=1.02 6"= 1.47 Radius² X 0.163		
(TD - DTW X Multiplier = 1 Volume	80% Recovery (TD - DTW X 0.20 + DTW)	

1 Volume = 36.3 X 3 = 109 (Total Purge) 80%= 133.24

Time	Temp (°C) °F)	pH	Cond (mS µS)	Turbidity (NTU)	Purge Rate (gal or mL/ min)	Volume Removed (gal) / L)	DO (mg/l)	ORP (mv)	DTW	Notes
910	12.2	8.1	1085	13	3gpm	36.3	0.08	-78	136.60	
922	12.2	8.1	977	12	"	72.6	0.10	-83	141.10	
936	12.2	8.1	990	12	"	109	0.10	-80	142.45	
	Waited for 80%									

Did well dewater? YES (NO) Total volume removed: 109 (gal) / L)

Sample method: Disp Bailer Hydrasleeve (New Tubing) Ext. Port Other:

Sample date: 06NOV2012	Sample time: 1015		DTW at sample: 133.24
Sample ID: 6258 / 6293 split	Lab: Energy Labs + ACZ		Number of bottles: 2 + 3 (spl.t)
Analysis: 500 ml NP poly - Alkalinity, Cl, SO4, TDS, EC, pH 250 ml HNO3 poly *field filtered - Dissolved Metals			
Equipment blank ID @		Field blank ID @	
Duplicate ID:		Pre-purge DO:	Post purge DO:
$Fe2^+$:		Pre-purge ORP:	Post purge ORP:
NAPL depth:	Volume of NAPL:		Volume removed: ml

Purging And Sampling Data Sheet

Job#: 1350	**Sampler:** J Kerns B Myers	**Client:** Montgomery & Associates
Well ID: MW-103	**Date** (DDOct2012): ~~SEP~~ 07NOV2012	**Site:** Rio Algom Mining, Lisbon, UT
Weather Conditions: Blue Sky – Cold	**Sampler Signature:**	
Well diam: 1/4" 1" 2" 3" (4") 6" Other:	**DTW:** 85.28 **Total Depth:**	
Purge equip: ES - diam: Bladder Peri Waterra Positive Air Displacement Ext. System		
disp bailer teflon bailer other:	**Tubing:** OD: New Dedicated NA	
Purge method: 3-5 Case Volume Micro/Low-Flow Extraction Other:		
Pump depth/ intake: 100.5'	**Multipliers:** 1"= 0.04 2"= 0.16 3"= 0.37 4"= 0.65 5"=1.02 6"= 1.47 Radius² X 0.163	
(TD - DTW X Multiplier = 1 Volume	80% Recovery (TD - DTW X 0.20 + DTW)	

1 Volume = ___ X ___ = ___ (Total Purge) 80%= ___

Time	Temp (°C/ °F)	pH	Cond (mS / µS)	Turbidity (NTU)	Purge Rate (gal or mL/ min)	Volume Removed (gal / L)	DO (mg/l)	ORP (mv)	DTW	Notes
0700	9.7	7.0	6620	4.3	—	—	5.23	63.4	85.28	

Did well dewater? YES NO — Total volume removed: — (gal / L)

Sample method: Disp Bailer (Hydrasleeve) New Tubing Ext. Port Other:

Sample date: 07NOV2012 — Sample time: 0700 — DTW at sample: 85.28

Sample ID: 6772 — Lab: Energy Labs — Number of bottles (2)

Analysis: 500 ml NP poly - Alkalinity, Cl, SO4, TDS, EC, pH 250 ml HNO3 poly *field filtered - Dissolved Metals

Equipment blank ID @	Field blank ID @	
Duplicate ID:	Pre-purge DO:	Post purge DO:
$Fe2^+$:	Pre-purge ORP:	Post purge ORP:
NAPL depth:	Volume of NAPL:	Volume removed: ml

Purging And Sampling Data Sheet

Job#: 1350	**Sampler:** J Kerns B Myers	**Client:** Montgomery & Associates
Well ID: MW-103	**Date** (DDOct2012): 07NOV2012	**Site:** Rio Algom Mining, Lisbon, UT
Weather Conditions: Bluesky - Cold	**Sampler Signature:**	
Well diam: 1/4" 1" 2" 3" (4") 6" Other:	**DTW:** 85.28	**Total Depth:** 113.51
Purge equip: (ES - diam:2") Bladder Peri Waterra Positive Air Displacement Ext. System		
disp bailer teflon bailer other:	**Tubing:** OD: (New) Dedicated NA	
Purge method: 3-5 Case Volume (Micro/Low-Flow) Extraction Other:		
Pump depth/ intake: 100'	**Multipliers:** 1"= 0.04 2"= 0.16 3"= 0.37 4"= 0.65 5"=1.02 6"= 1.47 Radius² X 0.163	
(TD - DTW X Multiplier = 1 Volume	80% Recovery (TD - DTW X 0.20 + DTW)	

1 Volume = ___ X ___ = ___ (Total Purge) 80%= ___

Time	Temp (°C) °F)	pH	Cond (mS /(µS))	Turbidity (NTU)	Purge Rate (gal or (mL)/min)	Volume Removed (gal /(L))	DO (mg/l)	ORP (mv)	DTW	Notes
0723	9.2	7.0	7094	27.6	300	1.0	5.30	107.7	85.82	
0726	8.2	7.0	7295	12.5	300	1.9	5.41	101.8	85.82	
0729	8.2	7.0	7295	9.6	300	2.8	5.30	99.2	85.80	
0732	8.2	7.0	7298	9.3	300	3.7	5.25	97.8	85.80	
0735	8.2	7.0	7308	9.4	300	4.6	5.17	92.2	85.82	
0738	8.0	7.0	7314	9.5	300	5.5	5.08	85.0	85.82	
0741	8.0	7.0	7306	9.5	300	6.4	5.02	83.6	85.82	
0744	8.0	7.0	7300	9.3	300	7.3	5.01	83.2	85.82	

Did well dewater? YES (NO)	Total volume removed: 7.3 (gal (L))	
Sample method: Disp Bailer Hydrasleeve (New Tubing) Ext. Port Other:		
Sample date: 07NOV2012	Sample time: 0745	DTW at sample: 85.82
Sample ID: 6273	Lab: Energy Labs	Number of bottles: (2)
Analysis: 500 ml NP poly - Alkalinity, Cl, SO4, TDS, EC, pH 250 ml HNO3 poly *field filtered - Dissolved Metals		
Equipment blank ID @	Field blank ID @	
Duplicate ID:	Pre-purge DO:	Post purge DO:
$Fe2^+$:	Pre-purge ORP:	Post purge ORP:
NAPL depth:	Volume of NAPL:	Volume removed: ml

Purging And Sampling Data Sheet

Job#: 1350	**Sampler:** J Kerns B Myers	**Client:** Montgomery & Associates
Well ID: Mw-103	**Date** (DDOct2012): 07NOV2017	**Site:** Rio Algom Mining, Lisbon, UT
Weather Conditions: Blue Sky - Cold	**Sampler Signature:**	
Well diam: 1/4" 1" 2" 3" (4") 6" Other:	**DTW:** 85.28 **Total Depth:** 113.51	

Purge equip: (ES - diam: 2") Bladder Peri Waterra Positive Air Displacement Ext. System
disp bailer teflon bailer other: **Tubing:** OD: (New) Dedicated NA

Purge method: (3-5 Case Volume) Micro/Low-Flow Extraction Other:

Pump depth/ intake: 100' **Multipliers:** 1"= 0.04 2"= 0.16 3"= 0.37 4"= 0.65 5"=1.02 6"= 1.47 Radius² X 0.163

(TD - DTW X Multiplier = 1 Volume | 80% Recovery (TD - DTW X 0.20 + DTW)

1 Volume = 18.3 X 3 = 55 (Total Purge) 80%= 90.93

Time	Temp (°C) °F	pH	Sp Cond (mS/µS)	Turbidity (NTU)	Purge Rate (gal or mL/ min)	Volume Removed (gal)/ L)	DO (mg/l)	ORP (mv)	DTW	Notes
0810	12.3	7.1	4580	175	1.5	20	4.13	69.1	98.73	
0821	12.8	7.1	7362	203	1.0	40	2.76	67.4	108.30	
0835	well dewatered @				approx	55 gallons			112.13	
1130	12.7	7.0	7181	13	—	—	3.26	24.9	—	

Did well dewater? (YES) NO Total volume removed: 55 (gal)/ L)

Sample method: Disp Bailer Hydrasleeve (New Tubing) Ext. Port Other:

Sample date: 07NOV2017 Sample time: 1130 DTW at sample: 89.64

Sample ID: ~~6274~~ (DC) ~~6275~~ (DC) (6276) Lab: Energy Labs Number of bottles: 2

Analysis: 500 ml NP poly - Alkalinity, Cl, SO4, TDS, EC, pH 250 ml HNO3 poly *field filtered - Dissolved Metals

Equipment blank ID @	Field blank ID @	
Duplicate ID:	Pre-purge DO:	Post purge DO:
$Fe2^+$:	Pre-purge ORP:	Post purge ORP:
NAPL depth:	Volume of NAPL:	Volume removed: ml

Purging And Sampling Data Sheet

Job#: 1350	**Sampler:** J Kerns B Myers	**Client:** Montgomery & Associates
Well ID: MW-104	**Date** (DDOct2012): 07Nov2012	**Site:** Rio Algom Mining, Lisbon, UT
Weather Conditions: Blue Sky	**Sampler Signature:**	
Well diam: 1/4" 1" 2" 3" (4") 6" Other:	**DTW:** 103.30 **Total Depth:** 111.00	
Purge equip: ES - diam: Bladder Peri Waterra Positive Air Displacement Ext. System disp bailer teflon bailer other: Grab	**Tubing:** OD: New Dedicated NA	
Purge method: 3-5 Case Volume Micro/Low-Flow Extraction Other: Grab		
Pump depth/ intake: —	**Multipliers:** 1"= 0.04 2"= 0.16 3"= 0.37 4"= 0.65 5"=1.02 6"= 1.47 Radius² X 0.163	
(TD - DTW X Multiplier = 1 Volume	80% Recovery (TD - DTW X 0.20 + DTW)	

1 Volume = — X — = — (Total Purge) 80%= —

Time	Temp (°C / °F)	pH	Cond (mS (µS))	Turbidity (NTU)	Purge Rate (gal or mL/ min)	Volume Removed (gal / L)	DO (mg/l)	ORP (mv)	DTW	Notes
0945	11.1	7.3	1521	6.1	—	—	—	—	103.30	
	well recovered @ 60% - client request sample @ partial									
	recovery									

Did well dewater? YES (NO)	Total volume removed: — (gal / L)		
Sample method: (Disp Bailer) Hydrasleeve New Tubing Ext. Port Other:			
Sample date: 07Nov2012	Sample time: 0945	DTW at sample: 103.30	
Sample ID: 6275	Lab: Energy Labs	Number of bottles: 2	
Analysis: 500 ml NP poly - Alkalinity, Cl, SO4, TDS, EC, pH 250 ml HNO3 poly *field filtered - Dissolved Metals			
Equipment blank ID @	Field blank ID @		
Duplicate ID:	Pre-purge DO:	Post purge DO:	
$Fe2^+$:	Pre-purge ORP:	Post purge ORP:	
NAPL depth:	Volume of NAPL:	Volume removed: ml	

Purging And Sampling Data Sheet

Job#: 1350	**Sampler:** J Kerns (B Myers)	**Client:** Montgomery & Associates
Well ID: MW-105	**Date** (DDOct2012): 07/09/2012	**Site:** Rio Algom Mining, Lisbon, UT
Weather Conditions: Cold	**Sampler Signature:**	
Well diam: 1/4" 1" 2" 3" (4") 6" Other:	**DTW:** 73.53	**Total Depth:** 135.02

Purge equip: ES - diam: Bladder Peri Waterra Positive Air Displacement Ext. System
disp bailer teflon bailer other: **Tubing:** OD: New Dedicated NA

Purge method: 3-5 Case Volume Micro/Low-Flow Extraction Other: (PS)

Pump depth/ intake: 106' **Multipliers:** 1"= 0.04 2"= 0.16 3"= 0.37 4"= 0.65 5"=1.02 6"= 1.47 Radius² X 0.163

(TD - DTW X Multiplier = 1 Volume | 80% Recovery (TD - DTW X 0.20 + DTW)

1 Volume = _____ X _____ = _____ (Total Purge) 80%=_____

Time	Temp (°C) °F)	pH	Cond (mS (µS))	Turbidity (NTU)	Purge Rate (gal or mL/ min)	Volume Removed (gal / L)	DO (mg/l)	ORP (mv)	DTW	Notes
700	9.9	7.4	1252	8	—	—	1.4	22	73.53	

Did well dewater? YES (NO) Total volume removed: — (gal / L)

Sample method: Disp Bailer (Hydrasleeve) New Tubing Ext. Port Other:

Sample date: 07/09/2012 Sample time: 700 DTW at sample: 73.53

Sample ID: 0283 Lab: Energy Labs Number of bottles: 2

Analysis: 500 ml NP poly - Alkalinity, Cl, SO4, TDS, EC, pH 250 ml HNO3 poly *field filtered - Dissolved Metals

Equipment blank ID @	Field blank ID @	
Duplicate ID:	Pre-purge DO:	Post purge DO:
$Fe2^+$:	Pre-purge ORP:	Post purge ORP:
NAPL depth:	Volume of NAPL:	Volume removed: ml

Purging And Sampling Data Sheet

Job#: 1350	**Sampler:** J Kerns (B Myers)	**Client:** Montgomery & Associates
Well ID: MW105	**Date** (DDOct2012): 07NOV2012	**Site:** Rio Algom Mining, Lisbon, UT
Weather Conditions: Cold	**Sampler Signature:**	
Well diam: 1/4" 1" 2" 3" (4") 6" Other:	**DTW:** 73.53	**Total Depth:** 136.83
Purge equip: (ES - diam:) Bladder Peri Waterra Positive Air Displacement Ext. System		
disp bailer teflon bailer other:	**Tubing:** OD: New Dedicated NA	
Purge method: 3-5 Case Volume (Micro/Low-Flow) Extraction Other:		
Pump depth/ intake: 106'	**Multipliers:** 1"= 0.04 2"= 0.16 3"= 0.37 4"= 0.65 5"=1.02 6"= 1.47 Radius² X 0.163	
(TD - DTW X Multiplier = 1 Volume	80% Recovery (TD - DTW X 0.20 + DTW)	

1 Volume = _____ X _____ = _____ (Total Purge) 80%=_____

Time	Temp (°C / °F)	pH	Cond (mS / µS)	Turbidity (NTU)	Purge Rate (gal o (mL/ m)n)	Volume Removed (ga / L)	DO (mg/l)	ORP (mv)	DTW	Notes
715	8.7	7.2	1576	18	400ml	1.2L	0.54	211	73.47	
718	9.3	7.2	1725	17		2.4L	0.33	209	73.47	
721	9.8	7.1	1736	17		3.6L	0.25	204	73.47	
724	9.9	7.1	1732	18		4.8L	0.24	199	73.47	
727	10.2	7.1	1723	18		6L	0.260	188	73.47	
730	10.8	7.1	1697	17		7.2L	0.27	170	73.47	
733	11.0	7.2	1682	16		8.4L	0.27	161	73.47	
736	11.3	7.2	1671	15		9.6L	0.27	147	73.47	
739	11.6	7.2	1659	15		10.8L	0.28	136	73.47	
742	11.8	7.2	1643	14		12L	0.29	124	73.47	
745	12.0	7.2	1625	14		13.2L	0.29	119	73.47	see pg 2

Did well dewater? YES (NO) Total volume removed: 16.8L (gal / L)

Sample method: Disp Bailer Hydrasleeve (New Tubing) Ext. Port Other:

Sample date: 07NOV2012	Sample time: 755	DTW at sample: 73.47
Sample ID: 6284	Lab: Energy Labs	Number of bottles: 2
Analysis: 500 ml NP poly - Alkalinity, Cl, SO4, TDS, EC, pH	250 ml HNO3 poly *field filtered - Dissolved Metals	

Equipment blank ID @	Field blank ID @	
# Duplicate ID: 6285 @ 850	Pre-purge DO:	Post purge DO:
$Fe2^+$:	Pre-purge ORP:	Post purge ORP:
NAPL depth:	Volume of NAPL:	Volume removed: ml

Purging And Sampling Data Sheet

Job#: 1350	**Sampler:** J Kerns (B Myers)	**Client:** Montgomery & Associates
Well ID: MW105	**Date** (DDOct2012): 07NOV2012	**Site:** Rio Algom Mining, Lisbon, UT
Weather Conditions: cold	**Sampler Signature:**	
Well diam: 1/4" 1" 2" 3" (4") 6" Other:	**DTW:** 73.53 **Total Depth:** 136.83	
Purge equip: (ES - diam): Bladder Peri Waterra Positive Air Displacement Ext. System		
disp bailer teflon bailer other: **Tubing:** OD: New Dedicated NA		
Purge method: 3-5 Case Volume (Micro/Low-Flow) Extraction Other:		
Pump depth/ intake: 100'	**Multipliers:** 1"= 0.04 2"= 0.16 3"= 0.37 4"= 0.65 5"=1.02 6"= 1.47 Radius² X 0.163	
(TD - DTW X Multiplier = 1 Volume	80% Recovery (TD - DTW X 0.20 + DTW)	

1 Volume = _____ X _____ = _____ (Total Purge) 80%=_____

Time	Temp (°C) (°F)	pH	Cond (mS) (µS)	Turbidity (NTU)	Purge Rate (gal) (ml) min)	Volume Removed (gal) (L)	DO (mg/l)	ORP (mv)	DTW	Notes
748	12.0	7.2	11.14	14	400	14.4L	0.29	110	73.47	
751	12.1	7.2	11.06	14	1	15.6L	0.28	106	73.47	
754	12.1	7.2	11.00	14	L	16.8L	0.28	102	73.47	

Did well dewater? YES (NO) Total volume removed: 16.8L (gal (L))

Sample method: Disp Bailer Hydrasleeve (New Tubing) Ext. Port Other:

Sample date: 07NOV2012	Sample time: 755	DTW at sample: 73.47
Sample ID: 0284	Lab: Energy Labs	Number of bottles: 2
Analysis: 500 ml NP poly - Alkalinity, Cl, SO4, TDS, EC, pH 250 ml HNO3 poly *field filtered - Dissolved Metals		
Equipment blank ID @	Field blank ID @	
Duplicate ID: 0285 @ 800	Pre-purge DO:	Post purge DO:
$Fe2^{+}$:	Pre-purge ORP:	Post purge ORP:
NAPL depth:	Volume of NAPL:	Volume removed: ml

Purging And Sampling Data Sheet

Job#: 1350	**Sampler:** J Kerns B Myers	**Client:** Montgomery & Associates
Well ID: MW-105	**Date** (DDOct2012): 07NOV2012	**Site:** Rio Algom Mining, Lisbon, UT
Weather Conditions: Cool	**Sampler Signature:**	
Well diam: 1/4" 1" 2" 3" (4") 6" Other:	**DTW:** 73.53	**Total Depth:** 136.83
Purge equip: (ES - diam) Bladder Peri Waterra Positive Air Displacement Ext. System disp bailer teflon bailer other:	**Tubing:** OD: (New) Dedicated NA	
Purge method: (3-5 Case Volume) Micro/Low-Flow Extraction Other:		
Pump depth/ intake: 106'	**Multipliers:** 1"= 0.04 2"= 0.16 3"= 0.37 4"= 0.65 5"=1.02 6"= 1.47 Radius² X 0.163	
(TD - DTW X Multiplier = 1 Volume	80% Recovery (TD - DTW X 0.20 + DTW)	

1 Volume = 41 X 3 = 123 (Total Purge) 80%= 86.19

Time	Temp (°C/ °F)	pH	Cond (mS/ µS)	Turbidity (NTU)	Purge Rate (gal or mL/ min)	Volume Removed (gal/ L)	DO (mg/l)	ORP (mv)	DTW	Notes
807	12.2	7.3	1287	11	4gpm	41	0.70	113	73.52	
817	12.0	7.3	1270	10	1	82	1.10	119	73.55	
827	12.0	7.3	1262	10	1	123	1.34	120	73.59	

Did well dewater? YES (NO) Total volume removed: 123 (gal/ L)

Sample method: Disp Bailer Hydrasleeve (New Tubing) Ext. Port Other:

Sample date: 07NOV2012	Sample time: 830	DTW at sample: 73.59
Sample ID: 02806	Lab: Energy Labs	Number of bottles: 2
Analysis: 500 ml NP poly - Alkalinity, Cl, SO4, TDS, EC, pH 250 ml HNO3 poly *field filtered - Dissolved Metals		
Equipment blank ID @	Field blank ID @	
Duplicate ID:	Pre-purge DO:	Post purge DO:
$Fe2^+$:	Pre-purge ORP:	Post purge ORP:
NAPL depth:	Volume of NAPL:	Volume removed: ml

Purging And Sampling Data Sheet

Job#: 1350	**Sampler:** J Kerns B Myers	**Client:** Montgomery & Associates
Well ID: MW-106	**Date** (DDOct2012): ~~Blue Sky - Brisk~~ 07NOV 2012	**Site:** Rio Algom Mining, Lisbon, UT
Weather Conditions: Blue Sky - Brisk	**Sampler Signature:**	
Well diam: 1/4" 1" 2" 3" (4") 6" Other:	**DTW:** 255.43 **Total Depth:** 267.00	
Purge equip: ES - diam: Bladder Peri Waterra Positive Air Displacement Ext. System disp bailer teflon bailer other: Grab **Tubing:** OD: New Dedicated NA		
Purge method: 3-5 Case Volume Micro/Low-Flow Extraction Other: None		
Pump depth/ intake:	**Multipliers:** 1"= 0.04 2"= 0.16 3"= 0.37 4"= 0.65 5"=1.02 6"= 1.47 Radius² X 0.163	
(TD - DTW X Multiplier = 1 Volume	80% Recovery (TD - DTW X 0.20 + DTW)	

1 Volume = _____ X _____ = _____ (Total Purge) 80%= ~~271~~ 251 (510)

Time	Temp (°C) °F)	pH	Cond (mS (µS))	Turbidity (NTU)	Purge Rate (gal or mL/ min)	Volume Removed (gal / L)	DO (mg/l)	ORP (mv)	DTW	Notes
0915	11.7	7.0	3067	9.9	—	—	—	86	255.43	
—	Recovered to 60% - client request sample @ partial recovery									

Did well dewater? YES NO — Total volume removed: — (gal / L)

Sample method: (Disp Bailer) Hydrasleeve New Tubing Ext. Port Other:

Sample date: 07NOV2012 — Sample time: 0915 — DTW at sample:

Sample ID: 6274 — Lab: Energy Labs — Number of bottles: (2)

Analysis: 500 ml NP poly - Alkalinity, Cl, SO4, TDS, EC, pH 250 ml HNO3 poly *field filtered - Dissolved Metals

Equipment blank ID @		Field blank ID @	
Duplicate ID:		Pre-purge DO:	Post purge DO:
$Fe2^+$:		Pre-purge ORP:	Post purge ORP:
NAPL depth:	Volume of NAPL:	Volume removed:	ml

Purging And Sampling Data Sheet

Job#: 1350	**Sampler:** (Kerns) B Myers	**Client:** Montgomery & Associates
Well ID: BAKER TANK	**Date** (DDOct2012): 07NOV2012	**Site:** Rio Algom Mining, Lisbon, UT
Weather Conditions: warm	**Sampler Signature:**	
Well diam: 1/4" 1" 2" 3" 4" 6" Other:	**DTW:** —	**Total Depth:** —
Purge equip: ES - diam: Bladder Peri Waterra Positive Air Displacement Ext. System disp bailer teflon bailer other:	**Tubing:** OD: New Dedicated NA	
Purge method: 3-5 Case Volume Micro/Low-Flow Extraction Other:		
Pump depth/ intake:	**Multipliers:** 1"= 0.04 2"= 0.16 3"= 0.37 4"= 0.65 5"=1.02 6"= 1.47 Radius² X 0.163	
(TD - DTW X Multiplier = 1 Volume	80% Recovery (TD - DTW X 0.20 + DTW)	

1 Volume = _____ X _____ = _____ (Total Purge) 80%=_____

Time	Temp (C/F)	pH	Cond (mS/µS)	Turbidity (NTU)	Purge Rate (gal or mL/ min)	Volume Removed (gal / L)	DO (mg/l)	ORP (mv)	DTW	Notes
1100	14.6	6.8	3341	10	—	—	5.5	-34	—	

Did well dewater? YES (NO) Total volume removed: — (gal / L)

Sample method: (Disp Bailer) Hydrasleeve New Tubing Ext. Port Other:

Sample date: 07NOV2012	Sample time: 1100	DTW at sample: —
Sample ID: 6294	Lab: ~~Energy Labs~~ ACZ	Number of bottles: # 4
Analysis: 500 ml NP poly - Alkalinity, Cl, SO4, TDS, EC, pH 250 ml HNO3 poly *field filtered - Dissolved Metals		
Equipment blank ID @	Field blank ID @	
Duplicate ID:	Pre-purge DO:	Post purge DO:
$Fe2^{+}$:	Pre-purge ORP:	Post purge ORP:
NAPL depth:	Volume of NAPL:	Volume removed: ml

Development Data Sheet

Job#: 1358	**Developer:** T. Higgins	**Client:** Montgomery
Well ID: MW-100	**Date:** 10-31-12	**Site:** Rio Algom Mine
Well diam: 1/4" 1" 2" 3" (4") 6" Other:	**DTW:** 146.96	**TD Before:** 204.5 **TD After:**
Purge equip: ES - diam: Bladder Peri Waterra (Positive Air Displacement) Ext. System		
disp bailer teflon bailer other:	**Surge block used:** (Y) N	
Length of time surged prior to development: 30 min.		
Pump depth/ intake: Bottom	**Multipliers:** 1"= 0.04 2"= 0.16 3"= 0.37 4"= 0.65 5"=1.02 6"= 1.47 Radius² X 0.163	
(TD - DTW X Multiplier = 1 Volume	80% Recovery (TD - DTW X 0.20 + DTW)	

1 Volume = 37.4 X 10 = 374 (Total Purge) Meter(s): Myron L Ultrameter, LaMotte 2020 Turbidimeter

Time	Temp (°C / °F)	pH	Cond (mS / µS)	Turbidity (NTU)	Purge Rate (gal or mL/ min)	Volume Removed (gal / L)	DTW	Notes
1450	13.9	7.4	804	7.4	—	—	146.96	Collect Pre-Dev sample
—	Surge / Swab		well	—	—	—	—	Silty - Dark Brown
1703	12.7	7.9	797	>1000	—	38.0	148.71	Cloudy Hard Bottom
—	Pause	purged to	change to	E.S. pump			—	—
1728	12.4	7.3	886	>1000	3.0	76.0	149.93	cloudy
1742	12.0	7.3	854	681	3.0	114	150.27	clear
1754	12.3	7.3	862	39.2	3.0	152	150.40	"
1805	12.3	7.3	874	25.9	3.0	190	150.59	"

Did well dewater? YES (NO)	Total volume removed: 190 (gal / L)	
Sample method (if applicable): (Disp Bailer) Ded. Tubing New Tubing Ext. Port Other:		
Sample date: 10-31-12	Sample time: 1450	DTW at sample:
Sample ID: 6208	Lab: Energy	Number of bottles: (2)
Analysis:		

Development Data Sheet

Job#: 1350	**Developer:** T. Kerns	**Client:** Montgomery
Well ID: MW-101	**Date:** 10-30-12	**Site:** Rio Algom Mine
Well diam: 1/4" 1" 2" 3" (4") 6" Other:	**DTW:** 150.65	**TD Before:** 160.8 **TD After:** 161.07
Purge equip: ES - diam: Bladder Peri Waterra (Positive Air Displacement) Ext. System		
disp bailer teflon bailer other:	**Surge block used:** (Y) N	
Length of time surged prior to development: 15 minutes		
Pump depth/ intake: Bottom	**Multipliers:** 1"= 0.04 2"= 0.16 3"= 0.37 4"= 0.65 5"=1.02 6"= 1.47 Radius² X 0.163	
(TD - DTW X Multiplier = 1 Volume	80% Recovery (TD - DTW X 0.20 + DTW)	

1 Volume = 6.6 X 10 = 66 (Total Purge) Meter(s): Myron L Ultrameter, LaMotte 2020 Turbidimeter

Time	Temp (°C/°F)	pH	Cond (mS/µS)	Turbidity (NTU)	Purge Rate (gal or mL/min)	Volume Removed (gal/L)	DTW	Notes
1530	13.6	6.9	15.94	108	—	—	150.65	Pre-Development sample
1612	12.1	6.9	15.71	>1000	Ø.33	6.5	151.85	Silty - Dark Brown
1634	11.7	7.6	16.28	>1000	Ø.33	13.0	152.20	Silty - Dark Brown
1652	11.6	7.3	16.30	>1000	Ø.33	19.5	152.27	Silty - Dark Brown
1704	11.7	6.9	16.26	>1000	Ø.33	25.0	152.33	Turbid - lite ~~light~~ Brown
—	Suspended	purge	—	Restart	~~32.5~~ TIC		purge	10/31/12
0805	Begin	purge	—	—	—	—	150.93	
0820	8.5	7.0	16.39	>1000	Ø.33	32.5	152.00	Turbid - Brown
0835	9.4	7.1	16.38	>1000	Ø.33	39.0	152.22	Turbid - Lite Brown
0853	10.5	7.2	16.38	711	Ø.33	45.5	152.33	Cloudy - Hard Bottom
0910	10.8	7.2	16.42	197	Ø33	52.0	152.05	Less Cloudy
0927	11.2	7.2	16.39	158	Ø.33	59.0	152.10	—
0945	11.1	7.1	16.36	98	Ø.33	66.0	152.10	

Did well dewater? YES (NO)	Total volume removed: 66.0 (gal)/ L)	
Sample method (if applicable): (Disp Bailer) Ded. Tubing New Tubing Ext. Port Other:		
Sample date: 10-30-12	Sample time: 1530	DTW at sample: 150.65
Sample ID: 6205	Lab: Energy	Number of bottles: (2)
Analysis:		

Development Data Sheet

Job#: 1352	**Developer:** J. Kerns	**Client:** Montgomery
Well ID: MW-102	**Date:** 10-30-12	**Site:** Rio Algom Mine
Well diam: 1/4" 1" 2" 3" (4") 6" Other:	**DTW:** 125.28	**TD Before:** 137.8 **TD After:** 138.10
Purge equip: ES - diam: Bladder Peri Waterra (Positive Air Displacement) Ext. System		
disp bailer teflon bailer other:	**Surge block used:** (Y) N	
Length of time surged prior to development: 20 min.		
Pump depth/ intake: Bottom	**Multipliers:** 1"= 0.04 2"= 0.16 3"= 0.37 4"= 0.65 5"=1.02 6"= 1.47 Radius² X 0.163	
(TD - DTW X Multiplier = 1 Volume	80% Recovery (TD - DTW X 0.20 + DTW)	

1 Volume = 8.2 X 10 = 82 (Total Purge) Meter(s): LaMotte 2020 / Ultrameter

Time	Temp (°C) °F	pH	Cond (mS) µS	Turbidity (NTU)	Purge Rate (gal) or mL/min	Volume Removed (gal / L)	DTW	Notes
0810	8.4	7.8	13.95	9.6	—	—	125.38	Pre-Development Sample
—	Begin Surge / Swab		—		Approx.		—	Pre-Dev sample has a yellow tint
0905	9.4	7.8	14.41	>1000	—	8.5	128.90	Silty - Fishy Odor
0919	10.7	7.7	14.73	>1000	Ø.5	17.0	129.85	Silty - Fish like odor
0939	11.4	7.9	15.62	>1000	Ø.5	25.5	130.33	Turbid - Less Silty
1005	12.0	8.3	16.54	>1000	Ø.33	34.0	130.33	Turbid - Hard Bottom
1020	12.0	8.4	16.73	806	~~Ø.33~~ Ø.50 (SC)	42.5	130.79	Turbid - Yellow Color
1037	11.7	8.5	17.24	>1000	Ø.5	51.0	131.59	Turbid
1057	11.6	8.5	17.76	>1000	Ø.5	59.5	132.25	Turbid - Cloudy
1117	11.7	8.6	17.91	755	Ø.5	68.0	132.55	Cloudy - Yellow Color
1117	paused purge to offload				~~76.5~~ (SC)		—	Restart Purge @ 1150
1134	11.9	8.6	17.70	235	Ø.5	76.5	129.25	
1151	12.0	8.6	17.84	227	Ø.5	85.0	130.70	Cloudy - Hard Bottom

Did well dewater? YES (NO) Total volume removed: 85.0 ((gal) / L)

Sample method (if applicable): (Disp Bailer) Ded. Tubing New Tubing Ext. Port Other:

Sample date: 10-30-12 Sample time: 0810 DTW at sample: 125.28

Sample ID: 620.3 Lab: Energy Number of bottles: (2)

Analysis:

Development Data Sheet

Job#: 1350	**Developer:** J. Kerns	**Client:** Montgomery
Well ID: MW-1020B	**Date:** 10-30-17	**Site:** Rio Algom Mine
Well diam: 1/4" 1" 2" 3" (4") 6" Other:	**DTW:** 122.08	**TD Before:** 177.3 **TD After:** 177.90
Purge equip: (ES - diam) Bladder Peri Waterra (Positive Air Displacement) Ext. System		
disp bailer teflon bailer other:	**Surge block used:** (Y) N	
Length of time surged prior to development:		
Pump depth/ intake: Bottom	**Multipliers:** 1"= 0.04 2"= 0.16 3"= 0.37 4"= 0.65 5"=1.02 6"= 1.47 Radius² X 0.163	
(TD - DTW X Multiplier = 1 Volume	80% Recovery (TD - DTW X 0.20 + DTW)	

1 Volume = 35.9 X 10 = _____ (Total Purge) Meter(s): Ultrameter

Time	Temp (°C) °F	pH	Cond (mS/(µS))	Turbidity (NTU)	Purge Rate (gal or mL/ min)	Volume Removed (gal)/L)	DTW	Notes
0945	11.1	8.2	1094	8.5	—	—	122.08	Pre-Purge/Dev sample clear
–	Surge/Swab well prior to purge							
1324	14.0	8.5	885	>1000	Ø.75	36.0	124.95	Silty - Dark Brown
1330	13.4	8.8	761	>1000	Ø.50	72.0	126.95	No odor - cloudy
—	Paused purge to offload water						—	
1545	12.5	8.1	619	291	2gpm	108	132.90	cleaning w/ E.S.
1551	12.7	8.1	618	285		120	133.80	cleaning
1556	12.8	8.1	612	281		130	134.65	
1601	12.4	8.2	607	33		140	136.20	
1606	12.5	8.2	606	26		150	137.00	
1611	12.5	8.2	607	24		160	137.60	
1616	12.5	8.1	606	23		170	138.10	
1621	12.5	8.1	605	23		180	138.75	
Per Client - well developed well bottom clean + hard								

Did well dewater? YES (NO) Total volume removed: 180 (gal)/ L)

Sample method (if applicable): (Disp Bailer) Ded. Tubing New Tubing Ext. Port Other:

Sample date: 10-30-2017 Sample time: 0945 DTW at sample: 122.08

Sample ID: 6204 Lab: Energy Number of bottles: (2)

Analysis:

Development Data Sheet

Job#: 1350	**Developer:** J. Kerns	**Client:** Montgomery
Well ID: MW-103	**Date:** 10-31-12	**Site:** Rio Algom Mine
Well diam: 1/4" 1" 2" 3" (4") 6" Other:	**DTW:** 83.44	**TD Before:** 113.20 **TD After:**
Purge equip: (ES - diam:) Bladder Peri Waterra (Positive Air Displacement) Ext. System		
disp bailer teflon bailer other:	**Surge block used:** (Y) N	
Length of time surged prior to development: 30 min		
Pump depth/ intake: Bottom	**Multipliers:** 1"= 0.04 2"= 0.16 3"= 0.37 4"= 0.65 5"=1.02 6"= 1.47 Radius² X 0.163	
(TD - DTW X Multiplier = 1 Volume	80% Recovery (TD - DTW X 0.20 + DTW)	

1 Volume = 19.3 X 10 = 193 (Total Purge) Meter(s): LaMotte 2020 Turbidimeter, Myron L Ultrameter

Time	Temp (°C) °F	pH	Cond (mS / µS)	Turbidity (NTU)	Purge Rate (gal) or mL/ min	Volume Removed (gal) / L	DTW	Notes
1015	11.6	8.0	1372	5.8	—	—	83.44	Pre-Development Sample
—	Surge / Swab well				—	—	—	
1115	13.0	7.0	5017	>1000	Ø.66	20.0	91.97	Silty - Brown
1145	~~13.4~~ 13.2	7.0	5467	>1000	Ø.66	40.0	99.45	Turbid - Tan
1215	13.6	7.3	6055	>1000	Ø.66	60.0	105.76	Turbid
—	~~pa~~ suspended		purge to		offload	water	—	
1629	12.4	6.8	7138	60	1/2pm	70	95.10	clearing w/ F.S.
1638	12.7	6.7	6658	846	↓	80	101.80	becoming cloudy w/ ↓ wl
1648	12.6	6.9	7166	>1000	↓	90	110.90	Dewatered
	Dewatered	at	94	gallons				

Did well dewater? (YES) NO	Total volume removed: 94 (gal) L)
Sample method (if applicable): (Disp Bailer) Ded. Tubing New Tubing Ext. Port Other:	
Sample date: 10-31-12	Sample time: 1015 DTW at sample: 83.44
Sample ID: 6206	Lab: Energy Number of bottles: (2)
Analysis:	

Development Data Sheet

Job#: 1350	**Developer:** BM	**Client:** Montgomery
Well ID: MW104	**Date:** 10/29/12	**Site:** Rio Algom Mine
Well diam: 1/4" 1" 2" 3" (4") 6" Other:	**DTW:** 97.64	**TD Before:** 110.00 **TD After:**
Purge equip: ES - diam: Bladder Peri Waterra Positive Air Displacement Ext. System disp bailer teflon bailer other:	**Surge block used:** (Y) N	
Length of time surged prior to development: 20 mins		
Pump depth/ intake:	**Multipliers:** 1"= 0.04 2"= 0.16 3"= 0.37 4"= 0.65 5"=1.02 6"= 1.47 Radius² X 0.163	
(TD - DTW X Multiplier = 1 Volume	80% Recovery (TD - DTW X 0.20 + DTW)	

1 Volume = 8 X 10 = 80 (Total Purge) Meter(s): Lamotte 2020 Turb Myron L Ultrameter

Time	Temp (°C) °F)	pH	Cond (mS (µS))	Turbidity (NTU)	Purge Rate (gal or mL/ min)	Volume Removed (gal / L)	DTW	Notes
Per Client request - sample taken prior to dev (slow recharge)								
1625	11.5	7.0	2007	41	—	—	—	
1650	11.7	7.0	1945	>1000	—	8	—	Turbid
	Well dewatered @ 10 gallons							

Did well dewater? (YES) NO	Total volume removed: 10 (ga) / L)	
Sample method (if applicable): Disp Bailer Ded. Tubing New Tubing Ext. Port Other:		
Sample date: 10/29/12	Sample time: 1625	DTW at sample: —
Sample ID: 6202	Lab: Energy	Number of bottles: 2
Analysis:		

Development Data Sheet

Job#: 1350	**Developer:** T. Ickes	**Client:** Montgomery
Well ID: MW-105	**Date:** 10-31-12	**Site:** Rio Algom Mine
Well diam: 1/4" 1" 2" 3" (4") 6" Other:	**DTW:** 75.53	**TD Before:** 137.00 **TD After:** 137.00
Purge equip: (ES - diam) Bladder Peri Waterra (Positive Air Displacement) Ext. System		
disp bailer teflon bailer other:	**Surge block used:** (Y) N	
Length of time surged prior to development: 30 min		
Pump depth/ intake: Bottom	**Multipliers:** 1"= 0.04 2"= 0.16 3"= 0.37 4"= 0.65 5"=1.02 6"= 1.47 Radius² X 0.163	
(TD - DTW X Multiplier = 1 Volume	80% Recovery (TD - DTW X 0.20 + DTW)	

1 Volume = 40 X 10 = 400 (Total Purge) Meter(s): Myron L Ultrameter, LaMotte 2020 Turbidimeter

Time	Temp (°C) °F	pH	Cond (mS (µS))	Turbidity (NTU)	Purge Rate (gal or mL/ min)	Volume Removed (gal) L)	DTW	Notes
1230	15.3	7.5	895	9.0	—	—	75.53	Pre-Development Sample
—	Surge / Swab use		1	—	—	—	—	Silty - Brown
1415	12.9 ~~7.6a~~	7.6	906	680	0.66	40	75.60	Cloudy - Hard Bottom
1501	12.2	7.2	1118	22	3gpm	~~Col~~	73.60	clearing
1508	12.3	7.2	1125	12	3gpm	82	73.60	clear
1513 ~~1515~~	12.2	7.2	1173	10	4gpm	103	73.60	clear
1518 ~~1522~~	12.3	7.3	1134	5		124	73.60	
1523 ~~1529~~	12.3	7.3	1131	4		146	73.60	
1528	12.3	7.3	1154	3		165	73.60	
1533	12.3	7.3	1159	3		185	73.60	
1537	12.3	7.3	1164	2		200	73.60	—
Well	bottom clean &		hard					

Did well dewater? YES (NO) Total volume removed: 200 (gal) / L)

Sample method (if applicable): (Disp Bailer) Ded. Tubing New Tubing Ext. Port Other:

Sample date: 10-31-12	Sample time: 1230	DTW at sample: 75.53
Sample ID: ~~MW-105~~ 6207	Lab: Energy	Number of bottles: (2)
Analysis:		

Development Data Sheet

Job#: 1350	**Developer:** Bm	**Client:** Montgomery
Well ID: MW10C	**Date:** 10/29/12	**Site:** Rio Alyeska Mine
Well diam: 1/4" 1" 2" 3" (4") 6" Other:	**DTW:** 247.11	**TD Before:** 267.00 **TD After:**
Purge equip: ES - diam: Bladder Peri Waterra Positive Air Displacement Ext. System		
disp bailer teflon bailer other:	**Surge block used:** (Y) N	
Length of time surged prior to development: 20 mins		
Pump depth/ intake:	**Multipliers:** 1"= 0.04 2"= 0.16 3"= 0.37 4"= 0.65 5"=1.02 6"= 1.47 Radius² X 0.163	
(TD - DTW X Multiplier = 1 Volume	80% Recovery (TD - DTW X 0.20 + DTW)	

1 Volume = 13 X 10 = 130 (Total Purge) Meter(s): Ultrameter, Turbidmeter

Time	Temp (°C) °F)	pH	Cond (mS (µS))	Turbidity (NTU)	Purge Rate (gal or mL/ min)	Volume Removed (gal / L)	DTW	Notes
1100	Per client request - sample taken prior to dev (slow recharge)							Grab sample #6201
1300	11.9	6.8	3119	>1000	—	5	251.30 ~~250.90~~	Turbid, Hard bottom
1350	13.0	7.0	3132	>1000	—	10	—	cleaning, not turbid
1440	13.2	7.0	3140	>1000	—	15	257.80	cleaning
1511	13.2	7.0	3149	>1000	—	20	261.40	
				~~>1000~~		~~25~~		
	well	dewatered	@ 25	gallons		DTW	265.30	

Did well dewater? (YES) NO	Total volume removed: 25 (gal) / L)
Sample method (if applicable): Disp Bailer Ded. Tubing New Tubing Ext. Port Other:	
Sample date: 10/29/12 Sample time: 1100	DTW at sample: —
Sample ID: 6201 Lab: Energy	Number of bottles: 2
Analysis:	

ANALYTICAL SUMMARY REPORT

November 14, 2012

Rio Algom Mining Corporation LLC
Hwy 605 and 509
Grants, NM 87020

Workorder No.: C12110024

Project Name: Lisbon, UT Facility

Energy Laboratories, Inc. Casper WY received the following 22 samples for Rio Algom Mining Corporation LLC on 11/1/2012 for analysis.

Sample ID	Client Sample ID	Collect Date	Receive Date	Matrix	Test
C12110024-001	6201	10/29/12 11:00	11/01/12	Aqueous	Metals by ICP/ICPMS, Dissolved Alkalinity Conductivity E300.0 Anions pH Solids, Total Dissolved
C12110024-002	6202	10/29/12 16:25	11/01/12	Aqueous	Same As Above
C12110024-003	6203	10/30/12 8:10	11/01/12	Aqueous	Same As Above
C12110024-004	6204	10/30/12 9:45	11/01/12	Aqueous	Same As Above
C12110024-005	6205	10/30/12 15:30	11/01/12	Aqueous	Same As Above
C12110024-006	6206	10/30/12 10:15	11/01/12	Aqueous	Same As Above
C12110024-007	6207	10/30/12 12:30	11/01/12	Aqueous	Same As Above
C12110024-008	6221	10/31/12 10:15	11/01/12	Aqueous	Same As Above
C12110024-009	6222	10/31/12 10:50	11/01/12	Aqueous	Same As Above
C12110024-010	6223	10/31/12 11:35	11/01/12	Aqueous	Same As Above
C12110024-011	6224	10/31/12 13:00	11/01/12	Aqueous	Same As Above
C12110024-012	6225	10/31/12 13:10	11/01/12	Aqueous	Same As Above
C12110024-013	6211	10/30/12 8:45	11/01/12	Aqueous	Same As Above
C12110024-014	6212	10/30/12 9:25	11/01/12	Aqueous	Same As Above
C12110024-015	6213	10/30/12 10:55	11/01/12	Aqueous	Same As Above
C12110024-016	6214	10/30/12 12:10	11/01/12	Aqueous	Same As Above
C12110024-017	6215	10/30/12 13:05	11/01/12	Aqueous	Same As Above
C12110024-018	6216	10/30/12 14:15	11/01/12	Aqueous	Same As Above
C12110024-019	6217	10/31/12 8:05	11/01/12	Aqueous	Same As Above
C12110024-020	6218	10/31/12 8:45	11/01/12	Aqueous	Same As Above
C12110024-021	6219	10/31/12 8:55	11/01/12	Aqueous	Same As Above
C12110024-022	6220	10/31/12 10:00	11/01/12	Aqueous	Same As Above

ANALYTICAL SUMMARY REPORT

The results as reported relate only to the item(s) submitted for testing. The analyses presented in this report were performed at Energy Laboratories, Inc., 2393 Salt Creek Hwy., Casper, WY 82601, unless otherwise noted. Radiochemistry analyses were performed at Energy Laboratories, Inc., 2325 Kerzell Lane, Casper, WY 82601, unless otherwise noted. Any exceptions or problems with the analyses are noted in the Laboratory Analytical Report, the QA/QC Summary Report, or the Case Narrative.

If you have any questions regarding these test results, please call.

Report Approved By:

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility
Lab ID: C12110024-001
Client Sample ID: 6201

Report Date: 11/14/12
Collection Date: 10/29/12 11:00
DateReceived: 11/01/12
Matrix: Aqueous

Analyses	Result	Units	Qualifier	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Carbonate as CO3	ND	mg/L		5		A2320 B	11/01/12 18:18 / jba
Bicarbonate as HCO3	234	mg/L		5		A2320 B	11/01/12 18:18 / jba
Calcium	133	mg/L		1		E200.7	11/06/12 19:48 / sf
Chloride	85	mg/L	D	2		E300.0	11/01/12 22:58 / wc
Magnesium	56	mg/L		1		E200.7	11/06/12 19:48 / sf
Potassium	22	mg/L		1		E200.7	11/06/12 19:48 / sf
Sodium	479	mg/L		1		E200.7	11/06/12 19:48 / sf
Sulfate	1170	mg/L	D	8		E300.0	11/01/12 22:58 / wc
PHYSICAL PROPERTIES							
Conductivity @ 25 C	2740	umhos/cm		1		A2510 B	11/01/12 15:03 / ab
pH	7.55	s.u.	H	0.01		A4500-H B	11/01/12 15:03 / ab
Solids, Total Dissolved TDS @ 180 C	2050	mg/L		10		A2540 C	11/02/12 12:52 / jz
METALS - DISSOLVED							
Arsenic	0.002	mg/L		0.001		E200.8	11/07/12 14:01 / cp
Molybdenum	0.014	mg/L		0.001		E200.8	11/07/12 14:01 / cp
Selenium	ND	mg/L		0.001		E200.8	11/07/12 14:01 / cp
Uranium	0.0086	mg/L		0.0003		E200.8	11/07/12 14:01 / cp

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
H - Analysis performed past recommended holding time.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility
Lab ID: C12110024-002
Client Sample ID: 6202

Report Date: 11/14/12
Collection Date: 10/29/12 16:25
DateReceived: 11/01/12
Matrix: Aqueous

Analyses	Result	Units	Qualifier	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Carbonate as CO3	ND	mg/L		5		A2320 B	11/01/12 18:26 / jba
Bicarbonate as HCO3	465	mg/L		5		A2320 B	11/01/12 18:26 / jba
Calcium	59	mg/L		1		E200.7	11/06/12 19:52 / sf
Chloride	117	mg/L	D	2		E300.0	11/01/12 23:15 / wc
Magnesium	14	mg/L		1		E200.7	11/06/12 19:52 / sf
Potassium	6	mg/L		1		E200.7	11/06/12 19:52 / sf
Sodium	369	mg/L		1		E200.7	11/06/12 19:52 / sf
Sulfate	378	mg/L	D	8		E300.0	11/01/12 23:15 / wc
PHYSICAL PROPERTIES							
Conductivity @ 25 C	1760	umhos/cm		1		A2510 B	11/01/12 15:06 / ab
pH	7.69	s.u.	H	0.01		A4500-H B	11/01/12 15:06 / ab
Solids, Total Dissolved TDS @ 180 C	1180	mg/L		10		A2540 C	11/02/12 12:52 / jz
METALS - DISSOLVED							
Arsenic	0.003	mg/L		0.001		E200.8	11/07/12 14:23 / cp
Molybdenum	0.122	mg/L		0.001		E200.8	11/07/12 14:23 / cp
Selenium	0.005	mg/L		0.001		E200.8	11/07/12 14:23 / cp
Uranium	0.164	mg/L		0.0003		E200.8	11/07/12 14:23 / cp

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
H - Analysis performed past recommended holding time.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility
Lab ID: C12110024-003
Client Sample ID: 6203

Report Date: 11/14/12
Collection Date: 10/30/12 08:10
DateReceived: 11/01/12
Matrix: Aqueous

Analyses	Result	Units	Qualifier	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Carbonate as CO3	31	mg/L		5		A2320 B	11/01/12 18:42 / jba
Bicarbonate as HCO3	3320	mg/L		5		A2320 B	11/01/12 18:42 / jba
Calcium	68	mg/L		1		E200.7	11/06/12 19:56 / sf
Chloride	1160	mg/L	D	100		E300.0	11/02/12 19:06 / wc
Magnesium	48	mg/L		1		E200.7	11/06/12 19:56 / sf
Potassium	15	mg/L		1		E200.7	11/06/12 19:56 / sf
Sodium	4070	mg/L	D	3		E200.7	11/06/12 19:56 / sf
Sulfate	4290	mg/L	D	400		E300.0	11/02/12 19:06 / wc
PHYSICAL PROPERTIES							
Conductivity @ 25 C	13500	umhos/cm		1		A2510 B	11/01/12 15:09 / ab
pH	8.21	s.u.	H	0.01		A4500-H B	11/01/12 15:09 / ab
Solids, Total Dissolved TDS @ 180 C	10900	mg/L		10		A2540 C	11/02/12 12:53 / jz
METALS - DISSOLVED							
Arsenic	0.071	mg/L		0.001		E200.8	11/07/12 14:27 / cp
Molybdenum	19.2	mg/L		0.001		E200.8	11/07/12 14:27 / cp
Selenium	0.020	mg/L		0.001		E200.8	11/07/12 14:27 / cp
Uranium	103	mg/L		0.0003		E200.8	11/07/12 14:27 / cp

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
H - Analysis performed past recommended holding time.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility
Lab ID: C12110024-004
Client Sample ID: 6204

Report Date: 11/14/12
Collection Date: 10/30/12 09:45
DateReceived: 11/01/12
Matrix: Aqueous

Analyses	Result	Units	Qualifier	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Carbonate as CO3	ND	mg/L		5		A2320 B	11/01/12 19:12 / jba
Bicarbonate as HCO3	332	mg/L		5		A2320 B	11/01/12 19:12 / jba
Calcium	14	mg/L		1		E200.7	11/06/12 20:21 / sf
Chloride	36	mg/L		1		E300.0	11/02/12 00:25 / wc
Magnesium	5	mg/L		1		E200.7	11/06/12 20:21 / sf
Potassium	4	mg/L		1		E200.7	11/06/12 20:21 / sf
Sodium	154	mg/L		1		E200.7	11/06/12 20:21 / sf
Sulfate	55	mg/L	D	2		E300.0	11/02/12 00:25 / wc
PHYSICAL PROPERTIES							
Conductivity @ 25 C	728	umhos/cm		1		A2510 B	11/01/12 15:15 / ab
pH	8.48	s.u.	H	0.01		A4500-H B	11/01/12 15:15 / ab
Solids, Total Dissolved TDS @ 180 C	440	mg/L		10		A2540 C	11/02/12 12:53 / jz
METALS - DISSOLVED							
Arsenic	0.006	mg/L		0.001		E200.8	11/07/12 14:32 / cp
Molybdenum	0.016	mg/L		0.001		E200.8	11/07/12 14:32 / cp
Selenium	ND	mg/L		0.001		E200.8	11/07/12 14:32 / cp
Uranium	0.0917	mg/L		0.0003		E200.8	11/07/12 14:32 / cp

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
H - Analysis performed past recommended holding time.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility
Lab ID: C12110024-005
Client Sample ID: 6205

Report Date: 11/14/12
Collection Date: 10/30/12 15:30
DateReceived: 11/01/12
Matrix: Aqueous

Analyses	Result	Units	Qualifier	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Carbonate as CO3	ND	mg/L		5		A2320 B	11/01/12 19:35 / jba
Bicarbonate as HCO3	2950	mg/L		5		A2320 B	11/01/12 19:35 / jba
Calcium	493	mg/L		1		E200.8	11/07/12 14:36 / cp
Chloride	1210	mg/L	D	20		E300.0	11/02/12 01:17 / wc
Magnesium	159	mg/L		1		E200.8	11/07/12 14:36 / cp
Potassium	14	mg/L		1		E200.8	11/07/12 14:36 / cp
Sodium	4160	mg/L	D	6		E200.7	11/06/12 20:25 / sf
Sulfate	7620	mg/L	D	80		E300.0	11/02/12 01:17 / wc
PHYSICAL PROPERTIES							
Conductivity @ 25 C	16100	umhos/cm		1		A2510 B	11/01/12 15:18 / ab
pH	7.25	s.u.	H	0.01		A4500-H B	11/01/12 15:18 / ab
Solids, Total Dissolved TDS @ 180 C	13800	mg/L		10		A2540 C	11/02/12 12:53 / jz
METALS - DISSOLVED							
Arsenic	0.005	mg/L		0.001		E200.8	11/07/12 14:36 / cp
Molybdenum	28.6	mg/L		0.001		E200.8	11/07/12 14:36 / cp
Selenium	0.085	mg/L		0.001		E200.8	11/07/12 14:36 / cp
Uranium	73.4	mg/L		0.0003		E200.8	11/07/12 14:36 / cp

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
H - Analysis performed past recommended holding time.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility
Lab ID: C12110024-006
Client Sample ID: 6206

Report Date: 11/14/12
Collection Date: 10/30/12 10:15
DateReceived: 11/01/12
Matrix: Aqueous

Analyses	Result	Units	Qualifier	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Carbonate as CO3	ND	mg/L		5		A2320 B	11/01/12 19:58 / jba
Bicarbonate as HCO3	263	mg/L		5		A2320 B	11/01/12 19:58 / jba
Calcium	62	mg/L		1		E200.7	11/06/12 20:29 / sf
Chloride	22	mg/L		1		E300.0	11/02/12 01:34 / wc
Magnesium	16	mg/L		1		E200.7	11/06/12 20:29 / sf
Potassium	6	mg/L		1		E200.7	11/06/12 20:29 / sf
Sodium	142	mg/L		1		E200.7	11/06/12 20:29 / sf
Sulfate	240	mg/L	D	2		E300.0	11/02/12 01:34 / wc
PHYSICAL PROPERTIES							
Conductivity @ 25 C	941	umhos/cm		1		A2510 B	11/01/12 15:20 / ab
pH	7.74	s.u.	H	0.01		A4500-H B	11/01/12 15:20 / ab
Solids, Total Dissolved TDS @ 180 C	618	mg/L		10		A2540 C	11/02/12 12:53 / jz
METALS - DISSOLVED							
Arsenic	ND	mg/L		0.001		E200.8	11/07/12 14:40 / cp
Molybdenum	0.011	mg/L		0.001		E200.8	11/07/12 14:40 / cp
Selenium	ND	mg/L		0.001		E200.8	11/07/12 14:40 / cp
Uranium	0.0470	mg/L		0.0003		E200.8	11/07/12 14:40 / cp

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
H - Analysis performed past recommended holding time.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility
Lab ID: C12110024-007
Client Sample ID: 6207

Report Date: 11/14/12
Collection Date: 10/30/12 12:30
DateReceived: 11/01/12
Matrix: Aqueous

Analyses	Result	Units	Qualifier	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Carbonate as CO3	ND	mg/L		5		A2320 B	11/01/12 20:06 / jba
Bicarbonate as HCO3	239	mg/L		5		A2320 B	11/01/12 20:06 / jba
Calcium	102	mg/L		1		E200.7	11/06/12 20:33 / sf
Chloride	56	mg/L		1		E300.0	11/02/12 01:52 / wc
Magnesium	29	mg/L		1		E200.7	11/06/12 20:33 / sf
Potassium	4	mg/L		1		E200.7	11/06/12 20:33 / sf
Sodium	45	mg/L		1		E200.7	11/06/12 20:33 / sf
Sulfate	166	mg/L	D	2		E300.0	11/02/12 01:52 / wc
PHYSICAL PROPERTIES							
Conductivity @ 25 C	859	umhos/cm		1		A2510 B	11/01/12 15:23 / ab
pH	7.49	s.u.	H	0.01		A4500-H B	11/01/12 15:23 / ab
Solids, Total Dissolved TDS @ 180 C	555	mg/L		10		A2540 C	11/02/12 12:54 / jz
METALS - DISSOLVED							
Arsenic	0.015	mg/L		0.001		E200.8	11/07/12 14:45 / cp
Molybdenum	0.007	mg/L		0.001		E200.8	11/07/12 14:45 / cp
Selenium	0.010	mg/L		0.001		E200.8	11/07/12 14:45 / cp
Uranium	0.0122	mg/L		0.0003		E200.8	11/07/12 14:45 / cp

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
H - Analysis performed past recommended holding time.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility
Lab ID: C12110024-008
Client Sample ID: 6221

Report Date: 11/14/12
Collection Date: 10/31/12 10:15
DateReceived: 11/01/12
Matrix: Aqueous

Analyses	Result	Units	Qualifier	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Carbonate as CO3	ND	mg/L		5		A2320 B	11/01/12 20:11 / jba
Bicarbonate as HCO3	ND	mg/L		5		A2320 B	11/01/12 20:11 / jba
Calcium	ND	mg/L		1		E200.7	11/06/12 20:37 / sf
Chloride	ND	mg/L		1		E300.0	11/02/12 02:09 / wc
Magnesium	ND	mg/L		1		E200.7	11/06/12 20:37 / sf
Potassium	ND	mg/L		1		E200.7	11/06/12 20:37 / sf
Sodium	2	mg/L		1		E200.7	11/06/12 20:37 / sf
Sulfate	ND	mg/L		1		E300.0	11/02/12 02:09 / wc
PHYSICAL PROPERTIES							
Conductivity @ 25 C	2	umhos/cm	B	1		A2510 B	11/01/12 15:26 / ab
pH	5.74	s.u.	H	0.01		A4500-H B	11/01/12 15:26 / ab
Solids, Total Dissolved TDS @ 180 C	74	mg/L		10		A2540 C	11/05/12 15:57 / ab
METALS - DISSOLVED							
Arsenic	ND	mg/L		0.001		E200.8	11/07/12 14:49 / cp
Molybdenum	0.001	mg/L		0.001		E200.8	11/07/12 14:49 / cp
Selenium	ND	mg/L		0.001		E200.8	11/07/12 14:49 / cp
Uranium	0.0004	mg/L		0.0003		E200.8	11/07/12 14:49 / cp

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
B - The analyte was detected in the method blank.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
H - Analysis performed past recommended holding time.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility
Lab ID: C12110024-009
Client Sample ID: 6222

Report Date: 11/14/12
Collection Date: 10/31/12 10:50
DateReceived: 11/01/12
Matrix: Aqueous

Analyses	Result	Units	Qualifier	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Carbonate as CO3	ND	mg/L		5		A2320 B	11/01/12 20:20 / jba
Bicarbonate as HCO3	350	mg/L		5		A2320 B	11/01/12 20:20 / jba
Calcium	209	mg/L		1		E200.8	11/07/12 14:54 / cp
Chloride	174	mg/L		1		E300.0	11/02/12 02:27 / wc
Magnesium	51	mg/L		1		E200.8	11/07/12 14:54 / cp
Potassium	5	mg/L		1		E200.8	11/07/12 14:54 / cp
Sodium	135	mg/L		1		E200.8	11/07/12 14:54 / cp
Sulfate	363	mg/L	D	4		E300.0	11/02/12 02:27 / wc
PHYSICAL PROPERTIES							
Conductivity @ 25 C	1670	umhos/cm		1		A2510 B	11/01/12 15:28 / ab
pH	7.61	s.u.	H	0.01		A4500-H B	11/01/12 15:28 / ab
Solids, Total Dissolved TDS @ 180 C	1140	mg/L		10		A2540 C	11/02/12 12:54 / jz
METALS - DISSOLVED							
Arsenic	0.036	mg/L		0.001		E200.8	11/07/12 14:54 / cp
Molybdenum	0.009	mg/L		0.001		E200.8	11/07/12 14:54 / cp
Selenium	0.011	mg/L		0.001		E200.8	11/07/12 14:54 / cp
Uranium	0.523	mg/L		0.0003		E200.8	11/07/12 14:54 / cp

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
H - Analysis performed past recommended holding time.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility
Lab ID: C12110024-010
Client Sample ID: 6223

Report Date: 11/14/12
Collection Date: 10/31/12 11:35
DateReceived: 11/01/12
Matrix: Aqueous

Analyses	Result	Units	Qualifier	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Carbonate as CO3	ND	mg/L		5		A2320 B	11/01/12 20:28 / jba
Bicarbonate as HCO3	370	mg/L		5		A2320 B	11/01/12 20:28 / jba
Calcium	206	mg/L		1		E200.7	11/06/12 20:49 / sf
Chloride	191	mg/L		1		E300.0	11/02/12 02:44 / wc
Magnesium	55	mg/L		1		E200.7	11/06/12 20:49 / sf
Potassium	5	mg/L		1		E200.7	11/06/12 20:49 / sf
Sodium	144	mg/L		1		E200.7	11/06/12 20:49 / sf
Sulfate	413	mg/L	D	4		E300.0	11/02/12 02:44 / wc
PHYSICAL PROPERTIES							
Conductivity @ 25 C	1820	umhos/cm		1		A2510 B	11/01/12 15:31 / ab
pH	7.61	s.u.	H	0.01		A4500-H B	11/01/12 15:31 / ab
Solids, Total Dissolved TDS @ 180 C	1270	mg/L		10		A2540 C	11/02/12 12:54 / jz
METALS - DISSOLVED							
Arsenic	0.034	mg/L		0.001		E200.8	11/07/12 14:58 / cp
Molybdenum	0.011	mg/L		0.001		E200.8	11/07/12 14:58 / cp
Selenium	0.011	mg/L		0.001		E200.8	11/07/12 14:58 / cp
Uranium	0.515	mg/L		0.0003		E200.8	11/07/12 14:58 / cp

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
H - Analysis performed past recommended holding time.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility
Lab ID: C12110024-011
Client Sample ID: 6224

Report Date: 11/14/12
Collection Date: 10/31/12 13:00
DateReceived: 11/01/12
Matrix: Aqueous

Analyses	Result	Units	Qualifier	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Carbonate as CO3	ND	mg/L		5		A2320 B	11/01/12 20:36 / jba
Bicarbonate as HCO3	374	mg/L		5		A2320 B	11/01/12 20:36 / jba
Calcium	209	mg/L		1		E200.7	11/06/12 20:53 / sf
Chloride	190	mg/L		1		E300.0	11/02/12 03:01 / wc
Magnesium	56	mg/L		1		E200.7	11/06/12 20:53 / sf
Potassium	6	mg/L		1		E200.7	11/06/12 20:53 / sf
Sodium	144	mg/L		1		E200.7	11/06/12 20:53 / sf
Sulfate	416	mg/L	D	4		E300.0	11/02/12 03:01 / wc
PHYSICAL PROPERTIES							
Conductivity @ 25 C	1840	umhos/cm		1		A2510 B	11/01/12 15:34 / ab
pH	7.59	s.u.	H	0.01		A4500-H B	11/01/12 15:34 / ab
Solids, Total Dissolved TDS @ 180 C	1270	mg/L		10		A2540 C	11/02/12 12:55 / jz
METALS - DISSOLVED							
Arsenic	0.036	mg/L		0.001		E200.8	11/07/12 17:36 / cp
Molybdenum	0.008	mg/L		0.001		E200.8	11/07/12 17:36 / cp
Selenium	0.011	mg/L		0.001		E200.8	11/07/12 17:36 / cp
Uranium	0.537	mg/L		0.0003		E200.8	11/07/12 17:36 / cp

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
H - Analysis performed past recommended holding time.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility
Lab ID: C12110024-012
Client Sample ID: 6225

Report Date: 11/14/12
Collection Date: 10/31/12 13:10
DateReceived: 11/01/12
Matrix: Aqueous

Analyses	Result	Units	Qualifier	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Carbonate as CO3	ND	mg/L		5		A2320 B	11/01/12 20:44 / jba
Bicarbonate as HCO3	374	mg/L		5		A2320 B	11/01/12 20:44 / jba
Calcium	209	mg/L		1		E200.7	11/06/12 20:57 / sf
Chloride	190	mg/L		1		E300.0	11/02/12 03:19 / wc
Magnesium	55	mg/L		1		E200.7	11/06/12 20:57 / sf
Potassium	5	mg/L		1		E200.7	11/06/12 20:57 / sf
Sodium	146	mg/L		1		E200.7	11/06/12 20:57 / sf
Sulfate	416	mg/L	D	4		E300.0	11/02/12 03:19 / wc
PHYSICAL PROPERTIES							
Conductivity @ 25 C	1840	umhos/cm		1		A2510 B	11/01/12 15:36 / ab
pH	7.59	s.u.	H	0.01		A4500-H B	11/01/12 15:36 / ab
Solids, Total Dissolved TDS @ 180 C	1310	mg/L		10		A2540 C	11/02/12 12:55 / jz
METALS - DISSOLVED							
Arsenic	0.035	mg/L		0.001		E200.8	11/07/12 17:40 / cp
Molybdenum	0.008	mg/L		0.001		E200.8	11/07/12 17:40 / cp
Selenium	0.010	mg/L		0.001		E200.8	11/07/12 17:40 / cp
Uranium	0.528	mg/L		0.0003		E200.8	11/07/12 17:40 / cp

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
H - Analysis performed past recommended holding time.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility
Lab ID: C12110024-013
Client Sample ID: 6211

Report Date: 11/14/12
Collection Date: 10/30/12 08:45
DateReceived: 11/01/12
Matrix: Aqueous

Analyses	Result	Units	Qualifier	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Carbonate as CO3	ND	mg/L		5		A2320 B	11/01/12 20:52 / jba
Bicarbonate as HCO3	250	mg/L		5		A2320 B	11/01/12 20:52 / jba
Calcium	153	mg/L		1		E200.7	11/06/12 21:50 / sf
Chloride	145	mg/L		1		E300.0	11/02/12 03:36 / wc
Magnesium	44	mg/L		1		E200.7	11/06/12 21:50 / sf
Potassium	6	mg/L		1		E200.7	11/06/12 21:50 / sf
Sodium	95	mg/L		1		E200.7	11/06/12 21:50 / sf
Sulfate	312	mg/L	D	4		E300.0	11/02/12 03:36 / wc
PHYSICAL PROPERTIES							
Conductivity @ 25 C	1380	umhos/cm		1		A2510 B	11/01/12 15:39 / ab
pH	7.59	s.u.	H	0.01		A4500-H B	11/01/12 15:39 / ab
Solids, Total Dissolved TDS @ 180 C	928	mg/L		10		A2540 C	11/02/12 12:56 / jz
METALS - DISSOLVED							
Arsenic	0.007	mg/L		0.001		E200.8	11/07/12 17:45 / cp
Molybdenum	0.009	mg/L		0.001		E200.8	11/07/12 17:45 / cp
Selenium	0.008	mg/L		0.001		E200.8	11/07/12 17:45 / cp
Uranium	0.0181	mg/L		0.0003		E200.8	11/07/12 17:45 / cp

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
H - Analysis performed past recommended holding time.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility
Lab ID: C12110024-014
Client Sample ID: 6212

Report Date: 11/14/12
Collection Date: 10/30/12 09:25
DateReceived: 11/01/12
Matrix: Aqueous

Analyses	Result	Units	Qualifier	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Carbonate as CO3	ND	mg/L		5		A2320 B	11/01/12 21:00 / jba
Bicarbonate as HCO3	239	mg/L		5		A2320 B	11/01/12 21:00 / jba
Calcium	155	mg/L		1		E200.7	11/06/12 21:54 / sf
Chloride	146	mg/L		1		E300.0	11/02/12 08:22 / wc
Magnesium	44	mg/L		1		E200.7	11/06/12 21:54 / sf
Potassium	7	mg/L		1		E200.7	11/06/12 21:54 / sf
Sodium	93	mg/L		1		E200.7	11/06/12 21:54 / sf
Sulfate	317	mg/L	D	4		E300.0	11/02/12 08:22 / wc
PHYSICAL PROPERTIES							
Conductivity @ 25 C	1380	umhos/cm		1		A2510 B	11/01/12 15:53 / ab
pH	7.57	s.u.	H	0.01		A4500-H B	11/01/12 15:53 / ab
Solids, Total Dissolved TDS @ 180 C	922	mg/L		10		A2540 C	11/02/12 12:56 / jz
METALS - DISSOLVED							
Arsenic	0.006	mg/L		0.001		E200.8	11/07/12 17:49 / cp
Molybdenum	0.010	mg/L		0.001		E200.8	11/07/12 17:49 / cp
Selenium	0.008	mg/L		0.001		E200.8	11/07/12 17:49 / cp
Uranium	0.0180	mg/L		0.0003		E200.8	11/07/12 17:49 / cp

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
H - Analysis performed past recommended holding time.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility
Lab ID: C12110024-015
Client Sample ID: 6213

Report Date: 11/14/12
Collection Date: 10/30/12 10:55
DateReceived: 11/01/12
Matrix: Aqueous

Analyses	Result	Units	Qualifier	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Carbonate as CO3	ND	mg/L		5		A2320 B	11/01/12 21:16 / jba
Bicarbonate as HCO3	256	mg/L		5		A2320 B	11/01/12 21:16 / jba
Calcium	176	mg/L		1		E200.7	11/06/12 21:58 / sf
Chloride	156	mg/L		1		E300.0	11/02/12 09:14 / wc
Magnesium	47	mg/L		1		E200.7	11/06/12 21:58 / sf
Potassium	6	mg/L		1		E200.7	11/06/12 21:58 / sf
Sodium	92	mg/L		1		E200.7	11/06/12 21:58 / sf
Sulfate	345	mg/L	D	4		E300.0	11/02/12 09:14 / wc
PHYSICAL PROPERTIES							
Conductivity @ 25 C	1480	umhos/cm		1		A2510 B	11/01/12 15:55 / ab
pH	7.49	s.u.	H	0.01		A4500-H B	11/01/12 15:55 / ab
Solids, Total Dissolved TDS @ 180 C	1010	mg/L		10		A2540 C	11/02/12 12:56 / jz
METALS - DISSOLVED							
Arsenic	0.021	mg/L		0.001		E200.8	11/07/12 17:54 / cp
Molybdenum	0.006	mg/L		0.001		E200.8	11/12/12 19:33 / cp
Selenium	0.009	mg/L		0.001		E200.8	11/07/12 17:54 / cp
Uranium	0.0145	mg/L		0.0003		E200.8	11/12/12 19:33 / cp

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
H - Analysis performed past recommended holding time.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility
Lab ID: C12110024-016
Client Sample ID: 6214

Report Date: 11/14/12
Collection Date: 10/30/12 12:10
DateReceived: 11/01/12
Matrix: Aqueous

Analyses	Result	Units	Qualifier	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Carbonate as CO3	ND	mg/L		5		A2320 B	11/01/12 21:23 / jba
Bicarbonate as HCO3	479	mg/L		5		A2320 B	11/01/12 21:23 / jba
Calcium	217	mg/L		1		E200.7	11/06/12 22:02 / sf
Chloride	401	mg/L	D	2		E300.0	11/02/12 09:31 / wc
Magnesium	57	mg/L		1		E200.7	11/06/12 22:02 / sf
Potassium	6	mg/L		1		E200.7	11/06/12 22:02 / sf
Sodium	459	mg/L		1		E200.7	11/06/12 22:02 / sf
Sulfate	795	mg/L	D	8		E300.0	11/02/12 09:31 / wc
PHYSICAL PROPERTIES							
Conductivity @ 25 C	3140	umhos/cm		1		A2510 B	11/01/12 15:58 / ab
pH	7.27	s.u.	H	0.01		A4500-H B	11/01/12 15:58 / ab
Solids, Total Dissolved TDS @ 180 C	2170	mg/L		10		A2540 C	11/02/12 12:56 / jz
METALS - DISSOLVED							
Arsenic	0.014	mg/L		0.001		E200.8	11/07/12 17:58 / cp
Molybdenum	ND	mg/L		0.001		E200.8	11/07/12 17:58 / cp
Selenium	0.013	mg/L		0.001		E200.8	11/07/12 17:58 / cp
Uranium	2.05	mg/L		0.0003		E200.8	11/12/12 19:55 / cp

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
H - Analysis performed past recommended holding time.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility
Lab ID: C12110024-017
Client Sample ID: 6215

Report Date: 11/14/12
Collection Date: 10/30/12 13:05
DateReceived: 11/01/12
Matrix: Aqueous

Analyses	Result	Units	Qualifier	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Carbonate as CO3	ND	mg/L		5		A2320 B	11/01/12 21:33 / jba
Bicarbonate as HCO3	487	mg/L		5		A2320 B	11/01/12 21:33 / jba
Calcium	215	mg/L		1		E200.7	11/06/12 22:06 / sf
Chloride	388	mg/L	D	2		E300.0	11/02/12 09:49 / wc
Magnesium	55	mg/L		1		E200.7	11/06/12 22:06 / sf
Potassium	6	mg/L		1		E200.7	11/06/12 22:06 / sf
Sodium	430	mg/L		1		E200.7	11/06/12 22:06 / sf
Sulfate	789	mg/L	D	8		E300.0	11/02/12 09:49 / wc
PHYSICAL PROPERTIES							
Conductivity @ 25 C	3110	umhos/cm		1		A2510 B	11/01/12 16:01 / ab
pH	7.30	s.u.	H	0.01		A4500-H B	11/01/12 16:01 / ab
Solids, Total Dissolved TDS @ 180 C	2180	mg/L		10		A2540 C	11/02/12 12:57 / jz
METALS - DISSOLVED							
Arsenic	0.013	mg/L		0.001		E200.8	11/07/12 18:02 / cp
Molybdenum	0.002	mg/L		0.001		E200.8	11/07/12 18:02 / cp
Selenium	0.013	mg/L		0.001		E200.8	11/07/12 18:02 / cp
Uranium	1.77	mg/L		0.0003		E200.8	11/07/12 18:02 / cp

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
H - Analysis performed past recommended holding time.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility
Lab ID: C12110024-018
Client Sample ID: 6216

Report Date: 11/14/12
Collection Date: 10/30/12 14:15
DateReceived: 11/01/12
Matrix: Aqueous

Analyses	Result	Units	Qualifier	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Carbonate as CO3	ND	mg/L		5		A2320 B	11/01/12 21:41 / jba
Bicarbonate as HCO3	455	mg/L		5		A2320 B	11/01/12 21:41 / jba
Calcium	218	mg/L		1		E200.7	11/06/12 22:14 / sf
Chloride	373	mg/L	D	2		E300.0	11/02/12 10:06 / wc
Magnesium	58	mg/L		1		E200.7	11/06/12 22:14 / sf
Potassium	6	mg/L		1		E200.7	11/06/12 22:14 / sf
Sodium	388	mg/L		1		E200.7	11/06/12 22:14 / sf
Sulfate	775	mg/L	D	8		E300.0	11/02/12 10:06 / wc
PHYSICAL PROPERTIES							
Conductivity @ 25 C	3010	umhos/cm		1		A2510 B	11/01/12 16:03 / ab
pH	7.21	s.u.	H	0.01		A4500-H B	11/01/12 16:03 / ab
Solids, Total Dissolved TDS @ 180 C	2080	mg/L		10		A2540 C	11/02/12 12:57 / jz
METALS - DISSOLVED							
Arsenic	0.013	mg/L		0.001		E200.8	11/07/12 18:07 / cp
Molybdenum	ND	mg/L		0.001		E200.8	11/07/12 18:07 / cp
Selenium	0.012	mg/L		0.001		E200.8	11/07/12 18:07 / cp
Uranium	1.55	mg/L		0.0003		E200.8	11/07/12 18:07 / cp

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
H - Analysis performed past recommended holding time.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility
Lab ID: C12110024-019
Client Sample ID: 6217

Report Date: 11/14/12
Collection Date: 10/31/12 08:05
DateReceived: 11/01/12
Matrix: Aqueous

Analyses	Result	Units	Qualifier	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Carbonate as CO3	ND	mg/L		5		A2320 B	11/01/12 21:50 / jba
Bicarbonate as HCO3	1090	mg/L		5		A2320 B	11/01/12 21:50 / jba
Calcium	579	mg/L		1		E200.7	11/06/12 22:18 / sf
Chloride	662	mg/L	D	10		E300.0	11/02/12 10:24 / wc
Magnesium	197	mg/L		1		E200.7	11/06/12 22:18 / sf
Potassium	21	mg/L		1		E200.7	11/06/12 22:18 / sf
Sodium	1990	mg/L	D	3		E200.7	11/06/12 22:18 / sf
Sulfate	4410	mg/L	D	40		E300.0	11/02/12 10:24 / wc
PHYSICAL PROPERTIES							
Conductivity @ 25 C	9710	umhos/cm		1		A2510 B	11/01/12 16:06 / ab
pH	7.19	s.u.	H	0.01		A4500-H B	11/01/12 16:06 / ab
Solids, Total Dissolved TDS @ 180 C	8300	mg/L		10		A2540 C	11/02/12 12:57 / jz
METALS - DISSOLVED							
Arsenic	0.002	mg/L		0.001		E200.8	11/07/12 18:11 / cp
Molybdenum	10.4	mg/L		0.001		E200.8	11/07/12 18:11 / cp
Selenium	0.069	mg/L		0.001		E200.8	11/07/12 18:11 / cp
Uranium	43	mg/L	D	3		E200.7	11/06/12 22:18 / sf

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
H - Analysis performed past recommended holding time.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility
Lab ID: C12110024-020
Client Sample ID: 6218

Report Date: 11/14/12
Collection Date: 10/31/12 08:45
DateReceived: 11/01/12
Matrix: Aqueous

Analyses	Result	Units	Qualifier	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Carbonate as CO3	ND	mg/L		5		A2320 B	11/01/12 21:59 / jba
Bicarbonate as HCO3	1170	mg/L		5		A2320 B	11/01/12 21:59 / jba
Calcium	589	mg/L		1		E200.7	11/06/12 22:22 / sf
Chloride	685	mg/L	D	10		E300.0	11/02/12 10:41 / wc
Magnesium	209	mg/L		1		E200.7	11/06/12 22:22 / sf
Potassium	22	mg/L		1		E200.7	11/06/12 22:22 / sf
Sodium	2060	mg/L	D	3		E200.7	11/06/12 22:22 / sf
Sulfate	4640	mg/L	D	40		E300.0	11/02/12 10:41 / wc
PHYSICAL PROPERTIES							
Conductivity @ 25 C	10100	umhos/cm		1		A2510 B	11/01/12 16:09 / ab
pH	7.23	s.u.	H	0.01		A4500-H B	11/01/12 16:09 / ab
Solids, Total Dissolved TDS @ 180 C	8680	mg/L		10		A2540 C	11/02/12 12:57 / jz
METALS - DISSOLVED							
Arsenic	0.002	mg/L		0.001		E200.8	11/07/12 18:33 / cp
Molybdenum	11.2	mg/L		0.001		E200.8	11/07/12 18:33 / cp
Selenium	0.074	mg/L		0.001		E200.8	11/07/12 18:33 / cp
Uranium	43	mg/L	D	3		E200.7	11/06/12 22:22 / sf

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
H - Analysis performed past recommended holding time.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility
Lab ID: C12110024-021
Client Sample ID: 6219

Report Date: 11/14/12
Collection Date: 10/31/12 08:55
DateReceived: 11/01/12
Matrix: Aqueous

Analyses	Result	Units	Qualifier	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Carbonate as CO3	ND	mg/L		5		A2320 B	11/01/12 22:09 / jba
Bicarbonate as HCO3	1180	mg/L		5		A2320 B	11/01/12 22:09 / jba
Calcium	596	mg/L		1		E200.7	11/06/12 22:26 / sf
Chloride	685	mg/L	D	10		E300.0	11/02/12 10:59 / wc
Magnesium	209	mg/L		1		E200.7	11/06/12 22:26 / sf
Potassium	22	mg/L		1		E200.7	11/06/12 22:26 / sf
Sodium	2050	mg/L	D	3		E200.7	11/06/12 22:26 / sf
Sulfate	4640	mg/L	D	40		E300.0	11/02/12 10:59 / wc
PHYSICAL PROPERTIES							
Conductivity @ 25 C	10000	umhos/cm		1		A2510 B	11/01/12 16:11 / ab
pH	7.24	s.u.	H	0.01		A4500-H B	11/01/12 16:11 / ab
Solids, Total Dissolved TDS @ 180 C	8820	mg/L		10		A2540 C	11/05/12 15:58 / ab
METALS - DISSOLVED							
Arsenic	0.003	mg/L		0.001		E200.8	11/07/12 18:51 / cp
Molybdenum	11.2	mg/L		0.001		E200.8	11/07/12 18:51 / cp
Selenium	0.073	mg/L		0.001		E200.8	11/07/12 18:51 / cp
Uranium	43	mg/L	D	3		E200.7	11/06/12 22:26 / sf

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
H - Analysis performed past recommended holding time.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility
Lab ID: C12110024-022
Client Sample ID: 6220

Report Date: 11/14/12
Collection Date: 10/31/12 10:00
DateReceived: 11/01/12
Matrix: Aqueous

Analyses	Result	Units	Qualifier	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Carbonate as CO3	ND	mg/L		5		A2320 B	11/01/12 22:19 / jba
Bicarbonate as HCO3	1270	mg/L		5		A2320 B	11/01/12 22:19 / jba
Calcium	584	mg/L		1		E200.7	11/06/12 22:54 / sf
Chloride	679	mg/L	D	10		E300.0	11/02/12 11:16 / wc
Magnesium	182	mg/L		1		E200.7	11/06/12 22:54 / sf
Potassium	21	mg/L		1		E200.7	11/06/12 22:54 / sf
Sodium	2080	mg/L	D	3		E200.7	11/06/12 22:54 / sf
Sulfate	4570	mg/L	D	40		E300.0	11/02/12 11:16 / wc
PHYSICAL PROPERTIES							
Conductivity @ 25 C	10100	umhos/cm		1		A2510 B	11/01/12 16:14 / ab
pH	7.35	s.u.	H	0.01		A4500-H B	11/01/12 16:14 / ab
Solids, Total Dissolved TDS @ 180 C	8620	mg/L		10		A2540 C	11/02/12 12:59 / jz
METALS - DISSOLVED							
Arsenic	0.004	mg/L		0.001		E200.8	11/07/12 18:55 / cp
Molybdenum	11.6	mg/L		0.001		E200.8	11/07/12 18:55 / cp
Selenium	0.077	mg/L		0.001		E200.8	11/07/12 18:55 / cp
Uranium	42	mg/L	D	3		E200.7	11/06/12 22:54 / sf

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
H - Analysis performed past recommended holding time.

QA/QC Summary Report

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC **Report Date:** 11/14/12

Project: Lisbon, UT Facility **Work Order:** C12110024

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: A2320 B										Batch: R166673
Sample ID: MBLK	3	Method Blank				Run: MANTECH_121101B				11/01/12 14:51
Alkalinity, Total as CaCO3		ND	mg/L	5.0						
Carbonate as CO3		ND	mg/L	5.0						
Bicarbonate as HCO3		1.95	mg/L	5.0						
Sample ID: LCS_121003		Laboratory Control Sample				Run: MANTECH_121101B				11/01/12 15:06
Alkalinity, Total as CaCO3		207	mg/L	5.0	104	90	110			
Sample ID: C12101254-002AMS		Sample Matrix Spike				Run: MANTECH_121101B				11/01/12 16:15
Alkalinity, Total as CaCO3		277	mg/L	5.0	101	80	120			
Sample ID: C12110024-004ADUP	3	Sample Duplicate				Run: MANTECH_121101B				11/01/12 19:20
Alkalinity, Total as CaCO3		279	mg/L	5.0				0.1	10	
Carbonate as CO3		4.70	mg/L	5.0					10	
Bicarbonate as HCO3		331	mg/L	5.0				0.2	10	
Sample ID: C12110024-005AMS		Sample Matrix Spike				Run: MANTECH_121101B				11/01/12 19:50
Alkalinity, Total as CaCO3		2520	mg/L	5.0	87	80	120			
Sample ID: C12110024-014ADUP	3	Sample Duplicate				Run: MANTECH_121101B				11/01/12 21:08
Alkalinity, Total as CaCO3		196	mg/L	5.0				0.1	10	
Carbonate as CO3		ND	mg/L	5.0					10	
Bicarbonate as HCO3		239	mg/L	5.0				0.1	10	

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

QA/QC Summary Report

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Report Date: 11/14/12
Project: Lisbon, UT Facility
Work Order: C12110024

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: A2510 B										Batch: R166612
Sample ID: SC 2ND 1413		Laboratory Control Sample				Run: PHSC_101-C_121101A				11/01/12 09:07
Conductivity @ 25 C		1390	umhos/cm	1.0	98	90	110			
Sample ID: MBLK		Method Blank				Run: PHSC_101-C_121101A				11/01/12 09:13
Conductivity @ 25 C		2	umhos/cm	0.2						
Sample ID: C12110024-003ADUP		Sample Duplicate				Run: PHSC_101-C_121101A				11/01/12 15:11
Conductivity @ 25 C		13700	umhos/cm	1.0				1.7	10	
Sample ID: C12110024-013ADUP		Sample Duplicate				Run: PHSC_101-C_121101A				11/01/12 15:42
Conductivity @ 25 C		1380	umhos/cm	1.0					10	

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

QA/QC Summary Report

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Report Date: 11/14/12
Project: Lisbon, UT Facility
Work Order: C12110024

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: A2540 C										Batch: TDS121102A
Sample ID: MB-1_121102A		Method Blank				Run: BAL-1_121102A				11/02/12 12:48
Solids, Total Dissolved TDS @ 180 C		ND	mg/L	4						
Sample ID: LCS-2_121102A		Laboratory Control Sample				Run: BAL-1_121102A				11/02/12 12:49
Solids, Total Dissolved TDS @ 180 C		1100	mg/L	10	99	90	110			
Sample ID: C12101073-005A MS		Sample Matrix Spike				Run: BAL-1_121102A				11/02/12 12:50
Solids, Total Dissolved TDS @ 180 C		14200	mg/L	10	98	90	110			
Sample ID: C12110024-001A DUP		Sample Duplicate				Run: BAL-1_121102A				11/02/12 12:52
Solids, Total Dissolved TDS @ 180 C		2050	mg/L	10				0.4	5	
Sample ID: C12110024-011A DUP		Sample Duplicate				Run: BAL-1_121102A				11/02/12 12:55
Solids, Total Dissolved TDS @ 180 C		1280	mg/L	10				0.3	5	
Sample ID: C12110024-012A MS		Sample Matrix Spike				Run: BAL-1_121102A				11/02/12 12:56
Solids, Total Dissolved TDS @ 180 C		3210	mg/L	10	95	90	110			
Method: A2540 C										Batch: TDS121105A
Sample ID: MB-1_121105A		Method Blank				Run: BAL-1_121105A				11/05/12 15:57
Solids, Total Dissolved TDS @ 180 C		ND	mg/L	4						
Sample ID: LCS-2_121105A		Laboratory Control Sample				Run: BAL-1_121105A				11/05/12 15:57
Solids, Total Dissolved TDS @ 180 C		999	mg/L	10	100	90	110			
Sample ID: C12110024-021A DUP		Sample Duplicate				Run: BAL-1_121105A				11/05/12 15:58
Solids, Total Dissolved TDS @ 180 C		8670	mg/L	10				1.7	5	
Sample ID: C12110103-001A MS		Sample Matrix Spike				Run: BAL-1_121105A				11/05/12 16:00
Solids, Total Dissolved TDS @ 180 C		15600	mg/L	10	95	90	110			

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

QA/QC Summary Report

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Report Date: 11/14/12
Project: Lisbon, UT Facility
Work Order: C12110024

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: A4500-H B									Analytical Run: PHSC_101-C_121101A	
Sample ID: pH 6.86	Initial Calibration Verification Standard								11/01/12 08:54	
pH		6.84	s.u.	0.010	100	98	102			
Method: A4500-H B									Batch: R166612	
Sample ID: C12110024-003ADUP	Sample Duplicate					Run: PHSC_101-C_121101A			11/01/12 15:11	
pH		8.21	s.u.	0.010				0.0	3	
Sample ID: C12110024-013ADUP	Sample Duplicate					Run: PHSC_101-C_121101A			11/01/12 15:42	
pH		7.58	s.u.	0.010				0.1	3	

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

QA/QC Summary Report

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC **Report Date:** 11/14/12

Project: Lisbon, UT Facility **Work Order:** C12110024

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E200.7									Analytical Run: ICP2-C_121106A	
Sample ID: ICV	5	Initial Calibration Verification Standard							11/06/12 14:01	
Calcium		50.9	mg/L	0.50	102	95	105			
Magnesium		49.7	mg/L	0.50	99	95	105			
Potassium		48.7	mg/L	2.7	97	95	105			
Sodium		49.3	mg/L	0.50	99	95	105			
Uranium		5.09	mg/L	1.0	102	95	105			
Sample ID: ICSA	5	Interference Check Sample A							11/06/12 14:42	
Calcium		505	mg/L	0.50	101	80	120			
Magnesium		516	mg/L	0.50	103	80	120			
Potassium		-0.00570	mg/L	0.50						
Sodium		0.222	mg/L	0.50						
Uranium		0.0540	mg/L	1.0						
Sample ID: ICSAB	5	Interference Check Sample AB							11/06/12 14:46	
Calcium		511	mg/L	0.50	102	80	120			
Magnesium		525	mg/L	0.50	105	80	120			
Potassium		-0.00440	mg/L	0.50						
Sodium		0.610	mg/L	0.50						
Uranium		0.0450	mg/L	1.0						
Method: E200.7									Batch: R166838	
Sample ID: MB-121105A	5	Method Blank				Run: ICP2-C_121106A			11/06/12 15:10	
Calcium		ND	mg/L	0.06						
Magnesium		ND	mg/L	0.03						
Potassium		ND	mg/L	0.06						
Sodium		ND	mg/L	0.03						
Uranium		ND	mg/L	0.3						
Sample ID: LFB-121105A	5	Laboratory Fortified Blank				Run: ICP2-C_121106A			11/06/12 15:14	
Calcium		49.6	mg/L	0.50	99	85	115			
Magnesium		47.9	mg/L	0.50	96	85	115			
Potassium		46.4	mg/L	0.50	93	85	115			
Sodium		46.8	mg/L	0.50	94	85	115			
Uranium		4.48	mg/L	1.0	90	85	115			
Sample ID: C12110024-003BMS2	5	Sample Matrix Spike				Run: ICP2-C_121106A			11/06/12 20:00	
Calcium		558	mg/L	1.0	96	70	130			
Magnesium		530	mg/L	1.0	95	70	130			
Potassium		506	mg/L	1.0	96	70	130			
Sodium		4640	mg/L	3.2		70	130			A
Uranium		146	mg/L	2.6	96	70	130			
Sample ID: C12110024-003BMSD	5	Sample Matrix Spike Duplicate				Run: ICP2-C_121106A			11/06/12 20:04	
Calcium		562	mg/L	1.0	97	70	130	0.7	20	
Magnesium		549	mg/L	1.0	98	70	130	3.4	20	
Potassium		512	mg/L	1.0	97	70	130	1.2	20	

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

A - The analyte level was greater than four times the spike level. In accordance with the method % recovery is not calculated.

QA/QC Summary Report

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC **Report Date:** 11/14/12

Project: Lisbon, UT Facility **Work Order:** C12110024

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E200.7									Batch: R166838	
Sample ID: C12110024-003BMSD	5	Sample Matrix Spike Duplicate				Run: ICP2-C_121106A			11/06/12 20:04	
Sodium		4620	mg/L	3.2		70	130	0.5	20	A
Uranium		145	mg/L	2.6	94	70	130	0.7	20	
Sample ID: C12110024-012BMS2	5	Sample Matrix Spike				Run: ICP2-C_121106A			11/06/12 21:01	
Calcium		247	mg/L	1.0		70	130			A
Magnesium		104	mg/L	1.0	96	70	130			
Potassium		52.8	mg/L	1.0	93	70	130			
Sodium		195	mg/L	1.0	95	70	130			
Uranium		5.04	mg/L	0.26	92	70	130			
Sample ID: C12110024-012BMSD	5	Sample Matrix Spike Duplicate				Run: ICP2-C_121106A			11/06/12 21:45	
Calcium		255	mg/L	1.0		70	130	3.2	20	A
Magnesium		107	mg/L	1.0	101	70	130	2.6	20	
Potassium		54.3	mg/L	1.0	96	70	130	2.7	20	
Sodium		197	mg/L	1.0	100	70	130	1.1	20	
Uranium		5.07	mg/L	0.26	93	70	130	0.6	20	

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

A - The analyte level was greater than four times the spike level. In accordance with the method % recovery is not calculated.

QA/QC Summary Report

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC **Report Date:** 11/14/12

Project: Lisbon, UT Facility **Work Order:** C12110024

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E200.8									Analytical Run: ICPMS4-C_121107A	
Sample ID: ICV	8	Initial Calibration Verification Standard							11/07/12 07:50	
Arsenic		0.0499	mg/L	0.0010	100	90	110			
Calcium		9.80	mg/L	0.0066	98	90	110			
Magnesium		9.94	mg/L	0.0027	99	90	110			
Molybdenum		0.0487	mg/L	0.0010	97	90	110			
Potassium		9.96	mg/L	0.0041	100	90	110			
Selenium		0.0510	mg/L	0.0010	102	90	110			
Sodium		10.1	mg/L	0.0043	101	90	110			
Uranium		0.0512	mg/L	0.00030	102	90	110			
Method: E200.8									Batch: R166946	
Sample ID: LRB	8	Method Blank				Run: ICPMS4-C_121107A			11/07/12 08:25	
Arsenic		ND	mg/L	5E-05						
Calcium		ND	mg/L	0.007						
Magnesium		0.005	mg/L	0.003						
Molybdenum		ND	mg/L	3E-05						
Potassium		0.006	mg/L	0.004						
Selenium		ND	mg/L	7E-05						
Sodium		0.007	mg/L	0.004						
Uranium		ND	mg/L	9E-06						
Sample ID: LFB	8	Laboratory Fortified Blank				Run: ICPMS4-C_121107A			11/07/12 08:30	
Arsenic		0.0544	mg/L	0.0010	109	85	115			
Calcium		13.3	mg/L	0.0066	106	85	115			
Magnesium		13.5	mg/L	0.0027	108	85	115			
Molybdenum		0.0521	mg/L	0.0010	104	85	115			
Potassium		13.4	mg/L	0.0041	107	85	115			
Selenium		0.0548	mg/L	0.0010	110	85	115			
Sodium		13.5	mg/L	0.0043	108	85	115			
Uranium		0.0543	mg/L	0.00030	109	85	115			
Sample ID: C12110024-010BMS4	8	Sample Matrix Spike				Run: ICPMS4-C_121107A			11/07/12 15:20	
Arsenic		0.0887	mg/L	0.0010	109	70	130			
Calcium		223	mg/L	1.0		70	130			A
Magnesium		62.1	mg/L	1.0		70	130			A
Molybdenum		0.0637	mg/L	0.0010	106	70	130			
Potassium		18.9	mg/L	1.0	109	70	130			
Selenium		0.0621	mg/L	0.0010	102	70	130			
Sodium		147	mg/L	1.0		70	130			A
Uranium		0.576	mg/L	0.00030		70	130			A
Sample ID: C12110024-010BMSD	8	Sample Matrix Spike Duplicate				Run: ICPMS4-C_121107A			11/07/12 15:24	
Arsenic		0.0879	mg/L	0.0010	107	70	130	1.0	20	
Calcium		221	mg/L	1.0		70	130	1.0	20	A
Magnesium		61.6	mg/L	1.0		70	130	0.8	20	A
Molybdenum		0.0642	mg/L	0.0010	107	70	130	0.8	20	

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

A - The analyte level was greater than four times the spike level. In accordance with the method % recovery is not calculated.

QA/QC Summary Report

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC **Report Date:** 11/14/12

Project: Lisbon, UT Facility **Work Order:** C12110024

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E200.8									Batch: R166946	
Sample ID: C12110024-010BMSD	8	Sample Matrix Spike Duplicate				Run: ICPMS4-C_121107A			11/07/12 15:24	
Potassium		18.7	mg/L	1.0	107	70	130	1.0	20	
Selenium		0.0635	mg/L	0.0010	105	70	130	2.2	20	
Sodium		146	mg/L	1.0		70	130	0.3	20	A
Uranium		0.588	mg/L	0.00030		70	130	2.0	20	A
Sample ID: C12110024-020BMS4	8	Sample Matrix Spike				Run: ICPMS4-C_121107A			11/07/12 18:38	
Arsenic		0.537	mg/L	0.0010	107	70	130			
Calcium		733	mg/L	1.0		70	130			A
Magnesium		334	mg/L	1.0	99	70	130			
Molybdenum		12.0	mg/L	0.0010		70	130			A
Potassium		149	mg/L	1.0	102	70	130			
Selenium		0.568	mg/L	0.0010	99	70	130			
Sodium		2080	mg/L	1.0		70	130			A
Uranium		47.0	mg/L	0.00030		70	130			A
Sample ID: C12110024-020BMSD	8	Sample Matrix Spike Duplicate				Run: ICPMS4-C_121107A			11/07/12 18:42	
Arsenic		0.530	mg/L	0.0010	106	70	130	1.3	20	
Calcium		721	mg/L	1.0		70	130	1.6	20	A
Magnesium		325	mg/L	1.0	92	70	130	2.7	20	
Molybdenum		11.8	mg/L	0.0010		70	130	1.3	20	A
Potassium		146	mg/L	1.0	100	70	130	1.7	20	
Selenium		0.587	mg/L	0.0010	103	70	130	3.3	20	
Sodium		1990	mg/L	1.0		70	130	4.5	20	A
Uranium		46.7	mg/L	0.00030		70	130	0.7	20	A
Method: E200.8									Analytical Run: ICPMS4-C_121112A	
Sample ID: ICV	2	Initial Calibration Verification Standard							11/12/12 12:39	
Molybdenum		0.0477	mg/L	0.0010	95	90	110			
Uranium		0.0500	mg/L	0.00030	100	90	110			
Method: E200.8									Batch: R167122	
Sample ID: LRB	2	Method Blank				Run: ICPMS4-C_121112A			11/12/12 13:14	
Molybdenum		ND	mg/L	3E-05						
Uranium		0.0006	mg/L	9E-06						
Sample ID: LFB	2	Laboratory Fortified Blank				Run: ICPMS4-C_121112A			11/12/12 13:41	
Molybdenum		0.0495	mg/L	0.0010	99	85	115			
Uranium		0.0521	mg/L	0.00030	103	85	115			
Sample ID: C12101103-003BMS4	2	Sample Matrix Spike				Run: ICPMS4-C_121112A			11/12/12 19:20	
Molybdenum		0.0516	mg/L	0.0010	100	70	130			
Uranium		0.0598	mg/L	0.00030	111	70	130			
Sample ID: C12101103-003BMSD	2	Sample Matrix Spike Duplicate				Run: ICPMS4-C_121112A			11/12/12 19:24	
Molybdenum		0.0532	mg/L	0.0010	103	70	130	3.0	20	
Uranium		0.0605	mg/L	0.00030	113	70	130	1.2	20	

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

A - The analyte level was greater than four times the spike level. In accordance with the method % recovery is not calculated.

QA/QC Summary Report

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC **Report Date:** 11/14/12

Project: Lisbon, UT Facility **Work Order:** C12110024

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E300.0									Analytical Run: IC1-C_121101A	
Sample ID: ICV-110112-10	2	Initial Calibration Verification Standard							11/01/12 11:04	
Chloride		9.80	mg/L	1.0	98	90	110			
Sulfate		39.7	mg/L	1.0	99	90	110			
Method: E300.0									Batch: R166708	
Sample ID: ICB-110112-11	2	Method Blank				Run: IC1-C_121101A			11/01/12 11:21	
Chloride		ND	mg/L	0.04						
Sulfate		0.1	mg/L	0.1						
Sample ID: LFB-110112-12	2	Laboratory Fortified Blank				Run: IC1-C_121101A			11/01/12 11:39	
Chloride		10.2	mg/L	1.0	102	90	110			
Sulfate		40.9	mg/L	1.0	102	90	110			
Sample ID: C12110024-004AMS	2	Sample Matrix Spike				Run: IC1-C_121101A			11/02/12 00:42	
Chloride		54.3	mg/L	1.0	93	90	110			
Sulfate		132	mg/L	1.7	96	90	110			
Sample ID: C12110024-004AMSD	2	Sample Matrix Spike Duplicate				Run: IC1-C_121101A			11/02/12 01:00	
Chloride		54.9	mg/L	1.0	96	90	110	1.0	10	
Sulfate		134	mg/L	1.7	99	90	110	1.4	10	
Sample ID: C12110024-014AMS	2	Sample Matrix Spike				Run: IC1-C_121101A			11/02/12 08:39	
Chloride		195	mg/L	1.0	97	90	110			
Sulfate		509	mg/L	4.2	96	90	110			
Sample ID: C12110024-014AMSD	2	Sample Matrix Spike Duplicate				Run: IC1-C_121101A			11/02/12 08:57	
Chloride		194	mg/L	1.0	95	90	110	0.4	10	
Sulfate		508	mg/L	4.2	95	90	110	0.1	10	

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

QA/QC Summary Report

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC **Report Date:** 11/14/12

Project: Lisbon, UT Facility **Work Order:** C12110024

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E300.0									Analytical Run: IC1-C_121102A	
Sample ID: ICV-110212-10	2	Initial Calibration Verification Standard							11/02/12 15:37	
Chloride		9.78	mg/L	1.0	98	90	110			
Sulfate		39.6	mg/L	1.0	99	90	110			
Method: E300.0									Batch: R166729	
Sample ID: ICB-110212-11	2	Method Blank				Run: IC1-C_121102A			11/02/12 15:54	
Chloride		ND	mg/L	0.04						
Sulfate		0.2	mg/L	0.1						
Sample ID: LFB-110212-12	2	Laboratory Fortified Blank				Run: IC1-C_121102A			11/02/12 16:12	
Chloride		9.59	mg/L	1.0	96	90	110			
Sulfate		38.7	mg/L	1.0	96	90	110			
Sample ID: C12110046-001AMS	2	Sample Matrix Spike				Run: IC1-C_121102A			11/02/12 16:47	
Chloride		37.0	mg/L	1.0	100	90	110			
Sulfate		234	mg/L	1.7	101	90	110			
Sample ID: C12110046-001AMSD	2	Sample Matrix Spike Duplicate				Run: IC1-C_121102A			11/02/12 17:21	
Chloride		36.9	mg/L	1.0	100	90	110	0.1	10	
Sulfate		233	mg/L	1.7	99	90	110	0.4	10	
Sample ID: C12110075-001AMS	2	Sample Matrix Spike				Run: IC1-C_121102A			11/02/12 21:25	
Chloride		104	mg/L	1.0	101	90	110			
Sulfate		380	mg/L	4.2	101	90	110			
Sample ID: C12110075-001AMSD	2	Sample Matrix Spike Duplicate				Run: IC1-C_121102A			11/02/12 21:43	
Chloride		104	mg/L	1.0	100	90	110	0.7	10	
Sulfate		377	mg/L	4.2	100	90	110	0.6	10	

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

Standard Reporting Procedures

Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH, Dissolved Oxygen and Residual Chlorine, are qualified as being analyzed outside of recommended holding time.

Solid/soil samples are reported on a wet weight basis (as received) unless specifically indicated. If moisture corrected, data units are typically noted as –dry. For agricultural and mining soil parameters/characteristics, all samples are dried and ground prior to sample analysis.

Workorder Receipt Checklist

Rio Algom Mining Corporation LLC C12110024

Login completed by: Tracy Judge
Date Received: 11/1/2012
Reviewed by: BL2000\smead
Received by: tj
Reviewed Date: 11/1/2012
Carrier name: FedEx

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on shipping container/cooler?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time? (Exclude analyses that are considered field parameters such as pH, DO, Res Cl, Sulfite, Ferrous Iron, etc.)	Yes ☑	No ☐	
Temp Blank received?	Yes ☐	No ☑	Not Applicable ☐
Container/Temp Blank temperature:	1.2°C On Ice		
Water - VOA vials have zero headspace?	Yes ☐	No ☐	No VOA vials submitted ☑
Water - pH acceptable upon receipt?	Yes ☑	No ☐	Not Applicable ☐

Contact and Corrective Action Comments:

None

Chain of Custody and Analytical Request Record

ENERGY LABORATORIES

PLEASE PRINT (Provide as much information as possible.)

Company Name: Montgomery + Associates

Report Mail Address (Required):

Fax 521-881-4912

☒ No Hard Copy Email: tleo@elmontgomery.com

Invoice Address (Required):

☐ No Hard Copy Email:

Project Name, PWS, Permit, Etc.: Rio Algom Mining Lisbon, UT Facility

Contact Name: Phone/Fax:

Invoice Contact & Phone:

Sample Origin State: Utah

Cell:

Purchase Order:

EPA/State Compliance: Yes ☒ No ☐

Sampler: (Please Print) John Laney, Brandon Myers

Quote/Bottle Order: 38150

Special Report/Formats:

☐ DW ☐ POTW/WWTP ☐ State: ☐ Other:

☐ EDD/EDT (Electronic Data) Format: ☐ LEVEL IV ☐ NELAC

Number of Containers
Sample Type: A Air W Water S Soils/Solids V Vegetation B Bioassay O Other DW - Drinking Water

ANALYSIS REQUESTED

SAMPLE IDENTIFICATION (Name, Location, Interval, etc.)	Collection Date	Collection Time	MATRIX	See Attached bottle order #38150	SEE ATTACHED
1 6201	10/29/12	1100	W	X	
2 6202	10/29/12	1625	W	X	
3 6203	10/30/12	0810	W	X	
4 6204	10/30/12	0945	W	X	
5 6205	10/30/12	1530	W	X	
6 6206	10/31/12	1015	W	X	
7 6207	10/31/12	1230	W	X	
8					
9					
10					

Standard Turnaround (TAT) RUSH

Contact ELI prior to **RUSH** sample submittal for charges and scheduling – See Instruction Page

Comments: Metals samples were field filtered + preserved w/ HNO_3 in field

Shipped by: Fedex ES

Cooler ID(s): 2692

Receipt Temp: 1.2 °C

On Ice: (Y) N

Custody Seal: On Bottle Y N; On Cooler N; Intact Y N; Signature Match N

LABORATORY USE ONLY C12110024

Custody Record MUST be Signed

Relinquished by (print): JOHN LANEY Date/Time: 10/31/12 14:30 Signature:

Relinquished by (print): Date/Time: Signature:

Received by (print): Date/Time: Signature:

Received by (print): Date/Time: Signature:

Received by Laboratory: Date/Time: 11/2/945 Signature:

Sample Disposal: Return to Client: ____ Lab Disposal: X

In certain circumstances, samples submitted to Energy Laboratories, Inc. may be subcontracted to other certified laboratories in order to complete the analysis requested. This serves as notice of this possibility. All sub-contract data will be clearly notated on your analytical report.

Chain of Custody and Analytical Request Record

PLEASE PRINT (Provide as much information as possible.)

Company Name: Montgomery + Associates

Report Mail Address: 520-881-4912

Forward Email report: tleo@elamontgomery.com

Project Name, PWS, Permit, Etc.: Rio Algom Mining Lisbon, UT Facility

Contact Name: Phone/Fax:

Sample Origin State: Utah

Email:

EPA/State Compliance: Yes [X] No [ ]

Sampler: (Please Print) John Lanny Brandon Myers

Invoice Address:

Invoice Contact & Phone:

Purchase Order:

Quote/Bottle Order: 38150

Special Report/Formats:

- [ ] DW
- [ ] POTW/WWTP
- [ ] State: _____
- [ ] Other: _____
- [ ] EDD/EDT (Electronic Data) Format: _____
- [ ] LEVEL IV
- [ ] NELAC

Number of Containers
Sample Type: A W S V B O DW
Air Water Soils/Solids
Vegetation Bioassay Other
DW - Drinking Water

ANALYSIS REQUESTED

SEE ATTACHED

Standard Turnaround (TAT)

RUSH

Contact ELI prior to **RUSH** sample submittal for charges and scheduling – See Instruction Page

Comments: Metals samples were field filtered + preserved w/ HNO3 in field

Shipped by: Fedex ES

Cooler ID(s): 2692

Receipt Temp: 1.2 °C

On Ice: (Y) N

Custody Seal: On Bottle Y N; On Cooler N; Intact Y N; Signature Match Y N

	SAMPLE IDENTIFICATION (Name, Location, Interval, etc.)	Collection Date	Collection Time	MATRIX	See Attached bottle order # 38150
1	6221	10/31/12	1015	W	X
2	6222		1050	W	X
3	6223		1135	W	X
4	6224		1300	W	X
5	6225		1310	W	X
6					
7					
8					
9					
10					

LABORATORY USE ONLY

Custody Record MUST be Signed

Relinquished by (print): BRANDON MYERS Date/Time: 10/31/12 14:30 Signature:

Relinquished by (print): Date/Time: Signature:

Received by (print): Date/Time: Signature:

Received by (print): Date/Time: Signature:

Received by Laboratory: Date/Time: 11/2/945 Signature:

Sample Disposal: Return to Client: _____ Lab Disposal: X

In certain circumstances, samples submitted to Energy Laboratories, Inc. may be subcontracted to other certified laboratories in order to complete the analysis requested.
This serves as notice of this possibility. All sub-contract data will be clearly notated on your analytical report.
For additional information, downloadable fee schedule, forms, and links.

Chain of Custody and Analytical Request Record

Page 3 of 3

PLEASE PRINT (Provide as much information as possible.)

Company Name: Montgomery + Associates

Report Mail Address: Email report tleo@elmontgomery.com 520-881-4912

Invoice Address:

Project Name, PWS, Permit, Etc.: Rio Algom Mining Lisbon UT facility

Contact Name: Phone/Fax:

Invoice Contact & Phone:

Sample Origin State: Utah

Email:

EPA/State Compliance: Yes [X] No [ ]

Sampler: (Please Print) John Laney Brandon Myers

Purchase Order:

Quote/Bottle Order: 38152

Special Report/Formats:

- [ ] DW
- [ ] POTW/WWTP
- [ ] State: _____
- [ ] Other: _____
- [ ] EDD/EDT (Electronic Data) Format: _____
- [ ] LEVEL IV
- [ ] NELAC

Number of Containers
Sample Type: A Air W Water S Soils/Solids V Vegetation B Bioassay O Other D DW - Drinking Water

ANALYSIS REQUESTED

SAMPLE IDENTIFICATION (Name, Location, Interval, etc.)	Collection Date	Collection Time	MATRIX	See attached bottle order # 38152	SEE ATTACHED
1 6211	10/30/12	845	W	X	
2 6212		925		X	
3 6213		1055		X	
4 6214		1210		X	
5 6215		1305		X	
6 6216		1415		X	
7 6217	10/31/12	805		X	
8 6218		845		X	
9 6219		855		X	
10 6220		1002		X	

Standard Turnaround (TAT)

RUSH

Contact ELI prior to **RUSH** sample submittal for charges and scheduling – See Instruction Page

Comments: Metals samples were field filtered + preserved w/ HNO3 in field

Shipped by: Fedex-ES

Cooler ID(s): 2692

Receipt Temp: 1.2 °C

On Ice: (Y) N

Custody Seal: On Bottle Y N; On Cooler Y N

Intact: Y N

Signature Match: Y N

LABORATORY USE ONLY

Custody Record MUST be Signed

Relinquished by (print): BRANDON MYERS Date/Time: 10/31/12 14:30 Signature:

Relinquished by (print): Date/Time: Signature:

Received by (print): Date/Time: Signature:

Received by (print): Date/Time: Signature:

Received by Laboratory: Date/Time: 11/12/945 Signature:

Sample Disposal: Return to Client: _____ Lab Disposal: X

In certain circumstances, samples submitted to Energy Laboratories, Inc. may be subcontracted to other certified laboratories in order to complete the analysis requested. This serves as notice of this possibility. All sub-contract data will be clearly notated on your analytical report.

Visit our web site at www.energylab.com for additional information, downloadable fee schedule, forms, and links.

ENERGY LAB
www.energylab.com
Analytical Excellence Since 1952

Helena, MT 877-472-0711 • Billings, MT 800-735-4489 • Casper, WY 888-235-0515
Gillette, WY 866-686-7175 • Rapid City, SD 888-672-1225 • College Station, TX 888-690-2218

BOTTLE ORDER 38150

SHIPPED TO: Rio Algom Mining Corporation LLC

Contact: Jason Brown
c/o Confluence Environmental Inc
3308 El Camino Ave Ste 300 #148
Sacramento CA 95821
Phone: (916) 759-8156

Order Created by: Kerri Schroeder
Shipped From: Casper, WY

Ship Date: 10/24/2012
VIA: Next Day Air
Early AM

Project:

Bottle Size/Type	Bottles Per Samp	Method	Tests	Critical Hold Time	Preservative	Notes	Num of Samp
500 mL Plastic	1	A2320 B	Alkalinity				16
		E300.0	E300.0 Anions				
		A2540 C	Solids, Total Dissolved				
		A2510 B	Conductivity				
		A4500-H B	pH	0.25 hrs			
250 mL Plastic	1	E200.7_8	Metals by ICP/ICPMS, Dissolved		■ HNO3	Filter before preservation	16

Comments

Bicarbonate, Carbonate, Cl, SO4, TDS, pH, Cond Ca, Mg, Na, K, As, Se, Mo, U.
Metals samples will be filtered in the field.

■ HNO3 - Nitric Acid ■ H2SO4 - Sulfuric Acid ■ NaOH - Sodium Hydroxide
■ ZnAc - Zinc Acetate ■ HCl - Hydrochloric Acid □ H3PO4 - Phosphoric Acid

We strongly suggest that the samples are shipped the same day as they are collected.

Material Safety Data Sheets(MSDS) Available @ EnergyLab.com ->Services -> MSDS Sheets

Corrosive Chemicals: Nitric, Sulfuric, Phosphoric, Hydrochloric Acids and Sodium Hydroxide. Zinc Acetate is a skin irritant.

Subcontracting of sample analyses to an outside laboratory may be required. If so, Energy Laboratories will utilize its branch laboratories or qualified contract laboratories for this service. Any such laboratories will be indicated within the Laboratory Analytical Report.

ANALYTICAL SUMMARY REPORT

November 19, 2012

Rio Algom Mining Corporation LLC
Hwy 605 and 509
Grants, NM 87020

Workorder No.: C12110279

Project Name: Lisbon, UT Facility

Energy Laboratories, Inc. Casper WY received the following 26 samples for Rio Algom Mining Corporation LLC on 11/7/2012 for analysis.

Sample ID	Client Sample ID	Collect Date	Receive Date	Matrix	Test
C12110279-001	6240	11/03/12 13:25	11/07/12	Aqueous	Metals by ICP/ICPMS, Dissolved Alkalinity Conductivity E300.0 Anions pH Solids, Total Dissolved
C12110279-002	6251	11/03/12 14:40	11/07/12	Aqueous	Same As Above
C12110279-003	6252	11/05/12 9:30	11/07/12	Aqueous	Same As Above
C12110279-004	6253	11/05/12 10:05	11/07/12	Aqueous	Same As Above
C12110279-005	6254	11/05/12 10:35	11/07/12	Aqueous	Same As Above
C12110279-006	6230	11/02/12 10:45	11/07/12	Aqueous	Same As Above
C12110279-007	6231	11/02/12 11:35	11/07/12	Aqueous	Same As Above
C12110279-008	6232	11/02/12 12:40	11/07/12	Aqueous	Same As Above
C12110279-009	6233	11/02/12 13:45	11/07/12	Aqueous	Same As Above
C12110279-010	6234	11/02/12 15:10	11/07/12	Aqueous	Same As Above
C12110279-011	6235	11/03/12 8:45	11/07/12	Aqueous	Same As Above
C12110279-012	6236	11/03/12 9:40	11/07/12	Aqueous	Same As Above
C12110279-013	6237	11/03/12 11:00	11/07/12	Aqueous	Same As Above
C12110279-014	6238	11/03/12 11:45	11/07/12	Aqueous	Same As Above
C12110279-015	6239	11/03/12 12:20	11/07/12	Aqueous	Same As Above
C12110279-016	6266	11/03/12 14:30	11/07/12	Aqueous	Same As Above
C12110279-017	6246	11/02/12 11:50	11/07/12	Aqueous	Same As Above
C12110279-018	6247	11/02/12 12:45	11/07/12	Aqueous	Same As Above
C12110279-019	6248	11/02/12 14:00	11/07/12	Aqueous	Same As Above
C12110279-020	6249	11/03/12 8:35	11/07/12	Aqueous	Same As Above
C12110279-021	6250	11/03/12 9:35	11/07/12	Aqueous	Same As Above
C12110279-022	6261	11/03/12 10:55	11/07/12	Aqueous	Same As Above
C12110279-023	6262	11/03/12 11:50	11/07/12	Aqueous	Same As Above
C12110279-024	6263	11/03/12 11:55	11/07/12	Aqueous	Same As Above

ANALYTICAL SUMMARY REPORT

C12110279-025	6264	11/03/12 12:55	11/07/12	Aqueous	Same As Above
C12110279-026	6265	11/03/12 14:00	11/07/12	Aqueous	Same As Above

The results as reported relate only to the item(s) submitted for testing. The analyses presented in this report were performed at Energy Laboratories, Inc., 2393 Salt Creek Hwy., Casper, WY 82601, unless otherwise noted. Radiochemistry analyses were performed at Energy Laboratories, Inc., 2325 Kerzell Lane, Casper, WY 82601, unless otherwise noted. Any exceptions or problems with the analyses are noted in the Laboratory Analytical Report, the QA/QC Summary Report, or the Case Narrative.

If you have any questions regarding these test results, please call.

Report Approved By:

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility
Lab ID: C12110279-001
Client Sample ID: 6240

Report Date: 11/19/12
Collection Date: 11/03/12 13:25
DateReceived: 11/07/12
Matrix: Aqueous

Analyses	Result	Units	Qualifier	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Carbonate as CO3	ND	mg/L		5		A2320 B	11/07/12 19:18 / jba
Bicarbonate as HCO3	394	mg/L		5		A2320 B	11/07/12 19:18 / jba
Calcium	114	mg/L		1		E200.7	11/15/12 19:58 / sf
Chloride	20	mg/L		1		E300.0	11/08/12 18:37 / wc
Magnesium	61	mg/L		1		E200.7	11/15/12 19:58 / sf
Potassium	4	mg/L		1		E200.7	11/15/12 19:58 / sf
Sodium	30	mg/L		1		E200.7	11/15/12 19:58 / sf
Sulfate	221	mg/L	D	2		E300.0	11/08/12 18:37 / wc
PHYSICAL PROPERTIES							
Conductivity @ 25 C	985	umhos/cm		1		A2510 B	11/07/12 16:28 / ab
pH	7.38	s.u.	H	0.01		A4500-H B	11/07/12 16:28 / ab
Solids, Total Dissolved TDS @ 180 C	690	mg/L		10		A2540 C	11/08/12 15:50 / jz
METALS - DISSOLVED							
Arsenic	0.003	mg/L		0.001		E200.8	11/13/12 17:40 / cp
Molybdenum	0.005	mg/L		0.001		E200.8	11/13/12 17:40 / cp
Selenium	0.011	mg/L		0.001		E200.8	11/13/12 17:40 / cp
Uranium	0.0364	mg/L		0.0003		E200.8	11/16/12 10:11 / cp

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
H - Analysis performed past recommended holding time.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility
Lab ID: C12110279-002
Client Sample ID: 6251

Report Date: 11/19/12
Collection Date: 11/03/12 14:40
DateReceived: 11/07/12
Matrix: Aqueous

Analyses	Result	Units	Qualifier	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Carbonate as CO3	ND	mg/L		5		A2320 B	11/07/12 19:26 / jba
Bicarbonate as HCO3	321	mg/L		5		A2320 B	11/07/12 19:26 / jba
Calcium	268	mg/L		1		E200.7	11/15/12 20:42 / sf
Chloride	13	mg/L		1		E300.0	11/08/12 18:52 / wc
Magnesium	88	mg/L		1		E200.7	11/15/12 20:42 / sf
Potassium	4	mg/L		1		E200.7	11/15/12 20:42 / sf
Sodium	17	mg/L		1		E200.7	11/15/12 20:42 / sf
Sulfate	687	mg/L	D	4		E300.0	11/08/12 18:52 / wc
PHYSICAL PROPERTIES							
Conductivity @ 25 C	1570	umhos/cm		1		A2510 B	11/07/12 16:31 / ab
pH	7.13	s.u.	H	0.01		A4500-H B	11/07/12 16:31 / ab
Solids, Total Dissolved TDS @ 180 C	1350	mg/L		10		A2540 C	11/08/12 15:51 / jz
METALS - DISSOLVED							
Arsenic	ND	mg/L		0.001		E200.8	11/13/12 17:43 / cp
Molybdenum	ND	mg/L		0.001		E200.8	11/13/12 17:43 / cp
Selenium	0.061	mg/L		0.001		E200.8	11/13/12 17:43 / cp
Uranium	0.0087	mg/L		0.0003		E200.8	11/16/12 10:15 / cp

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
H - Analysis performed past recommended holding time.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility
Lab ID: C12110279-003
Client Sample ID: 6252

Report Date: 11/19/12
Collection Date: 11/05/12 09:30
DateReceived: 11/07/12
Matrix: Aqueous

Analyses	Result	Units	Qualifier	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Carbonate as CO3	ND	mg/L		5		A2320 B	11/07/12 19:34 / jba
Bicarbonate as HCO3	902	mg/L		5		A2320 B	11/07/12 19:34 / jba
Calcium	540	mg/L		1		E200.7	11/15/12 20:46 / sf
Chloride	533	mg/L	D	10		E300.0	11/08/12 19:08 / wc
Magnesium	219	mg/L		1		E200.8	11/16/12 10:20 / cp
Potassium	20	mg/L		1		E200.8	11/16/12 10:20 / cp
Sodium	1450	mg/L		1		E200.8	11/16/12 10:20 / cp
Sulfate	2920	mg/L	D	40		E300.0	11/08/12 19:08 / wc
PHYSICAL PROPERTIES							
Conductivity @ 25 C	7100	umhos/cm		1		A2510 B	11/07/12 16:34 / ab
pH	7.21	s.u.	H	0.01		A4500-H B	11/07/12 16:34 / ab
Solids, Total Dissolved TDS @ 180 C	5900	mg/L		10		A2540 C	11/08/12 15:51 / jz
METALS - DISSOLVED							
Arsenic	0.002	mg/L		0.001		E200.8	11/13/12 17:45 / cp
Molybdenum	3.62	mg/L		0.001		E200.8	11/13/12 17:45 / cp
Selenium	0.073	mg/L		0.001		E200.8	11/13/12 17:45 / cp
Uranium	25	mg/L	D	1		E200.7	11/15/12 20:46 / sf

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
H - Analysis performed past recommended holding time.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility
Lab ID: C12110279-004
Client Sample ID: 6253

Report Date: 11/19/12
Collection Date: 11/05/12 10:05
DateReceived: 11/07/12
Matrix: Aqueous

Analyses	Result	Units	Qualifier	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Carbonate as CO3	ND	mg/L		5		A2320 B	11/07/12 19:45 / jba
Bicarbonate as HCO3	1300	mg/L		5		A2320 B	11/07/12 19:45 / jba
Calcium	581	mg/L		1		E200.7	11/15/12 20:50 / sf
Chloride	695	mg/L	D	10		E300.0	11/08/12 19:23 / wc
Magnesium	249	mg/L		1		E200.7	11/15/12 20:50 / sf
Potassium	19	mg/L		1		E200.7	11/15/12 20:50 / sf
Sodium	2000	mg/L	D	3		E200.7	11/15/12 20:50 / sf
Sulfate	4140	mg/L	D	40		E300.0	11/08/12 19:23 / wc
PHYSICAL PROPERTIES							
Conductivity @ 25 C	9600	umhos/cm		1		A2510 B	11/07/12 16:36 / ab
pH	7.17	s.u.	H	0.01		A4500-H B	11/07/12 16:36 / ab
Solids, Total Dissolved TDS @ 180 C	8280	mg/L		10		A2540 C	11/08/12 15:51 / jz
METALS - DISSOLVED							
Arsenic	0.005	mg/L		0.001		E200.8	11/13/12 18:45 / cp
Molybdenum	6.21	mg/L		0.001		E200.8	11/13/12 18:45 / cp
Selenium	0.080	mg/L		0.001		E200.8	11/13/12 18:45 / cp
Uranium	34.8	mg/L	D	0.0005		E200.8	11/13/12 18:45 / cp

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
H - Analysis performed past recommended holding time.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility
Lab ID: C12110279-005
Client Sample ID: 6254

Report Date: 11/19/12
Collection Date: 11/05/12 10:35
DateReceived: 11/07/12
Matrix: Aqueous

Analyses	Result	Units	Qualifier	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Carbonate as CO3	ND	mg/L		5		A2320 B	11/07/12 19:55 / jba
Bicarbonate as HCO3	1150	mg/L		5		A2320 B	11/07/12 19:55 / jba
Calcium	501	mg/L		1		E200.7	11/15/12 20:54 / sf
Chloride	616	mg/L	D	10		E300.0	11/08/12 19:38 / wc
Magnesium	216	mg/L		1		E200.7	11/15/12 20:54 / sf
Potassium	18	mg/L		1		E200.7	11/15/12 20:54 / sf
Sodium	1750	mg/L	D	3		E200.7	11/15/12 20:54 / sf
Sulfate	3530	mg/L	D	40		E300.0	11/08/12 19:38 / wc
PHYSICAL PROPERTIES							
Conductivity @ 25 C	8490	umhos/cm		1		A2510 B	11/07/12 16:39 / ab
pH	7.31	s.u.	H	0.01		A4500-H B	11/07/12 16:39 / ab
Solids, Total Dissolved TDS @ 180 C	7090	mg/L		10		A2540 C	11/08/12 15:52 / jz
METALS - DISSOLVED							
Arsenic	0.003	mg/L		0.001		E200.8	11/13/12 18:48 / cp
Molybdenum	4.52	mg/L		0.001		E200.8	11/13/12 18:48 / cp
Selenium	0.069	mg/L		0.001		E200.8	11/13/12 18:48 / cp
Uranium	27.2	mg/L	D	0.0005		E200.8	11/13/12 18:48 / cp

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
H - Analysis performed past recommended holding time.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility
Lab ID: C12110279-006
Client Sample ID: 6230

Report Date: 11/19/12
Collection Date: 11/02/12 10:45
DateReceived: 11/07/12
Matrix: Aqueous

Analyses	Result	Units	Qualifier	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Carbonate as CO3	ND	mg/L		5		A2320 B	11/07/12 20:03 / jba
Bicarbonate as HCO3	208	mg/L		5		A2320 B	11/07/12 20:03 / jba
Calcium	70	mg/L		1		E200.7	11/15/12 20:58 / sf
Chloride	10	mg/L		1		E300.0	11/08/12 19:54 / wc
Magnesium	19	mg/L		1		E200.7	11/15/12 20:58 / sf
Potassium	3	mg/L		1		E200.7	11/15/12 20:58 / sf
Sodium	31	mg/L		1		E200.7	11/15/12 20:58 / sf
Sulfate	113	mg/L	D	2		E300.0	11/08/12 19:54 / wc
PHYSICAL PROPERTIES							
Conductivity @ 25 C	555	umhos/cm		1		A2510 B	11/07/12 16:42 / ab
pH	7.54	s.u.	H	0.01		A4500-H B	11/07/12 16:42 / ab
Solids, Total Dissolved TDS @ 180 C	352	mg/L		10		A2540 C	11/08/12 15:52 / jz
METALS - DISSOLVED							
Arsenic	ND	mg/L		0.001		E200.8	11/13/12 18:51 / cp
Molybdenum	0.014	mg/L		0.001		E200.8	11/13/12 18:51 / cp
Selenium	0.002	mg/L		0.001		E200.8	11/13/12 18:51 / cp
Uranium	0.0053	mg/L		0.0003		E200.8	11/13/12 18:51 / cp

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
H - Analysis performed past recommended holding time.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility
Lab ID: C12110279-007
Client Sample ID: 6231

Report Date: 11/19/12
Collection Date: 11/02/12 11:35
DateReceived: 11/07/12
Matrix: Aqueous

Analyses	Result	Units	Qualifier	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Carbonate as CO3	ND	mg/L		5		A2320 B	11/07/12 20:10 / jba
Bicarbonate as HCO3	207	mg/L		5		A2320 B	11/07/12 20:10 / jba
Calcium	73	mg/L		1		E200.7	11/15/12 21:14 / sf
Chloride	10	mg/L		1		E300.0	11/08/12 20:40 / wc
Magnesium	17	mg/L		1		E200.7	11/15/12 21:14 / sf
Potassium	3	mg/L		1		E200.7	11/15/12 21:14 / sf
Sodium	31	mg/L		1		E200.7	11/15/12 21:14 / sf
Sulfate	112	mg/L	D	2		E300.0	11/08/12 20:40 / wc
PHYSICAL PROPERTIES							
Conductivity @ 25 C	552	umhos/cm		1		A2510 B	11/07/12 16:47 / ab
pH	7.60	s.u.	H	0.01		A4500-H B	11/07/12 16:47 / ab
Solids, Total Dissolved TDS @ 180 C	362	mg/L		10		A2540 C	11/08/12 15:52 / jz
METALS - DISSOLVED							
Arsenic	ND	mg/L		0.001		E200.8	11/13/12 18:53 / cp
Molybdenum	0.004	mg/L		0.001		E200.8	11/13/12 18:53 / cp
Selenium	0.002	mg/L		0.001		E200.8	11/13/12 18:53 / cp
Uranium	0.0045	mg/L		0.0003		E200.8	11/13/12 18:53 / cp

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
H - Analysis performed past recommended holding time.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility
Lab ID: C12110279-008
Client Sample ID: 6232

Report Date: 11/19/12
Collection Date: 11/02/12 12:40
DateReceived: 11/07/12
Matrix: Aqueous

Analyses	Result	Units	Qualifier	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Carbonate as CO3	ND	mg/L		5		A2320 B	11/07/12 20:18 / jba
Bicarbonate as HCO3	225	mg/L		5		A2320 B	11/07/12 20:18 / jba
Calcium	70	mg/L		1		E200.7	11/15/12 21:18 / sf
Chloride	10	mg/L		1		E300.0	11/08/12 21:26 / wc
Magnesium	18	mg/L		1		E200.7	11/15/12 21:18 / sf
Potassium	3	mg/L		1		E200.7	11/15/12 21:18 / sf
Sodium	31	mg/L		1		E200.7	11/15/12 21:18 / sf
Sulfate	112	mg/L	D	2		E300.0	11/08/12 21:26 / wc
PHYSICAL PROPERTIES							
Conductivity @ 25 C	554	umhos/cm		1		A2510 B	11/07/12 16:50 / ab
pH	7.54	s.u.	H	0.01		A4500-H B	11/07/12 16:50 / ab
Solids, Total Dissolved TDS @ 180 C	358	mg/L		10		A2540 C	11/08/12 15:52 / jz
METALS - DISSOLVED							
Arsenic	ND	mg/L		0.001		E200.8	11/13/12 18:56 / cp
Molybdenum	ND	mg/L		0.001		E200.8	11/13/12 18:56 / cp
Selenium	0.002	mg/L		0.001		E200.8	11/13/12 18:56 / cp
Uranium	0.0020	mg/L		0.0003		E200.8	11/13/12 18:56 / cp

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
H - Analysis performed past recommended holding time.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility
Lab ID: C12110279-009
Client Sample ID: 6233

Report Date: 11/19/12
Collection Date: 11/02/12 13:45
DateReceived: 11/07/12
Matrix: Aqueous

Analyses	Result	Units	Qualifier	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Carbonate as CO3	ND	mg/L		5		A2320 B	11/07/12 20:26 / jba
Bicarbonate as HCO3	317	mg/L		5		A2320 B	11/07/12 20:26 / jba
Calcium	296	mg/L		1		E200.7	11/15/12 21:22 / sf
Chloride	12	mg/L		1		E300.0	11/08/12 21:42 / wc
Magnesium	91	mg/L		1		E200.7	11/15/12 21:22 / sf
Potassium	4	mg/L		1		E200.7	11/15/12 21:22 / sf
Sodium	18	mg/L		1		E200.7	11/15/12 21:22 / sf
Sulfate	780	mg/L	D	4		E300.0	11/08/12 21:42 / wc
PHYSICAL PROPERTIES							
Conductivity @ 25 C	1680	umhos/cm		1		A2510 B	11/07/12 16:52 / ab
pH	7.15	s.u.	H	0.01		A4500-H B	11/07/12 16:52 / ab
Solids, Total Dissolved TDS @ 180 C	1460	mg/L		10		A2540 C	11/08/12 15:53 / jz
METALS - DISSOLVED							
Arsenic	ND	mg/L		0.001		E200.8	11/13/12 18:59 / cp
Molybdenum	ND	mg/L		0.001		E200.8	11/13/12 18:59 / cp
Selenium	0.066	mg/L		0.001		E200.8	11/13/12 18:59 / cp
Uranium	0.0070	mg/L		0.0003		E200.8	11/13/12 18:59 / cp

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
H - Analysis performed past recommended holding time.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility
Lab ID: C12110279-010
Client Sample ID: 6234

Report Date: 11/19/12
Collection Date: 11/02/12 15:10
DateReceived: 11/07/12
Matrix: Aqueous

Analyses	Result	Units	Qualifier	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Carbonate as CO3	ND	mg/L		5		A2320 B	11/07/12 20:34 / jba
Bicarbonate as HCO3	318	mg/L		5		A2320 B	11/07/12 20:34 / jba
Calcium	300	mg/L		1		E200.7	11/15/12 21:39 / sf
Chloride	12	mg/L		1		E300.0	11/08/12 21:57 / wc
Magnesium	92	mg/L		1		E200.7	11/15/12 21:39 / sf
Potassium	4	mg/L		1		E200.7	11/15/12 21:39 / sf
Sodium	18	mg/L		1		E200.7	11/15/12 21:39 / sf
Sulfate	771	mg/L	D	4		E300.0	11/08/12 21:57 / wc
PHYSICAL PROPERTIES							
Conductivity @ 25 C	1680	umhos/cm		1		A2510 B	11/07/12 16:55 / ab
pH	7.15	s.u.	H	0.01		A4500-H B	11/07/12 16:55 / ab
Solids, Total Dissolved TDS @ 180 C	1490	mg/L		10		A2540 C	11/08/12 15:53 / jz
METALS - DISSOLVED							
Arsenic	ND	mg/L		0.001		E200.8	11/13/12 19:02 / cp
Molybdenum	0.001	mg/L		0.001		E200.8	11/13/12 19:02 / cp
Selenium	0.064	mg/L		0.001		E200.8	11/13/12 19:02 / cp
Uranium	0.0084	mg/L		0.0003		E200.8	11/13/12 19:02 / cp

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
H - Analysis performed past recommended holding time.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility
Lab ID: C12110279-011
Client Sample ID: 6235

Report Date: 11/19/12
Collection Date: 11/03/12 08:45
DateReceived: 11/07/12
Matrix: Aqueous

Analyses	Result	Units	Qualifier	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Carbonate as CO3	ND	mg/L		5		A2320 B	11/07/12 20:51 / jba
Bicarbonate as HCO3	243	mg/L		5		A2320 B	11/07/12 20:51 / jba
Calcium	86	mg/L		1		E200.7	11/15/12 21:43 / sf
Chloride	50	mg/L		1		E300.0	11/08/12 22:13 / wc
Magnesium	33	mg/L		1		E200.7	11/15/12 21:43 / sf
Potassium	4	mg/L		1		E200.7	11/15/12 21:43 / sf
Sodium	59	mg/L		1		E200.7	11/15/12 21:43 / sf
Sulfate	174	mg/L	D	2		E300.0	11/08/12 22:13 / wc
PHYSICAL PROPERTIES							
Conductivity @ 25 C	850	umhos/cm		1		A2510 B	11/07/12 16:58 / ab
pH	7.48	s.u.	H	0.01		A4500-H B	11/07/12 16:58 / ab
Solids, Total Dissolved TDS @ 180 C	549	mg/L		10		A2540 C	11/08/12 15:53 / jz
METALS - DISSOLVED							
Arsenic	0.029	mg/L		0.001		E200.8	11/13/12 19:04 / cp
Molybdenum	0.012	mg/L		0.001		E200.8	11/13/12 19:04 / cp
Selenium	0.009	mg/L		0.001		E200.8	11/13/12 19:04 / cp
Uranium	0.0117	mg/L		0.0003		E200.8	11/13/12 19:04 / cp

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
H - Analysis performed past recommended holding time.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility
Lab ID: C12110279-012
Client Sample ID: 6236

Report Date: 11/19/12
Collection Date: 11/03/12 09:40
DateReceived: 11/07/12
Matrix: Aqueous

Analyses	Result	Units	Qualifier	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Carbonate as CO3	ND	mg/L		5		A2320 B	11/07/12 20:59 / jba
Bicarbonate as HCO3	243	mg/L		5		A2320 B	11/07/12 20:59 / jba
Calcium	89	mg/L		1		E200.7	11/15/12 21:47 / sf
Chloride	51	mg/L		1		E300.0	11/08/12 22:28 / wc
Magnesium	33	mg/L		1		E200.7	11/15/12 21:47 / sf
Potassium	4	mg/L		1		E200.7	11/15/12 21:47 / sf
Sodium	63	mg/L		1		E200.7	11/15/12 21:47 / sf
Sulfate	167	mg/L	D	2		E300.0	11/08/12 22:28 / wc
PHYSICAL PROPERTIES							
Conductivity @ 25 C	861	umhos/cm		1		A2510 B	11/07/12 17:00 / ab
pH	7.46	s.u.	H	0.01		A4500-H B	11/07/12 17:00 / ab
Solids, Total Dissolved TDS @ 180 C	565	mg/L		10		A2540 C	11/08/12 15:53 / jz
METALS - DISSOLVED							
Arsenic	0.028	mg/L		0.001		E200.8	11/13/12 19:07 / cp
Molybdenum	0.012	mg/L		0.001		E200.8	11/13/12 19:07 / cp
Selenium	0.009	mg/L		0.001		E200.8	11/13/12 19:07 / cp
Uranium	0.0119	mg/L		0.0003		E200.8	11/13/12 19:07 / cp

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
H - Analysis performed past recommended holding time.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility
Lab ID: C12110279-013
Client Sample ID: 6237

Report Date: 11/19/12
Collection Date: 11/03/12 11:00
DateReceived: 11/07/12
Matrix: Aqueous

Analyses	Result	Units	Qualifier	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Carbonate as CO3	ND	mg/L		5		A2320 B	11/07/12 21:07 / jba
Bicarbonate as HCO3	240	mg/L		5		A2320 B	11/07/12 21:07 / jba
Calcium	88	mg/L		1		E200.7	11/15/12 21:51 / sf
Chloride	47	mg/L		1		E300.0	11/08/12 22:43 / wc
Magnesium	32	mg/L		1		E200.7	11/15/12 21:51 / sf
Potassium	4	mg/L		1		E200.7	11/15/12 21:51 / sf
Sodium	57	mg/L		1		E200.7	11/15/12 21:51 / sf
Sulfate	168	mg/L	D	2		E300.0	11/08/12 22:43 / wc
PHYSICAL PROPERTIES							
Conductivity @ 25 C	833	umhos/cm		1		A2510 B	11/07/12 17:03 / ab
pH	7.45	s.u.	H	0.01		A4500-H B	11/07/12 17:03 / ab
Solids, Total Dissolved TDS @ 180 C	538	mg/L		10		A2540 C	11/08/12 15:54 / jz
METALS - DISSOLVED							
Arsenic	0.027	mg/L		0.001		E200.8	11/13/12 19:20 / cp
Molybdenum	0.011	mg/L		0.001		E200.8	11/13/12 19:20 / cp
Selenium	0.009	mg/L		0.001		E200.8	11/13/12 19:20 / cp
Uranium	0.0108	mg/L		0.0003		E200.8	11/13/12 19:20 / cp

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
H - Analysis performed past recommended holding time.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility
Lab ID: C12110279-014
Client Sample ID: 6238

Report Date: 11/19/12
Collection Date: 11/03/12 11:45
DateReceived: 11/07/12
Matrix: Aqueous

Analyses	Result	Units	Qualifier	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Carbonate as CO3	ND	mg/L		5		A2320 B	11/07/12 21:16 / jba
Bicarbonate as HCO3	401	mg/L		5		A2320 B	11/07/12 21:16 / jba
Calcium	111	mg/L		1		E200.7	11/15/12 21:59 / sf
Chloride	20	mg/L		1		E300.0	11/08/12 22:59 / wc
Magnesium	71	mg/L		1		E200.7	11/15/12 21:59 / sf
Potassium	4	mg/L		1		E200.7	11/15/12 21:59 / sf
Sodium	30	mg/L		1		E200.7	11/15/12 21:59 / sf
Sulfate	228	mg/L	D	4		E300.0	11/08/12 22:59 / wc
PHYSICAL PROPERTIES							
Conductivity @ 25 C	1000	umhos/cm		1		A2510 B	11/07/12 17:06 / ab
pH	7.33	s.u.	H	0.01		A4500-H B	11/07/12 17:06 / ab
Solids, Total Dissolved TDS @ 180 C	672	mg/L		10		A2540 C	11/08/12 15:54 / jz
METALS - DISSOLVED							
Arsenic	0.003	mg/L		0.001		E200.8	11/13/12 19:31 / cp
Molybdenum	0.005	mg/L		0.001		E200.8	11/13/12 19:31 / cp
Selenium	0.012	mg/L		0.001		E200.8	11/13/12 19:31 / cp
Uranium	0.0244	mg/L		0.0003		E200.8	11/13/12 19:31 / cp

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
H - Analysis performed past recommended holding time.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility
Lab ID: C12110279-015
Client Sample ID: 6239

Report Date: 11/19/12
Collection Date: 11/03/12 12:20
DateReceived: 11/07/12
Matrix: Aqueous

Analyses	Result	Units	Qualifier	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Carbonate as CO3	ND	mg/L		5		A2320 B	11/07/12 21:24 / jba
Bicarbonate as HCO3	401	mg/L		5		A2320 B	11/07/12 21:24 / jba
Calcium	120	mg/L		1		E200.7	11/15/12 22:03 / sf
Chloride	19	mg/L		1		E300.0	11/08/12 23:14 / wc
Magnesium	66	mg/L		1		E200.7	11/15/12 22:03 / sf
Potassium	4	mg/L		1		E200.7	11/15/12 22:03 / sf
Sodium	30	mg/L		1		E200.7	11/15/12 22:03 / sf
Sulfate	223	mg/L	D	4		E300.0	11/08/12 23:14 / wc
PHYSICAL PROPERTIES							
Conductivity @ 25 C	1010	umhos/cm		1		A2510 B	11/07/12 17:08 / ab
pH	7.31	s.u.	H	0.01		A4500-H B	11/07/12 17:08 / ab
Solids, Total Dissolved TDS @ 180 C	707	mg/L		10		A2540 C	11/08/12 16:25 / jz
METALS - DISSOLVED							
Arsenic	0.002	mg/L		0.001		E200.8	11/13/12 19:33 / cp
Molybdenum	0.006	mg/L		0.001		E200.8	11/13/12 19:33 / cp
Selenium	0.013	mg/L		0.001		E200.8	11/13/12 19:33 / cp
Uranium	0.0261	mg/L		0.0003		E200.8	11/13/12 19:33 / cp

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
H - Analysis performed past recommended holding time.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility
Lab ID: C12110279-016
Client Sample ID: 6266

Report Date: 11/19/12
Collection Date: 11/03/12 14:30
DateReceived: 11/07/12
Matrix: Aqueous

Analyses	Result	Units	Qualifier	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Carbonate as CO3	ND	mg/L		5		A2320 B	11/07/12 21:29 / jba
Bicarbonate as HCO3	8	mg/L		5		A2320 B	11/07/12 21:29 / jba
Calcium	ND	mg/L		1		E200.7	11/15/12 22:15 / sf
Chloride	1	mg/L		1		E300.0	11/08/12 23:30 / wc
Magnesium	ND	mg/L		1		E200.7	11/15/12 22:15 / sf
Potassium	ND	mg/L		1		E200.7	11/15/12 22:15 / sf
Sodium	ND	mg/L		1		E200.7	11/15/12 22:15 / sf
Sulfate	ND	mg/L		1		E300.0	11/08/12 23:30 / wc
PHYSICAL PROPERTIES							
Conductivity @ 25 C	12	umhos/cm	B	1		A2510 B	11/07/12 17:11 / ab
pH	6.80	s.u.	H	0.01		A4500-H B	11/07/12 17:11 / ab
Solids, Total Dissolved TDS @ 180 C	72	mg/L		10		A2540 C	11/09/12 13:50 / ab
METALS - DISSOLVED							
Arsenic	ND	mg/L		0.001		E200.8	11/13/12 19:36 / cp
Molybdenum	ND	mg/L		0.001		E200.8	11/13/12 19:36 / cp
Selenium	ND	mg/L		0.001		E200.8	11/13/12 19:36 / cp
Uranium	ND	mg/L		0.0003		E200.8	11/13/12 19:36 / cp

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
B - The analyte was detected in the method blank.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
H - Analysis performed past recommended holding time.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility
Lab ID: C12110279-017
Client Sample ID: 6246

Report Date: 11/19/12
Collection Date: 11/02/12 11:50
DateReceived: 11/07/12
Matrix: Aqueous

Analyses	Result	Units	Qualifier	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Carbonate as CO3	ND	mg/L		5		A2320 B	11/07/12 21:37 / jba
Bicarbonate as HCO3	226	mg/L		5		A2320 B	11/07/12 21:37 / jba
Calcium	73	mg/L		1		E200.7	11/15/12 22:19 / sf
Chloride	15	mg/L		1		E300.0	11/09/12 00:16 / wc
Magnesium	18	mg/L		1		E200.7	11/15/12 22:19 / sf
Potassium	2	mg/L		1		E200.7	11/15/12 22:19 / sf
Sodium	37	mg/L		1		E200.7	11/15/12 22:19 / sf
Sulfate	100	mg/L	D	2		E300.0	11/09/12 00:16 / wc
PHYSICAL PROPERTIES							
Conductivity @ 25 C	572	umhos/cm		1		A2510 B	11/07/12 17:25 / ab
pH	7.66	s.u.	H	0.01		A4500-H B	11/07/12 17:25 / ab
Solids, Total Dissolved TDS @ 180 C	360	mg/L		10		A2540 C	11/08/12 16:26 / jz
METALS - DISSOLVED							
Arsenic	ND	mg/L		0.001		E200.8	11/13/12 19:39 / cp
Molybdenum	ND	mg/L		0.001		E200.8	11/13/12 19:39 / cp
Selenium	0.003	mg/L		0.001		E200.8	11/13/12 19:39 / cp
Uranium	0.0020	mg/L		0.0003		E200.8	11/13/12 19:39 / cp

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
H - Analysis performed past recommended holding time.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility
Lab ID: C12110279-018
Client Sample ID: 6247

Report Date: 11/19/12
Collection Date: 11/02/12 12:45
DateReceived: 11/07/12
Matrix: Aqueous

Analyses	Result	Units	Qualifier	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Carbonate as CO3	ND	mg/L		5		A2320 B	11/07/12 21:45 / jba
Bicarbonate as HCO3	251	mg/L		5		A2320 B	11/07/12 21:45 / jba
Calcium	73	mg/L		1		E200.7	11/15/12 22:35 / sf
Chloride	15	mg/L		1		E300.0	11/09/12 01:02 / wc
Magnesium	18	mg/L		1		E200.7	11/15/12 22:35 / sf
Potassium	3	mg/L		1		E200.7	11/15/12 22:35 / sf
Sodium	43	mg/L		1		E200.7	11/15/12 22:35 / sf
Sulfate	104	mg/L	D	2		E300.0	11/09/12 01:02 / wc
PHYSICAL PROPERTIES							
Conductivity @ 25 C	599	umhos/cm		1		A2510 B	11/07/12 17:28 / ab
pH	7.66	s.u.	H	0.01		A4500-H B	11/07/12 17:28 / ab
Solids, Total Dissolved TDS @ 180 C	379	mg/L		10		A2540 C	11/08/12 16:26 / jz
METALS - DISSOLVED							
Arsenic	ND	mg/L		0.001		E200.8	11/13/12 19:41 / cp
Molybdenum	0.002	mg/L		0.001		E200.8	11/13/12 19:41 / cp
Selenium	0.003	mg/L		0.001		E200.8	11/13/12 19:41 / cp
Uranium	0.0021	mg/L		0.0003		E200.8	11/13/12 19:41 / cp

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
H - Analysis performed past recommended holding time.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility
Lab ID: C12110279-019
Client Sample ID: 6248

Report Date: 11/19/12
Collection Date: 11/02/12 14:00
DateReceived: 11/07/12
Matrix: Aqueous

Analyses	Result	Units	Qualifier	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Carbonate as CO3	ND	mg/L		5		A2320 B	11/07/12 21:53 / jba
Bicarbonate as HCO3	237	mg/L		5		A2320 B	11/07/12 21:53 / jba
Calcium	73	mg/L		1		E200.7	11/15/12 22:39 / sf
Chloride	15	mg/L		1		E300.0	11/09/12 01:18 / wc
Magnesium	18	mg/L		1		E200.7	11/15/12 22:39 / sf
Potassium	3	mg/L		1		E200.7	11/15/12 22:39 / sf
Sodium	42	mg/L		1		E200.7	11/15/12 22:39 / sf
Sulfate	102	mg/L	D	2		E300.0	11/09/12 01:18 / wc
PHYSICAL PROPERTIES							
Conductivity @ 25 C	598	umhos/cm		1		A2510 B	11/07/12 17:30 / ab
pH	7.69	s.u.	H	0.01		A4500-H B	11/07/12 17:30 / ab
Solids, Total Dissolved TDS @ 180 C	369	mg/L		10		A2540 C	11/08/12 16:26 / jz
METALS - DISSOLVED							
Arsenic	ND	mg/L		0.001		E200.8	11/13/12 19:55 / cp
Molybdenum	ND	mg/L		0.001		E200.8	11/13/12 19:55 / cp
Selenium	0.003	mg/L		0.001		E200.8	11/13/12 19:55 / cp
Uranium	0.0021	mg/L		0.0003		E200.8	11/13/12 19:55 / cp

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
H - Analysis performed past recommended holding time.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility
Lab ID: C12110279-020
Client Sample ID: 6249

Report Date: 11/19/12
Collection Date: 11/03/12 08:35
DateReceived: 11/07/12
Matrix: Aqueous

Analyses	Result	Units	Qualifier	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Carbonate as CO3	ND	mg/L		5		A2320 B	11/07/12 22:22 / jba
Bicarbonate as HCO3	263	mg/L		5		A2320 B	11/07/12 22:22 / jba
Calcium	26	mg/L		1		E200.7	11/15/12 22:43 / sf
Chloride	67	mg/L		1		E300.0	11/09/12 01:33 / wc
Magnesium	5	mg/L		1		E200.7	11/15/12 22:43 / sf
Potassium	3	mg/L		1		E200.7	11/15/12 22:43 / sf
Sodium	212	mg/L		1		E200.7	11/15/12 22:43 / sf
Sulfate	188	mg/L	D	4		E300.0	11/09/12 01:33 / wc
PHYSICAL PROPERTIES							
Conductivity @ 25 C	1000	umhos/cm		1		A2510 B	11/07/12 17:33 / ab
pH	8.11	s.u.	H	0.01		A4500-H B	11/07/12 17:33 / ab
Solids, Total Dissolved TDS @ 180 C	629	mg/L		10		A2540 C	11/08/12 16:26 / jz
METALS - DISSOLVED							
Arsenic	0.065	mg/L		0.001		E200.8	11/13/12 19:58 / cp
Molybdenum	0.007	mg/L		0.001		E200.8	11/13/12 19:58 / cp
Selenium	0.008	mg/L		0.001		E200.8	11/13/12 19:58 / cp
Uranium	0.0099	mg/L		0.0003		E200.8	11/13/12 19:58 / cp

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
H - Analysis performed past recommended holding time.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility
Lab ID: C12110279-021
Client Sample ID: 6250

Report Date: 11/19/12
Collection Date: 11/03/12 09:35
DateReceived: 11/07/12
Matrix: Aqueous

Analyses	Result	Units	Qualifier	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Carbonate as CO3	ND	mg/L		5		A2320 B	11/07/12 22:39 / jba
Bicarbonate as HCO3	259	mg/L		5		A2320 B	11/07/12 22:39 / jba
Calcium	26	mg/L		1		E200.7	11/15/12 22:47 / sf
Chloride	66	mg/L		1		E300.0	11/09/12 01:48 / wc
Magnesium	5	mg/L		1		E200.7	11/15/12 22:47 / sf
Potassium	3	mg/L		1		E200.7	11/15/12 22:47 / sf
Sodium	209	mg/L		1		E200.7	11/15/12 22:47 / sf
Sulfate	183	mg/L	D	4		E300.0	11/09/12 01:48 / wc
PHYSICAL PROPERTIES							
Conductivity @ 25 C	1000	umhos/cm		1		A2510 B	11/07/12 17:36 / ab
pH	8.11	s.u.	H	0.01		A4500-H B	11/07/12 17:36 / ab
Solids, Total Dissolved TDS @ 180 C	640	mg/L		10		A2540 C	11/08/12 16:26 / jz
METALS - DISSOLVED							
Arsenic	0.065	mg/L		0.001		E200.8	11/13/12 20:00 / cp
Molybdenum	0.008	mg/L		0.001		E200.8	11/13/12 20:00 / cp
Selenium	0.008	mg/L		0.001		E200.8	11/13/12 20:00 / cp
Uranium	0.0097	mg/L		0.0003		E200.8	11/13/12 20:00 / cp

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
H - Analysis performed past recommended holding time.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility
Lab ID: C12110279-022
Client Sample ID: 6261

Report Date: 11/19/12
Collection Date: 11/03/12 10:55
DateReceived: 11/07/12
Matrix: Aqueous

Analyses	Result	Units	Qualifier	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Carbonate as CO3	ND	mg/L		5		A2320 B	11/07/12 22:56 / jba
Bicarbonate as HCO3	230	mg/L		5		A2320 B	11/07/12 22:56 / jba
Calcium	75	mg/L		1		E200.7	11/15/12 22:51 / sf
Chloride	63	mg/L		1		E300.0	11/09/12 02:04 / wc
Magnesium	15	mg/L		1		E200.7	11/15/12 22:51 / sf
Potassium	4	mg/L		1		E200.7	11/15/12 22:51 / sf
Sodium	118	mg/L		1		E200.7	11/15/12 22:51 / sf
Sulfate	184	mg/L	D	2		E300.0	11/09/12 02:04 / wc
PHYSICAL PROPERTIES							
Conductivity @ 25 C	914	umhos/cm		1		A2510 B	11/07/12 17:38 / ab
pH	7.76	s.u.	H	0.01		A4500-H B	11/07/12 17:38 / ab
Solids, Total Dissolved TDS @ 180 C	585	mg/L		10		A2540 C	11/08/12 16:27 / jz
METALS - DISSOLVED							
Arsenic	0.032	mg/L		0.001		E200.8	11/13/12 20:03 / cp
Molybdenum	0.005	mg/L		0.001		E200.8	11/13/12 20:03 / cp
Selenium	0.008	mg/L		0.001		E200.8	11/13/12 20:03 / cp
Uranium	0.0089	mg/L		0.0003		E200.8	11/13/12 20:03 / cp

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
H - Analysis performed past recommended holding time.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility
Lab ID: C12110279-023
Client Sample ID: 6262

Report Date: 11/19/12
Collection Date: 11/03/12 11:50
DateReceived: 11/07/12
Matrix: Aqueous

Analyses	Result	Units	Qualifier	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Carbonate as CO3	6240	mg/L		5		A2320 B	11/08/12 14:34 / jba
Bicarbonate as HCO3	8170	mg/L		5		A2320 B	11/08/12 14:34 / jba
Calcium	4	mg/L		1		E200.7	11/15/12 22:59 / sf
Chloride	1390	mg/L	D	100		E300.0	11/09/12 02:19 / wc
Magnesium	22	mg/L	D	2		E200.7	11/15/12 22:59 / sf
Potassium	18	mg/L	D	3		E200.7	11/15/12 22:59 / sf
Sodium	15100	mg/L	D	20		E200.7	11/15/12 22:59 / sf
Sulfate	10600	mg/L	D	400		E300.0	11/09/12 02:19 / wc
PHYSICAL PROPERTIES							
Conductivity @ 25 C	36400	umhos/cm		1		A2510 B	11/07/12 17:41 / ab
pH	9.49	s.u.	H	0.01		A4500-H B	11/07/12 17:41 / ab
Solids, Total Dissolved TDS @ 180 C	36200	mg/L		10		A2540 C	11/08/12 16:27 / jz
METALS - DISSOLVED							
Arsenic	3.28	mg/L		0.001		E200.8	11/16/12 10:24 / cp
Molybdenum	51.6	mg/L		0.001		E200.8	11/13/12 20:06 / cp
Selenium	0.055	mg/L	D	0.003		E200.8	11/13/12 20:06 / cp
Uranium	93.4	mg/L	D	0.001		E200.8	11/13/12 20:06 / cp

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
H - Analysis performed past recommended holding time.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility
Lab ID: C12110279-024
Client Sample ID: 6263

Report Date: 11/19/12
Collection Date: 11/03/12 11:55
DateReceived: 11/07/12
Matrix: Aqueous

Analyses	Result	Units	Qualifier	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Carbonate as CO3	6420	mg/L		5		A2320 B	11/08/12 14:44 / jba
Bicarbonate as HCO3	8050	mg/L		5		A2320 B	11/08/12 14:44 / jba
Calcium	3	mg/L		1		E200.7	11/15/12 23:03 / sf
Chloride	1390	mg/L	D	100		E300.0	11/09/12 02:35 / wc
Magnesium	22	mg/L	D	2		E200.7	11/15/12 23:03 / sf
Potassium	18	mg/L	D	3		E200.7	11/15/12 23:03 / sf
Sodium	15000	mg/L	D	20		E200.7	11/15/12 23:03 / sf
Sulfate	10700	mg/L	D	400		E300.0	11/09/12 02:35 / wc
PHYSICAL PROPERTIES							
Conductivity @ 25 C	36900	umhos/cm		1		A2510 B	11/07/12 17:44 / ab
pH	9.49	s.u.	H	0.01		A4500-H B	11/07/12 17:44 / ab
Solids, Total Dissolved TDS @ 180 C	37000	mg/L		10		A2540 C	11/08/12 16:27 / jz
METALS - DISSOLVED							
Arsenic	3.66	mg/L		0.001		E200.8	11/13/12 20:16 / cp
Molybdenum	51.7	mg/L		0.001		E200.8	11/13/12 20:16 / cp
Selenium	0.044	mg/L		0.001		E200.8	11/16/12 10:47 / cp
Uranium	93.6	mg/L	D	0.001		E200.8	11/13/12 20:16 / cp

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
H - Analysis performed past recommended holding time.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility
Lab ID: C12110279-025
Client Sample ID: 6264

Report Date: 11/19/12
Collection Date: 11/03/12 12:55
DateReceived: 11/07/12
Matrix: Aqueous

Analyses	Result	Units	Qualifier	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Carbonate as CO3	6600	mg/L		5		A2320 B	11/08/12 14:48 / jba
Bicarbonate as HCO3	8530	mg/L		5		A2320 B	11/08/12 14:48 / jba
Calcium	5	mg/L		1		E200.7	11/15/12 23:16 / sf
Chloride	1420	mg/L	D	100		E300.0	11/09/12 02:50 / wc
Magnesium	21	mg/L	D	2		E200.7	11/15/12 23:16 / sf
Potassium	18	mg/L	D	3		E200.7	11/15/12 23:16 / sf
Sodium	14900	mg/L	D	20		E200.7	11/15/12 23:16 / sf
Sulfate	10700	mg/L	D	400		E300.0	11/09/12 02:50 / wc
PHYSICAL PROPERTIES							
Conductivity @ 25 C	37200	umhos/cm		1		A2510 B	11/07/12 17:46 / ab
pH	9.48	s.u.	H	0.01		A4500-H B	11/07/12 17:46 / ab
Solids, Total Dissolved TDS @ 180 C	35400	mg/L		10		A2540 C	11/08/12 16:27 / jz
METALS - DISSOLVED							
Arsenic	2.90	mg/L		0.001		E200.8	11/13/12 20:29 / cp
Molybdenum	39.4	mg/L		0.001		E200.8	11/13/12 20:29 / cp
Selenium	0.022	mg/L		0.001		E200.8	11/16/12 11:04 / cp
Uranium	92.1	mg/L	D	0.001		E200.8	11/13/12 20:29 / cp

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
H - Analysis performed past recommended holding time.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility
Lab ID: C12110279-026
Client Sample ID: 6265

Report Date: 11/19/12
Collection Date: 11/03/12 14:00
DateReceived: 11/07/12
Matrix: Aqueous

Analyses	Result	Units	Qualifier	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Carbonate as CO3	6720	mg/L		5		A2320 B	11/08/12 14:52 / jba
Bicarbonate as HCO3	7370	mg/L		5		A2320 B	11/08/12 14:52 / jba
Calcium	4	mg/L		1		E200.7	11/16/12 00:00 / sf
Chloride	1380	mg/L	D	100		E300.0	11/09/12 03:06 / wc
Magnesium	21	mg/L	D	2		E200.7	11/16/12 00:00 / sf
Potassium	18	mg/L	D	3		E200.7	11/16/12 00:00 / sf
Sodium	14700	mg/L	D	20		E200.7	11/16/12 00:00 / sf
Sulfate	10600	mg/L	D	400		E300.0	11/09/12 03:06 / wc
PHYSICAL PROPERTIES							
Conductivity @ 25 C	36600	umhos/cm		1		A2510 B	11/07/12 17:49 / ab
pH	9.49	s.u.	H	0.01		A4500-H B	11/07/12 17:49 / ab
Solids, Total Dissolved TDS @ 180 C	35900	mg/L		10		A2540 C	11/08/12 16:28 / jz
METALS - DISSOLVED							
Arsenic	3.58	mg/L		0.001		E200.8	11/13/12 20:31 / cp
Molybdenum	51.4	mg/L		0.001		E200.8	11/13/12 20:31 / cp
Selenium	0.046	mg/L		0.001		E200.8	11/16/12 11:09 / cp
Uranium	88.6	mg/L	D	0.001		E200.8	11/13/12 20:31 / cp

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
H - Analysis performed past recommended holding time.

QA/QC Summary Report

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC **Report Date:** 11/19/12

Project: Lisbon, UT Facility **Work Order:** C12110279

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: A2320 B										Batch: R166893
Sample ID: MBLK	2	Method Blank				Run: MANTECH_121107A			11/07/12 14:44	
Carbonate as CO3		ND	mg/L	1						
Bicarbonate as HCO3		2	mg/L	1						
Sample ID: C12110279-010ADUP	2	Sample Duplicate				Run: MANTECH_121107A			11/07/12 20:42	
Carbonate as CO3		ND	mg/L	5.0					10	
Bicarbonate as HCO3		319	mg/L	5.0				0.0	10	
Sample ID: C12110279-020ADUP	2	Sample Duplicate				Run: MANTECH_121107A			11/07/12 22:30	
Carbonate as CO3		ND	mg/L	5.0					10	
Bicarbonate as HCO3		263	mg/L	5.0				0.0	10	
Method: A2320 B										Batch: 121108_1_ALK-W
Sample ID: MBLK1_121108_	3	Method Blank				Run: TTR-ALK_121108A			11/08/12 14:23	
Alkalinity, Total as CaCO3		1.25	mg/L	5.0						
Carbonate as CO3		ND	mg/L	5.0						
Bicarbonate as HCO3		1.52	mg/L	5.0						
Sample ID: LCS_121003_121108_		Laboratory Control Sample				Run: TTR-ALK_121108A			11/08/12 14:29	
Alkalinity, Total as CaCO3		1000	mg/L	5.0	100	90	110			
Sample ID: C12110279-023ADUP	3	Sample Duplicate				Run: TTR-ALK_121108A			11/08/12 14:38	
Alkalinity, Total as CaCO3		17000	mg/L	5.0				0.3	10	
Carbonate as CO3		6240	mg/L	5.0				0.0	10	
Bicarbonate as HCO3		8110	mg/L	5.0				0.7	10	

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

QA/QC Summary Report

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC **Report Date:** 11/19/12

Project: Lisbon, UT Facility **Work Order:** C12110279

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: A2510 B										Batch: R166835
Sample ID: SC 2ND 1413		Laboratory Control Sample				Run: PHSC_101-C_121107A				11/07/12 09:01
Conductivity @ 25 C		1410	umhos/cm	1.0	99	90	110			
Sample ID: MBLK		Method Blank				Run: PHSC_101-C_121107A				11/07/12 09:06
Conductivity @ 25 C		2	umhos/cm	0.2						
Sample ID: C12110279-006ADUP		Sample Duplicate				Run: PHSC_101-C_121107A				11/07/12 16:44
Conductivity @ 25 C		553	umhos/cm	1.0				0.3	10	
Sample ID: C12110279-016ADUP		Sample Duplicate				Run: PHSC_101-C_121107A				11/07/12 17:14
Conductivity @ 25 C		12.2	umhos/cm	1.0				2.4	10	
Sample ID: C12110279-026ADUP		Sample Duplicate				Run: PHSC_101-C_121107A				11/07/12 17:52
Conductivity @ 25 C		36600	umhos/cm	1.0				0.0	10	

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

QA/QC Summary Report

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Report Date: 11/19/12
Project: Lisbon, UT Facility
Work Order: C12110279

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: A2540 C										Batch: TDS121108A
Sample ID: MB-1_121108A		Method Blank				Run: BAL-1_121108B				11/08/12 15:47
Solids, Total Dissolved TDS @ 180 C		ND	mg/L	4						
Sample ID: LCS-2_121108A		Laboratory Control Sample				Run: BAL-1_121108B				11/08/12 15:48
Solids, Total Dissolved TDS @ 180 C		1090	mg/L	10	98	90	110			
Sample ID: C12110259-001B MS		Sample Matrix Spike				Run: BAL-1_121108B				11/08/12 15:49
Solids, Total Dissolved TDS @ 180 C		8260	mg/L	10	99	90	110			
Sample ID: C12110279-004A DUP		Sample Duplicate				Run: BAL-1_121108B				11/08/12 15:52
Solids, Total Dissolved TDS @ 180 C		8030	mg/L	10				3.1	5	
Sample ID: C12110279-014A DUP		Sample Duplicate				Run: BAL-1_121108B				11/08/12 16:25
Solids, Total Dissolved TDS @ 180 C		685	mg/L	10				1.9	5	
Sample ID: C12110279-015A MS		Sample Matrix Spike				Run: BAL-1_121108B				11/08/12 16:25
Solids, Total Dissolved TDS @ 180 C		1770	mg/L	10	96	90	110			
Method: A2540 C										Batch: TDS121109A
Sample ID: MB-1_121109A		Method Blank				Run: BAL-1_121109C				11/09/12 13:49
Solids, Total Dissolved TDS @ 180 C		5	mg/L	4						
Sample ID: LCS-2_121109A		Laboratory Control Sample				Run: BAL-1_121109C				11/09/12 13:49
Solids, Total Dissolved TDS @ 180 C		1110	mg/L	10	99	90	110			
Sample ID: C12110285-008A DUP		Sample Duplicate				Run: BAL-1_121109C				11/09/12 13:50
Solids, Total Dissolved TDS @ 180 C		6180	mg/L	10					5	
Sample ID: C12110285-009A MS		Sample Matrix Spike				Run: BAL-1_121109C				11/09/12 13:51
Solids, Total Dissolved TDS @ 180 C		4250	mg/L	10	100	90	110			

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

QA/QC Summary Report

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC **Report Date:** 11/19/12

Project: Lisbon, UT Facility **Work Order:** C12110279

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: A4500-H B									Analytical Run: PHSC_101-C_121107A	
Sample ID: pH 6.86	Initial Calibration Verification Standard								11/07/12 08:47	
pH		6.84	s.u.	0.010	100	98	102			
Method: A4500-H B									Batch: R166835	
Sample ID: C12110279-006ADUP	Sample Duplicate					Run: PHSC_101-C_121107A			11/07/12 16:44	
pH		7.53	s.u.	0.010				0.1	3	
Sample ID: C12110279-016ADUP	Sample Duplicate					Run: PHSC_101-C_121107A			11/07/12 17:14	
pH		6.79	s.u.	0.010				0.1	3	
Sample ID: C12110279-026ADUP	Sample Duplicate					Run: PHSC_101-C_121107A			11/07/12 17:52	
pH		9.48	s.u.	0.010				0.1	3	

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

QA/QC Summary Report

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC **Report Date:** 11/19/12

Project: Lisbon, UT Facility **Work Order:** C12110279

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E200.7									Analytical Run: ICP2-C_121115A	
Sample ID: ICV	5	Initial Calibration Verification Standard							11/15/12 12:39	
Calcium		50.8	mg/L	0.50	102	95	105			
Magnesium		49.9	mg/L	0.50	100	95	105			
Potassium		47.6	mg/L	0.50	95	95	105			
Sodium		51.9	mg/L	0.50	104	95	105			
Uranium		4.94	mg/L	1.0	99	95	105			
Sample ID: ICSA	5	Interference Check Sample A							11/15/12 13:09	
Calcium		509	mg/L	0.50	102	80	120			
Magnesium		492	mg/L	0.50	98	80	120			
Potassium		0.00170	mg/L	0.50						
Sodium		0.237	mg/L	0.50						
Uranium		-0.0250	mg/L	1.0						
Sample ID: ICSAB	5	Interference Check Sample AB							11/15/12 13:13	
Calcium		506	mg/L	0.50	101	80	120			
Magnesium		498	mg/L	0.50	100	80	120			
Potassium		0.00170	mg/L	0.50						
Sodium		0.143	mg/L	0.50						
Uranium		-0.0390	mg/L	1.0						
Method: E200.7									Batch: R167269	
Sample ID: MB-121115A	5	Method Blank				Run: ICP2-C_121115A			11/15/12 13:37	
Calcium		ND	mg/L	0.06						
Magnesium		ND	mg/L	0.03						
Potassium		ND	mg/L	0.06						
Sodium		ND	mg/L	0.3						
Uranium		ND	mg/L	0.3						
Sample ID: LFB-121115A	5	Laboratory Fortified Blank				Run: ICP2-C_121115A			11/15/12 13:41	
Calcium		49.1	mg/L	0.50	98	85	115			
Magnesium		46.0	mg/L	0.50	92	85	115			
Potassium		43.9	mg/L	0.50	88	85	115			
Sodium		48.3	mg/L	0.50	97	85	115			
Uranium		4.38	mg/L	1.0	88	85	115			
Sample ID: C12110279-006BMS2	5	Sample Matrix Spike				Run: ICP2-C_121115A			11/15/12 21:02	
Calcium		117	mg/L	1.0	92	70	130			
Magnesium		68.6	mg/L	1.0	98	70	130			
Potassium		49.9	mg/L	1.0	92	70	130			
Sodium		80.4	mg/L	1.0	97	70	130			
Uranium		3.99	mg/L	0.26	78	70	130			

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

QA/QC Summary Report

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC **Report Date:** 11/19/12

Project: Lisbon, UT Facility **Work Order:** C12110279

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E200.7										Batch: R167269
Sample ID: C12110279-006BMSD	5	Sample Matrix Spike Duplicate				Run: ICP2-C_121115A				11/15/12 21:06
Calcium		119	mg/L	1.0	96	70	130	1.6	20	
Magnesium		69.1	mg/L	1.0	99	70	130	0.6	20	
Potassium		49.7	mg/L	1.0	92	70	130	0.4	20	
Sodium		82.1	mg/L	1.0	101	70	130	2.1	20	
Uranium		4.08	mg/L	0.26	80	70	130	2.3	20	
Sample ID: C12110279-015BMS2	5	Sample Matrix Spike				Run: ICP2-C_121115A				11/15/12 22:07
Calcium		164	mg/L	1.0	88	70	130			
Magnesium		116	mg/L	1.0	99	70	130			
Potassium		52.7	mg/L	1.0	95	70	130			
Sodium		81.7	mg/L	1.0	101	70	130			
Uranium		4.19	mg/L	0.26	82	70	130			
Sample ID: C12110279-015BMSD	5	Sample Matrix Spike Duplicate				Run: ICP2-C_121115A				11/15/12 22:11
Calcium		161	mg/L	1.0	82	70	130	2.0	20	
Magnesium		113	mg/L	1.0	94	70	130	2.1	20	
Potassium		52.5	mg/L	1.0	94	70	130	0.4	20	
Sodium		81.9	mg/L	1.0	101	70	130	0.2	20	
Uranium		4.20	mg/L	0.26	82	70	130	0.4	20	

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

QA/QC Summary Report

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC **Report Date:** 11/19/12

Project: Lisbon, UT Facility **Work Order:** C12110279

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E200.8									Analytical Run: ICPMS2-C_121113A	
Sample ID: ICV	4	Initial Calibration Verification Standard							11/13/12 13:17	
Arsenic		0.0501	mg/L	0.0010	100	90	110			
Molybdenum		0.0525	mg/L	0.0010	105	90	110			
Selenium		0.0520	mg/L	0.0010	104	90	110			
Uranium		0.0503	mg/L	0.00030	101	90	110			
Method: E200.8									Batch: R167164	
Sample ID: LRB	4	Method Blank				Run: ICPMS2-C_121113A			11/13/12 13:39	
Arsenic		ND	mg/L	0.00010						
Molybdenum		6E-05	mg/L	4E-05						
Selenium		ND	mg/L	0.0002						
Uranium		ND	mg/L	1E-05						
Sample ID: LFB	4	Laboratory Fortified Blank				Run: ICPMS2-C_121113A			11/13/12 13:41	
Arsenic		0.0522	mg/L	0.0010	104	85	115			
Molybdenum		0.0526	mg/L	0.0010	105	85	115			
Selenium		0.0540	mg/L	0.0010	108	85	115			
Uranium		0.0520	mg/L	0.00030	104	85	115			
Sample ID: C12110279-003BMS4	4	Sample Matrix Spike				Run: ICPMS2-C_121113A			11/13/12 17:59	
Arsenic		0.258	mg/L	0.0010	102	70	130			
Molybdenum		3.78	mg/L	0.0010		70	130			A
Selenium		0.332	mg/L	0.0013	104	70	130			
Uranium		24.9	mg/L	0.00050		70	130			A
Sample ID: C12110279-003BMSD	4	Sample Matrix Spike Duplicate				Run: ICPMS2-C_121113A			11/13/12 18:01	
Arsenic		0.260	mg/L	0.0010	103	70	130	0.8	20	
Molybdenum		3.86	mg/L	0.0010		70	130	2.1	20	A
Selenium		0.331	mg/L	0.0013	103	70	130	0.5	20	
Uranium		25.1	mg/L	0.00050		70	130	1.0	20	A
Sample ID: C12110279-013BMS4	4	Sample Matrix Spike				Run: ICPMS2-C_121113A			11/13/12 19:23	
Arsenic		0.0819	mg/L	0.0010	110	70	130			
Molybdenum		0.0639	mg/L	0.0010	106	70	130			
Selenium		0.0640	mg/L	0.0010	109	70	130			
Uranium		0.0639	mg/L	0.00030	106	70	130			
Sample ID: C12110279-013BMSD	4	Sample Matrix Spike Duplicate				Run: ICPMS2-C_121113A			11/13/12 19:26	
Arsenic		0.0819	mg/L	0.0010	110	70	130	0.1	20	
Molybdenum		0.0656	mg/L	0.0010	109	70	130	2.6	20	
Selenium		0.0650	mg/L	0.0010	111	70	130	1.5	20	
Uranium		0.0644	mg/L	0.00030	107	70	130	0.7	20	

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

A - The analyte level was greater than four times the spike level. In accordance with the method % recovery is not calculated.

QA/QC Summary Report

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC **Report Date:** 11/19/12

Project: Lisbon, UT Facility **Work Order:** C12110279

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E200.8									Analytical Run: ICPMS4-C_121115A	
Sample ID: ICV	6	Initial Calibration Verification Standard							11/15/12 14:05	
Arsenic		0.0484	mg/L	0.0010	97	90	110			
Magnesium		9.58	mg/L	0.0027	96	90	110			
Potassium		9.50	mg/L	0.0041	95	90	110			
Selenium		0.0491	mg/L	0.0010	98	90	110			
Sodium		9.50	mg/L	0.0043	95	90	110			
Uranium		0.0496	mg/L	0.00030	99	90	110			
Method: E200.8									Batch: R167319	
Sample ID: LRB	6	Method Blank				Run: ICPMS4-C_121115A			11/15/12 14:40	
Arsenic		ND	mg/L	5E-05						
Magnesium		0.009	mg/L	0.003						
Potassium		ND	mg/L	0.004						
Selenium		ND	mg/L	7E-05						
Sodium		ND	mg/L	0.004						
Uranium		2E-05	mg/L	9E-06						
Sample ID: LFB	6	Laboratory Fortified Blank				Run: ICPMS4-C_121115A			11/15/12 14:45	
Arsenic		0.0502	mg/L	0.0010	100	85	115			
Magnesium		12.5	mg/L	0.0027	100	85	115			
Potassium		12.4	mg/L	0.0041	99	85	115			
Selenium		0.0505	mg/L	0.0010	101	85	115			
Sodium		12.6	mg/L	0.0043	100	85	115			
Uranium		0.0512	mg/L	0.00030	102	85	115			
Sample ID: C12110213-004BMS4	6	Sample Matrix Spike				Run: ICPMS4-C_121115A			11/16/12 08:28	
Arsenic		0.145	mg/L	0.0010	108	70	130			
Magnesium		23.9	mg/L	1.0	100	70	130			
Potassium		17.6	mg/L	1.0	98	70	130			
Selenium		0.0525	mg/L	0.0010	93	70	130			
Sodium		30.2	mg/L	1.0	102	70	130			
Uranium		0.327	mg/L	0.00030		70	130			A
Sample ID: C12110213-004BMSD	6	Sample Matrix Spike Duplicate				Run: ICPMS4-C_121115A			11/16/12 08:33	
Arsenic		0.146	mg/L	0.0010	109	70	130	0.1	20	
Magnesium		23.7	mg/L	1.0	98	70	130	0.8	20	
Potassium		17.5	mg/L	1.0	98	70	130	0.1	20	
Selenium		0.0559	mg/L	0.0010	99	70	130	6.3	20	
Sodium		29.9	mg/L	1.0	99	70	130	1.1	20	
Uranium		0.329	mg/L	0.00030		70	130	0.5	20	A
Sample ID: C12110279-024BMS4	5	Sample Matrix Spike				Run: ICPMS4-C_121115A			11/16/12 10:51	
Arsenic		3.54	mg/L	0.0010		70	130			A
Magnesium		140	mg/L	1.0	95	70	130			

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

A - The analyte level was greater than four times the spike level. In accordance with the method % recovery is not calculated.

QA/QC Summary Report

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC **Report Date:** 11/19/12

Project: Lisbon, UT Facility **Work Order:** C12110279

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E200.8									Batch: R167319	
Sample ID: C12110279-024BMS4	5	Sample Matrix Spike				Run: ICPMS4-C_121115A			11/16/12 10:51	
Potassium		157	mg/L	1.0	111	70	130			
Selenium		0.564	mg/L	0.0010	104	70	130			
Uranium		103	mg/L	0.00030		70	130			A
Sample ID: C12110279-024BMSD	5	Sample Matrix Spike Duplicate				Run: ICPMS4-C_121115A			11/16/12 10:55	
Arsenic		3.50	mg/L	0.0010		70	130	1.1	20	A
Magnesium		136	mg/L	1.0	92	70	130	2.8	20	
Potassium		159	mg/L	1.0	112	70	130	1.1	20	
Selenium		0.611	mg/L	0.0010	114	70	130	8.1	20	
Uranium		102	mg/L	0.00030		70	130	1.2	20	A

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

A - The analyte level was greater than four times the spike level. In accordance with the method % recovery is not calculated.

QA/QC Summary Report

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC **Report Date:** 11/19/12

Project: Lisbon, UT Facility **Work Order:** C12110279

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E300.0									Analytical Run: IC2-C_121108A	
Sample ID: ICV-110812-10	2	Initial Calibration Verification Standard							11/08/12 16:18	
Chloride		9.80	mg/L	1.0	98	90	110			
Sulfate		40.2	mg/L	1.0	100	90	110			
Method: E300.0									Batch: R166991	
Sample ID: ICB-110812-11	2	Method Blank				Run: IC2-C_121108A			11/08/12 16:33	
Chloride		ND	mg/L	0.03						
Sulfate		0.1	mg/L	0.10						
Sample ID: LFB-110812-12	2	Laboratory Fortified Blank				Run: IC2-C_121108A			11/08/12 16:49	
Chloride		9.77	mg/L	1.0	98	90	110			
Sulfate		39.5	mg/L	1.0	99	90	110			
Sample ID: C12110298-001AMS	2	Sample Matrix Spike				Run: IC2-C_121108A			11/08/12 17:20	
Chloride		38.3	mg/L	1.0	99	90	110			
Sulfate		245	mg/L	1.7	97	90	110			
Sample ID: C12110298-001AMSD	2	Sample Matrix Spike Duplicate				Run: IC2-C_121108A			11/08/12 17:35	
Chloride		38.2	mg/L	1.0	98	90	110	0.2	10	
Sulfate		245	mg/L	1.7	97	90	110	0.1	10	
Sample ID: C12110279-007AMS	2	Sample Matrix Spike				Run: IC2-C_121108A			11/08/12 20:55	
Chloride		29.3	mg/L	1.0	98	90	110			
Sulfate		189	mg/L	1.7	97	90	110			
Sample ID: C12110279-007AMSD	2	Sample Matrix Spike Duplicate				Run: IC2-C_121108A			11/08/12 21:11	
Chloride		29.6	mg/L	1.0	99	90	110	1.1	10	
Sulfate		190	mg/L	1.7	98	90	110	0.4	10	

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

Standard Reporting Procedures

Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH, Dissolved Oxygen and Residual Chlorine, are qualified as being analyzed outside of recommended holding time.

Solid/soil samples are reported on a wet weight basis (as received) unless specifically indicated. If moisture corrected, data units are typically noted as –dry. For agricultural and mining soil parameters/characteristics, all samples are dried and ground prior to sample analysis.

Workorder Receipt Checklist

Rio Algom Mining Corporation LLC C12110279

Login completed by: Timothy I.. Houghteling
Date Received: 11/7/2012
Reviewed by: BL2000\kmiller
Received by: th
Reviewed Date: 11/8/2012
Carrier name: FedEx

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on shipping container/cooler?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time? (Exclude analyses that are considered field parameters such as pH, DO, Res Cl, Sulfite, Ferrous Iron, etc.)	Yes ☑	No ☐	
Temp Blank received?	Yes ☑	No ☐	Not Applicable ☐
Container/Temp Blank temperature:	0.6°C On Ice		
Water - VOA vials have zero headspace?	Yes ☐	No ☐	No VOA vials submitted ☑
Water - pH acceptable upon receipt?	Yes ☐	No ☑	Not Applicable ☐

Contact and Corrective Action Comments:

Samples 6262, 6263, 6264 and 6265 ph'ed high due to matrix.

Chain of Custody and Analytical Request Record

PLEASE PRINT (Provide as much information as possible.)

Company Name: Montgomery + Associates	Project Name, PWS, Permit, Etc.: Rio Algom Mining Lisbon Uranium Facility	Sample Origin State: Utah	EPA/State Compliance: Yes ☐ No ☐
Report Mail Address (Required): 520-881-4912	Contact Name: Phone/Fax:	Cell:	Sampler: (Please Print) BRANDON MYERS
X No Hard Copy Email: tlee@elmontgomery.com	Invoice Contact & Phone:	Purchase Order:	Quote/Bottle Order: 38150
Invoice Address (Required): ❑ No Hard Copy Email:			

Special Report/Formats:
☐ DW ☐ EDD/EDT (Electronic Data)
☐ POTW/WWTP Format: ____
☐ State: ____ ☐ LEVEL IV
☐ Other: ____ ☐ NELAC

Number of Containers
Sample Type: A Air W Water S Soils/Solids V Vegetation B Bioassay O Other D DW - Drinking Water

ANALYSIS REQUESTED

SEE ATTACHED

Standard Turnaround (TAT) — RUSH

Contact ELI prior to **RUSH** sample submittal for charges and scheduling – See Instruction Page

Comments: Metals samples were field filtered + preserved w/ HNO3 in field

Shipped by: Fedex
Cooler ID(s): 4681
Receipt Temp: 0.4 °C
On Ice: (Y) N
Custody Seal: On Bottle Y (N) On Cooler Y (N)
Intact Y N
Signature Match Y N

	SAMPLE IDENTIFICATION (Name, Location, Interval, etc.)	Collection Date	Collection Time	MATRIX	See attached bottle order # 38150											
1	6240	05/NOV/2012	1325	W	X											Samples in cooler 1 of 2
2	6251	"	1440	W	X											
3	6252	05/NOV/2012	930	W	X											
4	6253	"	1005	W	X											
5	6254	"	1035	W	X											
6																
7																
8																
9																
10																

LABORATORY USE ONLY C12110279

Custody Record MUST be Signed

Relinquished by (print): BRANDON MYERS	Date/Time: 11/5/12 1400	Signature:	Received by (print):	Date/Time:	Signature:
Relinquished by (print):	Date/Time:	Signature:	Received by (print):	Date/Time:	Signature:
Sample Disposal: Return to Client: ____ Lab Disposal: ____			Received by Laboratory: 11-7-12	Date/Time: 10:45	Signature:

In certain circumstances, samples submitted to Energy Laboratories, Inc. may be subcontracted to other certified laboratories in order to complete the analysis requested. This serves as notice of this possibility. All sub-contract data will be clearly notated on your analytical report.

Chain of Custody and Analytical Request Record

PLEASE PRINT (Provide as much information as possible.)

Company Name: Montgomery + Associates	Project Name, PWS, Permit, Etc.: Rio Algom Mining Lisbon UT Facility	Sample Origin State: Utah	EPA/State Compliance: Yes ☐ No ☐
Report Mail Address: 520-881-4912	Contact Name: Phone/Fax:	Email:	Sampler: (Please Print) BRANDON MYERS
Email Report: tlco@elmontgomery.com			
Invoice Address:	Invoice Contact & Phone:	Purchase Order:	Quote/Bottle Order: 38150

Special Report/Formats:

☐ DW ☐ EDD/EDT (Electronic Data)
☐ POTW/WWTP Format: _____
☐ State: _____ ☐ LEVEL IV
☐ Other: _____ ☐ NELAC

Number of Containers
Sample Type: A W S V B O DW
Air Water Soils/Solids
Vegetation Bioassay Other
DW - Drinking Water

ANALYSIS REQUESTED

Standard Turnaround (TAT) — R U S H

Contact ELI prior to **RUSH** sample submittal for charges and scheduling – See Instruction Page

Shipped by: Fed ex

Cooler ID(s): 4081

Receipt Temp: 0.4 °C

On Ice: (Y) N

Custody Seal: On Bottle Y (N) / On Cooler Y (N)

Intact: Y N

Signature Match: Y N

Comments: Metals samples were field filtered + preserved w/ HNO3 in field

	SAMPLE IDENTIFICATION (Name, Location, Interval, etc.)	Collection Date	Collection Time	MATRIX	See attached bottle order #38150	SEE ATTACHED	
1	6230	02NOV2012	1045	W	X		Samples in cooler 1 of 2
2	6231		1135		X		
3	6232		1240		X		
4	6233		1345		X		
5	6234		1510		X		
6	6235	03NOV2012	845		X		
7	6236		940		X		
8	6237		1100		X		
9	6238		1145		X		
10	6239		1220		X		

LABORATORY USE ONLY: C12110279

Custody Record MUST be Signed

Relinquished by (print):	Date/Time:	Signature:	Received by (print):	Date/Time:	Signature:
[signature]	11/5/12 1400	BRANDON MYERS			
Relinquished by (print):	Date/Time:	Signature:	Received by (print):	Date/Time:	Signature:
			Received by Laboratory:	Date/Time: 11712 / 1045	Signature: [signature]

Sample Disposal: Return to Client: _____ Lab Disposal: _____

In certain circumstances, samples submitted to Energy Laboratories, Inc. may be subcontracted to other certified laboratories in order to complete the analysis requested. This serves as notice of this possibility. All sub-contract data will be clearly notated on your analytical report.

Chain of Custody and Analytical Request Record

PLEASE PRINT (Provide as much information as possible.)

Company Name: Montgomery + Associates

Report Mail Address (Required): 520-881-4912

X No Hard Copy Email: tleo@elmontgomery.com

Invoice Address (Required):

❑ No Hard Copy Email:

Special Report/Formats:
- ☐ DW
- ☐ POTW/WWTP
- ☐ State: _____
- ☐ Other: _____
- ☐ EDD/EDT (Electronic Data) Format: _____
- ☐ LEVEL IV
- ☐ NELAC

Project Name, PWS, Permit, Etc.: Rio Algom Mining Lisbon UT facility

Contact Name: Phone/Fax: Cell:

Invoice Contact & Phone:

Sample Origin State: Utah

Purchase Order:

EPA/State Compliance: Yes ☐ No ☐

Sampler: (Please Print) Josh Kerns

Quote/Bottle Order: 38150

Number of Containers
Sample Type: A W S V B O DW
Air Water Soils/Solids
Vegetation Bioassay Other
DW - Drinking Water

ANALYSIS REQUESTED

SAMPLE IDENTIFICATION (Name, Location, Interval, etc.)	Collection Date	Collection Time	MATRIX	See attached bottle order # 38150									SEE ATTACHED
1 U266	03NOV2012	1430	W	X									
2													
3													
4													
5													
6													
7													
8													
9													
10													

Standard Turnaround (TAT)

RUSH

Contact ELI prior to **RUSH** sample submittal for charges and scheduling – See Instruction Page

Comments: Metals samples were field filtered + preserved w/ HNO3 in field

3 Samples in Cooler 1 of 2

Shipped by: Fedex

Cooler ID(s): 4061

Receipt Temp: 0.4 °C

On Ice: (Y) N

Custody Seal: On Bottle Y N; On Cooler Y N

Intact: Y N

Signature Match: Y N

LABORATORY USE ONLY

012110279

Custody Record MUST be Signed

Relinquished by (print):	Date/Time:	Signature:	Received by (print):	Date/Time:	Signature:
Josh Kerns	1400 05NOV2012				

Sample Disposal: Return to Client: _____ Lab Disposal: _____

Received by Laboratory: Date/Time: 11-7-12 / 1045 Signature:

In certain circumstances, samples submitted to Energy Laboratories, Inc. may be subcontracted to other certified laboratories in order to complete the analysis requested. This serves as notice of this possibility. All sub-contract data will be clearly notated on your analytical report.

Chain of Custody and Analytical Request Record

PLEASE PRINT (Provide as much information as possible.)

Company Name: Montgomery + Associates

Report Mail Address (Required): 520-881-4912

No Hard Copy Email: tleo@elmontgomery.com

Invoice Address (Required):

No Hard Copy Email:

Special Report/Formats:
- DW
- POTW/WWTP
- State:
- Other:
- EDD/EDT (Electronic Data) Format:
- LEVEL IV
- NELAC

Project Name, PWS, Permit, Etc.: Rio Algom Mining Lisbon, UT facility

Contact Name: Phone/Fax:

Invoice Contact & Phone:

Sample Origin: State: Utah

Cell:

Purchase Order:

EPA/State Compliance: Yes ☐ No ☐

Sampler: (Please Print): Josh Kerns

Quote/Bottle Order: 38150

Contact ELI prior to **RUSH** sample submittal for charges and scheduling – See Instruction Page

Comments: Metals samples were field filtered + preserved w/ HNO_3 in field

Shipped by: Fedex - NDA

Cooler ID(s): 3848

Receipt Temp: 6 TB °C

On Ice: Y N

Custody Seal: On Bottle Y N; On Cooler Y N

Intact: Y N

Signature Match: Y N

	SAMPLE IDENTIFICATION (Name, Location, Interval, etc.)	Collection Date	Collection Time	MATRIX	Number of Containers / Sample Type: A W S V B O DW / Air Water Soils/Solids Vegetation Bioassay Other DW - Drinking Water	ANALYSIS REQUESTED: See attached bottle order #38150	SEE ATTACHED
1	6246	02NOV2012	1150	W	X		
2	6247	02NOV2012	1245 ~~1150~~ JK	W	X		
3	6248	02NOV2012	1400	W	X		
4	6249	03NOV2012	0835	W	X		
5	6250	03NOV2012	0935	W	X		
6	6261	03NOV2012	1055	W	X		
7	6262	03NOV2012	1150	W	X		
8	6263	03NOV2012	1155	W	X		
9	6264	03NOV2012	1255	W	X		
10	6265	03NOV2012	1400	W	X		

Standard Turnaround (TAT)

Samples in Cooler 1 of 2

Samples in Cooler 2 of 2

High pH, additional HNO_3 preserv. added. 3 vials added to each metals bottle double volume rinse

LABORATORY USE ONLY

C12110279

Custody Record MUST be Signed

Relinquished by (print): Josh Kerns Date/Time: 05NOV2012/1400 Signature:

Relinquished by (print): Date/Time: Signature:

Received by (print): Date/Time: Signature:

Received by (print): Date/Time: Signature:

Received by Laboratory: 11-6-12 9:45 Date/Time: Signature: WC

Sample Disposal: Return to Client: Lab Disposal:

In certain circumstances, samples submitted to Energy Laboratories, Inc. may be subcontracted to other certified laboratories in order to complete the analysis requested. This serves as notice of this possibility. All sub-contract data will be clearly notated on your analytical report.

ENERGY LABORATORIES
www.energylab.com
Analytical Excellence Since 1952

Helena, MT 877-472-0711 • Billings, MT 800-735-4489 • Casper, WY 888-235-0515
Gillette, WY 866-686-7175 • Rapid City, SD 888-672-1225 • College Station, TX 888-690-2218

BOTTLE ORDER 38150

SHIPPED TO: Rio Algom Mining Corporation LLC

Contact: Jason Brown
c/o Confluence Environmental Inc
3308 El Camino Ave Ste 300 #148
Sacramento CA 95821
Phone: (916) 759-8156

Order Created by: Kerri Schroeder
Shipped From: Casper, WY

Ship Date: 10/24/2012
VIA: Next Day Air
Early AM

Project:

Bottle Size/Type	Bottles Per Samp	Method	Tests	Critical Hold Time	Preservative	Notes	Num of Samp
500 mL Plastic	1	A2320 B	Alkalinity				16
		E300.0	E300.0 Anions				
		A2540 C	Solids, Total Dissolved				
		A2510 B	Conductivity				
		A4500-H B	pH	0.25 hrs			
250 mL Plastic	1	E200.7_8	Metals by ICP/ICPMS, Dissolved		■ HNO3	Filter before preservation	16

Comments

Bicarbonate, Carbonate, Cl, SO4, TDS, pH, Cond Ca, Mg, Na, K, As, Se, Mo, U.
Metals samples will be filtered in the field.

■ HNO3 - Nitric Acid ■ H2SO4 - Sulfuric Acid ■ NaOH - Sodium Hydroxide
■ ZnAc - Zinc Acetate ■ HCl - Hydrochloric Acid □ H3PO4 - Phosphoric Acid

We strongly suggest that the samples are shipped the same day as they are collected.

Material Safety Data Sheets(MSDS) Available @ EnergyLab.com ->Services -> MSDS Sheets

Corrosive Chemicals: Nitric, Sulfuric, Phosphoric, Hydrochloric Acids and Sodium Hydroxide. Zinc Acetate is a skin irritant.

Subcontracting of sample analyses to an outside laboratory may be required. If so, Energy Laboratories will utilize its branch laboratories or qualified contract laboratories for this service. Any such laboratories will be indicated within the Laboratory Analytical Report.

ENERGY LABORATORIES
www.energylab.com
Analytical Excellence Since 1952

Helena, MT 877-472-0711 • Billings, MT 800-735-4489 • Casper, WY 888-235-0515
Gillette, WY 866-686-7175 • Rapid City, SD 888-672-1225 • College Station, TX 888-690-2218

BOTTLE ORDER 38150

SHIPPED TO: Rio Algom Mining Corporation LLC

Contact: Jason Brown
c/o Confluence Environmental Inc
3308 El Camino Ave Ste 300 #148
Sacramento CA 95821
Phone: (916) 759-8156

Order Created by: Kerri Schroeder
Shipped From: Casper, WY

Ship Date: 10/24/2012
VIA: Next Day Air
Early AM

Project:

Bottle Size/Type	Bottles Per Samp	Method	Tests	Critical Hold Time	Preservative	Notes	Num of Samp
500 mL Plastic	1	A2320 B	Alkalinity				16
		E300.0	E300.0 Anions				
		A2540 C	Solids, Total Dissolved				
		A2510 B	Conductivity				
		A4500-H B	pH	0.25 hrs			
250 mL Plastic	1	E200.7_8	Metals by ICP/ICPMS, Dissolved		■ HNO3	Filter before preservation	16

Comments

Bicarbonate, Carbonate, Cl, SO4, TDS, pH, Cond Ca, Mg, Na, K, As, Se, Mo, U.
Metals samples will be filtered in the field.

■ HNO3 - Nitric Acid ■ H2SO4 - Sulfuric Acid ■ NaOH - Sodium Hydroxide
■ ZnAc - Zinc Acetate ■ HCl - Hydrochloric Acid □ H3PO4 - Phosphoric Acid

We strongly suggest that the samples are shipped the same day as they are collected.

Material Safety Data Sheets(MSDS) Available @ EnergyLab.com ->Services -> MSDS Sheets

Corrosive Chemicals: Nitric, Sulfuric, Phosphoric, Hydrochloric Acids and Sodium Hydroxide. Zinc Acetate is a skin irritant.

Subcontracting of sample analyses to an outside laboratory may be required. If so, Energy Laboratories will utilize its branch laboratories or qualified contract laboratories for this service. Any such laboratories will be indicated within the Laboratory Analytical Report.

ANALYTICAL SUMMARY REPORT

November 16, 2012

Rio Algom Mining Corporation LLC
Hwy 605 and 509
Grants, NM 87020

Workorder No.: C12110375

Project Name: Lisbon, UT Facility

Energy Laboratories, Inc. Casper WY received the following 25 samples for Rio Algom Mining Corporation LLC on 11/8/2012 for analysis.

Sample ID	Client Sample ID	Collect Date	Receive Date	Matrix	Test
C12110375-001	6267	11/06/12 7:35	11/08/12	Aqueous	Metals by ICP/ICPMS, Dissolved Alkalinity Conductivity E300.0 Anions pH Solids, Total Dissolved
C12110375-002	6268	11/06/12 7:40	11/08/12	Aqueous	Same As Above
C12110375-003	6269	11/06/12 8:50	11/08/12	Aqueous	Same As Above
C12110375-004	6270	11/06/12 10:10	11/08/12	Aqueous	Same As Above
C12110375-005	6271	11/06/12 10:40	11/08/12	Aqueous	Same As Above
C12110375-006	6272	11/07/12 7:00	11/08/12	Aqueous	Same As Above
C12110375-007	6273	11/07/12 7:45	11/08/12	Aqueous	Same As Above
C12110375-008	6274	11/07/12 9:15	11/08/12	Aqueous	Same As Above
C12110375-009	6275	11/07/12 9:45	11/08/12	Aqueous	Same As Above
C12110375-010	6276	11/07/12 11:30	11/08/12	Aqueous	Same As Above
C12110375-011	6285	11/07/12 8:00	11/08/12	Aqueous	Same As Above
C12110375-012	6286	11/07/12 8:30	11/08/12	Aqueous	Same As Above
C12110375-013	6287	11/07/12 8:55	11/08/12	Aqueous	Same As Above
C12110375-014	6288	11/07/12 9:20	11/08/12	Aqueous	Same As Above
C12110375-015	6289	11/07/12 10:00	11/08/12	Aqueous	Same As Above
C12110375-016	6255	11/06/12 7:45	11/08/12	Aqueous	Same As Above
C12110375-017	6256	11/06/12 8:45	11/08/12	Aqueous	Same As Above
C12110375-018	6257	11/06/12 8:55	11/08/12	Aqueous	Same As Above
C12110375-019	6258	11/06/12 10:15	11/08/12	Aqueous	Same As Above
C12110375-020	6259	11/06/12 11:15	11/08/12	Aqueous	Same As Above
C12110375-021	6260	11/06/12 11:40	11/08/12	Aqueous	Same As Above
C12110375-022	6281	11/06/12 11:50	11/08/12	Aqueous	Same As Above
C12110375-023	6282	11/06/12 12:15	11/08/12	Aqueous	Same As Above
C12110375-024	6283	11/07/12 7:00	11/08/12	Aqueous	Same As Above
C12110375-025	6284	11/07/12 7:55	11/08/12	Aqueous	Same As Above

ANALYTICAL SUMMARY REPORT

The results as reported relate only to the item(s) submitted for testing. The analyses presented in this report were performed at Energy Laboratories, Inc., 2393 Salt Creek Hwy., Casper, WY 82601, unless otherwise noted. Radiochemistry analyses were performed at Energy Laboratories, Inc., 2325 Kerzell Lane, Casper, WY 82601, unless otherwise noted. Any exceptions or problems with the analyses are noted in the Laboratory Analytical Report, the QA/QC Summary Report, or the Case Narrative.

If you have any questions regarding these test results, please call.

Report Approved By:

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility
Lab ID: C12110375-001
Client Sample ID: 6267

Report Date: 11/16/12
Collection Date: 11/06/12 07:35
DateReceived: 11/08/12
Matrix: Aqueous

Analyses	Result	Units	Qualifier	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Carbonate as CO3	360	mg/L		5		A2320 B	11/09/12 09:18 / jba
Bicarbonate as HCO3	4270	mg/L		5		A2320 B	11/09/12 09:18 / jba
Calcium	40	mg/L		1		E200.7	11/15/12 18:59 / sf
Chloride	1260	mg/L	D	20		E300.0	11/09/12 20:36 / ljl
Magnesium	56	mg/L		1		E200.7	11/15/12 18:59 / sf
Potassium	9	mg/L		1		E200.7	11/15/12 18:59 / sf
Sodium	5110	mg/L	D	4		E200.7	11/15/12 18:59 / sf
Sulfate	6280	mg/L	D	80		E300.0	11/09/12 20:36 / ljl
PHYSICAL PROPERTIES							
Conductivity @ 25 C	17800	umhos/cm		1		A2510 B	11/09/12 09:28 / ab
pH	8.64	s.u.	H	0.01		A4500-H B	11/09/12 09:28 / ab
Solids, Total Dissolved TDS @ 180 C	14400	mg/L		10		A2540 C	11/09/12 13:58 / ab
METALS - DISSOLVED							
Arsenic	0.175	mg/L		0.001		E200.8	11/14/12 20:44 / cp
Molybdenum	28.3	mg/L		0.001		E200.8	11/14/12 20:44 / cp
Selenium	0.189	mg/L		0.001		E200.8	11/14/12 20:44 / cp
Uranium	146	mg/L		0.0003		E200.8	11/14/12 20:44 / cp

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
H - Analysis performed past recommended holding time.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility
Lab ID: C12110375-002
Client Sample ID: 6268

Report Date: 11/16/12
Collection Date: 11/06/12 07:40
DateReceived: 11/08/12
Matrix: Aqueous

Analyses	Result	Units	Qualifier	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Carbonate as CO3	300	mg/L		5		A2320 B	11/09/12 09:23 / jba
Bicarbonate as HCO3	4390	mg/L		5		A2320 B	11/09/12 09:23 / jba
Calcium	40	mg/L		1		E200.7	11/15/12 19:20 / sf
Chloride	1210	mg/L	D	20		E300.0	11/09/12 20:51 / ljl
Magnesium	57	mg/L		1		E200.7	11/15/12 19:20 / sf
Potassium	10	mg/L		1		E200.7	11/15/12 19:20 / sf
Sodium	5360	mg/L	D	4		E200.7	11/15/12 19:20 / sf
Sulfate	6060	mg/L	D	80		E300.0	11/09/12 20:51 / ljl
PHYSICAL PROPERTIES							
Conductivity @ 25 C	17700	umhos/cm		1		A2510 B	11/09/12 09:31 / ab
pH	8.67	s.u.	H	0.01		A4500-H B	11/09/12 09:31 / ab
Solids, Total Dissolved TDS @ 180 C	15000	mg/L		10		A2540 C	11/09/12 13:59 / ab
METALS - DISSOLVED							
Arsenic	0.133	mg/L		0.001		E200.8	11/14/12 20:48 / cp
Molybdenum	28.4	mg/L		0.001		E200.8	11/14/12 20:48 / cp
Selenium	0.189	mg/L		0.001		E200.8	11/14/12 20:48 / cp
Uranium	143	mg/L		0.0003		E200.8	11/14/12 20:48 / cp

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
H - Analysis performed past recommended holding time.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility
Lab ID: C12110375-003
Client Sample ID: 6269

Report Date: 11/16/12
Collection Date: 11/06/12 08:50
DateReceived: 11/08/12
Matrix: Aqueous

Analyses	Result	Units	Qualifier	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Carbonate as CO3	360	mg/L		5		A2320 B	11/09/12 09:26 / jba
Bicarbonate as HCO3	4330	mg/L		5		A2320 B	11/09/12 09:26 / jba
Calcium	34	mg/L		1		E200.7	11/15/12 19:24 / sf
Chloride	1260	mg/L	D	20		E300.0	11/09/12 21:07 / ljl
Magnesium	51	mg/L		1		E200.7	11/15/12 19:24 / sf
Potassium	9	mg/L		1		E200.7	11/15/12 19:24 / sf
Sodium	5330	mg/L	D	4		E200.7	11/15/12 19:24 / sf
Sulfate	6280	mg/L	D	80		E300.0	11/09/12 21:07 / ljl
PHYSICAL PROPERTIES							
Conductivity @ 25 C	17600	umhos/cm		1		A2510 B	11/09/12 09:33 / ab
pH	8.64	s.u.	H	0.01		A4500-H B	11/09/12 09:33 / ab
Solids, Total Dissolved TDS @ 180 C	14400	mg/L		10		A2540 C	11/09/12 13:59 / ab
METALS - DISSOLVED							
Arsenic	0.212	mg/L		0.001		E200.8	11/14/12 20:52 / cp
Molybdenum	27.9	mg/L		0.001		E200.8	11/14/12 20:52 / cp
Selenium	0.189	mg/L		0.001		E200.8	11/14/12 20:52 / cp
Uranium	148	mg/L		0.0003		E200.8	11/14/12 20:52 / cp

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
H - Analysis performed past recommended holding time.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility
Lab ID: C12110375-004
Client Sample ID: 6270

Report Date: 11/16/12
Collection Date: 11/06/12 10:10
DateReceived: 11/08/12
Matrix: Aqueous

Analyses	Result	Units	Qualifier	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Carbonate as CO3	240	mg/L		5		A2320 B	11/09/12 09:28 / jba
Bicarbonate as HCO3	4630	mg/L		5		A2320 B	11/09/12 09:28 / jba
Calcium	48	mg/L		1		E200.7	11/15/12 19:28 / sf
Chloride	1320	mg/L	D	20		E300.0	11/09/12 21:22 / ljl
Magnesium	56	mg/L		1		E200.7	11/15/12 19:28 / sf
Potassium	10	mg/L		1		E200.7	11/15/12 19:28 / sf
Sodium	5340	mg/L	D	4		E200.7	11/15/12 19:28 / sf
Sulfate	6620	mg/L	D	80		E300.0	11/09/12 21:22 / ljl
PHYSICAL PROPERTIES							
Conductivity @ 25 C	17700	umhos/cm		1		A2510 B	11/09/12 09:36 / ab
pH	8.61	s.u.	H	0.01		A4500-H B	11/09/12 09:36 / ab
Solids, Total Dissolved TDS @ 180 C	13700	mg/L		10		A2540 C	11/09/12 13:59 / ab
METALS - DISSOLVED							
Arsenic	0.109	mg/L		0.001		E200.8	11/14/12 20:57 / cp
Molybdenum	27.3	mg/L		0.001		E200.8	11/14/12 20:57 / cp
Selenium	0.191	mg/L		0.001		E200.8	11/14/12 20:57 / cp
Uranium	136	mg/L		0.0003		E200.8	11/14/12 20:57 / cp

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
H - Analysis performed past recommended holding time.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility
Lab ID: C12110375-005
Client Sample ID: 6271

Report Date: 11/16/12
Collection Date: 11/06/12 10:40
DateReceived: 11/08/12
Matrix: Aqueous

Analyses	Result	Units	Qualifier	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Carbonate as CO3	ND	mg/L		5		A2320 B	11/08/12 23:02 / jba
Bicarbonate as HCO3	2940	mg/L		5		A2320 B	11/08/12 23:02 / jba
Calcium	463	mg/L		1		E200.7	11/15/12 19:32 / sf
Chloride	1130	mg/L	D	20		E300.0	11/09/12 21:38 / ljl
Magnesium	159	mg/L		1		E200.7	11/15/12 19:32 / sf
Potassium	13	mg/L		1		E200.7	11/15/12 19:32 / sf
Sodium	4280	mg/L	D	4		E200.7	11/15/12 19:32 / sf
Sulfate	7260	mg/L	D	80		E300.0	11/09/12 21:38 / ljl
PHYSICAL PROPERTIES							
Conductivity @ 25 C	16000	umhos/cm		1		A2510 B	11/09/12 09:39 / ab
pH	7.34	s.u.	H	0.01		A4500-H B	11/09/12 09:39 / ab
Solids, Total Dissolved TDS @ 180 C	13500	mg/L		10		A2540 C	11/09/12 14:00 / ab
METALS - DISSOLVED							
Arsenic	0.004	mg/L		0.001		E200.8	11/14/12 21:01 / cp
Molybdenum	27.0	mg/L		0.001		E200.8	11/14/12 21:01 / cp
Selenium	0.089	mg/L		0.001		E200.8	11/14/12 21:01 / cp
Uranium	77.0	mg/L		0.0003		E200.8	11/14/12 21:01 / cp

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
H - Analysis performed past recommended holding time.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility
Lab ID: C12110375-006
Client Sample ID: 6272

Report Date: 11/16/12
Collection Date: 11/07/12 07:00
DateReceived: 11/08/12
Matrix: Aqueous

Analyses	Result	Units	Qualifier	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Carbonate as CO3	ND	mg/L		5		A2320 B	11/08/12 23:25 / jba
Bicarbonate as HCO3	456	mg/L		5		A2320 B	11/08/12 23:25 / jba
Calcium	655	mg/L		1		E200.7	11/15/12 19:35 / sf
Chloride	1180	mg/L	D	10		E300.0	11/12/12 15:52 / wc
Magnesium	213	mg/L		1		E200.7	11/15/12 19:35 / sf
Potassium	18	mg/L		1		E200.7	11/15/12 19:35 / sf
Sodium	529	mg/L		1		E200.7	11/15/12 19:35 / sf
Sulfate	1580	mg/L	D	20		E300.0	11/09/12 21:53 / ljl
PHYSICAL PROPERTIES							
Conductivity @ 25 C	5850	umhos/cm		1		A2510 B	11/09/12 09:41 / ab
pH	7.05	s.u.	H	0.01		A4500-H B	11/09/12 09:41 / ab
Solids, Total Dissolved TDS @ 180 C	4380	mg/L		10		A2540 C	11/09/12 14:00 / ab
METALS - DISSOLVED							
Arsenic	ND	mg/L		0.001		E200.8	11/14/12 21:06 / cp
Molybdenum	0.036	mg/L		0.001		E200.8	11/14/12 21:06 / cp
Selenium	0.023	mg/L		0.001		E200.8	11/14/12 21:06 / cp
Uranium	8.81	mg/L		0.0003		E200.8	11/14/12 21:06 / cp

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
H - Analysis performed past recommended holding time.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility
Lab ID: C12110375-007
Client Sample ID: 6273

Report Date: 11/16/12
Collection Date: 11/07/12 07:45
DateReceived: 11/08/12
Matrix: Aqueous

Analyses	Result	Units	Qualifier	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Carbonate as CO3	ND	mg/L		5		A2320 B	11/08/12 23:33 / jba
Bicarbonate as HCO3	471	mg/L		5		A2320 B	11/08/12 23:33 / jba
Calcium	654	mg/L		1		E200.7	11/15/12 19:39 / sf
Chloride	1200	mg/L	D	10		E300.0	11/12/12 16:09 / wc
Magnesium	214	mg/L		1		E200.7	11/15/12 19:39 / sf
Potassium	18	mg/L		1		E200.7	11/15/12 19:39 / sf
Sodium	537	mg/L		1		E200.7	11/15/12 19:39 / sf
Sulfate	1540	mg/L	D	20		E300.0	11/09/12 22:09 / ljl
PHYSICAL PROPERTIES							
Conductivity @ 25 C	5930	umhos/cm		1		A2510 B	11/09/12 09:44 / ab
pH	7.13	s.u.	H	0.01		A4500-H B	11/09/12 09:44 / ab
Solids, Total Dissolved TDS @ 180 C	4310	mg/L		10		A2540 C	11/09/12 14:00 / ab
METALS - DISSOLVED							
Arsenic	ND	mg/L		0.001		E200.8	11/14/12 22:48 / cp
Molybdenum	0.012	mg/L		0.001		E200.8	11/14/12 22:48 / cp
Selenium	0.020	mg/L		0.001		E200.8	11/14/12 22:48 / cp
Uranium	8.55	mg/L		0.0003		E200.8	11/14/12 22:48 / cp

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
H - Analysis performed past recommended holding time.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility
Lab ID: C12110375-008
Client Sample ID: 6274

Report Date: 11/16/12
Collection Date: 11/07/12 09:15
DateReceived: 11/08/12
Matrix: Aqueous

Analyses	Result	Units	Qualifier	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Carbonate as CO3	ND	mg/L		5		A2320 B	11/08/12 23:41 / jba
Bicarbonate as HCO3	243	mg/L		5		A2320 B	11/08/12 23:41 / jba
Calcium	115	mg/L		1		E200.7	11/15/12 19:43 / sf
Chloride	77	mg/L	D	2		E300.0	11/09/12 22:24 / ljl
Magnesium	55	mg/L		1		E200.7	11/15/12 19:43 / sf
Potassium	16	mg/L		1		E200.7	11/15/12 19:43 / sf
Sodium	442	mg/L		1		E200.7	11/15/12 19:43 / sf
Sulfate	1290	mg/L	D	8		E300.0	11/09/12 22:24 / ljl
PHYSICAL PROPERTIES							
Conductivity @ 25 C	2840	umhos/cm		1		A2510 B	11/09/12 09:50 / ab
pH	7.85	s.u.	H	0.01		A4500-H B	11/09/12 09:50 / ab
Solids, Total Dissolved TDS @ 180 C	2170	mg/L		10		A2540 C	11/09/12 14:00 / ab
METALS - DISSOLVED							
Arsenic	ND	mg/L		0.001		E200.8	11/14/12 22:52 / cp
Molybdenum	0.007	mg/L		0.001		E200.8	11/14/12 22:52 / cp
Selenium	ND	mg/L		0.001		E200.8	11/14/12 22:52 / cp
Uranium	0.0043	mg/L		0.0003		E200.8	11/14/12 22:52 / cp

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
H - Analysis performed past recommended holding time.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility
Lab ID: C12110375-009
Client Sample ID: 6275

Report Date: 11/16/12
Collection Date: 11/07/12 09:45
DateReceived: 11/08/12
Matrix: Aqueous

Analyses	Result	Units	Qualifier	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Carbonate as CO3	ND	mg/L		5		A2320 B	11/08/12 23:50 / jba
Bicarbonate as HCO3	474	mg/L		5		A2320 B	11/08/12 23:50 / jba
Calcium	88	mg/L		1		E200.7	11/15/12 19:47 / sf
Chloride	113	mg/L		1		E300.0	11/09/12 22:39 / ljl
Magnesium	21	mg/L		1		E200.7	11/15/12 19:47 / sf
Potassium	5	mg/L		1		E200.7	11/15/12 19:47 / sf
Sodium	250	mg/L		1		E200.7	11/15/12 19:47 / sf
Sulfate	247	mg/L	D	4		E300.0	11/09/12 22:39 / ljl
PHYSICAL PROPERTIES							
Conductivity @ 25 C	1490	umhos/cm		1		A2510 B	11/09/12 09:53 / ab
pH	7.72	s.u.	H	0.01		A4500-H B	11/09/12 09:53 / ab
Solids, Total Dissolved TDS @ 180 C	968	mg/L		10		A2540 C	11/09/12 14:00 / ab
METALS - DISSOLVED							
Arsenic	0.002	mg/L		0.001		E200.8	11/14/12 22:57 / cp
Molybdenum	0.119	mg/L		0.001		E200.8	11/14/12 22:57 / cp
Selenium	0.004	mg/L		0.001		E200.8	11/14/12 22:57 / cp
Uranium	0.210	mg/L		0.0003		E200.8	11/14/12 22:57 / cp

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
H - Analysis performed past recommended holding time.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility
Lab ID: C12110375-010
Client Sample ID: 6276

Report Date: 11/16/12
Collection Date: 11/07/12 11:30
DateReceived: 11/08/12
Matrix: Aqueous

Analyses	Result	Units	Qualifier	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Carbonate as CO3	ND	mg/L		5		A2320 B	11/08/12 23:58 / jba
Bicarbonate as HCO3	467	mg/L		5		A2320 B	11/08/12 23:58 / jba
Calcium	676	mg/L		1		E200.7	11/15/12 19:51 / sf
Chloride	1210	mg/L	D	10		E300.0	11/12/12 16:27 / wc
Magnesium	222	mg/L		1		E200.7	11/15/12 19:51 / sf
Potassium	18	mg/L		1		E200.7	11/15/12 19:51 / sf
Sodium	515	mg/L		1		E200.7	11/15/12 19:51 / sf
Sulfate	1500	mg/L	D	20		E300.0	11/09/12 23:26 / ljl
PHYSICAL PROPERTIES							
Conductivity @ 25 C	5970	umhos/cm		1		A2510 B	11/09/12 09:56 / ab
pH	6.99	s.u.	H	0.01		A4500-H B	11/09/12 09:56 / ab
Solids, Total Dissolved TDS @ 180 C	4440	mg/L		10		A2540 C	11/09/12 14:01 / ab
METALS - DISSOLVED							
Arsenic	ND	mg/L		0.001		E200.8	11/14/12 23:01 / cp
Molybdenum	0.013	mg/L		0.001		E200.8	11/14/12 23:01 / cp
Selenium	0.025	mg/L		0.001		E200.8	11/14/12 23:01 / cp
Uranium	9.66	mg/L		0.0003		E200.8	11/14/12 23:01 / cp

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
H - Analysis performed past recommended holding time.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility
Lab ID: C12110375-011
Client Sample ID: 6285

Report Date: 11/16/12
Collection Date: 11/07/12 08:00
DateReceived: 11/08/12
Matrix: Aqueous

Analyses	Result	Units	Qualifier	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Carbonate as CO3	ND	mg/L		5		A2320 B	11/09/12 00:06 / jba
Bicarbonate as HCO3	260	mg/L		5		A2320 B	11/09/12 00:06 / jba
Calcium	146	mg/L		1		E200.7	11/15/12 20:14 / sf
Chloride	126	mg/L		1		E300.0	11/10/12 00:12 / ljl
Magnesium	38	mg/L		1		E200.7	11/15/12 20:14 / sf
Potassium	5	mg/L		1		E200.7	11/15/12 20:14 / sf
Sodium	91	mg/L		1		E200.7	11/15/12 20:14 / sf
Sulfate	204	mg/L	D	4		E300.0	11/10/12 00:12 / ljl
PHYSICAL PROPERTIES							
Conductivity @ 25 C	1340	umhos/cm		1		A2510 B	11/09/12 09:58 / ab
pH	7.47	s.u.	H	0.01		A4500-H B	11/09/12 09:58 / ab
Solids, Total Dissolved TDS @ 180 C	856	mg/L		10		A2540 C	11/09/12 14:01 / ab
METALS - DISSOLVED							
Arsenic	0.008	mg/L		0.001		E200.8	11/14/12 23:06 / cp
Molybdenum	0.006	mg/L		0.001		E200.8	11/14/12 23:06 / cp
Selenium	0.012	mg/L		0.001		E200.8	11/14/12 23:06 / cp
Uranium	0.0248	mg/L		0.0003		E200.8	11/14/12 23:06 / cp

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
H - Analysis performed past recommended holding time.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility
Lab ID: C12110375-012
Client Sample ID: 6286

Report Date: 11/16/12
Collection Date: 11/07/12 08:30
DateReceived: 11/08/12
Matrix: Aqueous

Analyses	Result	Units	Qualifier	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Carbonate as CO3	ND	mg/L		5		A2320 B	11/09/12 00:14 / jba
Bicarbonate as HCO3	240	mg/L		5		A2320 B	11/09/12 00:14 / jba
Calcium	114	mg/L		1		E200.7	11/15/12 20:17 / sf
Chloride	83	mg/L		1		E300.0	11/10/12 00:27 / ljl
Magnesium	31	mg/L		1		E200.7	11/15/12 20:17 / sf
Potassium	4	mg/L		1		E200.7	11/15/12 20:17 / sf
Sodium	67	mg/L		1		E200.7	11/15/12 20:17 / sf
Sulfate	183	mg/L	D	4		E300.0	11/10/12 00:27 / ljl
PHYSICAL PROPERTIES							
Conductivity @ 25 C	1050	umhos/cm		1		A2510 B	11/09/12 10:01 / ab
pH	7.47	s.u.	H	0.01		A4500-H B	11/09/12 10:01 / ab
Solids, Total Dissolved TDS @ 180 C	686	mg/L		10		A2540 C	11/12/12 15:52 / ab
METALS - DISSOLVED							
Arsenic	0.016	mg/L		0.001		E200.8	11/14/12 23:10 / cp
Molybdenum	0.004	mg/L		0.001		E200.8	11/14/12 23:10 / cp
Selenium	0.011	mg/L		0.001		E200.8	11/14/12 23:10 / cp
Uranium	0.0155	mg/L		0.0003		E200.8	11/14/12 23:10 / cp

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
H - Analysis performed past recommended holding time.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility
Lab ID: C12110375-013
Client Sample ID: 6287

Report Date: 11/16/12
Collection Date: 11/07/12 08:55
DateReceived: 11/08/12
Matrix: Aqueous

Analyses	Result	Units	Qualifier	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Carbonate as CO3	ND	mg/L		5		A2320 B	11/09/12 00:22 / jba
Bicarbonate as HCO3	357	mg/L		5		A2320 B	11/09/12 00:22 / jba
Calcium	80	mg/L		1		E200.7	11/15/12 20:21 / sf
Chloride	11	mg/L		1		E300.0	11/10/12 00:43 / ljl
Magnesium	58	mg/L		1		E200.7	11/15/12 20:21 / sf
Potassium	3	mg/L		1		E200.7	11/15/12 20:21 / sf
Sodium	11	mg/L		1		E200.7	11/15/12 20:21 / sf
Sulfate	150	mg/L	D	2		E300.0	11/10/12 00:43 / ljl
PHYSICAL PROPERTIES							
Conductivity @ 25 C	783	umhos/cm		1		A2510 B	11/09/12 10:04 / ab
pH	7.51	s.u.	H	0.01		A4500-H B	11/09/12 10:04 / ab
Solids, Total Dissolved TDS @ 180 C	504	mg/L		10		A2540 C	11/12/12 15:52 / ab
METALS - DISSOLVED							
Arsenic	ND	mg/L		0.001		E200.8	11/14/12 23:15 / cp
Molybdenum	ND	mg/L		0.001		E200.8	11/14/12 23:15 / cp
Selenium	0.006	mg/L		0.001		E200.8	11/14/12 23:15 / cp
Uranium	0.0029	mg/L		0.0003		E200.8	11/14/12 23:15 / cp

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
H - Analysis performed past recommended holding time.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility
Lab ID: C12110375-014
Client Sample ID: 6288

Report Date: 11/16/12
Collection Date: 11/07/12 09:20
DateReceived: 11/08/12
Matrix: Aqueous

Analyses	Result	Units	Qualifier	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Carbonate as CO3	ND	mg/L		5		A2320 B	11/09/12 00:52 / jba
Bicarbonate as HCO3	356	mg/L		5		A2320 B	11/09/12 00:52 / jba
Calcium	80	mg/L		1		E200.7	11/15/12 20:25 / sf
Chloride	11	mg/L		1		E300.0	11/10/12 00:58 / ljl
Magnesium	58	mg/L		1		E200.7	11/15/12 20:25 / sf
Potassium	3	mg/L		1		E200.7	11/15/12 20:25 / sf
Sodium	11	mg/L		1		E200.7	11/15/12 20:25 / sf
Sulfate	150	mg/L	D	2		E300.0	11/10/12 00:58 / ljl
PHYSICAL PROPERTIES							
Conductivity @ 25 C	787	umhos/cm		1		A2510 B	11/09/12 10:06 / ab
pH	7.52	s.u.	H	0.01		A4500-H B	11/09/12 10:06 / ab
Solids, Total Dissolved TDS @ 180 C	505	mg/L		10		A2540 C	11/12/12 15:52 / ab
METALS - DISSOLVED							
Arsenic	ND	mg/L		0.001		E200.8	11/14/12 23:19 / cp
Molybdenum	ND	mg/L		0.001		E200.8	11/14/12 23:19 / cp
Selenium	0.006	mg/L		0.001		E200.8	11/14/12 23:19 / cp
Uranium	0.0058	mg/L		0.0003		E200.8	11/14/12 23:19 / cp

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
H - Analysis performed past recommended holding time.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility
Lab ID: C12110375-015
Client Sample ID: 6289

Report Date: 11/16/12
Collection Date: 11/07/12 10:00
DateReceived: 11/08/12
Matrix: Aqueous

Analyses	Result	Units	Qualifier	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Carbonate as CO3	ND	mg/L		5		A2320 B	11/09/12 01:08 / jba
Bicarbonate as HCO3	356	mg/L		5		A2320 B	11/09/12 01:08 / jba
Calcium	78	mg/L		1		E200.7	11/15/12 20:28 / sf
Chloride	11	mg/L		1		E300.0	11/10/12 01:14 / ljl
Magnesium	58	mg/L		1		E200.7	11/15/12 20:28 / sf
Potassium	3	mg/L		1		E200.7	11/15/12 20:28 / sf
Sodium	11	mg/L		1		E200.7	11/15/12 20:28 / sf
Sulfate	149	mg/L	D	2		E300.0	11/10/12 01:14 / ljl
PHYSICAL PROPERTIES							
Conductivity @ 25 C	780	umhos/cm		1		A2510 B	11/09/12 10:09 / ab
pH	7.54	s.u.	H	0.01		A4500-H B	11/09/12 10:09 / ab
Solids, Total Dissolved TDS @ 180 C	505	mg/L		10		A2540 C	11/12/12 15:52 / ab
METALS - DISSOLVED							
Arsenic	ND	mg/L		0.001		E200.8	11/14/12 23:23 / cp
Molybdenum	ND	mg/L		0.001		E200.8	11/14/12 23:23 / cp
Selenium	0.007	mg/L		0.001		E200.8	11/14/12 23:23 / cp
Uranium	0.0038	mg/L		0.0003		E200.8	11/14/12 23:23 / cp

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
H - Analysis performed past recommended holding time.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility
Lab ID: C12110375-016
Client Sample ID: 6255

Report Date: 11/16/12
Collection Date: 11/06/12 07:45
DateReceived: 11/08/12
Matrix: Aqueous

Analyses	Result	Units	Qualifier	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Carbonate as CO3	ND	mg/L		5		A2320 B	11/09/12 01:25 / jba
Bicarbonate as HCO3	344	mg/L		5		A2320 B	11/09/12 01:25 / jba
Calcium	14	mg/L		1		E200.7	11/15/12 20:32 / sf
Chloride	39	mg/L		1		E300.0	11/10/12 01:29 / ljl
Magnesium	5	mg/L		1		E200.7	11/15/12 20:32 / sf
Potassium	4	mg/L		1		E200.7	11/15/12 20:32 / sf
Sodium	159	mg/L		1		E200.7	11/15/12 20:32 / sf
Sulfate	64	mg/L	D	2		E300.0	11/10/12 01:29 / ljl
PHYSICAL PROPERTIES							
Conductivity @ 25 C	749	umhos/cm		1		A2510 B	11/09/12 10:12 / ab
pH	8.10	s.u.	H	0.01		A4500-H B	11/09/12 10:12 / ab
Solids, Total Dissolved TDS @ 180 C	459	mg/L		10		A2540 C	11/12/12 15:52 / ab
METALS - DISSOLVED							
Arsenic	0.005	mg/L		0.001		E200.8	11/14/12 23:46 / cp
Molybdenum	0.017	mg/L		0.001		E200.8	11/14/12 23:46 / cp
Selenium	ND	mg/L		0.001		E200.8	11/14/12 23:46 / cp
Uranium	0.0814	mg/L		0.0003		E200.8	11/14/12 23:46 / cp

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
H - Analysis performed past recommended holding time.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility
Lab ID: C12110375-017
Client Sample ID: 6256

Report Date: 11/16/12
Collection Date: 11/06/12 08:45
DateReceived: 11/08/12
Matrix: Aqueous

Analyses	Result	Units	Qualifier	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Carbonate as CO3	ND	mg/L		5		A2320 B	11/09/12 01:34 / jba
Bicarbonate as HCO3	355	mg/L		5		A2320 B	11/09/12 01:34 / jba
Calcium	13	mg/L		1		E200.7	11/15/12 20:36 / sf
Chloride	36	mg/L		1		E300.0	11/10/12 01:44 / ljl
Magnesium	5	mg/L		1		E200.7	11/15/12 20:36 / sf
Potassium	4	mg/L		1		E200.7	11/15/12 20:36 / sf
Sodium	159	mg/L		1		E200.7	11/15/12 20:36 / sf
Sulfate	60	mg/L	D	2		E300.0	11/10/12 01:44 / ljl
PHYSICAL PROPERTIES							
Conductivity @ 25 C	740	umhos/cm		1		A2510 B	11/09/12 10:14 / ab
pH	8.13	s.u.	H	0.01		A4500-H B	11/09/12 10:14 / ab
Solids, Total Dissolved TDS @ 180 C	460	mg/L		10		A2540 C	11/12/12 15:53 / ab
METALS - DISSOLVED							
Arsenic	0.004	mg/L		0.001		E200.8	11/15/12 00:04 / cp
Molybdenum	0.010	mg/L		0.001		E200.8	11/15/12 00:04 / cp
Selenium	ND	mg/L		0.001		E200.8	11/15/12 00:04 / cp
Uranium	0.0416	mg/L		0.0003		E200.8	11/15/12 00:04 / cp

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
H - Analysis performed past recommended holding time.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility
Lab ID: C12110375-018
Client Sample ID: 6257

Report Date: 11/16/12
Collection Date: 11/06/12 08:55
DateReceived: 11/08/12
Matrix: Aqueous

Analyses	Result	Units	Qualifier	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Carbonate as CO3	ND	mg/L		5		A2320 B	11/09/12 01:42 / jba
Bicarbonate as HCO3	344	mg/L		5		A2320 B	11/09/12 01:42 / jba
Calcium	13	mg/L		1		E200.7	11/15/12 20:39 / sf
Chloride	36	mg/L		1		E300.0	11/10/12 02:00 / ljl
Magnesium	5	mg/L		1		E200.7	11/15/12 20:39 / sf
Potassium	4	mg/L		1		E200.7	11/15/12 20:39 / sf
Sodium	159	mg/L		1		E200.7	11/15/12 20:39 / sf
Sulfate	60	mg/L	D	2		E300.0	11/10/12 02:00 / ljl
PHYSICAL PROPERTIES							
Conductivity @ 25 C	739	umhos/cm		1		A2510 B	11/09/12 10:29 / ab
pH	8.11	s.u.	H	0.01		A4500-H B	11/09/12 10:29 / ab
Solids, Total Dissolved TDS @ 180 C	455	mg/L		10		A2540 C	11/12/12 15:53 / ab
METALS - DISSOLVED							
Arsenic	0.004	mg/L		0.001		E200.8	11/15/12 00:08 / cp
Molybdenum	0.011	mg/L		0.001		E200.8	11/15/12 00:08 / cp
Selenium	ND	mg/L		0.001		E200.8	11/15/12 00:08 / cp
Uranium	0.0416	mg/L		0.0003		E200.8	11/15/12 00:08 / cp

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
H - Analysis performed past recommended holding time.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility
Lab ID: C12110375-019
Client Sample ID: 6258

Report Date: 11/16/12
Collection Date: 11/06/12 10:15
DateReceived: 11/08/12
Matrix: Aqueous

Analyses	Result	Units	Qualifier	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Carbonate as CO3	56	mg/L		5		A2320 B	11/09/12 01:53 / jba
Bicarbonate as HCO3	1080	mg/L		5		A2320 B	11/09/12 01:53 / jba
Calcium	15	mg/L		1		E200.7	11/15/12 20:43 / sf
Chloride	270	mg/L	D	4		E300.0	11/10/12 02:15 / ljl
Magnesium	9	mg/L		1		E200.7	11/15/12 20:43 / sf
Potassium	4	mg/L		1		E200.7	11/15/12 20:43 / sf
Sodium	599	mg/L		1		E200.7	11/15/12 20:43 / sf
Sulfate	1230	mg/L	D	20		E300.0	11/10/12 02:15 / ljl
PHYSICAL PROPERTIES							
Conductivity @ 25 C	4470	umhos/cm		1		A2510 B	11/09/12 10:32 / ab
pH	8.69	s.u.	H	0.01		A4500-H B	11/09/12 10:32 / ab
Solids, Total Dissolved TDS @ 180 C	3150	mg/L		10		A2540 C	11/12/12 15:53 / ab
METALS - DISSOLVED							
Arsenic	0.028	mg/L		0.001		E200.8	11/15/12 00:13 / cp
Molybdenum	2.25	mg/L		0.001		E200.8	11/15/12 00:13 / cp
Selenium	0.015	mg/L		0.001		E200.8	11/15/12 00:13 / cp
Uranium	11.4	mg/L		0.0003		E200.8	11/15/12 00:13 / cp

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
H - Analysis performed past recommended holding time.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility
Lab ID: C12110375-020
Client Sample ID: 6259

Report Date: 11/16/12
Collection Date: 11/06/12 11:15
DateReceived: 11/08/12
Matrix: Aqueous

Analyses	Result	Units	Qualifier	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Carbonate as CO3	ND	mg/L		5		A2320 B	11/09/12 02:08 / jba
Bicarbonate as HCO3	2900	mg/L		5		A2320 B	11/09/12 02:08 / jba
Calcium	445	mg/L		1		E200.7	11/15/12 21:31 / sf
Chloride	1060	mg/L	D	20		E300.0	11/10/12 03:02 / ljl
Magnesium	156	mg/L		1		E200.7	11/15/12 21:31 / sf
Potassium	12	mg/L		1		E200.7	11/15/12 21:31 / sf
Sodium	4120	mg/L	D	4		E200.7	11/15/12 21:31 / sf
Sulfate	6680	mg/L	D	80		E300.0	11/10/12 03:02 / ljl
PHYSICAL PROPERTIES							
Conductivity @ 25 C	16100	umhos/cm		1		A2510 B	11/09/12 10:34 / ab
pH	7.31	s.u.	H	0.01		A4500-H B	11/09/12 10:34 / ab
Solids, Total Dissolved TDS @ 180 C	14100	mg/L		10		A2540 C	11/12/12 15:54 / ab
METALS - DISSOLVED							
Arsenic	0.004	mg/L		0.001		E200.8	11/15/12 00:17 / cp
Molybdenum	27.5	mg/L		0.001		E200.8	11/15/12 00:17 / cp
Selenium	0.080	mg/L		0.001		E200.8	11/15/12 00:17 / cp
Uranium	76.3	mg/L		0.0003		E200.8	11/15/12 00:17 / cp

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
H - Analysis performed past recommended holding time.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility
Lab ID: C12110375-021
Client Sample ID: 6260

Report Date: 11/16/12
Collection Date: 11/06/12 11:40
DateReceived: 11/08/12
Matrix: Aqueous

Analyses	Result	Units	Qualifier	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Carbonate as CO3	ND	mg/L		5		A2320 B	11/09/12 02:23 / jba
Bicarbonate as HCO3	2870	mg/L		5		A2320 B	11/09/12 02:23 / jba
Calcium	441	mg/L		1		E200.7	11/15/12 21:34 / sf
Chloride	1050	mg/L	D	20		E300.0	11/10/12 03:48 / ljl
Magnesium	155	mg/L		1		E200.7	11/15/12 21:34 / sf
Potassium	12	mg/L		1		E200.7	11/15/12 21:34 / sf
Sodium	4120	mg/L	D	4		E200.7	11/15/12 21:34 / sf
Sulfate	6710	mg/L	D	80		E300.0	11/10/12 03:48 / ljl
PHYSICAL PROPERTIES							
Conductivity @ 25 C	16100	umhos/cm		1		A2510 B	11/09/12 10:37 / ab
pH	7.30	s.u.	H	0.01		A4500-H B	11/09/12 10:37 / ab
Solids, Total Dissolved TDS @ 180 C	13700	mg/L		10		A2540 C	11/12/12 15:54 / ab
METALS - DISSOLVED							
Arsenic	0.004	mg/L		0.001		E200.8	11/15/12 00:22 / cp
Molybdenum	28.0	mg/L		0.001		E200.8	11/15/12 00:22 / cp
Selenium	0.082	mg/L		0.001		E200.8	11/15/12 00:22 / cp
Uranium	78.0	mg/L		0.0003		E200.8	11/15/12 00:22 / cp

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
H - Analysis performed past recommended holding time.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility
Lab ID: C12110375-022
Client Sample ID: 6281

Report Date: 11/16/12
Collection Date: 11/06/12 11:50
DateReceived: 11/08/12
Matrix: Aqueous

Analyses	Result	Units	Qualifier	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Carbonate as CO3	ND	mg/L		5		A2320 B	11/09/12 02:37 / jba
Bicarbonate as HCO3	2870	mg/L		5		A2320 B	11/09/12 02:37 / jba
Calcium	442	mg/L		1		E200.7	11/15/12 21:38 / sf
Chloride	1060	mg/L	D	20		E300.0	11/10/12 04:03 / ljl
Magnesium	156	mg/L		1		E200.7	11/15/12 21:38 / sf
Potassium	12	mg/L		1		E200.7	11/15/12 21:38 / sf
Sodium	4110	mg/L	D	4		E200.7	11/15/12 21:38 / sf
Sulfate	6790	mg/L	D	80		E300.0	11/10/12 04:03 / ljl
PHYSICAL PROPERTIES							
Conductivity @ 25 C	16100	umhos/cm		1		A2510 B	11/09/12 10:40 / ab
pH	7.31	s.u.	H	0.01		A4500-H B	11/09/12 10:40 / ab
Solids, Total Dissolved TDS @ 180 C	13100	mg/L		10		A2540 C	11/12/12 15:54 / ab
METALS - DISSOLVED							
Arsenic	0.003	mg/L		0.001		E200.8	11/15/12 00:44 / cp
Molybdenum	28.1	mg/L		0.001		E200.8	11/15/12 00:44 / cp
Selenium	0.079	mg/L		0.001		E200.8	11/15/12 00:44 / cp
Uranium	76.3	mg/L		0.0003		E200.8	11/15/12 00:44 / cp

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
H - Analysis performed past recommended holding time.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility
Lab ID: C12110375-023
Client Sample ID: 6282

Report Date: 11/16/12
Collection Date: 11/06/12 12:15
DateReceived: 11/08/12
Matrix: Aqueous

Analyses	Result	Units	Qualifier	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Carbonate as CO3	ND	mg/L		5		A2320 B	11/09/12 09:31 / jba
Bicarbonate as HCO3	ND	mg/L		5		A2320 B	11/09/12 09:31 / jba
Calcium	ND	mg/L		1		E200.7	11/15/12 21:42 / sf
Chloride	ND	mg/L		1		E300.0	11/10/12 04:19 / ljl
Magnesium	ND	mg/L		1		E200.7	11/15/12 21:42 / sf
Potassium	ND	mg/L		1		E200.7	11/15/12 21:42 / sf
Sodium	ND	mg/L		1		E200.7	11/15/12 21:42 / sf
Sulfate	ND	mg/L		1		E300.0	11/10/12 04:19 / ljl
PHYSICAL PROPERTIES							
Conductivity @ 25 C	13	umhos/cm	B	1		A2510 B	11/09/12 10:42 / ab
pH	5.85	s.u.	H	0.01		A4500-H B	11/09/12 10:42 / ab
Solids, Total Dissolved TDS @ 180 C	67	mg/L		10		A2540 C	11/12/12 15:55 / ab
METALS - DISSOLVED							
Arsenic	ND	mg/L		0.001		E200.8	11/15/12 00:49 / cp
Molybdenum	0.002	mg/L		0.001		E200.8	11/15/12 00:49 / cp
Selenium	ND	mg/L		0.001		E200.8	11/15/12 00:49 / cp
Uranium	0.0022	mg/L		0.0003		E200.8	11/15/12 00:49 / cp

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
B - The analyte was detected in the method blank.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
H - Analysis performed past recommended holding time.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility
Lab ID: C12110375-024
Client Sample ID: 6283

Report Date: 11/16/12
Collection Date: 11/07/12 07:00
DateReceived: 11/08/12
Matrix: Aqueous

Analyses	Result	Units	Qualifier	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Carbonate as CO3	ND	mg/L		5		A2320 B	11/09/12 02:51 / jba
Bicarbonate as HCO3	244	mg/L		5		A2320 B	11/09/12 02:51 / jba
Calcium	122	mg/L		1		E200.7	11/15/12 21:45 / sf
Chloride	98	mg/L		1		E300.0	11/10/12 04:34 / ljl
Magnesium	32	mg/L		1		E200.7	11/15/12 21:45 / sf
Potassium	4	mg/L		1		E200.7	11/15/12 21:45 / sf
Sodium	74	mg/L		1		E200.7	11/15/12 21:45 / sf
Sulfate	191	mg/L	D	4		E300.0	11/10/12 04:34 / ljl
PHYSICAL PROPERTIES							
Conductivity @ 25 C	1140	umhos/cm		1		A2510 B	11/09/12 10:45 / ab
pH	7.48	s.u.	H	0.01		A4500-H B	11/09/12 10:45 / ab
Solids, Total Dissolved TDS @ 180 C	748	mg/L		10		A2540 C	11/12/12 15:55 / ab
METALS - DISSOLVED							
Arsenic	0.011	mg/L		0.001		E200.8	11/15/12 00:53 / cp
Molybdenum	0.006	mg/L		0.001		E200.8	11/15/12 00:53 / cp
Selenium	0.011	mg/L		0.001		E200.8	11/15/12 00:53 / cp
Uranium	0.0169	mg/L		0.0003		E200.8	11/15/12 00:53 / cp

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
H - Analysis performed past recommended holding time.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility
Lab ID: C12110375-025
Client Sample ID: 6284

Report Date: 11/16/12
Collection Date: 11/07/12 07:55
DateReceived: 11/08/12
Matrix: Aqueous

Analyses	Result	Units	Qualifier	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Carbonate as CO3	ND	mg/L		5		A2320 B	11/09/12 03:07 / jba
Bicarbonate as HCO3	249	mg/L		5		A2320 B	11/09/12 03:07 / jba
Calcium	138	mg/L		1		E200.7	11/15/12 21:49 / sf
Chloride	124	mg/L		1		E300.0	11/10/12 04:49 / ljl
Magnesium	36	mg/L		1		E200.7	11/15/12 21:49 / sf
Potassium	4	mg/L		1		E200.7	11/15/12 21:49 / sf
Sodium	84	mg/L		1		E200.7	11/15/12 21:49 / sf
Sulfate	203	mg/L	D	4		E300.0	11/10/12 04:49 / ljl
PHYSICAL PROPERTIES							
Conductivity @ 25 C	1330	umhos/cm		1		A2510 B	11/09/12 10:48 / ab
pH	7.43	s.u.	H	0.01		A4500-H B	11/09/12 10:48 / ab
Solids, Total Dissolved TDS @ 180 C	862	mg/L		10		A2540 C	11/12/12 15:55 / ab
METALS - DISSOLVED							
Arsenic	0.008	mg/L		0.001		E200.8	11/15/12 00:58 / cp
Molybdenum	0.007	mg/L		0.001		E200.8	11/15/12 00:58 / cp
Selenium	0.011	mg/L		0.001		E200.8	11/15/12 00:58 / cp
Uranium	0.0231	mg/L		0.0003		E200.8	11/15/12 00:58 / cp

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
H - Analysis performed past recommended holding time.

QA/QC Summary Report

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC **Report Date:** 11/16/12

Project: Lisbon, UT Facility **Work Order:** C12110375

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: A2320 B									Batch: R166953	
Sample ID: MBLK	3	Method Blank				Run: MANTECH_121108A			11/08/12 16:29	
Alkalinity, Total as CaCO3		2.94	mg/L	5.0						
Carbonate as CO3		ND	mg/L	5.0						
Bicarbonate as HCO3		3.58	mg/L	5.0						
Sample ID: LCS_121003		Laboratory Control Sample				Run: MANTECH_121108A			11/08/12 16:45	
Alkalinity, Total as CaCO3		205	mg/L	5.0	101	90	110			
Sample ID: C12110298-001ADUP	3	Sample Duplicate				Run: MANTECH_121108A			11/08/12 17:01	
Alkalinity, Total as CaCO3		160	mg/L	5.0				0.1	10	
Carbonate as CO3		ND	mg/L	5.0					10	
Bicarbonate as HCO3		195	mg/L	5.0				0.1	10	
Sample ID: C12110358-003AMS		Sample Matrix Spike				Run: MANTECH_121108A			11/08/12 20:44	
Alkalinity, Total as CaCO3		428	mg/L	5.0	102	80	120			
Sample ID: C12110375-005ADUP	3	Sample Duplicate				Run: MANTECH_121108A			11/08/12 23:17	
Alkalinity, Total as CaCO3		2400	mg/L	5.0				0.3	10	
Carbonate as CO3		ND	mg/L	5.0					10	
Bicarbonate as HCO3		2930	mg/L	5.0				0.3	10	
Sample ID: C12110375-014ADUP	3	Sample Duplicate				Run: MANTECH_121108A			11/09/12 01:01	
Alkalinity, Total as CaCO3		302	mg/L	5.0				3.4	10	
Carbonate as CO3		ND	mg/L	5.0					10	
Bicarbonate as HCO3		368	mg/L	5.0				3.4	10	
Method: A2320 B									Batch: 121109_1_ALK-W	
Sample ID: MBLK1_121109_	3	Method Blank				Run: TTR-ALK_121109A			11/09/12 09:11	
Alkalinity, Total as CaCO3		1.25	mg/L	5.0						
Carbonate as CO3		ND	mg/L	5.0						
Bicarbonate as HCO3		1.52	mg/L	5.0						
Sample ID: LCS_121003_121109_		Laboratory Control Sample				Run: TTR-ALK_121109A			11/09/12 09:16	
Alkalinity, Total as CaCO3		1000	mg/L	5.0	100	90	110			
Sample ID: C12110375-001ADUP	3	Sample Duplicate				Run: TTR-ALK_121109A			11/09/12 09:21	
Alkalinity, Total as CaCO3		4120	mg/L	5.0				0.6	10	
Carbonate as CO3		300	mg/L	5.0				18	10	R
Bicarbonate as HCO3		4420	mg/L	5.0				3.5	10	

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

R - RPD exceeds advisory limit.

QA/QC Summary Report

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC **Report Date:** 11/16/12

Project: Lisbon, UT Facility **Work Order:** C12110375

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: A2510 B										Batch: R166968
Sample ID: SC 2ND 1413		Laboratory Control Sample				Run: PHSC_101-C_121109A				11/09/12 09:12
Conductivity @ 25 C		1410	umhos/cm	1.0	99	90	110			
Sample ID: MBLK		Method Blank				Run: PHSC_101-C_121109A				11/09/12 09:17
Conductivity @ 25 C		2	umhos/cm	0.2						
Sample ID: C12110375-007ADUP		Sample Duplicate				Run: PHSC_101-C_121109A				11/09/12 09:47
Conductivity @ 25 C		6050	umhos/cm	1.0				2.0	10	
Sample ID: C12110375-017ADUP		Sample Duplicate				Run: PHSC_101-C_121109A				11/09/12 10:17
Conductivity @ 25 C		749	umhos/cm	1.0				1.2	10	
Sample ID: C12110375-025ADUP		Sample Duplicate				Run: PHSC_101-C_121109A				11/09/12 10:50
Conductivity @ 25 C		1350	umhos/cm	1.0				0.8	10	

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

QA/QC Summary Report

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Report Date: 11/16/12
Project: Lisbon, UT Facility
Work Order: C12110375

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: A2540 C									Batch: TDS121109A	
Sample ID: MB-1_121109A	Method Blank					Run: BAL-1_121109C			11/09/12 13:49	
Solids, Total Dissolved TDS @ 180 C		5	mg/L	4						
Sample ID: LCS-2_121109A	Laboratory Control Sample					Run: BAL-1_121109C			11/09/12 13:49	
Solids, Total Dissolved TDS @ 180 C		1110	mg/L	10	99	90	110			
Sample ID: C12110359-002A MS	Sample Matrix Spike					Run: BAL-1_121109C			11/09/12 13:57	
Solids, Total Dissolved TDS @ 180 C		82700	mg/L	10	99	90	110			
Sample ID: C12110375-002A DUP	Sample Duplicate					Run: BAL-1_121109C			11/09/12 13:59	
Solids, Total Dissolved TDS @ 180 C		15500	mg/L	10				3.1	5	
Method: A2540 C									Batch: TDS121112A	
Sample ID: MB-1_121112A	Method Blank					Run: BAL-1_121112A			11/12/12 15:50	
Solids, Total Dissolved TDS @ 180 C		ND	mg/L	4						
Sample ID: LCS-2_121112A	Laboratory Control Sample					Run: BAL-1_121112A			11/12/12 15:50	
Solids, Total Dissolved TDS @ 180 C		1070	mg/L	10	97	90	110			
Sample ID: C12110348-002A MS	Sample Matrix Spike					Run: BAL-1_121112A			11/12/12 15:51	
Solids, Total Dissolved TDS @ 180 C		1310	mg/L	10	95	90	110			
Sample ID: C12110375-019A DUP	Sample Duplicate					Run: BAL-1_121112A			11/12/12 15:54	
Solids, Total Dissolved TDS @ 180 C		3180	mg/L	10				0.9	5	
Sample ID: C12110433-004A MS	Sample Matrix Spike					Run: BAL-1_121112A			11/12/12 16:01	
Solids, Total Dissolved TDS @ 180 C		5170	mg/L	10	96	90	110			
Sample ID: C12110433-012A DUP	Sample Duplicate					Run: BAL-1_121112A			11/12/12 16:03	
Solids, Total Dissolved TDS @ 180 C		1520	mg/L	10				1.7	5	

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

QA/QC Summary Report

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC **Report Date:** 11/16/12

Project: Lisbon, UT Facility **Work Order:** C12110375

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: A4500-H B									Analytical Run: PHSC_101-C_121109A	
Sample ID: pH 6.86	Initial Calibration Verification Standard								11/09/12 08:57	
pH		6.84	s.u.	0.010	100	98	102			
Method: A4500-H B									Batch: R166968	
Sample ID: C12110375-007ADUP	Sample Duplicate					Run: PHSC_101-C_121109A			11/09/12 09:47	
pH		7.14	s.u.	0.010				0.1	3	
Sample ID: C12110375-017ADUP	Sample Duplicate					Run: PHSC_101-C_121109A			11/09/12 10:17	
pH		8.13	s.u.	0.010				0.0	3	
Sample ID: C12110375-025ADUP	Sample Duplicate					Run: PHSC_101-C_121109A			11/09/12 10:50	
pH		7.43	s.u.	0.010				0.0	3	

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

QA/QC Summary Report

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC **Report Date:** 11/16/12

Project: Lisbon, UT Facility **Work Order:** C12110375

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E200.7									Analytical Run: ICP4-C_121115A	
Sample ID: ICV	4	Initial Calibration Verification Standard							11/15/12 15:07	
Calcium		49.1	mg/L	0.50	98	95	105			
Magnesium		48.9	mg/L	0.50	98	95	105			
Potassium		47.8	mg/L	0.50	96	95	105			
Sodium		49.7	mg/L	0.50	99	95	105			
Sample ID: ICSA	4	Interference Check Sample A							11/15/12 15:21	
Calcium		428	mg/L	0.50	86	80	120			
Magnesium		472	mg/L	0.50	94	80	120			
Potassium		-0.0231	mg/L	0.50						
Sodium		-0.377	mg/L	0.50						
Sample ID: ICSAB	4	Interference Check Sample AB							11/15/12 15:25	
Calcium		430	mg/L	0.50	86	80	120			
Magnesium		469	mg/L	0.50	94	80	120			
Potassium		0.0337	mg/L	0.50						
Sodium		-0.293	mg/L	0.50						
Method: E200.7									Batch: R167278	
Sample ID: MB-121115A	4	Method Blank				Run: ICP4-C_121115A			11/15/12 15:43	
Calcium		ND	mg/L	0.02						
Magnesium		0.07	mg/L	0.01						
Potassium		ND	mg/L	0.04						
Sodium		ND	mg/L	0.2						
Sample ID: LFB-121115A	4	Laboratory Fortified Blank				Run: ICP4-C_121115A			11/15/12 15:47	
Calcium		45.2	mg/L	0.50	90	85	115			
Magnesium		45.4	mg/L	0.50	91	85	115			
Potassium		43.9	mg/L	0.50	88	85	115			
Sodium		44.7	mg/L	0.50	89	85	115			
Sample ID: C12110375-001BMS2	4	Sample Matrix Spike				Run: ICP4-C_121115A			11/15/12 19:03	
Calcium		982	mg/L	1.0	92	70	130			
Magnesium		992	mg/L	1.0	92	70	130			
Potassium		966	mg/L	1.0	94	70	130			
Sodium		6080	mg/L	4.2		70	130			A
Sample ID: C12110375-001BMSD	4	Sample Matrix Spike Duplicate				Run: ICP4-C_121115A			11/15/12 19:06	
Calcium		983	mg/L	1.0	92	70	130	0.1	20	
Magnesium		994	mg/L	1.0	92	70	130	0.2	20	
Potassium		972	mg/L	1.0	94	70	130	0.6	20	
Sodium		6100	mg/L	4.2		70	130	0.2	20	A
Sample ID: C12110375-010BMS2	4	Sample Matrix Spike				Run: ICP4-C_121115A			11/15/12 19:55	
Calcium		857	mg/L	1.0	71	70	130			
Magnesium		440	mg/L	1.0	85	70	130			
Potassium		268	mg/L	1.0	98	70	130			
Sodium		716	mg/L	1.0	79	70	130			

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

A - The analyte level was greater than four times the spike level. In accordance with the method % recovery is not calculated.

QA/QC Summary Report

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC **Report Date:** 11/16/12

Project: Lisbon, UT Facility **Work Order:** C12110375

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E200.7										Batch: R167278
Sample ID: C12110375-010BMSD	4	Sample Matrix Spike Duplicate				Run: ICP4-C_121115A				11/15/12 20:10
Calcium		862	mg/L	1.0	73	70	130	0.5	20	
Magnesium		448	mg/L	1.0	88	70	130	1.8	20	
Potassium		272	mg/L	1.0	100	70	130	1.8	20	
Sodium		730	mg/L	1.0	84	70	130	2.0	20	
Sample ID: C12110375-019BMS2	4	Sample Matrix Spike				Run: ICP4-C_121115A				11/15/12 21:24
Calcium		253	mg/L	1.0	93	70	130			
Magnesium		246	mg/L	1.0	93	70	130			
Potassium		241	mg/L	1.0	93	70	130			
Sodium		783	mg/L	1.0	72	70	130			
Sample ID: C12110375-019BMSD	4	Sample Matrix Spike Duplicate				Run: ICP4-C_121115A				11/15/12 21:27
Calcium		254	mg/L	1.0	93	70	130	0.0	20	
Magnesium		247	mg/L	1.0	93	70	130	0.3	20	
Potassium		243	mg/L	1.0	94	70	130	0.8	20	
Sodium		783	mg/L	1.0	72	70	130	0.0	20	

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

QA/QC Summary Report

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC **Report Date:** 11/16/12

Project: Lisbon, UT Facility **Work Order:** C12110375

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E200.8									Analytical Run: ICPMS4-C_121114A	
Sample ID: ICV	4	Initial Calibration Verification Standard							11/14/12 13:50	
Arsenic		0.0506	mg/L	0.0010	101	90	110			
Molybdenum		0.0468	mg/L	0.0010	94	90	110			
Selenium		0.0519	mg/L	0.0010	104	90	110			
Uranium		0.0498	mg/L	0.00030	100	90	110			
Method: E200.8									Batch: R167233	
Sample ID: LRB	4	Method Blank				Run: ICPMS4-C_121114A			11/14/12 14:25	
Arsenic		ND	mg/L	5E-05						
Molybdenum		ND	mg/L	3E-05						
Selenium		ND	mg/L	7E-05						
Uranium		1E-05	mg/L	9E-06						
Sample ID: LFB	4	Laboratory Fortified Blank				Run: ICPMS4-C_121114A			11/14/12 14:30	
Arsenic		0.0490	mg/L	0.0010	98	85	115			
Molybdenum		0.0451	mg/L	0.0010	90	85	115			
Selenium		0.0494	mg/L	0.0010	99	85	115			
Uranium		0.0474	mg/L	0.00030	95	85	115			
Sample ID: C12110375-006BMS4	4	Sample Matrix Spike				Run: ICPMS4-C_121114A			11/14/12 21:28	
Arsenic		0.288	mg/L	0.0010	115	70	130			
Molybdenum		0.281	mg/L	0.0010	98	70	130			
Selenium		0.292	mg/L	0.0010	108	70	130			
Uranium		9.17	mg/L	0.00030		70	130			A
Sample ID: C12110375-006BMSD	4	Sample Matrix Spike Duplicate				Run: ICPMS4-C_121114A			11/14/12 21:32	
Arsenic		0.283	mg/L	0.0010	113	70	130	1.7	20	
Molybdenum		0.281	mg/L	0.0010	98	70	130	0.2	20	
Selenium		0.297	mg/L	0.0010	109	70	130	1.5	20	
Uranium		9.15	mg/L	0.00030		70	130	0.2	20	A
Sample ID: C12110375-016BMS4	4	Sample Matrix Spike				Run: ICPMS4-C_121114A			11/14/12 23:50	
Arsenic		0.0617	mg/L	0.0010	114	70	130			
Molybdenum		0.0724	mg/L	0.0010	112	70	130			
Selenium		0.0534	mg/L	0.0010	106	70	130			
Uranium		0.140	mg/L	0.00030	117	70	130			
Sample ID: C12110375-016BMSD	4	Sample Matrix Spike Duplicate				Run: ICPMS4-C_121114A			11/14/12 23:55	
Arsenic		0.0626	mg/L	0.0010	115	70	130	1.4	20	
Molybdenum		0.0770	mg/L	0.0010	121	70	130	6.1	20	
Selenium		0.0571	mg/L	0.0010	114	70	130	6.8	20	
Uranium		0.145	mg/L	0.00030	128	70	130	3.6	20	
Sample ID: C12110375-025BMS4	4	Sample Matrix Spike				Run: ICPMS4-C_121114A			11/15/12 01:02	
Arsenic		0.0604	mg/L	0.0010	105	70	130			
Molybdenum		0.0598	mg/L	0.0010	105	70	130			
Selenium		0.0628	mg/L	0.0010	104	70	130			
Uranium		0.0816	mg/L	0.00030	117	70	130			

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

A - The analyte level was greater than four times the spike level. In accordance with the method % recovery is not calculated.

QA/QC Summary Report

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC **Report Date:** 11/16/12

Project: Lisbon, UT Facility **Work Order:** C12110375

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: **E200.8**										Batch: R167233
Sample ID: **C12110375-025BMSD**	4	Sample Matrix Spike Duplicate				Run: ICPMS4-C_121114A				11/15/12 01:07
Arsenic		0.0625	mg/L	0.0010	109	70	130	3.4	20	
Molybdenum		0.0610	mg/L	0.0010	107	70	130	1.9	20	
Selenium		0.0635	mg/L	0.0010	105	70	130	1.0	20	
Uranium		0.0812	mg/L	0.00030	116	70	130	0.5	20	

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

QA/QC Summary Report

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC **Report Date:** 11/16/12

Project: Lisbon, UT Facility **Work Order:** C12110375

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E300.0									Analytical Run: IC1-C_121112A	
Sample ID: ICV-111212-10		Initial Calibration Verification Standard							11/12/12 13:15	
Chloride		9.82	mg/L	1.0	98	90	110			
Method: E300.0									Batch: R167080	
Sample ID: ICB-111212-11		Method Blank				Run: IC1-C_121112A			11/12/12 13:33	
Chloride		ND	mg/L	0.04						
Sample ID: LFB-111212-12		Laboratory Fortified Blank				Run: IC1-C_121112A			11/12/12 13:50	
Chloride		9.74	mg/L	1.0	97	90	110			
Sample ID: C12110483-001AMS		Sample Matrix Spike				Run: IC1-C_121112A			11/12/12 14:25	
Chloride		38.4	mg/L	1.0	90	90	110			
Sample ID: C12110483-001AMSD		Sample Matrix Spike Duplicate				Run: IC1-C_121112A			11/12/12 14:42	
Chloride		38.6	mg/L	1.0	91	90	110	0.7	10	
Sample ID: C12110438-001AMS		Sample Matrix Spike				Run: IC1-C_121112A			11/12/12 18:29	
Chloride		525	mg/L	4.2	103	90	110			
Sample ID: C12110438-001AMSD		Sample Matrix Spike Duplicate				Run: IC1-C_121112A			11/12/12 18:46	
Chloride		526	mg/L	4.2	104	90	110	0.3	10	

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

QA/QC Summary Report

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC **Report Date:** 11/16/12

Project: Lisbon, UT Facility **Work Order:** C12110375

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E300.0									Analytical Run: IC2-C_121109A	
Sample ID: ICV-110912-10	2	Initial Calibration Verification Standard							11/09/12 18:48	
Chloride		9.73	mg/L	1.0	97	90	110			
Sulfate		40.0	mg/L	1.0	100	90	110			
Method: E300.0									Batch: R167023	
Sample ID: ICB-110912-11	2	Method Blank				Run: IC2-C_121109A			11/09/12 19:04	
Chloride		ND	mg/L	0.03						
Sulfate		ND	mg/L	0.10						
Sample ID: LFB-110912-12	2	Laboratory Fortified Blank				Run: IC2-C_121109A			11/09/12 19:19	
Chloride		9.65	mg/L	1.0	96	90	110			
Sulfate		39.0	mg/L	1.0	97	90	110			
Sample ID: LFBD-110912-13	2	Laboratory Fortified Blank Duplicate				Run: IC2-C_121109A			11/09/12 19:34	
Chloride		9.57	mg/L	1.0	96	90	110	0.8	10	
Sulfate		39.1	mg/L	1.0	98	90	110	0.3	10	
Sample ID: C12110363-001AMS	2	Sample Matrix Spike				Run: IC2-C_121109A			11/09/12 20:05	
Chloride		305	mg/L	1.0		90	110			A
Sulfate		198	mg/L	4.2	98	90	110			
Sample ID: C12110363-001AMSD	2	Sample Matrix Spike Duplicate				Run: IC2-C_121109A			11/09/12 20:21	
Chloride		313	mg/L	1.0		90	110	2.6	10	A
Sulfate		207	mg/L	4.2	103	90	110	4.5	10	
Sample ID: C12110375-010AMS	2	Sample Matrix Spike				Run: IC2-C_121109A			11/09/12 23:41	
Chloride		1410	mg/L	4.2		90	110			A
Sulfate		2270	mg/L	17	95	90	110			
Sample ID: C12110375-010AMSD	2	Sample Matrix Spike Duplicate				Run: IC2-C_121109A			11/09/12 23:56	
Chloride		1380	mg/L	4.2		90	110	1.9	10	A
Sulfate		2260	mg/L	17	95	90	110	0.3	10	
Sample ID: C12110375-020AMS	2	Sample Matrix Spike				Run: IC2-C_121109A			11/10/12 03:17	
Chloride		2040	mg/L	21	98	90	110			
Sulfate		10500	mg/L	83	96	90	110			
Sample ID: C12110375-020AMSD	2	Sample Matrix Spike Duplicate				Run: IC2-C_121109A			11/10/12 03:32	
Chloride		2010	mg/L	21	95	90	110	1.4	10	
Sulfate		10400	mg/L	83	94	90	110	0.9	10	

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

A - The analyte level was greater than four times the spike level. In accordance with the method % recovery is not calculated.

Standard Reporting Procedures

Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH, Dissolved Oxygen and Residual Chlorine, are qualified as being analyzed outside of recommended holding time.

Solid/soil samples are reported on a wet weight basis (as received) unless specifically indicated. If moisture corrected, data units are typically noted as –dry. For agricultural and mining soil parameters/characteristics, all samples are dried and ground prior to sample analysis.

Workorder Receipt Checklist

Rio Algom Mining Corporation LLC C12110375

Login completed by: Tessa Parke
Date Received: 11/8/2012
Reviewed by: BL2000\cwagner
Received by: dw
Reviewed Date: 11/12/2012
Carrier name: FedEx

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on shipping container/cooler?	Yes ☐	No ☐	Not Present ☑
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time? (Exclude analyses that are considered field parameters such as pH, DO, Res Cl, Sulfite, Ferrous Iron, etc.)	Yes ☑	No ☐	
Temp Blank received?	Yes ☐	No ☑	Not Applicable ☐
Container/Temp Blank temperature:	0.6°C No Ice		
Water - VOA vials have zero headspace?	Yes ☐	No ☐	No VOA vials submitted ☑
Water - pH acceptable upon receipt?	Yes ☑	No ☐	Not Applicable ☐

Contact and Corrective Action Comments:

None

Chain of Custody and Analytical Request Record

PLEASE PRINT (Provide as much information as possible.)

Company Name: Montgomery + Associates	Project Name, PWS, Permit, Etc.: Rio Algom Mining Liquin Ut Facility	Sample Origin State: Utah	EPA/State Compliance: Yes ☐ No ☐
Report Mail Address:	Contact Name: Phone/Fax:	Email:	Sampler: (Please Print) Josh Kerns
Invoice Address:	Invoice Contact & Phone:	Purchase Order:	Quote/Bottle Order: 38150

Special Report/Formats:

☐ DW ☐ EDD/EDT (Electronic Data)
☐ POTW/WWTP Format: _____
☐ State: _____ ☐ LEVEL IV
☐ Other: _____ ☐ NELAC

Number of Containers
Sample Type: A W S V B O DW
Air Water Soils/Solids
Vegetation Bioassay Other
DW - Drinking Water

ANALYSIS REQUESTED

SAMPLE IDENTIFICATION (Name, Location, Interval, etc.)	Collection Date	Collection Time	MATRIX	See attached bottle order #38150	SEE ATTACHED
1 6267	06NOV2012	0735	W	X	
2 6268	06NOV2012	0740	W	X	
3 6269	06NOV2012	0850	W	X	
4 6270	06NOV2012	1010	W	X	
5 6271	06NOV2012	1040	W	X	
6 6272	07 06NOV2012	0700	W	X	
7 6273	07 06NOV2012	0745	W	X	
8 6274	07 06NOV2012	0915	W	X	
9 6275	07NOV2012	0945	W	X	
10 6276	07NOV2012	1130	W	X	

Standard Turnaround (TAT)

RUSH

➡ Contact ELI prior to **RUSH** sample submittal for charges and scheduling – See Instruction Page

Comments: Metals samples were field filtered + preserved w/ HNO3 in field

High pH

Shipped by: Fedex Ex
Cooler ID(s): 1721
Receipt Temp: IR1 0.6 °C
On Ice: (Y) N
Custody Seal: On Bottle Y N; On Cooler (Y) N
Intact (Y) N
Signature Match (Y) N

LABORATORY USE ONLY

Custody Record MUST be Signed

Relinquished by (print): Josh Kerns	Date/Time: 07NOV2012 / 1200	Signature:	Received by (print):
Relinquished by (print):	Date/Time:	Signature:	Received by (print):
Sample Disposal: Return to Client: _____	Lab Disposal: _____		Received by Laboratory: 11-8-12 9.45

Date/Time: Signature:

In certain circumstances, samples submitted to Energy Laboratories, Inc. may be subcontracted to other certified laboratories in order to complete the analysis requested.
This serves as notice of this possibility. All sub-contract data will be clearly notated on your analytical report.
Visit our web site at www.energylab.com for additional information, downloadable fee schedule, forms, and links.

Chain of Custody and Analytical Request Record

PLEASE PRINT (Provide as much information as possible.)

Company Name: Montgomery & Associates

Report Mail Address (Required):

☐ No Hard Copy Email:

Invoice Address (Required):

☐ No Hard Copy Email:

Special Report/Formats:
☐ DW ☐ EDD/EDT (Electronic Data)
☐ POTW/WWTP Format:
☐ State: ☐ LEVEL IV
☐ Other: ☐ NELAC

Project Name, PWS, Permit, Etc.: RIO Algom Mining Lisbon, UT Facility

Contact Name: Phone/Fax:

Invoice Contact & Phone:

Sample Origin: State: Utah

Cell:

Purchase Order:

EPA/State Compliance: Yes ☐ No ☐

Sampler: (Please Print) BRANDON MYERS

Quote/Bottle Order: 38150

ANALYSIS REQUESTED

Number of Containers
Sample Type: A W S V B O DW
Air Water Soils/Solids
Vegetation Bioassay Other
DW - Drinking Water

SAMPLE IDENTIFICATION (Name, Location, Interval, etc.)	Collection Date	Collection Time	MATRIX	See attached bottle order #38150	SEE ATTACHED
1 6285	07NOV2012	800	W	X	
2 6286		830	W	X	
3 6287		855	W	X	
4 6288		920	W	X	
5 6289		1000	W	X	
6					
7					
8					
9					
10					

Standard Turnaround (TAT)

RUSH

➡ Contact ELI prior to **RUSH** sample submittal for charges and scheduling – See Instruction Page

Comments: Metals samples were field filtered & preserved w/ HNO_3 in field

Shipped by:

Cooler ID(s):

Receipt Temp ____ °C

On Ice: Y N

Custody Seal: On Bottle Y N; On Cooler Y N

Intact: Y N

Signature Match: Y N

LABORATORY USE ONLY

Custody Record MUST be Signed

Relinquished by (print): BRANDON MYERS Date/Time: 11/7/12 1200 Signature:

Relinquished by (print): Date/Time: Signature:

Sample Disposal: Return to Client: ____ Lab Disposal: ____

Received by (print): Date/Time: Signature:

Received by (print): Date/Time: Signature:

Received by Laboratory: 11-8-12 945 Date/Time: Signature:

In certain circumstances, samples submitted to Energy Laboratories, Inc. may be subcontracted to other certified laboratories in order to complete the analysis requested. This serves as notice of this possibility. All sub-contract data will be clearly notated on your analytical report.

Chain of Custody and Analytical Request Record

ENERGY LABORATORIES

PLEASE PRINT (Provide as much information as possible.)

Company Name: Montgomery + Associates

Project Name, PWS, Permit, Etc.: Rio Algom Mining Lisbon Ut facility

Sample Origin State: Utah

EPA/State Compliance: Yes ☐ No ☐

Report Mail Address (Required):

Contact Name: Phone/Fax: Cell:

Sampler: (Please Print) BRANDON MYERS

Invoice Contact & Phone:

Purchase Order:

Quote/Bottle Order: 38150

☐ No Hard Copy Email:

Invoice Address (Required):

☐ No Hard Copy Email:

Special Report/Formats:

☐ DW ☐ POTW/WWTP ☐ State: ☐ Other:

☐ EDD/EDT (Electronic Data) Format: ☐ LEVEL IV ☐ NELAC

Number of Containers
Sample Type: A W S V B O DW
Air Water Soils/Solids Vegetation Bioassay Other DW - Drinking Water

ANALYSIS REQUESTED

SEE ATTACHED

Standard Turnaround (TAT)

RUSH

Contact ELI prior to **RUSH** sample submittal for charges and scheduling – See Instruction Page

Comments: Metals samples were field filtered + preserved w/ HNO3 in field

Shipped by:

Cooler ID(s):

Receipt Temp °C

On Ice: Y N

Custody Seal On Bottle Y N On Cooler Y N

Intact Y N

Signature Match Y N

	SAMPLE IDENTIFICATION (Name, Location, Interval, etc.)	Collection Date	Collection Time	MATRIX	See attached bottle order # 38150
1	6255	06NOV2012	745	W	X
2	6256		845		X
3	6257		855		X
4	6258		1015		X
5	6259		1115		X
6	6260		1140		X
7	6281		1150		X
8	6282		1215		X
9	6283	07NOV2012	700		X
10	6284	"	755		X

LABORATORY USE ONLY

Custody Record MUST be Signed

Relinquished by (print): BRANDON MYERS Date/Time: 11/7/12 1200 Signature:

Relinquished by (print): Date/Time: Signature:

Received by (print): Date/Time: Signature:

Received by (print): Date/Time: Signature:

Received by Laboratory: 11-8-12 945 Date/Time: Signature:

Sample Disposal: Return to Client: Lab Disposal:

In certain circumstances, samples submitted to Energy Laboratories, Inc. may be subcontracted to other certified laboratories in order to complete the analysis requested. This serves as notice of this possibility. All sub-contract data will be clearly notated on your analytical report.

ENERGY LAB www.energylab.com Analytical Excellence Since 1952

Helena, MT 877-472-0711 • Billings, MT 800-735-4489 • Casper, WY 888-235-0515
Gillette, WY 866-686-7175 • Rapid City, SD 888-672-1225 • College Station, TX 888-690-2218

BOTTLE ORDER 38200

SHIPPED TO: Rio Algom Mining Corporation LLC

Contact: John Laney (Guest)
c/o La Quinta Inn
815 S Main St

Moab UT 84532

Phone: (520) 881-4912

Project:

Order Created by: Kerri Schroeder
Shipped From: Casper, WY

Ship Date: 10/30/2012
VIA: Ground

Bottle Size/Type	Bottles Per Samp	Method	Tests	Critical Hold Time	Preservative	Notes	Num of Samp
500 mL Plastic	1	A2320 B	Alkalinity				10
		E300.0	E300.0 Anions				
		A2540 C	Solids, Total Dissolved				
		A2510 B	Conductivity				
		A4500-H B	pH	0.25 hrs			
250 mL Plastic	1	E200.7_8	Metals by ICP/ICPMS, Dissolved		■ HNO3	Filter before preservation	10

Comments

Bicarbonate, Carbonate, Cl, SO4, TDS, pH, Cond Ca, Mg, Na, K, As, Se, Mo, U.
Metals samples will be filtered in the field.

■ HNO3 - Nitric Acid ☐ H2SO4 - Sulfuric Acid ■ NaOH - Sodium Hydroxide
■ ZnAc - Zinc Acetate ■ HCl - Hydrochloric Acid ☐ H3PO4 - Phosphoric Acid

We strongly suggest that the samples are shipped the same day as they are collected.

Material Safety Data Sheets(MSDS) Available @ EnergyLab.com ->Services -> MSDS Sheets

Corrosive Chemicals: Nitric, Sulfuric, Phosphoric, Hydrochloric Acids and Sodium Hydroxide. Zinc Acetate is a skin irritant.

Subcontracting of sample analyses to an outside laboratory may be required. If so, Energy Laboratories will utilize its branch laboratories or qualified contract laboratories for this service. Any such laboratories will be indicated within the Laboratory Analytical Report.

ANALYTICAL SUMMARY REPORT

December 05, 2012

Rio Algom Mining Corporation LLC
Hwy 605 and 509
Grants, NM 87020

Workorder No.: C12110105

Project Name: Lisbon, UT Facility

Energy Laboratories, Inc. Casper WY received the following 12 samples for Rio Algom Mining Corporation LLC on 11/2/2012 for analysis.

Sample ID	Client Sample ID	Collect Date	Receive Date	Matrix	Test
C12110105-001	6226	11/01/12 9:45	11/02/12	Aqueous	Metals by ICP/ICPMS, Dissolved Alkalinity Conductivity E300.0 Anions pH Solids, Total Dissolved
C12110105-002	6227	11/01/12 10:50	11/02/12	Aqueous	Same As Above
C12110105-003	6228	11/01/12 11:00	11/02/12	Aqueous	Same As Above
C12110105-004	6229	11/01/12 13:15	11/02/12	Aqueous	Same As Above
C12110105-005	6208	10/31/12 14:50	11/02/12	Aqueous	Same As Above
C12110105-006	6209	11/01/12 10:15	11/02/12	Aqueous	Same As Above
C12110105-007	6210	11/01/12 11:25	11/02/12	Aqueous	Same As Above
C12110105-008	6241	11/01/12 11:50	11/02/12	Aqueous	Same As Above
C12110105-009	6242	11/01/12 13:00	11/02/12	Aqueous	Same As Above
C12110105-010	6243	11/01/12 14:30	11/02/12	Aqueous	Same As Above
C12110105-011	6244	11/01/12 15:00	11/02/12	Aqueous	Same As Above
C12110105-012	6245	11/01/12 15:10	11/02/12	Aqueous	Same As Above

The results as reported relate only to the item(s) submitted for testing. The analyses presented in this report were performed at Energy Laboratories, Inc., 2393 Salt Creek Hwy., Casper, WY 82601, unless otherwise noted. Radiochemistry analyses were performed at Energy Laboratories, Inc., 2325 Kerzell Lane, Casper, WY 82601, unless otherwise noted. Any exceptions or problems with the analyses are noted in the Laboratory Analytical Report, the QA/QC Summary Report, or the Case Narrative.

If you have any questions regarding these test results, please call.

Report Approved By:

CLIENT: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility
Sample Delivery Group: C12110105

Revised Date: 12/05/12
Report Date: 11/14/12

CASE NARRATIVE

REVISED/SUPPLEMENTAL REPORT
The attached analytical report has been revised from a previously submitted report due to the request by the client on December 5, 2012 for the correction of the metals QC.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility
Lab ID: C12110105-001
Client Sample ID: 6226

Revised Date: 12/05/12
Report Date: 11/14/12
Collection Date: 11/01/12 09:45
DateReceived: 11/02/12
Matrix: Aqueous

Analyses	Result	Units	Qualifier	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Carbonate as CO3	ND	mg/L		5		A2320 B	11/03/12 17:11 / ljl
Bicarbonate as HCO3	1200	mg/L		5		A2320 B	11/03/12 17:11 / ljl
Calcium	210	mg/L		1		E200.7	11/08/12 17:29 / sf
Chloride	705	mg/L	D	4		E300.0	11/06/12 08:25 / wc
Magnesium	111	mg/L		1		E200.7	11/08/12 17:29 / sf
Potassium	12	mg/L		1		E200.7	11/08/12 17:29 / sf
Sodium	1660	mg/L	D	2		E200.7	11/08/12 17:29 / sf
Sulfate	2100	mg/L	D	20		E300.0	11/06/12 08:25 / wc
PHYSICAL PROPERTIES							
Conductivity @ 25 C	6840	umhos/cm		1		A2510 B	11/05/12 12:24 / ab
pH	7.47	s.u.	H	0.01		A4500-H B	11/05/12 12:24 / ab
Solids, Total Dissolved TDS @ 180 C	4860	mg/L		10		A2540 C	11/05/12 16:07 / ab
METALS - DISSOLVED							
Arsenic	0.16	mg/L	D	0.07		E200.7	11/08/12 17:29 / sf
Molybdenum	2.56	mg/L	D	0.01		E200.7	11/08/12 17:29 / sf
Selenium	0.030	mg/L		0.001		E200.8	11/13/12 05:32 / cp
Uranium	20	mg/L	D	1		E200.7	11/08/12 17:29 / sf

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
H - Analysis performed past recommended holding time.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility
Lab ID: C12110105-002
Client Sample ID: 6227

Revised Date: 12/05/12
Report Date: 11/14/12
Collection Date: 11/01/12 10:50
DateReceived: 11/02/12
Matrix: Aqueous

Analyses	Result	Units	Qualifier	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Carbonate as CO3	ND	mg/L		5		A2320 B	11/03/12 17:20 / ljl
Bicarbonate as HCO3	1090	mg/L		5		A2320 B	11/03/12 17:20 / ljl
Calcium	235	mg/L		1		E200.7	11/08/12 17:45 / sf
Chloride	722	mg/L	D	4		E300.0	11/06/12 08:42 / wc
Magnesium	117	mg/L		1		E200.7	11/08/12 17:45 / sf
Potassium	13	mg/L		1		E200.7	11/08/12 17:45 / sf
Sodium	1550	mg/L	D	2		E200.7	11/08/12 17:45 / sf
Sulfate	2140	mg/L	D	20		E300.0	11/06/12 08:42 / wc
PHYSICAL PROPERTIES							
Conductivity @ 25 C	6770	umhos/cm		1		A2510 B	11/05/12 12:27 / ab
pH	7.39	s.u.	H	0.01		A4500-H B	11/05/12 12:27 / ab
Solids, Total Dissolved TDS @ 180 C	4880	mg/L		10		A2540 C	11/05/12 16:08 / ab
METALS - DISSOLVED							
Arsenic	0.128	mg/L		0.001		E200.8	11/13/12 05:37 / cp
Molybdenum	1.87	mg/L	D	0.01		E200.7	11/08/12 17:45 / sf
Selenium	0.028	mg/L		0.001		E200.8	11/13/12 05:37 / cp
Uranium	19	mg/L	D	1		E200.7	11/08/12 17:45 / sf

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
H - Analysis performed past recommended holding time.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility
Lab ID: C12110105-003
Client Sample ID: 6228

Revised Date: 12/05/12
Report Date: 11/14/12
Collection Date: 11/01/12 11:00
DateReceived: 11/02/12
Matrix: Aqueous

Analyses	Result	Units	Qualifier	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Carbonate as CO3	ND	mg/L		5		A2320 B	11/03/12 17:30 / ljl
Bicarbonate as HCO3	1100	mg/L		5		A2320 B	11/03/12 17:30 / ljl
Calcium	233	mg/L		1		E200.7	11/08/12 17:50 / sf
Chloride	702	mg/L	D	4		E300.0	11/06/12 08:59 / wc
Magnesium	116	mg/L		1		E200.7	11/08/12 17:50 / sf
Potassium	13	mg/L		1		E200.7	11/08/12 17:50 / sf
Sodium	1550	mg/L	D	2		E200.7	11/08/12 17:50 / sf
Sulfate	2090	mg/L	D	20		E300.0	11/06/12 08:59 / wc
PHYSICAL PROPERTIES							
Conductivity @ 25 C	6750	umhos/cm		1		A2510 B	11/05/12 12:29 / ab
pH	7.35	s.u.	H	0.01		A4500-H B	11/05/12 12:29 / ab
Solids, Total Dissolved TDS @ 180 C	4770	mg/L		10		A2540 C	11/05/12 16:13 / ab
METALS - DISSOLVED							
Arsenic	0.129	mg/L		0.001		E200.8	11/13/12 05:41 / cp
Molybdenum	1.85	mg/L	D	0.01		E200.7	11/08/12 17:50 / sf
Selenium	0.028	mg/L		0.001		E200.8	11/13/12 05:41 / cp
Uranium	19	mg/L	D	1		E200.7	11/08/12 17:50 / sf

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
H - Analysis performed past recommended holding time.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility
Lab ID: C12110105-004
Client Sample ID: 6229

Revised Date: 12/05/12
Report Date: 11/14/12
Collection Date: 11/01/12 13:15
DateReceived: 11/02/12
Matrix: Aqueous

Analyses	Result	Units	Qualifier	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Carbonate as CO3	ND	mg/L		5		A2320 B	11/03/12 17:40 / ljl
Bicarbonate as HCO3	1340	mg/L		5		A2320 B	11/03/12 17:40 / ljl
Calcium	205	mg/L		1		E200.7	11/08/12 17:54 / sf
Chloride	740	mg/L	D	10		E300.0	11/06/12 09:17 / wc
Magnesium	108	mg/L		1		E200.7	11/08/12 17:54 / sf
Potassium	12	mg/L		1		E200.7	11/08/12 17:54 / sf
Sodium	1780	mg/L	D	2		E200.7	11/08/12 17:54 / sf
Sulfate	2210	mg/L	D	40		E300.0	11/06/12 09:17 / wc
PHYSICAL PROPERTIES							
Conductivity @ 25 C	7300	umhos/cm		1		A2510 B	11/05/12 12:32 / ab
pH	7.49	s.u.	H	0.01		A4500-H B	11/05/12 12:32 / ab
Solids, Total Dissolved TDS @ 180 C	5060	mg/L		10		A2540 C	11/05/12 16:13 / ab
METALS - DISSOLVED							
Arsenic	0.192	mg/L		0.001		E200.8	11/13/12 05:46 / cp
Molybdenum	2.72	mg/L	D	0.01		E200.7	11/08/12 17:54 / sf
Selenium	0.033	mg/L		0.001		E200.8	11/13/12 05:46 / cp
Uranium	22	mg/L	D	1		E200.7	11/08/12 17:54 / sf

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
H - Analysis performed past recommended holding time.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility
Lab ID: C12110105-005
Client Sample ID: 6208

Revised Date: 12/05/12
Report Date: 11/14/12
Collection Date: 10/31/12 14:50
DateReceived: 11/02/12
Matrix: Aqueous

Analyses	Result	Units	Qualifier	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Carbonate as CO3	ND	mg/L		5		A2320 B	11/03/12 18:09 / ljl
Bicarbonate as HCO3	363	mg/L		5		A2320 B	11/03/12 18:09 / ljl
Calcium	81	mg/L		1		E200.7	11/08/12 17:58 / sf
Chloride	11	mg/L		1		E300.0	11/06/12 10:26 / wc
Magnesium	63	mg/L		1		E200.7	11/08/12 17:58 / sf
Potassium	3	mg/L		1		E200.7	11/08/12 17:58 / sf
Sodium	11	mg/L		1		E200.7	11/08/12 17:58 / sf
Sulfate	148	mg/L	D	2		E300.0	11/06/12 10:26 / wc
PHYSICAL PROPERTIES							
Conductivity @ 25 C	791	umhos/cm		1		A2510 B	11/05/12 12:35 / ab
pH	7.57	s.u.	H	0.01		A4500-H B	11/05/12 12:35 / ab
Solids, Total Dissolved TDS @ 180 C	503	mg/L		10		A2540 C	11/05/12 16:13 / ab
METALS - DISSOLVED							
Arsenic	ND	mg/L		0.001		E200.8	11/13/12 05:50 / cp
Molybdenum	0.001	mg/L		0.001		E200.8	11/13/12 05:50 / cp
Selenium	0.006	mg/L		0.001		E200.8	11/13/12 05:50 / cp
Uranium	0.0045	mg/L		0.0003		E200.8	11/13/12 05:50 / cp

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
H - Analysis performed past recommended holding time.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility
Lab ID: C12110105-006
Client Sample ID: 6209

Revised Date: 12/05/12
Report Date: 11/14/12
Collection Date: 11/01/12 10:15
DateReceived: 11/02/12
Matrix: Aqueous

Analyses	Result	Units	Qualifier	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Carbonate as CO3	ND	mg/L		5		A2320 B	11/03/12 18:27 / ljl
Bicarbonate as HCO3	338	mg/L		5		A2320 B	11/03/12 18:27 / ljl
Calcium	278	mg/L		1		E200.7	11/10/12 02:20 / sf
Chloride	39	mg/L		1		E300.0	11/06/12 11:19 / wc
Magnesium	96	mg/L		1		E200.7	11/10/12 02:20 / sf
Potassium	2	mg/L		1		E200.7	11/10/12 02:20 / sf
Sodium	48	mg/L		1		E200.7	11/10/12 02:20 / sf
Sulfate	769	mg/L	D	4		E300.0	11/06/12 11:19 / wc
PHYSICAL PROPERTIES							
Conductivity @ 25 C	1850	umhos/cm		1		A2510 B	11/05/12 12:37 / ab
pH	7.78	s.u.	H	0.01		A4500-H B	11/05/12 12:37 / ab
Solids, Total Dissolved TDS @ 180 C	1540	mg/L		10		A2540 C	11/06/12 15:15 / jz
METALS - DISSOLVED							
Arsenic	0.002	mg/L		0.001		E200.8	11/13/12 05:55 / cp
Molybdenum	0.018	mg/L		0.001		E200.8	11/13/12 05:55 / cp
Selenium	0.003	mg/L		0.001		E200.8	11/13/12 05:55 / cp
Uranium	0.0166	mg/L		0.0003		E200.8	11/13/12 05:55 / cp

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
H - Analysis performed past recommended holding time.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility
Lab ID: C12110105-007
Client Sample ID: 6210

Revised Date: 12/05/12
Report Date: 11/14/12
Collection Date: 11/01/12 11:25
DateReceived: 11/02/12
Matrix: Aqueous

Analyses	Result	Units	Qualifier	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Carbonate as CO3	ND	mg/L		5		A2320 B	11/03/12 18:35 / ljl
Bicarbonate as HCO3	341	mg/L		5		A2320 B	11/03/12 18:35 / ljl
Calcium	280	mg/L		1		E200.7	11/08/12 18:02 / sf
Chloride	38	mg/L		1		E300.0	11/06/12 11:36 / wc
Magnesium	96	mg/L		1		E200.7	11/08/12 18:02 / sf
Potassium	2	mg/L		1		E200.7	11/08/12 18:02 / sf
Sodium	49	mg/L		1		E200.7	11/08/12 18:02 / sf
Sulfate	751	mg/L	D	4		E300.0	11/06/12 11:36 / wc
PHYSICAL PROPERTIES							
Conductivity @ 25 C	1810	umhos/cm		1		A2510 B	11/05/12 12:41 / ab
pH	7.41	s.u.	H	0.01		A4500-H B	11/05/12 12:41 / ab
Solids, Total Dissolved TDS @ 180 C	1570	mg/L		10		A2540 C	11/06/12 15:16 / jz
METALS - DISSOLVED							
Arsenic	0.002	mg/L		0.001		E200.8	11/13/12 05:59 / cp
Molybdenum	0.017	mg/L		0.001		E200.8	11/13/12 05:59 / cp
Selenium	0.003	mg/L		0.001		E200.8	11/13/12 05:59 / cp
Uranium	0.0172	mg/L		0.0003		E200.8	11/13/12 05:59 / cp

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
H - Analysis performed past recommended holding time.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility
Lab ID: C12110105-008
Client Sample ID: 6241

Revised Date: 12/05/12
Report Date: 11/14/12
Collection Date: 11/01/12 11:50
DateReceived: 11/02/12
Matrix: Aqueous

Analyses	Result	Units	Qualifier	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Carbonate as CO3	ND	mg/L		5		A2320 B	11/03/12 18:51 / ljl
Bicarbonate as HCO3	338	mg/L		5		A2320 B	11/03/12 18:51 / ljl
Calcium	282	mg/L		1		E200.7	11/08/12 18:46 / sf
Chloride	40	mg/L		1		E300.0	11/06/12 11:54 / wc
Magnesium	101	mg/L		1		E200.7	11/08/12 18:46 / sf
Potassium	2	mg/L		1		E200.7	11/08/12 18:46 / sf
Sodium	49	mg/L		1		E200.7	11/08/12 18:46 / sf
Sulfate	788	mg/L	D	4		E300.0	11/06/12 11:54 / wc
PHYSICAL PROPERTIES							
Conductivity @ 25 C	1800	umhos/cm		1		A2510 B	11/05/12 12:44 / ab
pH	7.27	s.u.	H	0.01		A4500-H B	11/05/12 12:44 / ab
Solids, Total Dissolved TDS @ 180 C	1540	mg/L		10		A2540 C	11/06/12 15:16 / jz
METALS - DISSOLVED							
Arsenic	0.002	mg/L		0.001		E200.8	11/13/12 06:04 / cp
Molybdenum	0.016	mg/L		0.001		E200.8	11/13/12 06:04 / cp
Selenium	0.003	mg/L		0.001		E200.8	11/13/12 06:04 / cp
Uranium	0.0169	mg/L		0.0003		E200.8	11/13/12 06:04 / cp

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
H - Analysis performed past recommended holding time.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility
Lab ID: C12110105-009
Client Sample ID: 6242

Revised Date: 12/05/12
Report Date: 11/14/12
Collection Date: 11/01/12 13:00
DateReceived: 11/02/12
Matrix: Aqueous

Analyses	Result	Units	Qualifier	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Carbonate as CO3	ND	mg/L		5		A2320 B	11/03/12 18:59 / ljl
Bicarbonate as HCO3	224	mg/L		5		A2320 B	11/03/12 18:59 / ljl
Calcium	89	mg/L		1		E200.7	11/08/12 18:50 / sf
Chloride	47	mg/L		1		E300.0	11/06/12 12:11 / wc
Magnesium	31	mg/L		1		E200.7	11/08/12 18:50 / sf
Potassium	4	mg/L		1		E200.7	11/08/12 18:50 / sf
Sodium	49	mg/L		1		E200.7	11/08/12 18:50 / sf
Sulfate	172	mg/L	D	2		E300.0	11/06/12 12:11 / wc
PHYSICAL PROPERTIES							
Conductivity @ 25 C	808	umhos/cm		1		A2510 B	11/05/12 12:50 / ab
pH	7.66	s.u.	H	0.01		A4500-H B	11/05/12 12:50 / ab
Solids, Total Dissolved TDS @ 180 C	528	mg/L		10		A2540 C	11/06/12 15:17 / jz
METALS - DISSOLVED							
Arsenic	ND	mg/L		0.001		E200.8	11/13/12 06:26 / cp
Molybdenum	ND	mg/L		0.001		E200.8	11/13/12 06:26 / cp
Selenium	0.005	mg/L		0.001		E200.8	11/13/12 06:26 / cp
Uranium	0.0031	mg/L		0.0003		E200.8	11/13/12 06:26 / cp

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
H - Analysis performed past recommended holding time.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility
Lab ID: C12110105-010
Client Sample ID: 6243

Revised Date: 12/05/12
Report Date: 11/14/12
Collection Date: 11/01/12 14:30
DateReceived: 11/02/12
Matrix: Aqueous

Analyses	Result	Units	Qualifier	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Carbonate as CO3	ND	mg/L		5		A2320 B	11/03/12 19:07 / ljl
Bicarbonate as HCO3	225	mg/L		5		A2320 B	11/03/12 19:07 / ljl
Calcium	89	mg/L		1		E200.7	11/08/12 18:54 / sf
Chloride	46	mg/L		1		E300.0	11/06/12 12:28 / wc
Magnesium	32	mg/L		1		E200.7	11/08/12 18:54 / sf
Potassium	4	mg/L		1		E200.7	11/08/12 18:54 / sf
Sodium	49	mg/L		1		E200.7	11/08/12 18:54 / sf
Sulfate	170	mg/L	D	2		E300.0	11/06/12 12:28 / wc
PHYSICAL PROPERTIES							
Conductivity @ 25 C	810	umhos/cm		1		A2510 B	11/05/12 12:53 / ab
pH	7.75	s.u.	H	0.01		A4500-H B	11/05/12 12:53 / ab
Solids, Total Dissolved TDS @ 180 C	532	mg/L		10		A2540 C	11/06/12 15:17 / jz
METALS - DISSOLVED							
Arsenic	ND	mg/L		0.001		E200.8	11/13/12 06:44 / cp
Molybdenum	0.003	mg/L		0.001		E200.8	11/13/12 06:44 / cp
Selenium	0.005	mg/L		0.001		E200.8	11/13/12 06:44 / cp
Uranium	0.0029	mg/L		0.0003		E200.8	11/13/12 06:44 / cp

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
H - Analysis performed past recommended holding time.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility
Lab ID: C12110105-011
Client Sample ID: 6244

Revised Date: 12/05/12
Report Date: 11/14/12
Collection Date: 11/01/12 15:00
DateReceived: 11/02/12
Matrix: Aqueous

Analyses	Result	Units	Qualifier	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Carbonate as CO3	ND	mg/L		5		A2320 B	11/03/12 19:15 / ljl
Bicarbonate as HCO3	224	mg/L		5		A2320 B	11/03/12 19:15 / ljl
Calcium	91	mg/L		1		E200.7	11/08/12 18:58 / sf
Chloride	48	mg/L		1		E300.0	11/06/12 12:46 / wc
Magnesium	32	mg/L		1		E200.7	11/08/12 18:58 / sf
Potassium	4	mg/L		1		E200.7	11/08/12 18:58 / sf
Sodium	50	mg/L		1		E200.7	11/08/12 18:58 / sf
Sulfate	174	mg/L	D	2		E300.0	11/06/12 12:46 / wc
PHYSICAL PROPERTIES							
Conductivity @ 25 C	818	umhos/cm		1		A2510 B	11/05/12 12:55 / ab
pH	7.70	s.u.	H	0.01		A4500-H B	11/05/12 12:55 / ab
Solids, Total Dissolved TDS @ 180 C	546	mg/L		10		A2540 C	11/06/12 15:17 / jz
METALS - DISSOLVED							
Arsenic	ND	mg/L		0.001		E200.8	11/13/12 06:48 / cp
Molybdenum	0.001	mg/L		0.001		E200.8	11/13/12 06:48 / cp
Selenium	0.005	mg/L		0.001		E200.8	11/13/12 06:48 / cp
Uranium	0.0030	mg/L		0.0003		E200.8	11/13/12 06:48 / cp

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
H - Analysis performed past recommended holding time.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility
Lab ID: C12110105-012
Client Sample ID: 6245

Revised Date: 12/05/12
Report Date: 11/14/12
Collection Date: 11/01/12 15:10
DateReceived: 11/02/12
Matrix: Aqueous

Analyses	Result	Units	Qualifier	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Carbonate as CO3	ND	mg/L		5		A2320 B	11/03/12 19:23 / ljl
Bicarbonate as HCO3	225	mg/L		5		A2320 B	11/03/12 19:23 / ljl
Calcium	90	mg/L		1		E200.7	11/08/12 19:14 / sf
Chloride	48	mg/L		1		E300.0	11/06/12 13:03 / wc
Magnesium	32	mg/L		1		E200.7	11/08/12 19:14 / sf
Potassium	4	mg/L		1		E200.7	11/08/12 19:14 / sf
Sodium	49	mg/L		1		E200.7	11/08/12 19:14 / sf
Sulfate	175	mg/L	D	2		E300.0	11/06/12 13:03 / wc
PHYSICAL PROPERTIES							
Conductivity @ 25 C	819	umhos/cm		1		A2510 B	11/05/12 12:58 / ab
pH	7.72	s.u.	H	0.01		A4500-H B	11/05/12 12:58 / ab
Solids, Total Dissolved TDS @ 180 C	547	mg/L		10		A2540 C	11/06/12 15:17 / jz
METALS - DISSOLVED							
Arsenic	ND	mg/L		0.001		E200.8	11/13/12 06:53 / cp
Molybdenum	0.001	mg/L		0.001		E200.8	11/13/12 06:53 / cp
Selenium	0.005	mg/L		0.001		E200.8	11/13/12 06:53 / cp
Uranium	0.0030	mg/L		0.0003		E200.8	11/13/12 06:53 / cp

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
H - Analysis performed past recommended holding time.

QA/QC Summary Report

Prepared by Casper, WY Branch

Revised Date: 12/05/12
Report Date: 11/14/12
Work Order: C12110105

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: A2320 B										Batch: R166720
Sample ID: MBLK	3	Method Blank				Run: MANTECH_121103A				11/03/12 14:03
Alkalinity, Total as CaCO3		ND	mg/L	3						
Carbonate as CO3		ND	mg/L	1						
Bicarbonate as HCO3		1	mg/L	1						
Sample ID: LCS_121003		Laboratory Control Sample				Run: MANTECH_121103A				11/03/12 14:18
Alkalinity, Total as CaCO3		206	mg/L	5.0	103	90	110			
Sample ID: C12110103-001ADUP	3	Sample Duplicate				Run: MANTECH_121103A				11/03/12 14:24
Alkalinity, Total as CaCO3		ND	mg/L	5.0					10	
Carbonate as CO3		ND	mg/L	5.0					10	
Bicarbonate as HCO3		ND	mg/L	5.0					10	
Sample ID: C12110103-002AMS		Sample Matrix Spike				Run: MANTECH_121103A				11/03/12 14:54
Alkalinity, Total as CaCO3		544	mg/L	5.0	97	80	120			

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

QA/QC Summary Report

Prepared by Casper, WY Branch

Revised Date: 12/05/12
Report Date: 11/14/12
Work Order: C12110105

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: A2510 B										Batch: R166731
Sample ID: SC 2ND 1413		Laboratory Control Sample				Run: PHSC_101-C_121105A				11/05/12 09:20
Conductivity @ 25 C		1400	umhos/cm	1.0	99	90	110			
Sample ID: MBLK		Method Blank				Run: PHSC_101-C_121105A				11/05/12 09:26
Conductivity @ 25 C		2	umhos/cm	0.2						
Sample ID: C12110105-008ADUP		Sample Duplicate				Run: PHSC_101-C_121105A				11/05/12 12:46
Conductivity @ 25 C		1830	umhos/cm	1.0				1.7	10	

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

QA/QC Summary Report

Prepared by Casper, WY Branch

Revised Date: 12/05/12
Report Date: 11/14/12
Work Order: C12110105

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: A2540 C									Batch: TDS121105A	
Sample ID: MB-1_121105A		Method Blank				Run: BAL-1_121105A			11/05/12 15:57	
Solids, Total Dissolved TDS @ 180 C		ND	mg/L	4						
Sample ID: LCS-2_121105A		Laboratory Control Sample				Run: BAL-1_121105A			11/05/12 15:57	
Solids, Total Dissolved TDS @ 180 C		999	mg/L	10	100	90	110			
Sample ID: C12110104-001A DUP		Sample Duplicate				Run: BAL-1_121105A			11/05/12 16:05	
Solids, Total Dissolved TDS @ 180 C		4090	mg/L	10				3.7	5	
Sample ID: C12110104-002A MS		Sample Matrix Spike				Run: BAL-1_121105A			11/05/12 16:05	
Solids, Total Dissolved TDS @ 180 C		13600	mg/L	10	93	90	110			
Method: A2540 C									Batch: TDS121106A	
Sample ID: MB-1_121106A		Method Blank				Run: BAL-1_121106A			11/06/12 15:15	
Solids, Total Dissolved TDS @ 180 C		ND	mg/L	4						
Sample ID: LCS-2_121106A		Laboratory Control Sample				Run: BAL-1_121106A			11/06/12 15:15	
Solids, Total Dissolved TDS @ 180 C		1110	mg/L	10	100	90	110			
Sample ID: C12110105-007A DUP		Sample Duplicate				Run: BAL-1_121106A			11/06/12 15:16	
Solids, Total Dissolved TDS @ 180 C		1560	mg/L	10				0.5	5	
Sample ID: C12110105-008A MS		Sample Matrix Spike				Run: BAL-1_121106A			11/06/12 15:16	
Solids, Total Dissolved TDS @ 180 C		3520	mg/L	10	99	90	110			

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

QA/QC Summary Report

Prepared by Casper, WY Branch

Revised Date: 12/05/12
Report Date: 11/14/12
Work Order: C12110105

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: A4500-H B									Analytical Run: PHSC_101-C_121105A	
Sample ID: pH 6.86	Initial Calibration Verification Standard								11/05/12 09:07	
pH		6.84	s.u.	0.010	100	98	102			
Method: A4500-H B									Batch: R166731	
Sample ID: C12110105-008ADUP	Sample Duplicate					Run: PHSC_101-C_121105A			11/05/12 12:46	
pH		7.28	s.u.	0.010				0.1	3	

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

QA/QC Summary Report

Prepared by Casper, WY Branch

Revised Date: 12/05/12
Report Date: 11/14/12
Work Order: C12110105

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E200.7									Analytical Run: ICP2-C_121108C	
Sample ID: ICV	7	Initial Calibration Verification Standard							11/08/12 14:11	
Arsenic		1.02	mg/L	0.10	102	95	105			
Calcium		49.6	mg/L	0.50	99	95	105			
Magnesium		51.7	mg/L	0.50	103	95	105			
Molybdenum		1.05	mg/L	0.10	105	95	105			
Potassium		47.2	mg/L	0.50	95	95	105			
Sodium		52.6	mg/L	0.50	105	95	105			
Uranium		5.02	mg/L	1.0	100	95	105			
Sample ID: ICSA	7	Interference Check Sample A							11/08/12 14:40	
Arsenic		-0.0197	mg/L	0.10						
Calcium		493	mg/L	0.50	99	80	120			
Magnesium		533	mg/L	0.50	107	80	120			
Molybdenum		-0.0189	mg/L	0.10						
Potassium		-0.00720	mg/L	0.50						
Sodium		0.0329	mg/L	0.50						
Uranium		0.0121	mg/L	1.0						
Sample ID: ICSAB	7	Interference Check Sample AB							11/08/12 14:44	
Arsenic		-0.0241	mg/L	0.10						
Calcium		497	mg/L	0.50	99	80	120			
Magnesium		518	mg/L	0.50	104	80	120			
Molybdenum		-0.0186	mg/L	0.10						
Potassium		-0.00620	mg/L	0.50						
Sodium		0.0282	mg/L	0.50						
Uranium		0.00440	mg/L	1.0						
Method: E200.7										Batch: R166967
Sample ID: MB-121108A	7	Method Blank				Run: ICP2-C_121108C			11/08/12 15:08	
Arsenic		ND	mg/L	0.01						
Calcium		ND	mg/L	0.06						
Magnesium		ND	mg/L	0.03						
Molybdenum		ND	mg/L	0.004						
Potassium		ND	mg/L	0.06						
Sodium		ND	mg/L	0.3						
Uranium		ND	mg/L	0.3						
Sample ID: LFB-121108A	7	Laboratory Fortified Blank				Run: ICP2-C_121108C			11/08/12 15:12	
Arsenic		0.972	mg/L	0.10	97	85	115			
Calcium		48.4	mg/L	0.50	97	85	115			
Magnesium		50.0	mg/L	0.50	100	85	115			
Molybdenum		1.01	mg/L	0.10	101	85	115			
Potassium		46.0	mg/L	0.50	92	85	115			
Sodium		49.5	mg/L	0.50	99	85	115			
Uranium		4.80	mg/L	1.0	96	85	115			

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

QA/QC Summary Report

Prepared by Casper, WY Branch

Revised Date: 12/05/12
Report Date: 11/14/12
Work Order: C12110105

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E200.7										Batch: R166967
Sample ID: C12110105-011BMS2	7	Sample Matrix Spike				Run: ICP2-C_121108C				11/08/12 19:02
Arsenic		1.02	mg/L	0.015	100	70	130			
Calcium		134	mg/L	1.0	84	70	130			
Magnesium		81.4	mg/L	1.0	98	70	130			
Molybdenum		0.750	mg/L	0.0036	74	70	130			
Potassium		50.3	mg/L	1.0	92	70	130			
Sodium		100	mg/L	1.0	99	70	130			
Uranium		4.44	mg/L	0.26	87	70	130			
Sample ID: C12110105-011BMSD	7	Sample Matrix Spike Duplicate				Run: ICP2-C_121108C				11/08/12 19:06
Arsenic		1.03	mg/L	0.015	101	70	130	0.7	20	
Calcium		135	mg/L	1.0	86	70	130	0.8	20	
Magnesium		81.0	mg/L	1.0	97	70	130	0.5	20	
Molybdenum		0.775	mg/L	0.0036	76	70	130	3.3	20	
Potassium		51.5	mg/L	1.0	94	70	130	2.3	20	
Sodium		101	mg/L	1.0	100	70	130	0.8	20	
Uranium		4.35	mg/L	0.26	85	70	130	2.2	20	
Sample ID: C12100761-001BMS2	7	Sample Matrix Spike				Run: ICP2-C_121108C				11/08/12 20:59
Arsenic		1.03	mg/L	0.015	100	70	130			
Calcium		69.0	mg/L	1.0	96	70	130			
Magnesium		53.7	mg/L	1.0	99	70	130			
Molybdenum		0.737	mg/L	0.0036	72	70	130			
Potassium		50.0	mg/L	1.0	93	70	130			
Sodium		186	mg/L	1.0	104	70	130			
Uranium		4.18	mg/L	0.26	82	70	130			
Sample ID: C12100761-001BMSD	7	Sample Matrix Spike Duplicate				Run: ICP2-C_121108C				11/08/12 21:03
Arsenic		1.05	mg/L	0.015	103	70	130	2.5	20	
Calcium		69.6	mg/L	1.0	97	70	130	0.9	20	
Magnesium		54.1	mg/L	1.0	100	70	130	0.8	20	
Molybdenum		0.768	mg/L	0.0036	75	70	130	4.1	20	
Potassium		51.1	mg/L	1.0	95	70	130	2.2	20	
Sodium		181	mg/L	1.0	93	70	130	3.0	20	
Uranium		4.22	mg/L	0.26	83	70	130	0.9	20	

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

QA/QC Summary Report

Prepared by Casper, WY Branch

Revised Date: 12/05/12
Report Date: 11/14/12
Work Order: C12110105

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E200.7									Analytical Run: ICP2-C_121109B	
Sample ID: ICV	4	Initial Calibration Verification Standard							11/09/12 13:45	
Calcium		50.0	mg/L	0.50	100	95	105			
Magnesium		51.5	mg/L	0.50	103	95	105			
Potassium		49.4	mg/L	2.7	99	95	105			
Sodium		52.7	mg/L	0.50	105	95	105			
Sample ID: ICSA	4	Interference Check Sample A							11/09/12 14:25	
Calcium		503	mg/L	0.50	101	80	120			
Magnesium		535	mg/L	0.50	107	80	120			
Potassium		-0.00200	mg/L	0.50						
Sodium		-0.0409	mg/L	0.50						
Sample ID: ICSAB	4	Interference Check Sample AB							11/09/12 14:29	
Calcium		504	mg/L	0.50	101	80	120			
Magnesium		545	mg/L	0.50	109	80	120			
Potassium		-0.00180	mg/L	0.50						
Sodium		0.102	mg/L	0.50						
Method: E200.7									Batch: R167033	
Sample ID: MB-121109A	4	Method Blank				Run: ICP2-C_121109B			11/09/12 14:53	
Calcium		ND	mg/L	0.06						
Magnesium		ND	mg/L	0.03						
Potassium		ND	mg/L	0.06						
Sodium		ND	mg/L	0.03						
Sample ID: LFB-121109A	4	Laboratory Fortified Blank				Run: ICP2-C_121109B			11/09/12 14:58	
Calcium		48.2	mg/L	0.50	96	85	115			
Magnesium		48.4	mg/L	0.50	97	85	115			
Potassium		44.5	mg/L	0.50	89	85	115			
Sodium		47.6	mg/L	0.50	95	85	115			
Sample ID: C12110106-003BMS2	4	Sample Matrix Spike				Run: ICP2-C_121109B			11/10/12 02:45	
Calcium		125	mg/L	1.0	94	70	130			
Magnesium		99.1	mg/L	1.0	93	70	130			
Potassium		94.6	mg/L	1.0	91	70	130			
Sodium		591	mg/L	1.0		70	130			A
Sample ID: C12110106-003BMSD	4	Sample Matrix Spike Duplicate				Run: ICP2-C_121109B			11/10/12 02:49	
Calcium		122	mg/L	1.0	91	70	130	2.3	20	
Magnesium		99.7	mg/L	1.0	93	70	130	0.6	20	
Potassium		95.4	mg/L	1.0	92	70	130	0.9	20	
Sodium		592	mg/L	1.0		70	130	0.2	20	A

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

A - The analyte level was greater than four times the spike level. In accordance with the method % recovery is not calculated.

QA/QC Summary Report

Prepared by Casper, WY Branch

Revised Date: 12/05/12
Report Date: 11/14/12
Work Order: C12110105

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E200.8									Analytical Run: ICPMS4-C_121112A	
Sample ID: ICV	4	Initial Calibration Verification Standard							11/12/12 12:39	
Arsenic		0.0512	mg/L	0.0010	102	90	110			
Molybdenum		0.0477	mg/L	0.0010	95	90	110			
Selenium		0.0516	mg/L	0.0010	103	90	110			
Uranium		0.0500	mg/L	0.00030	100	90	110			
Method: E200.8									Batch: R167122	
Sample ID: LRB	4	Method Blank				Run: ICPMS4-C_121112A			11/12/12 13:14	
Arsenic		ND	mg/L	5E-05						
Molybdenum		ND	mg/L	3E-05						
Selenium		ND	mg/L	7E-05						
Uranium		0.0006	mg/L	9E-06						
Sample ID: LFB	4	Laboratory Fortified Blank				Run: ICPMS4-C_121112A			11/12/12 13:41	
Arsenic		0.0529	mg/L	0.0010	106	85	115			
Molybdenum		0.0495	mg/L	0.0010	99	85	115			
Selenium		0.0529	mg/L	0.0010	106	85	115			
Uranium		0.0521	mg/L	0.00030	104	85	115			
Sample ID: C12110104-008BMS4	4	Sample Matrix Spike				Run: ICPMS4-C_121112A			11/13/12 03:50	
Arsenic		0.271	mg/L	0.0010	106	70	130			
Molybdenum		0.269	mg/L	0.0010	102	70	130			
Selenium		0.310	mg/L	0.0010	102	70	130			
Uranium		0.676	mg/L	0.00030	98	70	130			
Sample ID: C12110104-008BMSD	4	Sample Matrix Spike Duplicate				Run: ICPMS4-C_121112A			11/13/12 03:54	
Arsenic		0.275	mg/L	0.0010	108	70	130	1.7	20	
Molybdenum		0.278	mg/L	0.0010	106	70	130	3.4	20	
Selenium		0.316	mg/L	0.0010	105	70	130	2.0	20	
Uranium		0.684	mg/L	0.00030	101	70	130	1.2	20	
Sample ID: C12110105-009BMS4	4	Sample Matrix Spike				Run: ICPMS4-C_121112A			11/13/12 06:30	
Arsenic		0.0593	mg/L	0.0010	118	70	130			
Molybdenum		0.0549	mg/L	0.0010	108	70	130			
Selenium		0.0623	mg/L	0.0010	114	70	130			
Uranium		0.0621	mg/L	0.00030	118	70	130			
Sample ID: C12110105-009BMSD	4	Sample Matrix Spike Duplicate				Run: ICPMS4-C_121112A			11/13/12 06:35	
Arsenic		0.0590	mg/L	0.0010	117	70	130	0.5	20	
Molybdenum		0.0561	mg/L	0.0010	110	70	130	2.2	20	
Selenium		0.0629	mg/L	0.0010	116	70	130	0.9	20	
Uranium		0.0630	mg/L	0.00030	120	70	130	1.3	20	

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

QA/QC Summary Report

Prepared by Casper, WY Branch

Revised Date: 12/05/12
Report Date: 11/14/12
Work Order: C12110105

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E300.0									Analytical Run: IC1-C_121105A	
Sample ID: ICV-110512-10	2	Initial Calibration Verification Standard							11/05/12 16:27	
Chloride		9.84	mg/L	1.0	98	90	110			
Sulfate		40.0	mg/L	1.0	100	90	110			
Method: E300.0									Batch: R166833	
Sample ID: ICB-110512-11	2	Method Blank				Run: IC1-C_121105A			11/05/12 16:45	
Chloride		ND	mg/L	0.04						
Sulfate		ND	mg/L	0.1						
Sample ID: LFB-110512-12	2	Laboratory Fortified Blank				Run: IC1-C_121105A			11/05/12 17:02	
Chloride		9.78	mg/L	1.0	98	90	110			
Sulfate		39.5	mg/L	1.0	99	90	110			
Sample ID: C12110103-012AMS	2	Sample Matrix Spike				Run: IC1-C_121105A			11/06/12 02:19	
Chloride		71.1	mg/L	1.0	98	90	110			
Sulfate		931	mg/L	4.2	97	90	110			
Sample ID: C12110103-012AMSD	2	Sample Matrix Spike Duplicate				Run: IC1-C_121105A			11/06/12 02:36	
Chloride		71.8	mg/L	1.0	100	90	110	0.9	10	
Sulfate		931	mg/L	4.2	97	90	110	0.0	10	
Sample ID: C12110104-006AMS	2	Sample Matrix Spike				Run: IC1-C_121105A			11/06/12 06:23	
Chloride		1650	mg/L	10	97	90	110			
Sulfate		6170	mg/L	42	95	90	110			
Sample ID: C12110104-006AMSD	2	Sample Matrix Spike Duplicate				Run: IC1-C_121105A			11/06/12 06:40	
Chloride		1660	mg/L	10	100	90	110	0.8	10	
Sulfate		6210	mg/L	42	98	90	110	0.8	10	

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

Standard Reporting Procedures

Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH, Dissolved Oxygen and Residual Chlorine, are qualified as being analyzed outside of recommended holding time.

Solid/soil samples are reported on a wet weight basis (as received) unless specifically indicated. If moisture corrected, data units are typically noted as –dry. For agricultural and mining soil parameters/characteristics, all samples are dried and ground prior to sample analysis.

Workorder Receipt Checklist

Rio Algom Mining Corporation LLC C12110105

Login completed by: Tracy Judge
Date Received: 11/2/2012

Reviewed by: BL2000\smead
Received by: tjp

Reviewed Date: 11/5/2012
Carrier name: FedEx

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on shipping container/cooler?	Yes ☐	No ☐	Not Present ☑
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time? (Exclude analyses that are considered field parameters such as pH, DO, Res Cl, Sulfite, Ferrous Iron, etc.)	Yes ☑	No ☐	
Temp Blank received?	Yes ☐	No ☑	Not Applicable ☐
Container/Temp Blank temperature:	3.4°C On Ice		
Water - VOA vials have zero headspace?	Yes ☐	No ☐	No VOA vials submitted ☑
Water - pH acceptable upon receipt?	Yes ☑	No ☐	Not Applicable ☐

Contact and Corrective Action Comments:

None

Chain of Custody and Analytical Request Record

Page 1 of 2

PLEASE PRINT (Provide as much information as possible.)

Company Name: Montgomery + Associates

Report Mail Address: 520-881-4912

Email Report: tleo@elmontgomery.com

Project Name, PWS, Permit, Etc.: Rio Algom Mining Lisbon, UT Facility

Contact Name: Phone/Fax:

Email:

Sample Origin: State: UTAH

EPA/State Compliance: Yes ☒ No ☐

Sampler: (Please Print) BRANDON MOELLS

Invoice Address:

Invoice Contact & Phone:

Purchase Order:

Quote/Bottle Order: 38150

Special Report/Formats:

☐ DW ☐ EDD/EDT (Electronic Data)
☐ POTW/WWTP Format: _____
☐ State: _____ ☐ LEVEL IV
☐ Other: _____ ☐ NELAC

Number of Containers
Sample Type: A W S V B O DW
Air Water Soils/Solids
Vegetation Bioassay Other
DW - Drinking Water

ANALYSIS REQUESTED

Standard Turnaround (TAT)

R U S H

Contact ELI prior to **RUSH** sample submittal for charges and scheduling – See Instruction Page

Comments: Metals samples were field filtered + preserved w/ HNO_3 in field

Shipped by: Fed ex GS

Cooler ID(s): 3791

Receipt Temp: 3.4 °C

On Ice: (Y) N

Custody Seal: On Bottle Y N; On Cooler N N

Intact Y N

Signature Match Y N

	SAMPLE IDENTIFICATION (Name, Location, Interval, etc.)	Collection Date	Collection Time	MATRIX	See attached bottle order #38150	SEE ATTACHED
1	6226	11/1/12	945	W	X	
2	6227		1050		X	
3	6228		1100		X	
4	6229		1315		X	
5						
6						
7						
8						
9						
10						

LABORATORY USE ONLY

Custody Record MUST be Signed

Relinquished by (print): Date/Time: 11/1/12 1520 Signature: BRANDON MOELLS

Relinquished by (print): Date/Time: Signature:

Received by (print): Date/Time: Signature:

Received by (print): Date/Time: Signature:

Received by Laboratory: Date/Time: 11/2/12 1010 Signature:

Sample Disposal: Return to Client: _____ Lab Disposal: _____

In certain circumstances, samples submitted to Energy Laboratories, Inc. may be subcontracted to other certified laboratories in order to complete the analysis requested.
This serves as notice of this possibility. All sub-contract data will be clearly notated on your analytical report.
Visit our web site at www.energylab.com for additional information, downloadable fee schedule, forms, and links.

Page 23 of 27

Chain of Custody and Analytical Request Record

ENERGY LABORATORIES

PLEASE PRINT (Provide as much information as possible.)

Company Name: Montgomery + Associates

Report Mail Address (Required):

520-881-4912

☒ No Hard Copy Email: tleo@elmontgomery.com

Invoice Address (Required):

☐ No Hard Copy Email:

Special Report/Formats:
☐ DW ☐ POTW/WWTP ☐ State: ☐ Other: ☐ EDD/EDT (Electronic Data) Format: ☐ LEVEL IV ☐ NELAC

Project Name, PWS, Permit, Etc.: Rio Algom Mining Lisbon, UT Facility

Contact Name: Phone/Fax:

Invoice Contact & Phone:

Sample Origin: State: Utah

Cell:

Purchase Order:

EPA/State Compliance: Yes ☒ No ☐

Sampler: (Please Print) Josh Kerns

Quote/Bottle Order: 38150

Contact ELI prior to **RUSH** sample submittal for charges and scheduling – See Instruction Page

Comments: Metals samples were field filtered & preserved w/ HNO_3 in field

Shipped by: FedEx

Cooler ID(s): 3721

Receipt Temp: 3.4 °C

On Ice: Y N

Custody Seal: On Bottle Y N; On Cooler Y N; Intact Y N; Signature Match Y N

Number of Containers
Sample Type: A Air S Soils/Solids W Water B Bioassay V Vegetation O Other DW - Drinking Water

SAMPLE IDENTIFICATION (Name, Location, Interval, etc.)	Collection Date	Collection Time	MATRIX	See attached bottle order #38150	SEE ATTACHED	Standard Turnaround (TAT)	RUSH	
1 6208	10/31/12	1450	W	X				Partial Volume (Raw) Insufficient Sample
2 6209	01NOV2012	1015	W	X				
3 6210	01NOV2012	1125	W	X				
4 6241	01NOV2012	1150	W	X				
5 6242	01NOV2012	1300	W	X				
6 6243	01NOV2012	1430	W	X				
7 6244	01NOV2012	1500	W	X				
8 6245	01NOV2012	1510	W	X				
9								
10								

LABORATORY USE ONLY

Custody Record MUST be Signed

Relinquished by (print): Josh Kerns Date/Time: 01NOV2012 / 1520 Signature:

Relinquished by (print): Date/Time: Signature:

Received by (print): Date/Time: Signature:

Received by (print): Date/Time: Signature:

Received by Laboratory: Date/Time: 11212/1010 Signature:

Sample Disposal: Return to Client: Lab Disposal:

In certain circumstances, samples submitted to Energy Laboratories, Inc. may be subcontracted to other certified laboratories in order to complete the analysis requested. This serves as notice of this possibility. All sub-contract data will be clearly notated on your analytical report.

ENERGY LABORATORIES
www.energylab.com
Analytical Excellence Since 1952

Helena, MT 877-472-0711 • Billings, MT 800-735-4489 • Casper, WY 888-235-0515
Gillette, WY 866-686-7175 • Rapid City, SD 888-672-1225 • College Station, TX 888-690-2218

BOTTLE ORDER 38150

SHIPPED TO: Rio Algom Mining Corporation LLC

Contact: Jason Brown
c/o Confluence Environmental Inc
3308 El Camino Ave Ste 300 #148
Sacramento CA 95821
Phone: (916) 759-8156

Order Created by: Kerri Schroeder
Shipped From: Casper, WY

Ship Date: 10/24/2012
VIA: Next Day Air
Early AM

Project:

Bottle Size/Type	Bottles Per Samp	Method	Tests	Critical Hold Time	Preservative	Notes	Num of Samp
500 mL Plastic	1	A2320 B	Alkalinity				16
		E300.0	E300.0 Anions				
		A2540 C	Solids, Total Dissolved				
		A2510 B	Conductivity				
		A4500-H B	pH	0.25 hrs			
250 mL Plastic	1	E200.7_8	Metals by ICP/ICPMS, Dissolved		■ HNO3	Filter before preservation	16

Comments

Bicarbonate, Carbonate, Cl, SO4, TDS, pH, Cond Ca, Mg, Na, K, As, Se, Mo, U.
Metals samples will be filtered in the field.

■ HNO3 - Nitric Acid ☐ H2SO4 - Sulfuric Acid ■ NaOH - Sodium Hydroxide
■ ZnAc - Zinc Acetate ■ HCl - Hydrochloric Acid ☐ H3PO4 - Phosphoric Acid

We strongly suggest that the samples are shipped the same day as they are collected.

Material Safety Data Sheets(MSDS) Available @ EnergyLab.com ->Services -> MSDS Sheets

Corrosive Chemicals: Nitric, Sulfuric, Phosphoric, Hydrochloric Acids and Sodium Hydroxide. Zinc Acetate is a skin irritant.

Subcontracting of sample analyses to an outside laboratory may be required. If so, Energy Laboratories will utilize its branch laboratories or qualified contract laboratories for this service. Any such laboratories will be indicated within the Laboratory Analytical Report.

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Analytical Report

November 16, 2012

Report to:
Tim Leo
Montgomery and Associates
1550 E. Prince Rd.
Tuscon, AZ 85719

Bill to:
Accounts Payable
Montgomery and Associates
1550 E. Prince Rd.
Tucson, AZ 85719

cc: Leilani Bew

Project ID: 1350.13
ACZ Project ID: L97753

Tim Leo:

Enclosed are the analytical results for sample(s) submitted to ACZ Laboratories, Inc. (ACZ) on November 08, 2012. This project has been assigned to ACZ's project number, L97753. Please reference this number in all future inquiries.

All analyses were performed according to ACZ's Quality Assurance Plan. The enclosed results relate only to the samples received under L97753. Each section of this report has been reviewed and approved by the appropriate Laboratory Supervisor, or a qualified substitute.

Except as noted, the test results for the methods and parameters listed on ACZ's current NELAC certificate letter (#ACZ) meet all requirements of NELAC.

This report shall be used or copied only in its entirety. ACZ is not responsible for the consequences arising from the use of a partial report.

All samples and sub-samples associated with this project will be disposed of after December 16, 2012. If the samples are determined to be hazardous, additional charges apply for disposal (typically $11/sample). If you would like the samples to be held longer than ACZ's stated policy or to be returned, please contact your Project Manager or Customer Service Representative for further details and associated costs. ACZ retains analytical raw data reports for ten years.

If you have any questions or other needs, please contact your Project Manager.

S. Habermehl

Scott Habermehl has reviewed
and approved this report.

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Analytical Results

Montgomery and Associates
Project ID: 1350.13
Sample ID: 6291

MW-102DB
hydrasleeve
split

ACZ Sample ID: ***L97753-01***
Date Sampled: *11/06/12 07:45*
Date Received: *11/08/12*
Sample Matrix: *Ground Water*

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Arsenic, dissolved	M200.8 ICP-MS	0.0051			mg/L	0.0002	0.001	11/10/12 3:26	pmc
Calcium, dissolved	M200.7 ICP	14.2			mg/L	0.2	1	11/14/12 12:26	aeb
Magnesium, dissolved	M200.7 ICP	5.2			mg/L	0.2	1	11/14/12 12:26	aeb
Molybdenum, dissolved	M200.8 ICP-MS	0.0169			mg/L	0.0005	0.003	11/10/12 3:26	pmc
Potassium, dissolved	M200.7 ICP	4.4			mg/L	0.3	2	11/14/12 12:26	aeb
Selenium, dissolved	M200.8 ICP-MS	0.0002	B		mg/L	0.0001	0.0003	11/10/12 3:26	pmc
Sodium, dissolved	M200.7 ICP	151			mg/L	0.3	2	11/14/12 12:26	aeb
Uranium, dissolved	M200.8 ICP-MS	0.0761			mg/L	0.0001	0.0005	11/10/12 3:26	pmc

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Alkalinity as CaCO3	SM2320B - Titration								
Bicarbonate as CaCO3		256			mg/L	2	20	11/10/12 0:00	las
Carbonate as CaCO3		7	B		mg/L	2	20	11/10/12 0:00	las
Hydroxide as CaCO3			U		mg/L	2	20	11/10/12 0:00	las
Total Alkalinity		263			mg/L	2	20	11/10/12 0:00	las
Chloride	SM4500Cl-E	43			mg/L	1	5	11/16/12 11:42	lhb
Conductivity @25C	SM2510B	725			umhos/cm	1	10	11/10/12 0:10	las
pH (lab)	SM4500H+ B								
pH		8.4	H		units	0.1	0.1	11/10/12 0:00	las
pH measured at		22.0			C	0.1	0.1	11/10/12 0:00	las
Residue, Filterable (TDS) @180C	SM2540C	490			mg/L	10	20	11/08/12 15:55	ljr
Sulfate	D516-02 - Turbidimetric	63		*	mg/L	5	30	11/13/12 16:24	mpb

Arizona license number: AZ0102

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Analytical Results

Montgomery and Associates
Project ID: 1350.13
Sample ID: 6292

mw-102DB
low-flow split

ACZ Sample ID: ***L97753-02***
Date Sampled: *11/06/12 08:45*
Date Received: *11/08/12*
Sample Matrix: *Ground Water*

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Arsenic, dissolved	M200.8 ICP-MS	0.0045			mg/L	0.0002	0.001	11/10/12 3:29	pmc
Calcium, dissolved	M200.7 ICP	13.4			mg/L	0.2	1	11/14/12 12:29	aeb
Magnesium, dissolved	M200.7 ICP	5.0			mg/L	0.2	1	11/14/12 12:29	aeb
Molybdenum, dissolved	M200.8 ICP-MS	0.0108			mg/L	0.0005	0.003	11/10/12 3:29	pmc
Potassium, dissolved	M200.7 ICP	4.1			mg/L	0.3	2	11/14/12 12:29	aeb
Selenium, dissolved	M200.8 ICP-MS	0.0004			mg/L	0.0001	0.0003	11/10/12 3:29	pmc
Sodium, dissolved	M200.7 ICP	150			mg/L	0.3	2	11/14/12 12:29	aeb
Uranium, dissolved	M200.8 ICP-MS	0.0364			mg/L	0.0001	0.0005	11/10/12 3:29	pmc

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Alkalinity as CaCO3	SM2320B - Titration								
Bicarbonate as CaCO3		254			mg/L	2	20	11/10/12 0:00	las
Carbonate as CaCO3		9	B		mg/L	2	20	11/10/12 0:00	las
Hydroxide as CaCO3			U		mg/L	2	20	11/10/12 0:00	las
Total Alkalinity		263			mg/L	2	20	11/10/12 0:00	las
Chloride	SM4500Cl-E	41			mg/L	1	5	11/16/12 11:42	lhb
Conductivity @25C	SM2510B	713			umhos/cm	1	10	11/10/12 0:19	las
pH (lab)	SM4500H+ B								
pH		8.4	H		units	0.1	0.1	11/10/12 0:00	las
pH measured at		22.0			C	0.1	0.1	11/10/12 0:00	las
Residue, Filterable (TDS) @180C	SM2540C	480			mg/L	10	20	11/08/12 15:56	ljr
Sulfate	D516-02 - Turbidimetric	62		*	mg/L	5	30	11/13/12 16:24	mpb

Arizona license number: AZ0102

** Please refer to Qualifier Reports for details.*

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Analytical Results

Montgomery and Associates
Project ID: 1350.13
Sample ID: 6293

MW-102 DB
purge
split

ACZ Sample ID: ***L97753-03***
Date Sampled: *11/06/12 10:15*
Date Received: *11/08/12*
Sample Matrix: *Ground Water*

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Arsenic, dissolved	M200.8 ICP-MS	0.0286			mg/L	0.0002	0.001	11/10/12 3:32	pmc
Calcium, dissolved	M200.7 ICP	14.9			mg/L	0.4	2	11/14/12 12:32	aeb
Magnesium, dissolved	M200.7 ICP	8.3			mg/L	0.4	2	11/14/12 12:32	aeb
Molybdenum, dissolved	M200.8 ICP-MS	1.82			mg/L	0.05	0.3	11/13/12 18:24	pmc
Potassium, dissolved	M200.7 ICP	4.4			mg/L	0.6	3	11/14/12 12:32	aeb
Selenium, dissolved	M200.8 ICP-MS	0.0131			mg/L	0.0001	0.0003	11/10/12 3:32	pmc
Sodium, dissolved	M200.7 ICP	486			mg/L	0.6	3	11/14/12 12:32	aeb
Uranium, dissolved	M200.8 ICP-MS	9.02			mg/L	0.01	0.05	11/13/12 18:24	pmc

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Alkalinity as CaCO3	SM2320B - Titration								
Bicarbonate as CaCO3		720			mg/L	2	20	11/10/12 0:00	las
Carbonate as CaCO3		77			mg/L	2	20	11/10/12 0:00	las
Hydroxide as CaCO3			U		mg/L	2	20	11/10/12 0:00	las
Total Alkalinity		797			mg/L	2	20	11/10/12 0:00	las
Chloride	SM4500Cl-E	190			mg/L	10	50	11/16/12 11:50	lhb
Conductivity @25C	SM2510B	3510			umhos/cm	1	10	11/10/12 0:32	las
pH (lab)	SM4500H+ B								
pH		8.8	H		units	0.1	0.1	11/10/12 0:00	las
pH measured at		22.0			C	0.1	0.1	11/10/12 0:00	las
Residue, Filterable (TDS) @180C	SM2540C	2580			mg/L	10	20	11/08/12 15:58	ljr
Sulfate	D516-02 - Turbidimetric	730		*	mg/L	50	300	11/13/12 16:25	mpb

Arizona license number: AZ0102

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Reference

Report Header Explanations

Batch	A distinct set of samples analyzed at a specific time
Found	Value of the QC Type of interest
Limit	Upper limit for RPD, in %.
Lower	Lower Recovery Limit, in % (except for LCSS, mg/Kg)
MDL	Method Detection Limit. Same as Minimum Reporting Limit. Allows for instrument and annual fluctuations.
PCN/SCN	A number assigned to reagents/standards to trace to the manufacturer's certificate of analysis
PQL	Practical Quantitation Limit, typically 5 times the MDL.
QC	True Value of the Control Sample or the amount added to the Spike
Rec	Recovered amount of the true value or spike added, in % (except for LCSS, mg/Kg)
RPD	Relative Percent Difference, calculation used for Duplicate QC Types
Upper	Upper Recovery Limit, in % (except for LCSS, mg/Kg)
Sample	Value of the Sample of interest

QC Sample Types

AS	Analytical Spike (Post Digestion)	*LCSWD*	Laboratory Control Sample - Water Duplicate
ASD	Analytical Spike (Post Digestion) Duplicate	*LFB*	Laboratory Fortified Blank
CCB	Continuing Calibration Blank	*LFM*	Laboratory Fortified Matrix
CCV	Continuing Calibration Verification standard	*LFMD*	Laboratory Fortified Matrix Duplicate
DUP	Sample Duplicate	*LRB*	Laboratory Reagent Blank
ICB	Initial Calibration Blank	*MS*	Matrix Spike
ICV	Initial Calibration Verification standard	*MSD*	Matrix Spike Duplicate
ICSAB	Inter-element Correction Standard - A plus B solutions	*PBS*	Prep Blank - Soil
LCSS	Laboratory Control Sample - Soil	*PBW*	Prep Blank - Water
LCSSD	Laboratory Control Sample - Soil Duplicate	*PQV*	Practical Quantitation Verification standard
LCSW	Laboratory Control Sample - Water	*SDL*	Serial Dilution

QC Sample Type Explanations

Blanks	Verifies that there is no or minimal contamination in the prep method or calibration procedure.
Control Samples	Verifies the accuracy of the method, including the prep procedure.
Duplicates	Verifies the precision of the instrument and/or method.
Spikes/Fortified Matrix	Determines sample matrix interferences, if any.
Standard	Verifies the validity of the calibration.

ACZ Qualifiers (Qual)

B	Analyte concentration detected at a value between MDL and PQL. The associated value is an estimated quantity.
H	Analysis exceeded method hold time. pH is a field test with an immediate hold time.
L	Target analyte response was below the laboratory defined negative threshold.
U	The material was analyzed for, but was not detected above the level of the associated value. The associated value is either the sample quantitation limit or the sample detection limit.

Method References

(1) EPA 600/4-83-020. Methods for Chemical Analysis of Water and Wastes, March 1983.
(2) EPA 600/R-93-100. Methods for the Determination of Inorganic Substances in Environmental Samples, August 1993.
(3) EPA 600/R-94-111. Methods for the Determination of Metals in Environmental Samples - Supplement I, May 1994.
(4) EPA SW-846. Test Methods for Evaluating Solid Waste.
(5) Standard Methods for the Examination of Water and Wastewater.

Comments

(1) QC results calculated from raw data. Results may vary slightly if the rounded values are used in the calculations.
(2) Soil, Sludge, and Plant matrices for Inorganic analyses are reported on a dry weight basis.
(3) Animal matrices for Inorganic analyses are reported on an "as received" basis.
(4) An asterisk in the "XQ" column indicates there is an extended qualifier and/or certification qualifier associated with the result.
(5) If the MDL equals the PQL or the MDL column is omitted, the PQL is the reporting limit.

For a complete list of ACZ's Extended Qualifiers, please click: http://www.acz.com/public/extquallist.pdf

Montgomery and Associates

ACZ Project ID: ***L97753***

Alkalinity as CaCO3 SM2320B - Titration

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG333858													
WG333858PBW1	PBW	11/09/12 15:47				U	mg/L		-20	20			
WG333858LCSW2	LCSW	11/09/12 16:00	WC121025-	820.0001		759.8	mg/L	92.7	90	110			
WG333858LCSW5	LCSW	11/09/12 19:50	WC121025-	820.0001		789.9	mg/L	96.3	90	110			
WG333858PBW2	PBW	11/09/12 19:59				3.5	mg/L		-20	20			
WG333858LCSW8	LCSW	11/09/12 23:07	WC121025-	820.0001		769	mg/L	93.8	90	110			
WG333858PBW3	PBW	11/09/12 23:15				U	mg/L		-20	20			
L97753-03DUP	DUP	11/10/12 0:45			797	800.6	mg/L				0.5	20	
WG333858LCSW11	LCSW	11/10/12 2:34	WC121025-	820.0001		792.4	mg/L	96.6	90	110			
WG333858PBW4	PBW	11/10/12 2:42				U	mg/L		-20	20			
WG333858LCSW14	LCSW	11/10/12 4:49	WC121025-	820.0001		778.8	mg/L	95	90	110			

Arsenic, dissolved M200.8 ICP-MS

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG333881													
WG333881ICV	ICV	11/10/12 2:07	MS121001-5	.05		.05293	mg/L	105.9	90	110			
WG333881ICB	ICB	11/10/12 2:10				U	mg/L		-0.0006	0.0006			
WG333881LFB	LFB	11/10/12 2:13	MS121009-6	.05005		.04958	mg/L	99.1	85	115			
L97749-02AS	AS	11/10/12 3:02	MS121009-6	.05005	.0053	.06349	mg/L	116.3	70	130			
L97749-02ASD	ASD	11/10/12 3:05	MS121009-6	.05005	.0053	.06007	mg/L	109.4	70	130	5.54	20	

Calcium, dissolved M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG334092													
WG334092ICV	ICV	11/14/12 11:14	II120914-1	100		99.14	mg/L	99.1	95	105			
WG334092ICB	ICB	11/14/12 11:18				U	mg/L		-0.6	0.6			
WG334092LFB	LFB	11/14/12 11:30	II121029-3	67.97554		70.43	mg/L	103.6	85	115			
L97746-04AS	AS	11/14/12 12:20	II121029-3	67.97554	140	205.28	mg/L	96	85	115			
L97746-04ASD	ASD	11/14/12 12:23	II121029-3	67.97554	140	205.3	mg/L	96.1	85	115	0.01	20	

Chloride SM4500Cl-E

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG334271													
WG334271ICB	ICB	11/16/12 10:30				U	mg/L		-3	3			
WG334271ICV	ICV	11/16/12 10:30	WI120904-1	54.945		57.8	mg/L	105.2	90	110			
WG334271LFB1	LFB	11/16/12 11:32	WI120716-1	30		31.8	mg/L	106	90	110			
WG334271LFB2	LFB	11/16/12 11:36	WI120716-1	30		32.2	mg/L	107.3	90	110			
L97746-02AS	AS	11/16/12 11:36	WI120716-1	30	16	45.5	mg/L	98.3	90	110			
L97746-03DUP	DUP	11/16/12 11:36			10	10.3	mg/L				3	20	

Montgomery and Associates

ACZ Project ID: ***L97753***

Conductivity @25C SM2510B

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG333858													
WG333858LCSW1	LCSW	11/09/12 15:48	PCN40827	1408.8		1418.1	umhos/cm	100.7	90	110			
WG333858LCSW4	LCSW	11/09/12 19:39	PCN40827	1408.8		1364.8	umhos/cm	96.9	90	110			
WG333858LCSW7	LCSW	11/09/12 22:56	PCN40827	1408.8		1348.4	umhos/cm	95.7	90	110			
L97753-03DUP	DUP	11/10/12 0:45			3510	3560	umhos/cm				1.4	20	
WG333858LCSW10	LCSW	11/10/12 2:21	PCN40827	1408.8		1304.2	umhos/cm	92.6	90	110			
WG333858LCSW13	LCSW	11/10/12 4:38	PCN40827	1408.8		1302.2	umhos/cm	92.4	90	110			

Magnesium, dissolved M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG334092													
WG334092ICV	ICV	11/14/12 11:14	II120914-1	100		100.09	mg/L	100.1	95	105			
WG334092ICB	ICB	11/14/12 11:18				U	mg/L		-0.6	0.6			
WG334092LFB	LFB	11/14/12 11:30	II121029-3	50.00131		51.12	mg/L	102.2	85	115			
L97746-04AS	AS	11/14/12 12:20	II121029-3	50.00131	26.8	79.15	mg/L	104.7	85	115			
L97746-04ASD	ASD	11/14/12 12:23	II121029-3	50.00131	26.8	79.04	mg/L	104.5	85	115	0.14	20	

Molybdenum, dissolved M200.8 ICP-MS

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG333881													
WG333881ICV	ICV	11/10/12 2:07	MS121001-5	.02004		.01969	mg/L	98.3	90	110			
WG333881ICB	ICB	11/10/12 2:10				U	mg/L		-0.0015	0.0015			
WG333881LFB	LFB	11/10/12 2:13	MS121009-6	.05		.04945	mg/L	98.9	85	115			
L97749-02AS	AS	11/10/12 3:02	MS121009-6	.05	.0239	.0758	mg/L	103.8	70	130			
L97749-02ASD	ASD	11/10/12 3:05	MS121009-6	.05	.0239	.07192	mg/L	96	70	130	5.25	20	
WG333979													
WG333979ICV	ICV	11/13/12 18:09	MS121001-5	.02004		.02038	mg/L	101.7	90	110			
WG333979ICB	ICB	11/13/12 18:12				U	mg/L		-0.0015	0.0015			
WG333979LFB	LFB	11/13/12 18:15	MS121009-6	.05		.04694	mg/L	93.9	85	115			
L97776-01AS	AS	11/13/12 18:30	MS121009-6	.05	U	.04918	mg/L	98.4	70	130			
L97776-01ASD	ASD	11/13/12 18:33	MS121009-6	.05	U	.04954	mg/L	99.1	70	130	0.73	20	

pH (lab) SM4500H+ B

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG333858													
WG333858LCSW3	LCSW	11/09/12 16:03	PCN39825	6		6.04	units	100.7	98	102			
WG333858LCSW6	LCSW	11/09/12 19:54	PCN39825	6		6.04	units	100.7	98	102			
WG333858LCSW9	LCSW	11/09/12 23:11	PCN39825	6		6.04	units	100.7	98	102			
L97753-03DUP	DUP	11/10/12 0:45			8.8	8.78	units				0.2	20	
WG333858LCSW12	LCSW	11/10/12 2:37	PCN39825	6		6.04	units	100.7	98	102			
WG333858LCSW15	LCSW	11/10/12 4:53	PCN39825	6		6.03	units	100.5	98	102			

Montgomery and Associates

ACZ Project ID: ***L97753***

Potassium, dissolved M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG334092													
WG334092ICV	ICV	11/14/12 11:14	II120914-1	20		19.89	mg/L	99.5	95	105			
WG334092ICB	ICB	11/14/12 11:18				U	mg/L		-0.9	0.9			
WG334092LFB	LFB	11/14/12 11:30	II121029-3	99.90868		100.73	mg/L	100.8	85	115			
L97746-04AS	AS	11/14/12 12:20	II121029-3	99.90868	2.3	103.93	mg/L	101.7	85	115			
L97746-04ASD	ASD	11/14/12 12:23	II121029-3	99.90868	2.3	104.7	mg/L	102.5	85	115	0.74	20	

Residue, Filterable (TDS) @180C SM2540C

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG333766													
WG333766PBW	PBW	11/08/12 15:21				U	mg/L		-20	20			
WG333766LCSW	LCSW	11/08/12 15:22	PCN41154	260		260	mg/L	100	80	120			
L97753-03DUP	DUP	11/08/12 16:00			2580	2584	mg/L				0.2	20	

Selenium, dissolved M200.8 ICP-MS

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG333881													
WG333881ICV	ICV	11/10/12 2:07	MS121001-5	.05		.05099	mg/L	102	90	110			
WG333881ICB	ICB	11/10/12 2:10				U	mg/L		-0.0003	0.0003			
WG333881LFB	LFB	11/10/12 2:13	MS121009-6	.05005		.04816	mg/L	96.2	85	115			
L97749-02AS	AS	11/10/12 3:02	MS121009-6	.05005	.0001	.06338	mg/L	126.4	70	130			
L97749-02ASD	ASD	11/10/12 3:05	MS121009-6	.05005	.0001	.06057	mg/L	120.8	70	130	4.53	20	

Sodium, dissolved M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG334092													
WG334092ICV	ICV	11/14/12 11:14	II120914-1	100		100.26	mg/L	100.3	95	105			
WG334092ICB	ICB	11/14/12 11:18				U	mg/L		-0.9	0.9			
WG334092LFB	LFB	11/14/12 11:30	II121029-3	100.0416		100.08	mg/L	100	85	115			
L97746-04AS	AS	11/14/12 12:20	II121029-3	100.0416	23.3	122.42	mg/L	99.1	85	115			
L97746-04ASD	ASD	11/14/12 12:23	II121029-3	100.0416	23.3	123.2	mg/L	99.9	85	115	0.64	20	

Sulfate D516-02 - Turbidimetric

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG334038													
WG334038ICB	ICB	11/13/12 11:20				U	mg/L		-3	3			
WG334038ICV	ICV	11/13/12 11:20	WI121109-4	20		20.3	mg/L	101.5	90	110			
WG334038LFB	LFB	11/13/12 16:10	WI121025-3	10		10.3	mg/L	103	90	110			
L97723-03DUP	DUP	11/13/12 16:22			750	755	mg/L				0.7	20	
L97733-01AS	AS	11/13/12 16:45	WI121025-3	10	U	4.8	mg/L	48	90	110			M2

Montgomery and Associates

ACZ Project ID: ***L97753***

Uranium, dissolved M200.8 ICP-MS

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG333881													
WG333881ICV	ICV	11/10/12 2:07	MS121001-5	.05		.05253	mg/L	105.1	90	110			
WG333881ICB	ICB	11/10/12 2:10				U	mg/L		-0.0003	0.0003			
WG333881LFB	LFB	11/10/12 2:13	MS121009-6	.05		.05051	mg/L	101	85	115			
L97749-02AS	AS	11/10/12 3:02	MS121009-6	.05	.0015	.05827	mg/L	113.5	70	130			
L97749-02ASD	ASD	11/10/12 3:05	MS121009-6	.05	.0015	.05502	mg/L	107	70	130	5.74	20	
WG333979													
WG333979ICV	ICV	11/13/12 18:09	MS121001-5	.05		.05355	mg/L	107.1	90	110			
WG333979ICB	ICB	11/13/12 18:12				U	mg/L		-0.0003	0.0003			
WG333979LFB	LFB	11/13/12 18:15	MS121009-6	.05		.04795	mg/L	95.9	85	115			
L97776-01AS	AS	11/13/12 18:30	MS121009-6	.05	U	.05047	mg/L	100.9	70	130			
L97776-01ASD	ASD	11/13/12 18:33	MS121009-6	.05	U	.05128	mg/L	102.6	70	130	1.59	20	

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Extended Qualifier Report

Montgomery and Associates

ACZ Project ID: ***L97753***

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L97753-01	WG334038	Sulfate	D516-02 - Turbidimetric	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
L97753-02	WG334038	Sulfate	D516-02 - Turbidimetric	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
L97753-03	WG334038	Sulfate	D516-02 - Turbidimetric	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.

Montgomery and Associates

ACZ Project ID: ***L97753***

No certification qualifiers associated with this analysis

ACZ Laboratories, Inc. L97753

2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Name: Tim Leo	Address: 1550 E. Prince Rd
Company: Montgomery & Assoc.	Tucson AZ
E-mail: tleo@elmontgomery.com	Telephone: 520-881-4912
Name: Leilani Bew	E-mail:
Company: lbew@elmontgomery.com	Telephone:
Name: SAA	Address:
Company:	
E-mail:	Telephone:

If sample(s) received past holding time (HT), or if insufficient HT remains to complete analysis before expiration, shall ACZ proceed with requested short HT analyses? YES [X] NO [ ]

If "NO" then ACZ will contact client for further instruction. If neither "YES" nor "NO" is indicated, ACZ will proceed with the requested analyses, even if HT is expired, and data will be qualified.

Are samples for SDWA Compliance Monitoring? Yes [ ] No [X]

If yes, please include state forms. Results will be reported to PQL for Colorado.

Sampler's Name: Brenda Affer Sampler's site Information: State: UT Zip code: Time Zone:

Quote #: LISBON-GW

Project/PO #: 1350.13

Reporting state for compliance testing: UTAH

Check box if samples include NRC licensed material? [ ]

				# of Containers	LISBON-GW							
~~6255~~ 6291		06NOV2012 0745	W	3	X							
~~6256~~ 6292		06NOV2012 0845	W	3	X							
~~6256~~ 6293		06NOV2012 1015	W	3	X							

Matrix: SW (Surface Water) · GW (Ground Water) · WW (Waste Water) · DW (Drinking Water) · SL (Sludge) · SO (Soil) · OL (Oil) · Other (Specify)

Please refer to ACZ's terms & conditions located on the reverse side of this COC.

	11/7/12 1200		11:29:40

L97753 Chain of Custody

Chain of Custody and Analytical Request Record

ENERGY LABORATORIES

PLEASE PRINT (Provide as much information as possible.)

Page 1 of 1

Company Name: Montgomery + Associates

Report Mail Address (Required): Report To: Leilani Bew LBew@ELMontgomery

☐ No Hard Copy Email:

Invoice Address (Required):

☐ No Hard Copy Email:

Special Report/Formats:
☐ DW ☐ EDD/EDT (Electronic Data)
☐ POTW/WWTP Format:
☐ State: ☐ LEVEL IV
☐ Other: ☐ NELAC

Project Name, PWS, Permit, Etc: RIO Algom Mining Lisbon, UT Facility

Contact Name: Phone/Fax:

Invoice Contact & Phone:

Sample Origin: State: Utah

Cell:

Purchase Order:

EPA/State Compliance: Yes ☐ No ☐

Sampler: (Please Print) Josh Kerns

Quote/Bottle Order: 38150

ANALYSIS REQUESTED

Number of Containers
Sample Type: A W S V B O DW
Air Water Soils/Solids
Vegetation Bioassay Other
DW - Drinking Water

SAMPLE IDENTIFICATION (Name, Location, Interval, etc.)	Collection Date	Collection Time	MATRIX	See attached bottle order #38150	SEE ATTACHED
1 6301	28/NOV/12	0830	Water	X	
2 6302	28/NOV 2012	0935	Water	X	
3					
4					
5					
6					
7					
8					
9					
10					

Standard Turnaround (TAT)

R U S H

Contact ELI prior to **RUSH** sample submittal for charges and scheduling – See Instruction Page

Comments: Metals samples were field filtered + preserved w/ HNO_3 in field

Shipped by:

Cooler ID(s):

Receipt Temp: °C

On Ice: Y N

Custody Seal: On Bottle Y N; On Cooler Y N

Intact: Y N

Signature Match: Y N

LABORATORY USE ONLY

Custody Record MUST be Signed

Relinquished by (print): Josh Kerns Date/Time: 28/NOV/2012/1200 Signature:

Relinquished by (print): Date/Time: Signature:

Received by (print): Date/Time: Signature:

Received by (print): Date/Time: Signature:

Received by Laboratory: Date/Time:

Sample Disposal: Return to Client: Lab Disposal:

may be subcontracted to other certified laboratories in order to complete the analysis requested.

ENERGY LABORATORIES
www.energylab.com
Analytical Excellence Since 1952

Helena, MT 877-472-0711 • Billings, MT 800-735-4489 • Casper, WY 888-235-0515
Gillette, WY 866-686-7175 • Rapid City, SD 888-672-1225 • College Station, TX 888-690-2218

BOTTLE ORDER 38150

SHIPPED TO: Rio Algom Mining Corporation LLC

Contact: Jason Brown

c/o Confluence Environmental Inc
3308 El Camino Ave Ste 300 #148
Sacramento CA 95821

Phone: (916) 759-8156

Project:

Order Created by: Kerri Schroeder
Shipped From: Casper, WY

Ship Date: 10/24/2012
VIA: Next Day Air
Early AM

Bottle Size/Type	Bottles Per Samp	Method	Tests	Critical Hold Time	Preservative	Notes	Num of Samp
500 mL Plastic	1	A2320 B	Alkalinity				16
		E300.0	E300.0 Anions				
		A2540 C	Solids, Total Dissolved				
		A2510 B	Conductivity				
		A4500-H B	pH	0.25 hrs			
250 mL Plastic	1	E200.7_8	Metals by ICP/ICPMS, Dissolved		HNO3	Filter before preservation	16

Comments

Bicarbonate, Carbonate, Cl, SO4, TDS, pH, Cond Ca, Mg, Na, K, As, Se, Mo, U.
Metals samples will be filtered in the field.

HNO3 - Nitric Acid | H2SO4 - Sulfuric Acid | NaOH - Sodium Hydroxide
ZnAc - Zinc Acetate | HCl - Hydrochloric Acid | H3PO4 - Phosphoric Acid

We strongly suggest that the samples are shipped the same day as they are collected.

Material Safety Data Sheets(MSDS) Available @ EnergyLab.com ->Services -> MSDS Sheets

Corrosive Chemicals: Nitric, Sulfuric, Phosphoric, Hydrochloric Acids and Sodium Hydroxide. Zinc Acetate is a skin irritant.

Subcontracting of sample analyses to an outside laboratory may be required. If so, Energy Laboratories will utilize its branch laboratories or qualified contract laboratories for this service. Any such laboratories will be indicated within the Laboratory Analytical Report.

Chain of Custody and Analytical Request Record

PLEASE PRINT (Provide as much information as possible.)

Page 1 of 1

Company Name: Montgomery & Associates

Report Mail Address (Required): Report to: Leilani Bew

LBew@ELMontgomery.com

☐ No Hard Copy Email:

Invoice Address (Required):

☐ No Hard Copy Email:

Special Report/Formats:
☐ DW ☐ EDD/EDT (Electronic Data)
☐ POTW/WWTP Format:
☐ State: ☐ LEVEL IV
☐ Other: ☐ NELAC

Project Name, PWS, Permit, Etc.: RIO Algom Mining Lisbon, UT Facility

Contact Name: Phone/Fax

Invoice Contact & Phone

Sample Origin: State: Utah

Cell:

Purchase Order:

EPA/State Compliance: Yes ☐ No ☐

Sampler: (Please Print) Josh Kerns

Quote/Bottle Order: 38150

ANALYSIS REQUESTED

Number of Containers
Sample Type: A-Air W-Water S-Soils/Solids V-Vegetation B-Biossay O-Other DW - Drinking Water

SEE ATTACHED

Standard Turnaround (TAT)

RUSH

Contact ELI prior to RUSH sample submittal for charges and scheduling – See Instruction Page

Comments: Metals samples were field filtered & preserved w/ HNO_3 in field

Shipped by:

Cooler ID(s):

Receipt Temp: °C

On Ice: Y N

Custody Seal: On Bottle Y N; On Cooler Y N

Intact Y N

Signature Match Y N

	SAMPLE IDENTIFICATION (Name, Location, Interval, etc.)	Collection Date	Collection Time	MATRIX	See attached bottle order #38150
1	6303	28NOV2012	1010	water	X
2	6304	28NOV2012	1030	water	X
3					
4					
5					
6					
7					
8					
9					
10					

LABORATORY USE ONLY

Custody Record MUST be Signed

Relinquished by (print): Josh Kerns Date/Time: 28 Nov 2012 / 1200 Signature:

Relinquished by (print): Date/Time: Signature:

Received by (print): Date/Time: Signature:

Received by (print): Date/Time: Signature:

Received by Laboratory: Date/Time: Signature:

Sample Disposal: Return to Client: Lab Disposal:

In certain circumstances, samples submitted to Energy Laboratories, Inc. may be subcontracted to other certified laboratories in order to complete the analysis requested. This serves as notice of this possibility. All sub-contract data will be clearly notated on your analytical report.

ENERGY LABORATORIES
www.energylab.com
Analytical Excellence Since 1952

Helena, MT 877-472-0711 • Billings, MT 800-735-4489 • Casper, WY 888-235-0515
Gillette, WY 866-686-7175 • Rapid City, SD 888-672-1225 • College Station, TX 888-690-2218

BOTTLE ORDER 38150

SHIPPED TO: Rio Algom Mining Corporation LLC

Contact: Jason Brown

c/o Confluence Environmental Inc
3308 El Camino Ave Ste 300 #148

Sacramento CA 95821

Phone: (916) 759-8156

Project:

Order Created by: Kerri Schroeder

Shipped From: Casper, WY

Ship Date: 10/24/2012

VIA: Next Day Air
Early AM

Bottle Size/Type	Bottles Per Samp	Method	Tests	Critical Hold Time	Preservative	Notes	Num of Samp
500 mL Plastic	1	A2320 B	Alkalinity				16
		E300.0	E300.0 Anions				
		A2540 C	Solids, Total Dissolved				
		A2510 B	Conductivity				
		A4500-H B	pH	0.25 hrs			
250 mL Plastic	1	E200.7_8	Metals by ICP/ICPMS, Dissolved		HNO3	Filter before preservation	16

Comments

Bicarbonate, Carbonate, Cl, SO4, TDS, pH, Cond Ca, Mg, Na, K, As, Se, Mo, U.
Metals samples will be filtered in the field.

HNO3 - Nitric Acid | H2SO4 - Sulfuric Acid | NaOH - Sodium Hydroxide
ZnAc - Zinc Acetate | HCl - Hydrochloric Acid | H3PO4 - Phosphoric Acid

We strongly suggest that the samples are shipped the same day as they are collected.

Material Safety Data Sheets(MSDS) Available @ EnergyLab.com ->Services -> MSDS Sheets

Corrosive Chemicals: Nitric, Sulfuric, Phosphoric, Hydrochloric Acids and Sodium Hydroxide. Zinc Acetate is a skin irritant.

Subcontracting of sample analyses to an outside laboratory may be required. If so, Energy Laboratories will utilize its branch laboratories or qualified contract laboratories for this service. Any such laboratories will be indicated within the Laboratory Analytical Report.

Confluence Environmental, Inc

Equipment Calibration Log

Equipment make/model	Equipment ID/ serial number	Date	Time	Calibration Standards	Equipment Reading	Equipment Calibrated	Temp (°C) °F)	Tech init.	Comments
YSI Pro	12A100565	11-28-12	0745	pH 4.0/7.0/10.0	4.0/7.0/10.0	✓	19	JK	
			0747	Cond 1413	1413	✓	19	JK	
			0750	DO 100%	100%	✓	20	JK	
			0752	ORP 237.5	237	✓	20	JK	

Notes/comments:

Purging And Sampling Data Sheet

Job#: 1350	**Sampler:** J Kerns T Mulloy	**Client:** Montgomery & Associates
Well ID: RL-1	**Date** (DDOct2012): 28NOV2012	**Site:** Rio Algom Mining, Lisbon, UT
Weather Conditions: Sunny - Cold	**Sampler Signature:**	
Well diam: 1/4" 1" 2" 3" 4" 6" Other: 5"	**DTW:** 116.24	**Total Depth:** 124.00
Purge equip: ES - diam: Bladder Peri Waterra Positive Air Displacement (Ext. System)		
disp bailer teflon bailer other:	**Tubing:** OD: New Dedicated NA	
Purge method: 3-5 Case Volume (Micro/Low-Flow) Extraction Other:		
Pump depth/ intake:	**Multipliers:** 1"= 0.04 2"= 0.16 3"= 0.37 4"= 0.65 5"=1.02 6"= 1.47 Radius^2 X 0.163	
(TD - DTW X Multiplier = 1 Volume	80% Recovery (TD - DTW X 0.20 + DTW)	

1 Volume = ___ X ___ = ___ (Total Purge) 80%= ___

Time	Temp (°C) °F)	pH	Sp Cond (mS µS)	Turbidity (NTU)	Purge Rate (gal or (ml) min)	Volume Removed (gal (L)	DO (mg/l)	ORP (mv)	DTW	Notes
0810	8.6	7.7	9781	27.2	150	1.0	7.74	267.2	116.32	
0813	9.6	7.5	9981	20.9	150	1.45	8.32	239.2	116.36	
0816	9.8	7.5	10063	18.1	150	1.90	7.27	228.3	116.38	
0819	9.8	7.4	10106	12.2	150	2.35	7.01	223.7	116.38	
0822	10.0	7.4	10086	12.2	150	2.80	6.82	220.9	116.38	
0825	10.1	7.4	10137	12.0	150	3.25	6.73	216.5	116.38	
0828	10.0	7.4	10127	11.8	150	3.70	6.70	215.3	116.38	

Did well dewater? YES (NO)	Total volume removed: 3.70 (gal (L)	
Sample method: Disp Bailer Hydrasleeve New Tubing Ext. Port Other: System		
Sample date: 28NOV2012	Sample time: 0830	DTW at sample: 116.38
Sample ID: 6301	Lab: Energy Labs	Number of bottles: 2
Analysis: 500 ml NP poly - Alkalinity, Cl, SO4, TDS, EC, pH 250 ml HNO3 poly *field filtered - Dissolved Metals		
Equipment blank ID @	Field blank ID @	
Duplicate ID:	Pre-purge DO:	Post purge DO:
$Fe2^+$:	Pre-purge ORP:	Post purge ORP:
NAPL depth:	Volume of NAPL:	Volume removed: ml

Purging And Sampling Data Sheet

Job#: 1350	**Sampler:** J Kerns T Mulloy	**Client:** Montgomery & Associates
Well ID: EF-8	**Date** (DDOct2012): 28Nov2012	**Site:** Rio Algom Mining, Lisbon, UT
Weather Conditions: Sunny - Cold	**Sampler Signature:**	
Well diam: 1/4" 1" 2" 3" (4") 6" Other:	**DTW:** 74.22 **Total Depth:** 242.00	
Purge equip: ES - diam: Bladder Peri Waterra Positive Air Displacement (Ext. System) disp bailer teflon bailer other:	**Tubing:** OD: New Dedicated NA	
Purge method: 3-5 Case Volume Micro/Low-Flow Extraction Other:		
Pump depth/ intake:	**Multipliers:** 1"= 0.04 2"= 0.16 3"= 0.37 4"= 0.65 5"=1.02 6"= 1.47 Radius² X 0.163	
(TD - DTW X Multiplier = 1 Volume	80% Recovery (TD - DTW X 0.20 + DTW)	

1 Volume = — X — = — (Total Purge) 80%= —

Time	Temp (°C) °F	pH	Sp Cond (mS) µS	Turbidity (NTU)	Purge Rate (gal or (mL) min	Volume Removed (gal (L)	DO (mg/l)	ORP (mv)	DTW	Notes
0908	9.6	8.1	1807	8.3	125	1.0	7.00	143.8	74.24	
0911	10.3	8.0	1791	2.5	125	1.38	6.17	144.5	74.27	
0915	10.3	7.9	1815	2.9	125	1.75	5.26	145.9	74.29	
0918	10.0	7.8	1818	2.7	125	2.13	5.28	148.5	74.29	
0921	9.8	7.8	1800	2.9	125	2.50	7.95	150.2	74.29	
0924	10.2	7.8	1772	3.2	125	2.88	7.94	149.0	74.29	
0927	10.3	7.7	1768	3.4	125	3.25	7.90	149.4	74.29	
0930	10.3	7.7	1775	3.5	125	3.63	7.91	151.1	74.29	

Did well dewater? YES (NO)	Total volume removed:	(gal (L)
Sample method: Disp Bailer Hydrasleeve New Tubing Ext. Port Other: System		
Sample date: 28Nov2012 Sample time: 0935	DTW at sample:	
Sample ID: 6302 Lab: Energy Labs	Number of bottles: 2	
Analysis: 500 ml NP poly - Alkalinity, Cl, SO4, TDS, EC, pH 250 ml HNO3 poly *field filtered - Dissolved Metals		
Equipment blank ID @	Field blank ID @	
Duplicate ID:	Pre-purge DO:	Post purge DO:
$Fe2^{+}$:	Pre-purge ORP:	Post purge ORP:
NAPL depth:	Volume of NAPL:	Volume removed: ml

Purging And Sampling Data Sheet

Job#: 1350	**Sampler:** J Kerns T Mulloy	**Client:** Montgomery & Associates
Well ID: MW-104	**Date** (DDOct2012): 28 NOV 2012	**Site:** Rio Algom Mining, Lisbon, UT
Weather Conditions: Sunny - Cold	**Sampler Signature:**	
Well diam: 1/4" 1" 2" 3" (4") 6" Other:	**DTW:** 94.42 **Total Depth:**	
Purge equip: ES - diam: Bladder Peri Waterra Positive Air Displacement Ext. System		
disp bailer teflon bailer other:	**Tubing:** OD: New Dedicated NA	
Purge method: 3-5 Case Volume Micro/Low-Flow Extraction Other:		
Pump depth/ intake:	**Multipliers:** 1"= 0.04 2"= 0.16 3"= 0.37 4"= 0.65 5"=1.02 6"= 1.47 Radius^2 X 0.163	
(TD - DTW X Multiplier = 1 Volume	80% Recovery (TD - DTW X 0.20 + DTW)	

1 Volume = _____ X _____ = _____ (Total Purge) 80%=_____

Time	Temp (°C) °F)	pH	Sp Cond (mS / µS)	Turbidity (NTU)	Purge Rate (gal or mL/ min)	Volume Removed (gal / L)	DO (mg/l)	ORP (mv)	DTW	Notes
1032	10.6	7.8	836	3.8	—	—	4.27	171.9	94.42	

Did well dewater? YES (NO) Total volume removed: — (gal / L)

Sample method: (Disp Bailer) Hydrasleeve New Tubing Ext. Port Other:

Sample date: 28/NOV 2012	Sample time: 1030	DTW at sample: 94.42
Sample ID: 6304	Lab: Energy Labs	Number of bottles: (2)
Analysis: 500 ml NP poly - Alkalinity, Cl, SO4, TDS, EC, pH 250 ml HNO3 poly *field filtered - Dissolved Metals		
Equipment blank ID @	Field blank ID @	
Duplicate ID:	Pre-purge DO:	Post purge DO:
$Fe2^+$:	Pre-purge ORP:	Post purge ORP:
NAPL depth:	Volume of NAPL:	Volume removed: ml

Purging And Sampling Data Sheet

Job#: 1350	**Sampler:** J Kerns T Mulloy	**Client:** Montgomery & Associates
Well ID: MW-106	**Date** (DDOct2012): 28NOV2012	**Site:** Rio Algom Mining, Lisbon, UT
Weather Conditions: Sunny - Cold	**Sampler Signature:**	
Well diam: 1/4" 1" 2" 3" (4") 6" Other:	**DTW:** 245.14 **Total Depth:**	
Purge equip: ES - diam: Bladder Peri Waterra Positive Air Displacement Ext. System disp bailer teflon bailer other:	**Tubing:** OD: New Dedicated NA	
Purge method: 3-5 Case Volume Micro/Low-Flow Extraction Other:		
Pump depth/ intake:	**Multipliers:** 1"= 0.04 2"= 0.16 3"= 0.37 4"= 0.65 5"=1.02 6"= 1.47 Radius² X 0.163	
(TD - DTW X Multiplier = 1 Volume	80% Recovery (TD - DTW X 0.20 + DTW)	

1 Volume = ___ X ___ = ___ (Total Purge) 80%= ___

Time	~~Temp~~ (°C / °F)	pH	Sp Cond (mS / µS)	Turbidity (NTU)	Purge Rate (gal or mL/ min)	Volume Removed (gal / L)	DO (mg/l)	ORP (mv)	DTW	Notes
1010	11.3	7.7	2865	5.3	—	—	2.58	262.7	245.14	

Did well dewater? YES (NO) Total volume removed: — (gal / L)

Sample method: (Disp Bailer) Hydrasleeve New Tubing Ext. Port Other:

Sample date: 28NOV2012	Sample time: 1010	DTW at sample: 245.14
Sample ID: 6303	Lab: Energy Labs	Number of bottles: 2
Analysis: 500 ml NP poly - Alkalinity, Cl, SO4, TDS, EC, pH 250 ml HNO3 poly *field filtered - Dissolved Metals		
Equipment blank ID @	Field blank ID @	
Duplicate ID:	Pre-purge DO:	Post purge DO:
$Fe2^{+}$:	Pre-purge ORP:	Post purge ORP:
NAPL depth:	Volume of NAPL:	Volume removed: ml

ANALYTICAL SUMMARY REPORT

December 07, 2012

Rio Algom Mining Corporation LLC
Hwy 605 and 509
Grants, NM 87020

Workorder No.: C12111026

Project Name: Lisbon, UT Facility

Energy Laboratories, Inc. Casper WY received the following 4 samples for Rio Algom Mining Corporation LLC on 11/29/2012 for analysis.

Sample ID	Client Sample ID	Collect Date	Receive Date	Matrix	Test
C12111026-001	6301	11/28/12 8:30	11/29/12	Aqueous	Metals by ICP/ICPMS, Dissolved Alkalinity QA Calculations Conductivity E300.0 Anions pH Solids, Total Dissolved Solids, Total Dissolved - Calculated
C12111026-002	6302	11/28/12 9:35	11/29/12	Aqueous	Same As Above
C12111026-003	6303	11/28/12 10:10	11/29/12	Aqueous	Same As Above
C12111026-004	6304	11/28/12 10:30	11/29/12	Aqueous	Same As Above

The results as reported relate only to the item(s) submitted for testing. The analyses presented in this report were performed at Energy Laboratories, Inc., 2393 Salt Creek Hwy., Casper, WY 82601, unless otherwise noted. Radiochemistry analyses were performed at Energy Laboratories, Inc., 2325 Kerzell Lane, Casper, WY 82601, unless otherwise noted. Any exceptions or problems with the analyses are noted in the Laboratory Analytical Report, the QA/QC Summary Report, or the Case Narrative.

If you have any questions regarding these test results, please call.

Report Approved By:

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility
Lab ID: C12111026-001
Client Sample ID: 6301

Report Date: 12/07/12
Collection Date: 11/28/12 08:30
DateReceived: 11/29/12
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Carbonate as CO3	ND	mg/L		5		A2320 B	11/29/12 19:19 / jba
Bicarbonate as HCO3	1240	mg/L		5		A2320 B	11/29/12 19:19 / jba
Calcium	565	mg/L		1		E200.7	11/30/12 19:13 / sf
Chloride	673	mg/L	D	10		E300.0	11/30/12 14:06 / wc
Magnesium	182	mg/L		1		E200.7	11/30/12 19:13 / sf
Potassium	20	mg/L		1		E200.7	11/30/12 19:13 / sf
Sodium	2280	mg/L	D	2		E200.7	12/04/12 13:19 / sf
Sulfate	4550	mg/L	D	40		E300.0	11/30/12 14:06 / wc
PHYSICAL PROPERTIES							
Conductivity @ 25 C	9960	umhos/cm		1		A2510 B	11/30/12 09:12 / ab
pH	7.38	s.u.	H	0.01		A4500-H B	11/30/12 09:12 / ab
Solids, Total Dissolved TDS @ 180 C	9100	mg/L		10		A2540 C	11/30/12 11:25 / ab
METALS - DISSOLVED							
Arsenic	0.003	mg/L		0.001		E200.8	12/05/12 23:27 / cp
Molybdenum	10.2	mg/L	D	0.006		E200.7	11/30/12 19:13 / sf
Selenium	0.074	mg/L		0.001		E200.8	12/05/12 23:27 / cp
Uranium	41.2	mg/L	D	0.5		E200.7	11/30/12 19:13 / sf
DATA QUALITY							
A/C Balance (± 5)	2.62	%				A1030 E	12/07/12 09:05 / kbh
Anions	136	meq/L				A1030 E	12/07/12 09:05 / kbh
Cations	143	meq/L				A1030 E	12/07/12 09:05 / kbh
Solids, Total Dissolved Calculated	9000	mg/L				A1030 E	12/07/12 09:05 / kbh
TDS Balance (0.80 - 1.20)	1.01					A1030 E	12/07/12 09:05 / kbh

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
H - Analysis performed past recommended holding time.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility
Lab ID: C12111026-002
Client Sample ID: 6302

Report Date: 12/07/12
Collection Date: 11/28/12 09:35
DateReceived: 11/29/12
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Carbonate as CO3	ND	mg/L		5		A2320 B	11/29/12 19:27 / jba
Bicarbonate as HCO3	384	mg/L		5		A2320 B	11/29/12 19:27 / jba
Calcium	205	mg/L		1		E200.7	11/30/12 19:29 / sf
Chloride	195	mg/L		1		E300.0	11/30/12 14:21 / wc
Magnesium	54	mg/L		1		E200.7	11/30/12 19:29 / sf
Potassium	5	mg/L		1		E200.7	11/30/12 19:29 / sf
Sodium	150	mg/L		1		E200.7	11/30/12 19:29 / sf
Sulfate	428	mg/L	D	4		E300.0	11/30/12 14:21 / wc
PHYSICAL PROPERTIES							
Conductivity @ 25 C	1860	umhos/cm		1		A2510 B	11/30/12 09:14 / ab
pH	7.70	s.u.	H	0.01		A4500-H B	11/30/12 09:14 / ab
Solids, Total Dissolved TDS @ 180 C	1330	mg/L		10		A2540 C	11/30/12 11:25 / ab
METALS - DISSOLVED							
Arsenic	0.031	mg/L		0.001		E200.8	12/05/12 23:31 / cp
Molybdenum	0.015	mg/L		0.001		E200.8	12/05/12 23:31 / cp
Selenium	0.011	mg/L		0.001		E200.8	12/05/12 23:31 / cp
Uranium	0.592	mg/L		0.0003		E200.8	12/05/12 23:31 / cp
DATA QUALITY							
A/C Balance (± 5)	0.497	%				A1030 E	12/05/12 07:15 / kbh
Anions	21.2	meq/L				A1030 E	12/05/12 07:15 / kbh
Cations	21.4	meq/L				A1030 E	12/05/12 07:15 / kbh
Solids, Total Dissolved Calculated	1300	mg/L				A1030 E	12/05/12 07:15 / kbh
TDS Balance (0.80 - 1.20)	1.05					A1030 E	12/05/12 07:15 / kbh

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
H - Analysis performed past recommended holding time.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility
Lab ID: C12111026-003
Client Sample ID: 6303

Report Date: 12/07/12
Collection Date: 11/28/12 10:10
DateReceived: 11/29/12
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Carbonate as CO3	ND	mg/L		5		A2320 B	11/29/12 19:35 / jba
Bicarbonate as HCO3	241	mg/L		5		A2320 B	11/29/12 19:35 / jba
Calcium	125	mg/L		1		E200.7	11/30/12 19:33 / sf
Chloride	75	mg/L	D	2		E300.0	11/30/12 14:37 / wc
Magnesium	60	mg/L		1		E200.7	11/30/12 19:33 / sf
Potassium	17	mg/L		1		E200.7	11/30/12 19:33 / sf
Sodium	498	mg/L		1		E200.7	11/30/12 19:33 / sf
Sulfate	1230	mg/L	D	8		E300.0	11/30/12 14:37 / wc
PHYSICAL PROPERTIES							
Conductivity @ 25 C	2820	umhos/cm		1		A2510 B	11/30/12 09:17 / ab
pH	7.77	s.u.	H	0.01		A4500-H B	11/30/12 09:17 / ab
Solids, Total Dissolved TDS @ 180 C	2220	mg/L		10		A2540 C	11/30/12 11:25 / ab
METALS - DISSOLVED							
Arsenic	0.001	mg/L		0.001		E200.8	12/05/12 23:40 / cp
Molybdenum	0.007	mg/L		0.001		E200.8	12/05/12 23:40 / cp
Selenium	ND	mg/L		0.001		E200.8	12/05/12 23:40 / cp
Uranium	0.0034	mg/L		0.0003		E200.8	12/05/12 23:40 / cp
DATA QUALITY							
A/C Balance (± 5)	2.20	%				A1030 E	12/05/12 07:15 / kbh
Anions	31.8	meq/L				A1030 E	12/05/12 07:15 / kbh
Cations	33.2	meq/L				A1030 E	12/05/12 07:15 / kbh
Solids, Total Dissolved Calculated	2100	mg/L				A1030 E	12/05/12 07:15 / kbh
TDS Balance (0.80 - 1.20)	1.04					A1030 E	12/05/12 07:15 / kbh

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
H - Analysis performed past recommended holding time.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility
Lab ID: C12111026-004
Client Sample ID: 6304

Report Date: 12/07/12
Collection Date: 11/28/12 10:30
DateReceived: 11/29/12
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Carbonate as CO3	ND	mg/L		5		A2320 B	11/29/12 19:43 / jba
Bicarbonate as HCO3	470	mg/L		5		A2320 B	11/29/12 19:43 / jba
Calcium	84	mg/L		1		E200.7	11/30/12 19:37 / sf
Chloride	109	mg/L		1		E300.0	11/30/12 14:52 / wc
Magnesium	23	mg/L		1		E200.7	11/30/12 19:37 / sf
Potassium	4	mg/L		1		E200.7	11/30/12 19:37 / sf
Sodium	202	mg/L		1		E200.7	11/30/12 19:37 / sf
Sulfate	209	mg/L	D	4		E300.0	11/30/12 14:52 / wc
PHYSICAL PROPERTIES							
Conductivity @ 25 C	1410	umhos/cm		1		A2510 B	11/30/12 09:20 / ab
pH	7.76	s.u.	H	0.01		A4500-H B	11/30/12 09:20 / ab
Solids, Total Dissolved TDS @ 180 C	925	mg/L		10		A2540 C	11/30/12 11:26 / ab
METALS - DISSOLVED							
Arsenic	0.002	mg/L		0.001		E200.8	12/05/12 23:36 / cp
Molybdenum	0.096	mg/L	D	0.006		E200.7	11/30/12 19:37 / sf
Selenium	0.004	mg/L		0.001		E200.8	12/05/12 23:36 / cp
Uranium	0.215	mg/L		0.0003		E200.8	12/05/12 23:36 / cp
DATA QUALITY							
A/C Balance (± 5)	-1.52	%				A1030 E	12/05/12 07:15 / kbh
Anions	15.4	meq/L				A1030 E	12/05/12 07:15 / kbh
Cations	14.9	meq/L				A1030 E	12/05/12 07:15 / kbh
Solids, Total Dissolved Calculated	900	mg/L				A1030 E	12/05/12 07:15 / kbh
TDS Balance (0.80 - 1.20)	1.03					A1030 E	12/05/12 07:15 / kbh

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
H - Analysis performed past recommended holding time.

QA/QC Summary Report

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Report Date: 12/07/12
Project: Lisbon, UT Facility
Work Order: C12111026

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: A2320 B										Batch: R167702
Sample ID: MBLK	3	Method Blank				Run: MANTECH_121129A				11/29/12 14:43
Alkalinity, Total as CaCO3		ND	mg/L	3						
Carbonate as CO3		ND	mg/L	1						
Bicarbonate as HCO3		3	mg/L	1						
Sample ID: LCS_121003		Laboratory Control Sample				Run: MANTECH_121129A				11/29/12 14:59
Alkalinity, Total as CaCO3		203	mg/L	5.0	102	90	110			
Sample ID: C12111008-001ADUP	3	Sample Duplicate				Run: MANTECH_121129A				11/29/12 15:17
Alkalinity, Total as CaCO3		829	mg/L	5.0				3.3	10	
Carbonate as CO3		ND	mg/L	5.0					10	
Bicarbonate as HCO3		1010	mg/L	5.0				3.3	10	
Sample ID: C12111024-003AMS		Sample Matrix Spike				Run: MANTECH_121129A				11/29/12 19:00
Alkalinity, Total as CaCO3		408	mg/L	5.0	100	80	120			

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

QA/QC Summary Report

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC **Report Date:** 12/07/12

Project: Lisbon, UT Facility **Work Order:** C12111026

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: A2510 B									Analytical Run: PHSC_101-C_121130A	
Sample ID: SC 100		Continuing Calibration Verification Standard							11/30/12 08:53	
Conductivity @ 25 C		100	umhos/cm	1.0	100	90	110			
Method: A2510 B									Batch: R167713	
Sample ID: SC 2ND 1413		Laboratory Control Sample				Run: PHSC_101-C_121130A			11/30/12 09:04	
Conductivity @ 25 C		1400	umhos/cm	1.0	99	90	110			
Sample ID: MBLK		Method Blank				Run: PHSC_101-C_121130A			11/30/12 09:09	
Conductivity @ 25 C		2	umhos/cm	0.2						
Sample ID: C12111033-001ADUP		Sample Duplicate				Run: PHSC_101-C_121130A			11/30/12 09:36	
Conductivity @ 25 C		2860	umhos/cm	1.0				0.2	10	

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

QA/QC Summary Report

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC **Report Date:** 12/07/12

Project: Lisbon, UT Facility **Work Order:** C12111026

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: A2540 C										Batch: TDS121130A
Sample ID: MB-1_121130A		Method Blank				Run: BAL-1_121130A				11/30/12 11:24
Solids, Total Dissolved TDS @ 180 C		5	mg/L	4						
Sample ID: LCS-2_121130A		Laboratory Control Sample				Run: BAL-1_121130A				11/30/12 11:24
Solids, Total Dissolved TDS @ 180 C		1110	mg/L	10	100	90	110			
Sample ID: C12110976-001B DUP		Sample Duplicate				Run: BAL-1_121130A				11/30/12 11:24
Solids, Total Dissolved TDS @ 180 C		309000	mg/L	10				0.6	5	
Sample ID: C12111026-001A MS		Sample Matrix Spike				Run: BAL-1_121130A				11/30/12 11:25
Solids, Total Dissolved TDS @ 180 C		18900	mg/L	10	98	90	110			

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

QA/QC Summary Report

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Report Date: 12/07/12
Project: Lisbon, UT Facility
Work Order: C12111026

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: A4500-H B									Analytical Run: PHSC_101-C_121130A	
Sample ID: pH 6.86	Initial Calibration Verification Standard								11/30/12 08:50	
pH		6.85	s.u.	0.010	100	98	102			
Method: A4500-H B									Batch: R167713	
Sample ID: C12111033-001ADUP	Sample Duplicate					Run: PHSC_101-C_121130A			11/30/12 09:36	
pH		7.88	s.u.	0.010				0.0	3	

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

QA/QC Summary Report

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC **Report Date:** 12/07/12

Project: Lisbon, UT Facility **Work Order:** C12111026

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E200.7									Analytical Run: ICP2-C_121130A	
Sample ID: ICV	6	Initial Calibration Verification Standard							11/30/12 11:39	
Calcium		51.5	mg/L	0.50	103	95	105			
Magnesium		50.0	mg/L	0.50	100	95	105			
Molybdenum		1.05	mg/L	0.10	105	95	105			
Potassium		47.6	mg/L	0.50	95	95	105			
Sodium		52.1	mg/L	0.50	104	95	105			
Uranium		5.19	mg/L	1.0	104	95	105			
Sample ID: ICSA	6	Interference Check Sample A							11/30/12 12:09	
Calcium		494	mg/L	0.50	99	80	120			
Magnesium		511	mg/L	0.50	102	80	120			
Molybdenum		-0.0157	mg/L	0.10						
Potassium		0.00160	mg/L	0.50						
Sodium		-0.0492	mg/L	0.50						
Uranium		0.00720	mg/L	1.0						
Sample ID: ICSAB	6	Interference Check Sample AB							11/30/12 12:13	
Calcium		505	mg/L	0.50	101	80	120			
Magnesium		515	mg/L	0.50	103	80	120			
Molybdenum		-0.0167	mg/L	0.10						
Potassium		0.000700	mg/L	0.50						
Sodium		-0.0382	mg/L	0.50						
Uranium		0.00840	mg/L	1.0						
Method: E200.7									Batch: R167761	
Sample ID: MB-121130A	6	Method Blank				Run: ICP2-C_121130A			11/30/12 12:37	
Calcium		ND	mg/L	0.06						
Magnesium		ND	mg/L	0.03						
Molybdenum		ND	mg/L	0.004						
Potassium		ND	mg/L	0.06						
Sodium		ND	mg/L	0.3						
Uranium		ND	mg/L	0.3						
Sample ID: LFB-121130A	6	Laboratory Fortified Blank				Run: ICP2-C_121130A			11/30/12 12:41	
Calcium		50.3	mg/L	0.50	101	85	115			
Magnesium		48.7	mg/L	0.50	97	85	115			
Molybdenum		1.00	mg/L	0.10	100	85	115			
Potassium		46.0	mg/L	0.50	92	85	115			
Sodium		48.9	mg/L	0.50	98	85	115			
Uranium		5.10	mg/L	1.0	102	85	115			
Sample ID: C12111032-001CMS2	6	Sample Matrix Spike				Run: ICP2-C_121130A			11/30/12 19:49	
Calcium		198	mg/L	1.0	99	70	130			
Magnesium		119	mg/L	1.0	97	70	130			
Molybdenum		1.80	mg/L	0.0072	88	70	130			
Potassium		103	mg/L	1.0	94	70	130			
Sodium		135	mg/L	1.0	102	70	130			
Uranium		9.66	mg/L	0.53	95	70	130			

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

QA/QC Summary Report

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC **Report Date:** 12/07/12

Project: Lisbon, UT Facility **Work Order:** C12111026

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E200.7										Batch: R167761
Sample ID: C12111032-001CMSD	6	Sample Matrix Spike Duplicate				Run: ICP2-C_121130A				11/30/12 19:53
Calcium		194	mg/L	1.0	94	70	130	2.2	20	
Magnesium		121	mg/L	1.0	99	70	130	1.4	20	
Molybdenum		1.86	mg/L	0.0072	91	70	130	3.6	20	
Potassium		102	mg/L	1.0	93	70	130	1.3	20	
Sodium		134	mg/L	1.0	102	70	130	0.3	20	
Uranium		9.78	mg/L	0.53	96	70	130	1.3	20	
Method: E200.7										Analytical Run: ICP2-C_121204A
Sample ID: ICV		Initial Calibration Verification Standard								12/04/12 11:37
Sodium		51.7	mg/L	0.50	103	95	105			
Sample ID: ICSA		Interference Check Sample A								12/04/12 12:07
Sodium		-0.0186	mg/L	0.50						
Sample ID: ICSAB		Interference Check Sample AB								12/04/12 12:11
Sodium		-0.110	mg/L	0.50						
Method: E200.7										Batch: R167847
Sample ID: MB-121204A		Method Blank				Run: ICP2-C_121204A				12/04/12 12:35
Sodium		ND	mg/L	0.3						
Sample ID: LFB-121204A		Laboratory Fortified Blank				Run: ICP2-C_121204A				12/04/12 12:39
Sodium		49.0	mg/L	0.50	98	85	115			
Sample ID: C12111026-001BMS2		Sample Matrix Spike				Run: ICP2-C_121204A				12/04/12 13:23
Sodium		2370	mg/L	1.6		70	130			A
Sample ID: C12111026-001BMSD		Sample Matrix Spike Duplicate				Run: ICP2-C_121204A				12/04/12 13:39
Sodium		2400	mg/L	1.6		70	130	1.0	20	A

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

A - The analyte level was greater than four times the spike level. In accordance with the method % recovery is not calculated.

QA/QC Summary Report

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC **Report Date:** 12/07/12

Project: Lisbon, UT Facility **Work Order:** C12111026

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E200.8									Analytical Run: ICPMS4-C_121205A	
Sample ID: ICV	4	Initial Calibration Verification Standard							12/05/12 10:26	
Arsenic		0.0528	mg/L	0.0010	105	90	110			
Molybdenum		0.504	mg/L	0.0010	101	90	110			
Selenium		0.0532	mg/L	0.0010	106	90	110			
Uranium		0.514	mg/L	0.00030	103	90	110			
Method: E200.8									Batch: R167885	
Sample ID: LRB	4	Method Blank				Run: ICPMS4-C_121205A			12/05/12 11:14	
Arsenic		ND	mg/L	5E-05						
Molybdenum		ND	mg/L	3E-05						
Selenium		ND	mg/L	7E-05						
Uranium		ND	mg/L	9E-06						
Sample ID: LFB	4	Laboratory Fortified Blank				Run: ICPMS4-C_121205A			12/05/12 11:18	
Arsenic		0.0512	mg/L	0.0010	102	85	115			
Molybdenum		0.0523	mg/L	0.0010	105	85	115			
Selenium		0.0501	mg/L	0.0010	100	85	115			
Uranium		0.0543	mg/L	0.00030	109	85	115			
Sample ID: C12100976-005LMS4	4	Sample Matrix Spike				Run: ICPMS4-C_121205A			12/05/12 22:31	
Arsenic		0.0543	mg/L	0.0010	108	70	130			
Molybdenum		0.0561	mg/L	0.0010	108	70	130			
Selenium		0.0558	mg/L	0.0010	112	70	130			
Uranium		0.0601	mg/L	0.00030	120	70	130			
Sample ID: C12100976-005LMSD	4	Sample Matrix Spike Duplicate				Run: ICPMS4-C_121205A			12/05/12 22:35	
Arsenic		0.0538	mg/L	0.0010	107	70	130	1.0	20	
Molybdenum		0.0566	mg/L	0.0010	109	70	130	1.0	20	
Selenium		0.0522	mg/L	0.0010	104	70	130	6.6	20	
Uranium		0.0597	mg/L	0.00030	119	70	130	0.6	20	

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

QA/QC Summary Report

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC **Report Date:** 12/07/12

Project: Lisbon, UT Facility **Work Order:** C12111026

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E300.0									Analytical Run: IC2-C_121130A	
Sample ID: ICV-113012-10	2	Initial Calibration Verification Standard							11/30/12 11:32	
Chloride		10.00	mg/L	1.0	100	90	110			
Sulfate		40.4	mg/L	1.0	101	90	110			
Method: E300.0									Batch: R167758	
Sample ID: ICB-113012-11	2	Method Blank				Run: IC2-C_121130A			11/30/12 11:47	
Chloride		ND	mg/L	0.03						
Sulfate		ND	mg/L	0.10						
Sample ID: LFB-113012-13	2	Laboratory Fortified Blank				Run: IC2-C_121130A			11/30/12 12:18	
Chloride		9.96	mg/L	1.0	100	90	110			
Sulfate		40.1	mg/L	1.0	100	90	110			
Sample ID: LFBD-113012-14	2	Laboratory Fortified Blank Duplicate				Run: IC2-C_121130A			11/30/12 12:33	
Chloride		10.0	mg/L	1.0	100	90	110	0.5	20	
Sulfate		40.5	mg/L	1.0	101	90	110	1.0	20	
Sample ID: C12111048-001AMS	2	Sample Matrix Spike				Run: IC2-C_121130A			11/30/12 13:04	
Chloride		38.2	mg/L	1.0	101	90	110			
Sulfate		236	mg/L	1.7	98	90	110			
Sample ID: C12111048-001AMSD	2	Sample Matrix Spike Duplicate				Run: IC2-C_121130A			11/30/12 13:20	
Chloride		38.3	mg/L	1.0	101	90	110	0.2	20	
Sulfate		238	mg/L	1.7	101	90	110	0.9	20	

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

Standard Reporting Procedures

Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH, Dissolved Oxygen and Residual Chlorine, are qualified as being analyzed outside of recommended holding time.

Solid/soil samples are reported on a wet weight basis (as received) unless specifically indicated. If moisture corrected, data units are typically noted as –dry. For agricultural and mining soil parameters/characteristics, all samples are dried and ground prior to sample analysis.

Workorder Receipt Checklist

Rio Algom Mining Corporation LLC C12111026

Login completed by: Dorian Quis
Date Received: 11/29/2012
Reviewed by: BL2000\kmiller
Received by: dw
Reviewed Date: 11/29/2012
Carrier name: NDA

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on shipping container/cooler?	Yes ☐	No ☐	Not Present ☑
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time? (Exclude analyses that are considered field parameters such as pH, DO, Res Cl, Sulfite, Ferrous Iron, etc.)	Yes ☑	No ☐	
Temp Blank received?	Yes ☐	No ☑	Not Applicable ☐
Container/Temp Blank temperature:	8.6°C On Ice		
Water - VOA vials have zero headspace?	Yes ☐	No ☐	No VOA vials submitted ☑
Water - pH acceptable upon receipt?	Yes ☑	No ☐	Not Applicable ☐

Contact and Corrective Action Comments:

None

Chain of Custody and Analytical Request Record

ENERGY LABORATORIES

PLEASE PRINT (Provide as much information as possible.)

Company Name: Montgomery & Associates	Project Name, PWS, Permit, Etc.: Rio Algom Mining Lisbon, UT Facility	Sample Origin State: Utah	EPA/State Compliance: Yes ☐ No ☐
Report Mail Address (Required): Report To: Leilani Bew LBew@ELMontgomery ☐ No Hard Copy Email:	Contact Name: Phone/Fax:	Cell:	Sampler: (Please Print) Josh Kerns
Invoice Address (Required): ☐ No Hard Copy Email:	Invoice Contact & Phone:	Purchase Order:	Quote/Bottle Order: 38150

Special Report/Formats:
☐ DW ☐ EDD/EDT (Electronic Data)
☐ POTW/WWTP Format: _____
☐ State: _____ ☐ LEVEL IV
☐ Other: _____ ☐ NELAC

Number of Containers
Sample Type: A Air W Water S Soils/Solids V Vegetation B Bioassay O Other D DW - Drinking Water

ANALYSIS REQUESTED

#	SAMPLE IDENTIFICATION (Name, Location, Interval, etc.)	Collection Date	Collection Time	MATRIX	See attached bottle order #38150	SEE ATTACHED
1	6301	28/NOV/2012	0830	Water	X	
2	6302	28/NOV/2012	0935	Water	X	
3						
4						
5						
6						
7						
8						
9						
10						

Standard Turnaround (TAT)

RUSH

Contact ELI prior to **RUSH** sample submittal for charges and scheduling – See Instruction Page

Comments: Metals samples were field filtered & preserved w/ HNO_3 in field

C12111026

Shipped by: Fedex E
Cooler ID(s): Client
Receipt Temp 8.6 °C (3)
On Ice: (Y) N
Custody Seal On Bottle Y (N) On Cooler Y (N)
Intact Y N
Signature Match Y N

LABORATORY USE ONLY

Custody Record MUST be Signed

	Relinquished by (print)	Date/Time	Signature	Received by (print)	Date/Time	Signature
1	Josh Kerns	28/NOV/2012/1200				
2						
3				Received by Laboratory:	Date/Time: 11-29-12 930	Signature:

Sample Disposal: Return to Client: _____ Lab Disposal: _____

In certain circumstances, samples submitted to Energy Laboratories, Inc. may be subcontracted to other certified laboratories in order to complete the analysis requested. This serves as notice of this possibility. All sub-contract data will be clearly notated on your analytical report.

Chain of Custody and Analytical Request Record

Page 1 of 1

PLEASE PRINT (Provide as much information as possible.)

Company Name: Montgomery & Associates

Report Mail Address (Required): Report to: Leilani Bew LBew@ELMontgomery.com

☐ No Hard Copy Email:

Invoice Address (Required):

☐ No Hard Copy Email:

Project Name, PWS, Permit, Etc.: Rio Algom Mining Lisbon, UT Facility

Contact Name: Phone/Fax:

Invoice Contact & Phone:

Sample Origin: State: Utah

Cell:

Purchase Order:

EPA/State Compliance: Yes ☐ No ☐

Sampler: (Please Print) Josh Kerns

Quote/Bottle Order: 38150

Special Report/Formats:

☐ DW ☐ POTW/WWTP ☐ State: ☐ Other:

☐ EDD/EDT (Electronic Data) Format: ☐ LEVEL IV ☐ NELAC

Number of Containers
Sample Type: A W S V B O DW
Air Water Soils/Solids Vegetation Bioassay Other DW - Drinking Water

ANALYSIS REQUESTED

SAMPLE IDENTIFICATION (Name, Location, Interval, etc.)	Collection Date	Collection Time	MATRIX	See attached bottle	order # 38150									SEE ATTACHED	Standard Turnaround (TAT)
1 6303	28NOV2012	1010	water	X											
2 6304	28NOV2012	1030	water	X											
3															
4															
5															
6															
7															
8															
9															
10															

R U S H

Contact ELI prior to **RUSH** sample submittal for charges and scheduling – See Instruction Page

Comments: Metals samples were field filtered & preserved w/ HNO_3 in field

C12111060

Shipped by: Fedex E

Cooler ID(s): Client

Receipt Temp: 8-6 °C (3)

On Ice: (Y) N

Custody Seal: On Bottle Y N; On Cooler Y N

Intact: Y N

Signature Match: Y N

LABORATORY USE ONLY

Custody Record MUST be Signed

Relinquished by (print): Josh Kerns Date/Time: 28NOV2012 1200 Signature:

Relinquished by (print): Date/Time: Signature:

Received by (print): Date/Time: Signature:

Received by (print): Date/Time: Signature:

Received by Laboratory: Date/Time: 11-29-12 930 Signature:

Sample Disposal: Return to Client: Lab Disposal:

In certain circumstances, samples submitted to Energy Laboratories, Inc. may be subcontracted to other certified laboratories in order to complete the analysis requested. This serves as notice of this possibility. All sub-contract data will be clearly notated on your analytical report.

ENERGY LABORATORIES
www.energylab.com
Analytical Excellence Since 1952
Helena, MT 877-472-0711 • Billings, MT 800-735-4489 • Casper, WY 888-235-0515
Gillette, WY 866-686-7175 • Rapid City, SD 888-672-1225 • College Station, TX 888-690-2218

BOTTLE ORDER 38150

SHIPPED TO: Rio Algom Mining Corporation LLC

Contact:

c/o Confluence Environmental Inc
3308 El Camino Ave Ste 300 #148
Sacramento CA 95821

Phone: (520) 881-4912

Order Created by: Kerri Schroeder
Shipped From: Casper, WY

Ship Date: 10/24/2012
VIA: Next Day Air
Early AM

Project:

Bottle Size/Type	Bottles Per Samp	Method	Tests	Critical Hold Time	Preservative	Notes	Num of Samp
500 mL Plastic	1	A2320 B	Alkalinity				16
		E300.0	E300.0 Anions				
		A2540 C	Solids, Total Dissolved				
		A2510 B	Conductivity				
		A4500-H B	pH	0.25 hrs			
250 mL Plastic	1	E200.7_8	Metals by ICP/ICPMS, Dissolved		HNO3	Filter before preservation	16

Comments

Bicarbonate, Carbonate, Cl, SO4, TDS, pH, Cond Ca, Mg, Na, K, As, Se, Mo, U.
Metals samples will be filtered in the field.

HNO3 - Nitric Acid H2SO4 - Sulfuric Acid NaOH - Sodium Hydroxide
ZnAc - Zinc Acetate HCl - Hydrochloric Acid H3PO4 - Phosphoric Acid

We strongly suggest that the samples are shipped the same day as they are collected.

Material Safety Data Sheets(MSDS) Available @ EnergyLab.com ->Services -> MSDS Sheets

Corrosive Chemicals: Nitric, Sulfuric, Phosphoric, Hydrochloric Acids and Sodium Hydroxide. Zinc Acetate is a skin irritant.

Subcontracting of sample analyses to an outside laboratory may be required. If so, Energy Laboratories will utilize its branch laboratories or qualified contract laboratories for this service. Any such laboratories will be indicated within the Laboratory Analytical Report.

Confluence Environmental, Inc

Equipment Calibration Log

Equipment make/model	Equipment ID/ serial number	Date	Time	Calibration Standards	Equipment Reading	Equipment Calibrated	Temp (°C / °F)	Tech init.	Comments
YSI Pro Series	12A100565	12-20-12	0800	pH 4.0/7.0/10.0	4.0/7.0/10.0	✓	23	JK	
"	"	"	"	cond 1413	1413	✓	23	JK	
"	"	"	"	D.O. 100%	98%	✓	—	JK	
"	"	"	"	ORP 231	231	✓	24	JK	

Notes/comments:

Water Level Measurements

Job Number: K1-121219 Date: 12-20-2012 Client: Montgomery

Site: Rio Algom Mine - Lisbon - Utah

Well I.D.	Time	Dia	Depth to NAPL	Thickness of NAPL	Depth to water (DTW)	Total Depth (measured)	Total Depth (historical)	Ref Point (TOC/ TOB)		
RL-1	0845	5	—	—	116.55	—	124.00	TOC		
EF-8	1015	4	—	—	74.43	—	244.00	1		

Well Maintenance Inspection Form

Client: Montgomery Site: Rio Algom Mine Date: 12-20-12

Job #: KJ-121219 Technician: Page 1 of 1

Inspection Point	Well Inspected - No Corrective Action Required	Entry Indicates Deficiency												Well Not Inspected (explain in notes)	Notes (Note any repairs made while on site)
		Cap non-functional	Lock non-functional	Lock missing	Bolts missing (# missing / # total tabs)	Tabs stripped (# stripped / # total tabs.)	Tabs broken (# broken / # of total tabs)	Annular seal incomplete	Apron damaged	Rim / Lid broken	Trip Hazard	Below Grade	Other (explain in notes)		
RL-1	X														
EF-8	X														

Notes:

Repair codes: **rt**=retap/ bolts added or replaced **as**=annular seal repair.

Purging And Sampling Data Sheet

Job#: 1350	**Sampler:** J Kerns	**Client:** Montgomery & Associates
Well ID: EE-8	**Date** (DDOct2012): 26 DEC 2012	**Site:** Rio Algom Mining, Lisbon, UT
Weather Conditions: VERY COLD 12°F	**Sampler Signature:**	
Well diam: 1/4" 1" 2" 3" (4") 6" Other:	**DTW:** 74.43 **Total Depth:** 244.00	
Purge equip: ES - diam: Bladder Peri Waterra Positive Air Displacement (Ext. System)		
disp bailer teflon bailer other: **Tubing:** OD: New (Dedicated) NA		
Purge method: 3-5 Case Volume Micro/Low-Flow Extraction Other:		
Pump depth/ intake: 225 **Multipliers:** 1"= 0.04 2"= 0.16 3"= 0.37 4"= 0.65 5"=1.02 6"= 1.47 Radius² X 0.163		
(TD - DTW X Multiplier = 1 Volume	80% Recovery (TD - DTW X 0.20 + DTW)	

1 Volume = ____ X ____ = ____ (Total Purge) 80%= ____

Time	Temp (°C) °F)	pH	Cond (mS / (uS))	Turbidity (NTU)	Purge Rate (gal or (L) min)	Volume Removed (gal (L))	DO (mg/l)	ORP (mv)	DTW	Notes
1020	6.0	7.9	1954	2.3	250	1.0	7.11	256	74.59	
1023	7.8	7.3	1913	2.0	300	1.9	7.31	256	74.59	
1026	7.7	7.2	1922	2.1	300	2.8	7.23	256	74.60	
1029	7.7	7.2	1916	2.2	300	3.7	7.30	256	74.62	
1032	7.6	7.2	1911	2.3	300	4.6	7.29	255	74.61	
1035	7.7	7.2	1909	2.4	300	5.5	7.29	254	74.61	
1038	7.7	7.2	1909	2.3	300	6.4	7.21	253	74.61	

Did well dewater? YES (NO)	Total volume removed: 6.4 (gal (L))	
Sample method: Disp Bailer Hydrasleeve New Tubing Ext. Port Other:		
Sample date: 26 DEC 2012	Sample time: 1040	DTW at sample: 74.61
Sample ID: 6306	Lab: Energy Labs	Number of bottles: 2
Analysis: 500 ml NP poly - Alkalinity, Cl, SO4, TDS, EC, pH 250 ml HNO3 poly *field filtered - Dissolved Metals		
Equipment blank ID @	Field blank ID @	
Duplicate ID:	Pre-purge DO:	Post purge DO:
$Fe2^{+}$:	Pre-purge ORP:	Post purge ORP:
NAPL depth:	Volume of NAPL:	Volume removed: ml

Purging And Sampling Data Sheet

Job#: 1350	**Sampler:** J Kerns	**Client:** Montgomery & Associates
Well ID: RL-1	**Date** (DDOct2012): 20 DEC 2012	**Site:** Rio Algom Mining, Lisbon, UT
Weather Conditions: VERY COLD 1°F		**Sampler Signature:**
Well diam: 1/4" 1" 2" 3" 4" 6" Other: (5")		**DTW:** 116.55 **Total Depth:** 124.00
Purge equip: ES - diam: Bladder Peri Waterra Positive Air Displacement (Ext. System)		
disp bailer teflon bailer other:	**Tubing:** OD: New (Dedicated) NA	
Purge method: 3-5 Case Volume Micro/Low-Flow Extraction Other:		
Pump depth/ intake: 114'	**Multipliers:** 1"= 0.04 2"= 0.16 3"= 0.37 4"= 0.65 5"=1.02 6"= 1.47 Radius² X 0.163	
(TD - DTW X Multiplier = 1 Volume	80% Recovery (TD - DTW X 0.20 + DTW)	

1 Volume = ___ X ___ = ___ (Total Purge) 80%= ___

Time	Temp (C) °F)	pH	Sp. Cond (mS (µS))	Turbidity (NTU)	Purge Rate (gal or (mL) / min)	Volume Removed (gal (L))	DO (mg/l)	ORP (mv)	DTW	Notes
0857	8.0	7.1	996	1.3	300	1.0 ~~1000~~	7.01	310	116.58	
0900	7.8	6.9	10415	1.5	300	1.9	6.80	304	116.58	
0903	8.4	6.5	10562	1.7	300	2.8	6.7	300	116.53	
0906	8.9	6.7	10454	1.5	300	3.7	6.7	299	116.58	
0909	8.9	6.8	10442	1.4	300	4.6	6.7	298	116.53	
0912	8.9	6.8	10449	1.5	300	5.5	6.7	297	116.53	

Did well dewater? YES (NO)	Total volume removed: 5.5 (gal (L))	
Sample method: Disp Bailer Hydrasleeve New Tubing (Ext. Port) Other:		
Sample date: 20DEC2012	Sample time: 0915	DTW at sample: 116.53
Sample ID: 6305	Lab: Energy Labs	Number of bottles: (2)
Analysis: 500 ml NP poly - Alkalinity, Cl, SO4, TDS, EC, pH 250 ml HNO3 poly *field filtered - Dissolved Metals		
Equipment blank ID @	Field blank ID @	
Duplicate ID:	Pre-purge DO:	Post purge DO:
$Fe2^+$:	Pre-purge ORP:	Post purge ORP:
NAPL depth:	Volume of NAPL:	Volume removed: ml

ANALYTICAL SUMMARY REPORT

January 07, 2013

Rio Algom Mining Corporation LLC
Hwy 605 and 509
Grants, NM 87020

Workorder No.: C12120777 Quote ID: C3846 - Not Indicated

Project Name: Lisbon, UT Facility

Energy Laboratories, Inc. Casper WY received the following 2 samples for Rio Algom Mining Corporation LLC on 12/22/2012 for analysis.

Sample ID	Client Sample ID	Collect Date	Receive Date	Matrix	Test
C12120777-001	6305	12/20/12 9:15	12/22/12	Aqueous	Metals by ICP/ICPMS, Dissolved Alkalinity QA Calculations Conductivity E300.0 Anions pH Solids, Total Dissolved Solids, Total Dissolved - Calculated
C12120777-002	6306	12/20/12 10:40	12/22/12	Aqueous	Same As Above

The results as reported relate only to the item(s) submitted for testing. The analyses presented in this report were performed at Energy Laboratories, Inc., 2393 Salt Creek Hwy., Casper, WY 82601, unless otherwise noted. Radiochemistry analyses were performed at Energy Laboratories, Inc., 2325 Kerzell Lane, Casper, WY 82601, unless otherwise noted. Any exceptions or problems with the analyses are noted in the Laboratory Analytical Report, the QA/QC Summary Report, or the Case Narrative.

If you have any questions regarding these test results, please call.

Report Approved By:

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility
Lab ID: C12120777-001
Client Sample ID: 6305

Report Date: 01/07/13
Collection Date: 12/20/12 09:15
DateReceived: 12/22/12
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Carbonate as CO3	ND	mg/L		5		A2320 B	12/24/12 12:04 / jba
Bicarbonate as HCO3	1250	mg/L		5		A2320 B	12/24/12 12:04 / jba
Calcium	622	mg/L		1		E200.7	12/28/12 20:46 / sf
Chloride	704	mg/L	D	10		E300.0	12/26/12 17:00 / ljl
Magnesium	210	mg/L		1		E200.7	12/28/12 20:46 / sf
Potassium	21	mg/L		1		E200.7	12/28/12 20:46 / sf
Sodium	2280	mg/L	D	3		E200.7	12/28/12 20:46 / sf
Sulfate	4820	mg/L	D	40		E300.0	12/26/12 17:00 / ljl
PHYSICAL PROPERTIES							
Conductivity @ 25 C	10100	umhos/cm		1		A2510 B	12/26/12 09:28 / ab
pH	7.29	s.u.	H	0.01		A4500-H B	12/26/12 09:28 / ab
Solids, Total Dissolved TDS @ 180 C	9150	mg/L		10		A2540 C	12/26/12 11:36 / ab
METALS - DISSOLVED							
Arsenic	ND	mg/L		0.001		E200.8	12/28/12 18:06 / cp
Molybdenum	11.4	mg/L		0.001		E200.8	12/28/12 18:06 / cp
Selenium	0.075	mg/L		0.001		E200.8	01/02/13 21:41 / cp
Uranium	47.0	mg/L	D	0.0005		E200.8	12/28/12 18:06 / cp
DATA QUALITY							
A/C Balance (± 5)	1.91	%				A1030 E	01/04/13 13:52 / sdw
Anions	142	meq/L				A1030 E	01/04/13 13:52 / sdw
Cations	148	meq/L				A1030 E	01/04/13 13:52 / sdw
Solids, Total Dissolved Calculated	9400	mg/L				A1030 E	01/04/13 13:52 / sdw
TDS Balance (0.80 - 1.20)	0.970					A1030 E	01/04/13 13:52 / sdw

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
H - Analysis performed past recommended holding time.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility
Lab ID: C12120777-002
Client Sample ID: 6306

Report Date: 01/07/13
Collection Date: 12/20/12 10:40
DateReceived: 12/22/12
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Carbonate as CO3	ND	mg/L		5		A2320 B	12/24/12 12:12 / jba
Bicarbonate as HCO3	387	mg/L		5		A2320 B	12/24/12 12:12 / jba
Calcium	206	mg/L		1		E200.7	12/28/12 20:54 / sf
Chloride	203	mg/L		1		E300.0	12/26/12 17:52 / ljl
Magnesium	55	mg/L		1		E200.7	12/28/12 20:54 / sf
Potassium	5	mg/L		1		E200.7	12/28/12 20:54 / sf
Sodium	147	mg/L		1		E200.7	12/28/12 20:54 / sf
Sulfate	455	mg/L	D	4		E300.0	12/26/12 17:52 / ljl
PHYSICAL PROPERTIES							
Conductivity @ 25 C	1920	umhos/cm		1		A2510 B	12/26/12 09:31 / ab
pH	7.64	s.u.	H	0.01		A4500-H B	12/26/12 09:31 / ab
Solids, Total Dissolved TDS @ 180 C	1330	mg/L		10		A2540 C	12/26/12 11:37 / ab
METALS - DISSOLVED							
Arsenic	0.033	mg/L		0.001		E200.8	12/28/12 18:09 / cp
Molybdenum	0.010	mg/L		0.001		E200.8	12/28/12 18:09 / cp
Selenium	0.011	mg/L		0.001		E200.8	01/02/13 21:45 / cp
Uranium	0.556	mg/L		0.0003		E200.8	12/28/12 18:09 / cp
DATA QUALITY							
A/C Balance (± 5)	-1.59	%				A1030 E	01/04/13 13:53 / sdw
Anions	22.0	meq/L				A1030 E	01/04/13 13:53 / sdw
Cations	21.3	meq/L				A1030 E	01/04/13 13:53 / sdw
Solids, Total Dissolved Calculated	1300	mg/L				A1030 E	01/04/13 13:53 / sdw
TDS Balance (0.80 - 1.20)	1.02					A1030 E	01/04/13 13:53 / sdw

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
H - Analysis performed past recommended holding time.

QA/QC Summary Report

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Report Date: 01/07/13
Project: Lisbon, UT Facility
Work Order: C12120777

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: A2320 B										Batch: R168590
Sample ID: MBLK	3	Method Blank				Run: MANTECH_121224A				12/24/12 10:38
Alkalinity, Total as CaCO3		ND	mg/L	5.0						
Carbonate as CO3		ND	mg/L	5.0						
Bicarbonate as HCO3		2.39	mg/L	5.0						
Sample ID: LCS_121003		Laboratory Control Sample				Run: MANTECH_121224A				12/24/12 10:53
Alkalinity, Total as CaCO3		203	mg/L	5.0	101	90	110			
Sample ID: C12120771-001ADUP	3	Sample Duplicate				Run: MANTECH_121224A				12/24/12 11:08
Alkalinity, Total as CaCO3		158	mg/L	5.0				0.6	10	
Carbonate as CO3		ND	mg/L	5.0					10	
Bicarbonate as HCO3		193	mg/L	5.0				0.6	10	
Sample ID: C12120768-001AMS		Sample Matrix Spike				Run: MANTECH_121224A				12/24/12 11:24
Alkalinity, Total as CaCO3		244	mg/L	5.0	101	80	120			

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

QA/QC Summary Report

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Report Date: 01/07/13
Project: Lisbon, UT Facility
Work Order: C12120777

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: A2510 B									Analytical Run: PHSC_101-C_121226A	
Sample ID: SC 100		Continuing Calibration Verification Standard							12/26/12 09:09	
Conductivity @ 25 C		103	umhos/cm	1.0	103	90	110			
Method: A2510 B									Batch: R168561	
Sample ID: SC 2ND 1413		Laboratory Control Sample				Run: PHSC_101-C_121226A			12/26/12 09:20	
Conductivity @ 25 C		1460	umhos/cm	1.0	103	90	110			
Sample ID: MBLK		Method Blank				Run: PHSC_101-C_121226A			12/26/12 09:25	
Conductivity @ 25 C		2	umhos/cm	0.2						
Sample ID: C12120777-002ADUP		Sample Duplicate				Run: PHSC_101-C_121226A			12/26/12 09:34	
Conductivity @ 25 C		1960	umhos/cm	1.0				1.8	10	

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

QA/QC Summary Report

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Report Date: 01/07/13
Project: Lisbon, UT Facility
Work Order: C12120777

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: A2540 C									Batch: TDS121226A	
Sample ID: MB-1_121226A	Method Blank					Run: BAL-1_121226B			12/26/12 11:34	
Solids, Total Dissolved TDS @ 180 C		ND	mg/L	4						
Sample ID: LCS-2_121226A	Laboratory Control Sample					Run: BAL-1_121226B			12/26/12 11:34	
Solids, Total Dissolved TDS @ 180 C		1970	mg/L	10	98	90	110			
Sample ID: C12120768-001A DUP	Sample Duplicate					Run: BAL-1_121226B			12/26/12 11:35	
Solids, Total Dissolved TDS @ 180 C		319	mg/L	10				0.6	5	
Sample ID: C12120768-002A MS	Sample Matrix Spike					Run: BAL-1_121226B			12/26/12 11:35	
Solids, Total Dissolved TDS @ 180 C		1300	mg/L	10	98	90	110			

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

QA/QC Summary Report

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Report Date: 01/07/13
Project: Lisbon, UT Facility
Work Order: C12120777

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: A4500-H B									Analytical Run: PHSC_101-C_121226A	
Sample ID: pH 6.86	Initial Calibration Verification Standard								12/26/12 09:07	
pH		6.84	s.u.	0.010	100	98	102			
Method: A4500-H B									Batch: R168561	
Sample ID: C12120777-002ADUP	Sample Duplicate					Run: PHSC_101-C_121226A			12/26/12 09:34	
pH		7.64	s.u.	0.010				0.0	3	

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

QA/QC Summary Report

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Report Date: 01/07/13
Project: Lisbon, UT Facility
Work Order: C12120777

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E200.7									Analytical Run: ICP2-C_121228A	
Sample ID: ICV	4	Initial Calibration Verification Standard							12/28/12 14:24	
Calcium		51.7	mg/L	0.50	103	95	105			
Magnesium		49.8	mg/L	0.50	100	95	105			
Potassium		48.3	mg/L	0.50	97	95	105			
Sodium		51.4	mg/L	0.50	103	95	105			
Sample ID: ICSA	4	Interference Check Sample A							12/28/12 14:52	
Calcium		492	mg/L	0.50	98	80	120			
Magnesium		480	mg/L	0.50	96	80	120			
Potassium		0.00250	mg/L	0.50						
Sodium		-0.0722	mg/L	0.50						
Sample ID: ICSAB	4	Interference Check Sample AB							12/28/12 14:56	
Calcium		503	mg/L	0.50	101	80	120			
Magnesium		495	mg/L	0.50	99	80	120			
Potassium		0.00130	mg/L	0.50						
Sodium		-0.444	mg/L	0.50						
Method: E200.7										Batch: R168713
Sample ID: MB-121228A	4	Method Blank				Run: ICP2-C_121228A			12/28/12 15:20	
Calcium		ND	mg/L	0.06						
Magnesium		ND	mg/L	0.03						
Potassium		ND	mg/L	0.06						
Sodium		ND	mg/L	0.03						
Sample ID: LFB-121228A	4	Laboratory Fortified Blank				Run: ICP2-C_121228A			12/28/12 15:24	
Calcium		47.0	mg/L	0.50	94	85	115			
Magnesium		45.5	mg/L	0.50	91	85	115			
Potassium		45.0	mg/L	0.50	90	85	115			
Sodium		46.7	mg/L	0.50	93	85	115			
Sample ID: C12120777-002BMS2	4	Sample Matrix Spike				Run: ICP2-C_121228A			12/28/12 20:58	
Calcium		309	mg/L	1.0	101	70	130			
Magnesium		163	mg/L	1.0	106	70	130			
Potassium		99.5	mg/L	1.0	93	70	130			
Sodium		260	mg/L	1.0	110	70	130			
Sample ID: C12120777-002BMSD	4	Sample Matrix Spike Duplicate				Run: ICP2-C_121228A			12/28/12 21:14	
Calcium		312	mg/L	1.0	104	70	130	0.9	20	
Magnesium		165	mg/L	1.0	107	70	130	0.9	20	
Potassium		101	mg/L	1.0	94	70	130	1.1	20	
Sodium		259	mg/L	1.0	110	70	130	0.2	20	

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

QA/QC Summary Report

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC **Report Date:** 01/07/13

Project: Lisbon, UT Facility **Work Order:** C12120777

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E200.8										Analytical Run: ICPMS2-C_121228A
Sample ID: ICV	3	Initial Calibration Verification Standard								12/28/12 14:13
Arsenic		0.0506	mg/L	0.0010	101	90	110			
Molybdenum		0.0489	mg/L	0.0010	98	90	110			
Uranium		0.0500	mg/L	0.00030	100	90	110			
Method: E200.8										Batch: R168702
Sample ID: LRB	3	Method Blank				Run: ICPMS2-C_121228A				12/28/12 14:39
Arsenic		ND	mg/L	0.00010						
Molybdenum		0.0001	mg/L	4E-05						
Uranium		3E-05	mg/L	1E-05						
Sample ID: LFB	3	Laboratory Fortified Blank				Run: ICPMS2-C_121228A				12/28/12 14:42
Arsenic		0.0503	mg/L	0.0010	101	85	115			
Molybdenum		0.0520	mg/L	0.0010	104	85	115			
Uranium		0.0526	mg/L	0.00030	105	85	115			
Sample ID: C12120341-002AMS4	3	Sample Matrix Spike				Run: ICPMS2-C_121228A				12/28/12 18:38
Arsenic		0.0946	mg/L	0.0010	95	70	130			
Molybdenum		0.108	mg/L	0.0010	103	70	130			
Uranium		0.144	mg/L	0.00030	105	70	130			
Sample ID: C12120341-002AMSD	3	Sample Matrix Spike Duplicate				Run: ICPMS2-C_121228A				12/28/12 18:42
Arsenic		0.0945	mg/L	0.0010	95	70	130	0.0	20	
Molybdenum		0.107	mg/L	0.0010	102	70	130	1.0	20	
Uranium		0.142	mg/L	0.00030	103	70	130	1.8	20	
Method: E200.8										Analytical Run: ICPMS4-C_130102A
Sample ID: ICV		Initial Calibration Verification Standard								01/02/13 15:00
Selenium		0.0499	mg/L	0.0010	100	90	110			
Method: E200.8										Batch: R168839
Sample ID: LRB		Method Blank				Run: ICPMS4-C_130102A				01/02/13 15:35
Selenium		ND	mg/L	7E-05						
Sample ID: LFB		Laboratory Fortified Blank				Run: ICPMS4-C_130102A				01/02/13 15:39
Selenium		0.0507	mg/L	0.0010	101	85	115			
Sample ID: C12120820-002AMS4		Sample Matrix Spike				Run: ICPMS4-C_130102A				01/02/13 22:16
Selenium		0.0995	mg/L	0.0010	99	70	130			
Sample ID: C12120820-002AMSD		Sample Matrix Spike Duplicate				Run: ICPMS4-C_130102A				01/02/13 22:20
Selenium		0.104	mg/L	0.0010	103	70	130	4.4	20	

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

QA/QC Summary Report

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Report Date: 01/07/13
Project: Lisbon, UT Facility
Work Order: C12120777

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E300.0									Analytical Run: IC1-C_121226A	
Sample ID: ICV-122612-11	2	Initial Calibration Verification Standard							12/26/12 12:39	
Chloride		9.87	mg/L	1.0	99	90	110			
Sulfate		40.1	mg/L	1.0	100	90	110			
Method: E300.0									Batch: R168631	
Sample ID: ICB-122612-12	2	Method Blank				Run: IC1-C_121226A			12/26/12 12:56	
Chloride		ND	mg/L	0.04						
Sulfate		0.2	mg/L	0.05						
Sample ID: LFB-122612-13	2	Laboratory Fortified Blank				Run: IC1-C_121226A			12/26/12 13:13	
Chloride		9.97	mg/L	1.0	100	90	110			
Sulfate		40.5	mg/L	1.0	101	90	110			
Sample ID: C12120777-002AMS	2	Sample Matrix Spike				Run: IC1-C_121226A			12/26/12 18:09	
Chloride		249	mg/L	1.0		90	110			A
Sulfate		649	mg/L	4.2	97	90	110			
Sample ID: C12120777-002AMSD	2	Sample Matrix Spike Duplicate				Run: IC1-C_121226A			12/26/12 18:27	
Chloride		249	mg/L	1.0		90	110	0.1	20	A
Sulfate		649	mg/L	4.2	97	90	110	0.0	20	

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

A - The analyte level was greater than four times the spike level. In accordance with the method % recovery is not calculated.

Standard Reporting Procedures

Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH, Dissolved Oxygen and Residual Chlorine, are qualified as being analyzed outside of recommended holding time.

Solid/soil samples are reported on a wet weight basis (as received) unless specifically indicated. If moisture corrected, data units are typically noted as –dry. For agricultural and mining soil parameters/characteristics, all samples are dried and ground prior to sample analysis.

Workorder Receipt Checklist

Rio Algom Mining Corporation LLC C12120777

Login completed by: Tracy Judge
Date Received: 12/22/2012
Reviewed by: BL2000\kmiller
Received by: dw
Reviewed Date: 12/26/2012
Carrier name: FedEx

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on shipping container/cooler?	Yes ☐	No ☐	Not Present ☑
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time? (Exclude analyses that are considered field parameters such as pH, DO, Res Cl, Sulfite, Ferrous Iron, etc.)	Yes ☑	No ☐	
Temp Blank received?	Yes ☐	No ☑	Not Applicable ☐
Container/Temp Blank temperature:	2.2°C On Ice		
Water - VOA vials have zero headspace?	Yes ☐	No ☐	No VOA vials submitted ☑
Water - pH acceptable upon receipt?	Yes ☑	No ☐	Not Applicable ☐

Contact and Corrective Action Comments:

None

Chain of Custody and Analytical Request Record

ENERGY LABORATORIES

PLEASE PRINT (Provide as much information as possible.)

Company Name: Montgomery & Associates

Report Mail Address (Required):

❑ No Hard Copy Email:

Invoice Address (Required):

❑ No Hard Copy Email:

Special Report/Formats:
- ☐ DW
- ☐ POTW/WWTP
- ☐ State:
- ☐ Other:
- ☐ EDD/EDT (Electronic Data) Format:
- ☐ LEVEL IV
- ☐ NELAC

Project Name, PWS, Permit, Etc.: Rio Algom Mining Lisbon, UT Facility

Contact Name: Phone/Fax:

Invoice Contact & Phone:

Sample Origin: State: Utah

Cell:

Purchase Order:

EPA/State Compliance: Yes ☐ No ☐

Sampler: (Please Print) J. Kerns

Quote/Bottle Order: 38150

Contact ELI prior to **RUSH** sample submittal for charges and scheduling – See Instruction Page

Comments: Metals samples were field filtered & preserved w/ HNO_3 in field

Shipped by: Fedex

Cooler ID(s): Client

Receipt Temp: 2.2 °C

On Ice: (Y) N

Custody Seal: On Bottle Y (N) / On Cooler Y (N)

Intact: Y N

Signature Match: Y N

	SAMPLE IDENTIFICATION (Name, Location, Interval, etc.)	Collection Date	Collection Time	MATRIX	Number of Containers (Sample Type: A W S V B O DW; Air Water Soils/Solids Vegetation Bioassay Other DW - Drinking Water)	ANALYSIS REQUESTED: See attached bottle order #38150	SEE ATTACHED	Standard Turnaround (TAT)	RUSH
1	6305	20DEC2012	0915	W	X				
2	6306	20DEC2012	1040	W	X				
3									
4									
5									
6									
7									
8									
9									
10									

LABORATORY USE ONLY

C12120777

Custody Record MUST be Signed

Relinquished by (print): Date/Time: Signature:

Relinquished by (print): 20DEC20.2 1145 Date/Time: Signature:

Received by (print): Date/Time: Signature:

Received by (print): Date/Time: Signature:

Received by Laboratory: Date/Time: 12-22-12 1145 Signature:

Sample Disposal: Return to Client: Lab Disposal:

In certain circumstances, samples submitted to Energy Laboratories, Inc. may be subcontracted to other certified laboratories in order to complete the analysis requested.
This serves as notice of this possibility. All sub-contract data will be clearly notated on your analytical report.
Visit our web site at www.energylab.com for additional information, downloadable fee schedule, forms, and links.

Chain of Custody and Analytical Request Record

Page 1 of 1

PLEASE PRINT (Provide as much information as possible.)

Company Name: ~~Env~~ Montgomery + Associates

Report Mail Address (Required): LeTunis Baw, LBaw@elmontgomery.com

☐ No Hard Copy Email:

Invoice Address (Required):

☐ No Hard Copy Email:

Special Report/Formats:
☐ DW ☐ EDD/EDT (Electronic Data)
☐ POTW/WWTP Format:
☐ State: ☐ LEVEL IV
☐ Other: ☐ NELAC

Project Name, PWS, Permit, Etc.: Rio Algom Mining - Lisbon, UT Facility

Contact Name: Phone/Fax:

Invoice Contact & Phone:

Sample Origin: State: Utah

Cell:

Purchase Order:

EPA/State Compliance: Yes ☐ No ☐

Sampler: (Please Print): Josh Kerns

Quote/Bottle Order: ~~38695~~ 38150

Standard Turnaround (TAT) — RUSH

Contact ELI prior to RUSH sample submittal for charges and scheduling – See Instruction Page

Comments: Metals samples filtered in field + preserved w/HNO3 in field.

Shipped by:

Cooler ID(s):

Receipt Temp: ____ °C

On Ice: Y N

Custody Seal: On Bottle Y N; On Cooler Y N

Intact: Y N

Signature Match: Y N

LABORATORY USE ONLY

	SAMPLE IDENTIFICATION (Name, Location, Interval, etc.)	Collection Date	Collection Time	MATRIX	ANALYSIS REQUESTED: See Attached Bottle Order 38695 38150	SEE ATTACHED
1	~~EFS~~ 6307	28Jan2013	1140	W	X	
2	~~RLT~~ 6308	28Jan2013	1255	W	X	
3						
4						
5						
6						
7						
8						
9						
10						

Number of Containers
Sample Type: A W S V B O DW
Air Water Soils/Solids
Vegetation Bioassay Other
DW - Drinking Water

Custody Record MUST be Signed

Relinquished by (print): Josh Kerns Date/Time: 28Jan2013 Signature:

Relinquished by (print): Date/Time: Signature:

Received by (print): Date/Time: Signature:

Received by (print): Date/Time: Signature:

Received by Laboratory: Date/Time: Signature:

Sample Disposal: Return to Client: Lab Disposal:

In certain circumstances, samples submitted to Energy Laboratories, Inc. may be subcontracted to other certified laboratories in order to complete the analysis requested.
This serves as notice of this possibility. All sub-contract data will be clearly notated on your analytical report.
Visit our web site at www.energylab.com for additional information, downloadable fee schedule, forms, and links.

Confluence Environmental, Inc

Equipment Calibration Log

Equipment make/model	Equipment ID/ serial number	Date	Time	Calibration Standards	Equipment Reading	Equipment Calibrated	Temp (°C / °F)	Tech init.	Comments
YSI ProSeries		1-28-13		4.0/7.0/10.0 pH		✓		JIL	
"	"	"		1413 cond		✓		JIL	
"	"	"		D.O. 100%		✓		JIL	
"	"	"		ORP		✓		JIL	
								JIL	

Notes/comments:

Water Level Measurements

Job Number: KI-130128 Date: 1-28-13 Client: Montgomery & Assoc.

Site: Rio Algom Mine - Lisbon Facility - Moab

Well I.D.	Time	Dia	Depth to NAPL	Thickness of NAPL	Depth to water (DTW)	Total Depth (measured)	Total Depth (historical)	Ref Point (TOC/ TOB)		
RL-1	1225	5			116.05	—	124.00	TOC		
EF-8	1315	4			74.09	—	244.00	1		

Well Maintenance Inspection Form

Client: Montgomery Site: Rio Algom Mine - Lisbon Date: 1-28-13

Job #: KI-130128 Technician: JK Page 1 of 1

Inspection Point	Well Inspected - No Corrective Action Required	Entry Indicates Deficiency: Cap non-functional	Lock non-functional	Lock missing	Bolts missing (# missing / # total tabs)	Tabs stripped (# stripped / # total tabs.)	Tabs broken (# broken / # of total tabs)	Annular seal incomplete	Apron damaged	Rim / Lid broken	Trip Hazard	Below Grade	Other (explain in notes)	Well Not Inspected (explain in notes)	Notes (Note any repairs made while on site)
RL-1	X														
EF-8	X														

Notes:

Repair codes: **rt**=retap/ bolts added or replaced **as**=annular seal repair.

Confluence Environmental, Inc 3308 El Camino Ave, Suite 300 #148, Sacramento CA, 95821, 916-760-7641

Purging And Sampling Data Sheet

Job#: 1350	**Sampler:** J Kerns	**Client:** Montgomery & Associates
Well ID: EF-8	**Date** (DDOct2012): 28 Jan 2013	**Site:** Rio Algom Mining, Lisbon, UT
Weather Conditions: Rain / Cold		**Sampler Signature:**
Well diam: 1/4" 1" 2" 3" (4") 6" Other:		**DTW:** 74.09 **Total Depth:** 244.00
Purge equip: ES - diam: (Bladder) Peri Waterra Positive Air Displacement Ext. System		
disp bailer teflon bailer other:	**Tubing:** OD: New Dedicated NA	
Purge method: 3-5 Case Volume Micro/Low-Flow Extraction Other:		
Pump depth/ intake: 229	**Multipliers:** 1"= 0.04 2"= 0.16 3"= 0.37 4"= 0.65 5"=1.02 6"= 1.47 Radius² X 0.163	
(TD - DTW X Multiplier = 1 Volume	80% Recovery (TD - DTW X 0.20 + DTW)	

1 Volume = ___ X ___ = ___ (Total Purge) 80%= ___

Time	Temp (°C) °F	pH	Sp. Cond (mS / µS)	Turbidity (NTU)	Purge Rate (gal or mL/ min)	Volume Removed (gal / L)	DO (mg/l)	ORP (mv)	DTW	Notes
1120	9.0	7.27	1899	5.3	200	1.0	8.24	232	74.19	
1123	9.3	7.37	1906	5.7	200	1.6	7.37	227	74.19	
1126	9.4	7.41	1910	3.2	200	2.2	7.65	225	74.19	
1129	9.4	7.41	1910	3.0	200	2.8	7.35	223	74.19	
1132	9.2	7.41	1925	2.7	200	3.4	7.26	220	74.19	
1135	9.2	7.41	1932	2.7	200	4.0	7.30	220	74.19	
1138	9.2	7.43	1940	2.3	200	4.6	7.28	218	74.19	

Did well dewater? YES (NO)	Total volume removed:	(gal (L))
Sample method: Disp Bailer Hydrasleeve New Tubing Ext. Port Other: Dedicated		
Sample date: 1-28-13	Sample time: 1140	DTW at sample:
Sample ID: 6307	Lab: Energy Labs	Number of bottles (2)
Analysis: 500 ml NP poly - Alkalinity, Cl, SO4, TDS, EC, pH 250 ml HNO3 poly *field filtered - Dissolved Metals		
Equipment blank ID @	Field blank ID @	
Duplicate ID:	Pre-purge DO:	Post purge DO:
$Fe2^{+}$:	Pre-purge ORP:	Post purge ORP:
NAPL depth:	Volume of NAPL:	Volume removed: ml

Purging And Sampling Data Sheet

Job#: 1350	**Sampler:** J Kerns	**Client:** Montgomery & Associates
Well ID: RL-1	**Date** (DDOct2012): 28 Jan 2013	**Site:** Rio Algom Mining, Lisbon, UT
Weather Conditions: Rain / Cold		**Sampler Signature:**
Well diam: 1/4" 1" 2" 3" 4" 6" Other: (5)		**DTW:** 116.05 **Total Depth:** 124.00
Purge equip: ES - diam: (Bladder) Peri Waterra Positive Air Displacement Ext. System		
disp bailer teflon bailer other:	**Tubing:** OD: New Dedicated NA	
Purge method: 3-5 Case Volume Micro/Low-Flow Extraction Other:		
Pump depth/ intake: 121	**Multipliers:** 1"= 0.04 2"= 0.16 3"= 0.37 4"= 0.65 5"=1.02 6"= 1.47 Radius² X 0.163	
(TD - DTW X Multiplier = 1 Volume	80% Recovery (TD - DTW X 0.20 + DTW)	

1 Volume = ____ X ____ = ____ (Total Purge) 80%= ____

Time	Temp (°C) °F	pH	SP Cond (mS / µS)	Turbidity (NTU)	Purge Rate (gal or ml/ min)	Volume Removed (gal / L)	DO (mg/l)	ORP (mv)	DTW	Notes
1228	9.8	7.57	10019	3.2	200	1.0	8.16	209	116.08	
1231	10.5	7.26	10403	3.1	200	1.6	6.54	210	116.05	
1234	10.6	7.15	10452	2.7	200	2.2	6.07	211	116.07	
1237	10.5	7.09	10492	2.7	200	2.8	5.84	211	116.05	
1240	10.6	7.06	10523	2.5	200	3.4	5.74	211	116.05	
1243	10.6	7.06	10529	2.7	200	4.0	5.69	210	116.13	
1246	10.7	7.05	10538	2.9	200	4.6	5.69	210	116.15	
1249	10.6	7.04	10538	2.9	200	5.2	5.69	209	116.15	
1252	10.6	7.04	10536	2.8	200	5.8	5.69	209	116.15	

Did well dewater? YES (NO)	Total volume removed: (gal (L))
Sample method: Disp Bailer Hydrasleeve New Tubing Ext. Port Other: Dedicated	
Sample date: 1-28-13 Sample time: 1255	DTW at sample:
Sample ID: 6308 Lab: Energy Labs	Number of bottles: 2
Analysis: 500 ml NP poly - Alkalinity, Cl, SO4, TDS, EC, pH 250 ml HNO3 poly *field filtered - Dissolved Metals	
Equipment blank ID @	Field blank ID @
Duplicate ID:	Pre-purge DO: Post purge DO:
$Fe2^{+}$:	Pre-purge ORP: Post purge ORP:
NAPL depth: Volume of NAPL:	Volume removed: ml

ANALYTICAL SUMMARY REPORT

February 11, 2013

Rio Algom Mining Corporation LLC
Hwy 605 and 509
Grants, NM 87020

Workorder No.: C13010849 Quote ID: C3636 - Groundwater

Project Name: Lisbon, UT Facility

Energy Laboratories, Inc. Casper WY received the following 2 samples for Rio Algom Mining Corporation LLC on 1/29/2013 for analysis.

Sample ID	Client Sample ID	Collect Date	Receive Date	Matrix	Test
C13010849-001	6307	01/28/13 11:40	01/29/13	Aqueous	Metals by ICP/ICPMS, Dissolved Alkalinity QA Calculations Conductivity E300.0 Anions pH Solids, Total Dissolved Solids, Total Dissolved - Calculated
C13010849-002	6308	01/28/13 12:55	01/29/13	Aqueous	Same As Above

The results as reported relate only to the item(s) submitted for testing. The analyses presented in this report were performed at Energy Laboratories, Inc., 2393 Salt Creek Hwy., Casper, WY 82601, unless otherwise noted. Radiochemistry analyses were performed at Energy Laboratories, Inc., 2325 Kerzell Lane, Casper, WY 82601, unless otherwise noted. Any exceptions or problems with the analyses are noted in the Laboratory Analytical Report, the QA/QC Summary Report, or the Case Narrative.

If you have any questions regarding these test results, please call.

Report Approved By:

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility
Lab ID: C13010849-001
Client Sample ID: 6307

Report Date: 02/11/13
Collection Date: 01/28/13 11:40
DateReceived: 01/29/13
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Carbonate as CO3	ND	mg/L		5		A2320 B	01/29/13 17:52 / jba
Bicarbonate as HCO3	393	mg/L		5		A2320 B	01/29/13 17:52 / jba
Calcium	223	mg/L		1		E200.7	01/30/13 17:03 / sf
Chloride	201	mg/L		1		E300.0	02/01/13 19:30 / wc
Magnesium	58	mg/L		1		E200.7	01/30/13 17:03 / sf
Potassium	6	mg/L		1		E200.7	01/30/13 17:03 / sf
Sodium	166	mg/L		1		E200.7	01/30/13 17:03 / sf
Sulfate	444	mg/L	D	4		E300.0	02/01/13 19:30 / wc
PHYSICAL PROPERTIES							
Conductivity @ 25 C	1950	umhos/c		1		A2510 B	01/29/13 16:36 / ab
pH	7.60	s.u.	H	0.01		A4500-H B	01/29/13 16:36 / ab
Solids, Total Dissolved TDS @ 180 C	1350	mg/L		20		A2540 C	01/29/13 15:41 / ab
METALS - DISSOLVED							
Arsenic	0.037	mg/L		0.001		E200.8	01/30/13 23:52 / clm
Molybdenum	0.01	mg/L		0.01		E200.8	01/30/13 23:52 / clm
Selenium	0.013	mg/L		0.001		E200.8	01/30/13 23:52 / clm
Uranium	0.598	mg/L		0.0003		E200.8	01/30/13 23:52 / clm
DATA QUALITY							
A/C Balance (± 5)	3.14	%				A1030 E	02/06/13 08:45 / kbh
Anions	21.8	meq/L				A1030 E	02/06/13 08:45 / kbh
Cations	23.2	meq/L				A1030 E	02/06/13 08:45 / kbh
Solids, Total Dissolved Calculated	1300	mg/L				A1030 E	02/06/13 08:45 / kbh
TDS Balance (0.80 - 1.20)	1.02					A1030 E	02/06/13 08:45 / kbh

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
H - Analysis performed past recommended holding time.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility
Lab ID: C13010849-002
Client Sample ID: 6308

Report Date: 02/11/13
Collection Date: 01/28/13 12:55
DateReceived: 01/29/13
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Carbonate as CO3	ND	mg/L		5		A2320 B	01/29/13 18:01 / jba
Bicarbonate as HCO3	1210	mg/L		5		A2320 B	01/29/13 18:01 / jba
Calcium	587	mg/L		1		E200.7	01/30/13 17:11 / sf
Chloride	679	mg/L	D	10		E300.0	02/06/13 18:54 / wc
Magnesium	215	mg/L		1		E200.7	01/30/13 17:11 / sf
Potassium	21	mg/L		1		E200.7	01/30/13 17:11 / sf
Sodium	2280	mg/L	D	3		E200.7	01/30/13 17:11 / sf
Sulfate	4720	mg/L	D	40		E300.0	02/06/13 18:54 / wc
PHYSICAL PROPERTIES							
Conductivity @ 25 C	10400	umhos/c		1		A2510 B	01/29/13 16:39 / ab
pH	7.16	s.u.	H	0.01		A4500-H B	01/29/13 16:39 / ab
Solids, Total Dissolved TDS @ 180 C	8520	mg/L		100		A2540 C	01/29/13 15:42 / ab
METALS - DISSOLVED							
Arsenic	0.011	mg/L		0.001		E200.8	01/31/13 00:08 / clm
Molybdenum	11.6	mg/L		0.01		E200.8	01/31/13 00:08 / clm
Selenium	0.080	mg/L		0.001		E200.8	01/31/13 00:08 / clm
Uranium	49.8	mg/L	D	0.0005		E200.8	01/31/13 00:08 / clm
DATA QUALITY							
A/C Balance (± 5)	2.33	%				A1030 E	02/04/13 09:14 / kbh
Anions	140	meq/L				A1030 E	02/04/13 09:14 / kbh
Cations	147	meq/L				A1030 E	02/04/13 09:14 / kbh
Solids, Total Dissolved Calculated	9300	mg/L				A1030 E	02/04/13 09:14 / kbh
TDS Balance (0.80 - 1.20)	0.920					A1030 E	02/04/13 09:14 / kbh

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
H - Analysis performed past recommended holding time.

QA/QC Summary Report

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Report Date: 02/11/13
Project: Lisbon, UT Facility
Work Order: C13010849

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: A2320 B										Batch: R169691
Sample ID: MBLK	2	Method Blank				Run: MANTECH_130129A				01/29/13 13:45
Alkalinity, Total as CaCO3		ND	mg/L	5.0						
Bicarbonate as HCO3		1.09	mg/L	5.0						
Sample ID: LCS_121003		Laboratory Control Sample				Run: MANTECH_130129A				01/29/13 13:59
Alkalinity, Total as CaCO3		155	mg/L	5.0	103	90	110			
Sample ID: C13010820-001ADUP	2	Sample Duplicate				Run: MANTECH_130129A				01/29/13 14:15
Alkalinity, Total as CaCO3		165	mg/L	5.0				0.1	10	
Bicarbonate as HCO3		202	mg/L	5.0				0.1	10	
Sample ID: C13010822-001AMS		Sample Matrix Spike				Run: MANTECH_130129A				01/29/13 14:37
Alkalinity, Total as CaCO3		252	mg/L	5.0	100	80	120			

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

QA/QC Summary Report

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Report Date: 02/11/13
Project: Lisbon, UT Facility
Work Order: C13010849

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: A2510 B									Analytical Run: PHSC_101-C_130129A	
Sample ID: SC 100		Continuing Calibration Verification Standard							01/29/13 08:51	
Conductivity @ 25 C		103	umhos/cm	1.0	103	90	110			
Method: A2510 B									Batch: R169633	
Sample ID: SC 2ND 1413		Laboratory Control Sample				Run: PHSC_101-C_130129A			01/29/13 09:02	
Conductivity @ 25 C		1450	umhos/cm	1.0	103	90	110			
Sample ID: MBLK		Method Blank				Run: PHSC_101-C_130129A			01/29/13 09:07	
Conductivity @ 25 C		1	umhos/cm	0.7						
Sample ID: C13010849-002ADUP		Sample Duplicate				Run: PHSC_101-C_130129A			01/29/13 16:42	
Conductivity @ 25 C		10500	umhos/cm	1.0				1.2	10	

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

QA/QC Summary Report

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Report Date: 02/11/13
Project: Lisbon, UT Facility
Work Order: C13010849

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: A2540 C									Batch: TDS130129A	
Sample ID: MB-1_130129A	Method Blank					Run: BAL-16_130129C			01/29/13 15:32	
Solids, Total Dissolved TDS @ 180 C		ND	mg/L	10						
Sample ID: LCS-2_130129A	Laboratory Control Sample					Run: BAL-16_130129C			01/29/13 15:33	
Solids, Total Dissolved TDS @ 180 C		1910	mg/L	20	96	90	110			
Sample ID: C13010844-001A DUP	Sample Duplicate					Run: BAL-16_130129C			01/29/13 15:34	
Solids, Total Dissolved TDS @ 180 C		3070	mg/L	20				0.2	5	
Sample ID: C13010844-002A MS	Sample Matrix Spike					Run: BAL-16_130129C			01/29/13 15:35	
Solids, Total Dissolved TDS @ 180 C		16700	mg/L	100	96	90	110			

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

QA/QC Summary Report

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Report Date: 02/11/13
Project: Lisbon, UT Facility
Work Order: C13010849

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: A4500-H B									Analytical Run: PHSC_101-C_130129A	
Sample ID: pH 6.86	Initial Calibration Verification Standard								01/29/13 08:49	
pH		6.83	s.u.	0.010	100	98	102			
Method: A4500-H B									Batch: R169633	
Sample ID: C13010849-002ADUP	Sample Duplicate					Run: PHSC_101-C_130129A			01/29/13 16:42	
pH		7.16	s.u.	0.010				0.0	3	

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

QA/QC Summary Report

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Report Date: 02/11/13
Project: Lisbon, UT Facility
Work Order: C13010849

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E200.7									Analytical Run: ICP2-C_130130A	
Sample ID: ICV	4	Initial Calibration Verification Standard							01/30/13 12:08	
Calcium		52.1	mg/L	0.50	104	95	105			
Magnesium		49.5	mg/L	0.50	99	95	105			
Potassium		47.3	mg/L	0.50	95	95	105			
Sodium		51.8	mg/L	0.50	104	95	105			
Sample ID: ICSA	4	Interference Check Sample A							01/30/13 12:37	
Calcium		502	mg/L	0.50	100	80	120			
Magnesium		494	mg/L	0.50	99	80	120			
Potassium		0.00120	mg/L	0.50						
Sodium		-0.119	mg/L	0.50						
Sample ID: ICSAB	4	Interference Check Sample AB							01/30/13 12:41	
Calcium		520	mg/L	0.50	104	80	120			
Magnesium		502	mg/L	0.50	100	80	120			
Potassium		0.000500	mg/L	0.50						
Sodium		-0.0933	mg/L	0.50						
Method: E200.7									Batch: R169757	
Sample ID: MB-130130A	4	Method Blank				Run: ICP2-C_130130A			01/30/13 13:05	
Calcium		ND	mg/L	0.06						
Magnesium		ND	mg/L	0.03						
Potassium		ND	mg/L	0.06						
Sodium		ND	mg/L	0.3						
Sample ID: LFB-130130A	4	Laboratory Fortified Blank				Run: ICP2-C_130130A			01/30/13 13:09	
Calcium		50.6	mg/L	0.50	101	85	115			
Magnesium		47.6	mg/L	0.50	95	85	115			
Potassium		46.7	mg/L	0.50	93	85	115			
Sodium		49.6	mg/L	0.50	99	85	115			
Sample ID: C13010849-002BMS2	4	Sample Matrix Spike				Run: ICP2-C_130130A			01/30/13 17:15	
Calcium		1100	mg/L	1.0	101	70	130			
Magnesium		742	mg/L	1.0	103	70	130			
Potassium		509	mg/L	1.0	96	70	130			
Sodium		2820	mg/L	3.2		70	130			A
Sample ID: C13010849-002BMSD	4	Sample Matrix Spike Duplicate				Run: ICP2-C_130130A			01/30/13 17:19	
Calcium		1120	mg/L	1.0	104	70	130	1.1	20	
Magnesium		732	mg/L	1.0	102	70	130	1.2	20	
Potassium		507	mg/L	1.0	95	70	130	0.4	20	
Sodium		2810	mg/L	3.2		70	130	0.2	20	A

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

A - The analyte level was greater than four times the spike level. In accordance with the method % recovery is not calculated.

QA/QC Summary Report

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Report Date: 02/11/13
Project: Lisbon, UT Facility
Work Order: C13010849

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E200.8									Analytical Run: ICPMS2-C_130130A	
Sample ID: ICV	4	Initial Calibration Verification Standard							01/30/13 13:21	
Arsenic		0.0497	mg/L	0.0010	99	90	110			
Molybdenum		0.0496	mg/L	0.0010	99	90	110			
Selenium		0.0514	mg/L	0.0010	103	90	110			
Uranium		0.0475	mg/L	0.00030	95	90	110			
Method: E200.8									Batch: R169755	
Sample ID: LRB	4	Method Blank				Run: ICPMS2-C_130130A			01/30/13 13:46	
Arsenic		ND	mg/L	0.00010						
Molybdenum		ND	mg/L	4E-05						
Selenium		ND	mg/L	0.0002						
Uranium		ND	mg/L	1E-05						
Sample ID: LFB	4	Laboratory Fortified Blank				Run: ICPMS2-C_130130A			01/30/13 13:49	
Arsenic		0.0506	mg/L	0.0010	101	85	115			
Molybdenum		0.0515	mg/L	0.0010	103	85	115			
Selenium		0.0514	mg/L	0.0010	103	85	115			
Uranium		0.0498	mg/L	0.00030	100	85	115			
Sample ID: C13010230-001CMS4	4	Sample Matrix Spike				Run: ICPMS2-C_130130A			01/30/13 23:39	
Arsenic		0.106	mg/L	0.0010	102	70	130			
Molybdenum		0.111	mg/L	0.0010	106	70	130			
Selenium		0.0997	mg/L	0.0010	96	70	130			
Uranium		0.130	mg/L	0.00030	121	70	130			
Sample ID: C13010230-001CMSD	4	Sample Matrix Spike Duplicate				Run: ICPMS2-C_130130A			01/30/13 23:42	
Arsenic		0.107	mg/L	0.0010	103	70	130	0.7	20	
Molybdenum		0.113	mg/L	0.0010	108	70	130	1.7	20	
Selenium		0.0986	mg/L	0.0010	95	70	130	1.1	20	
Uranium		0.130	mg/L	0.00030	121	70	130	0.2	20	

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

QA/QC Summary Report

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Report Date: 02/11/13
Project: Lisbon, UT Facility
Work Order: C13010849

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E300.0									Analytical Run: IC1-C_130206A	
Sample ID: ICV-020613-11	2	Initial Calibration Verification Standard							02/06/13 16:52	
Chloride		9.65	mg/L	1.0	97	90	110			
Sulfate		39.4	mg/L	1.0	99	90	110			
Method: E300.0									Batch: R170116	
Sample ID: ICB-020613-12	2	Method Blank				Run: IC1-C_130206A			02/06/13 17:09	
Chloride		ND	mg/L	0.04						
Sulfate		0.2	mg/L	0.05						
Sample ID: LFB-020613-13	2	Laboratory Fortified Blank				Run: IC1-C_130206A			02/06/13 17:27	
Chloride		9.71	mg/L	1.0	97	90	110			
Sulfate		39.6	mg/L	1.0	99	90	110			
Sample ID: C13020058-001BMS	2	Sample Matrix Spike				Run: IC1-C_130206A			02/06/13 18:19	
Chloride		87.9	mg/L	1.0	103	90	110			
Sulfate		736	mg/L	4.2	95	90	110			
Sample ID: C13020058-001BMSD	2	Sample Matrix Spike Duplicate				Run: IC1-C_130206A			02/06/13 18:37	
Chloride		87.9	mg/L	1.0	103	90	110	0.0	20	
Sulfate		744	mg/L	4.2	99	90	110	1.1	20	
Method: E300.0									Analytical Run: IC2-C_130201A	
Sample ID: ICV-020113-11	2	Initial Calibration Verification Standard							02/01/13 14:21	
Chloride		9.91	mg/L	1.0	99	90	110			
Sulfate		39.9	mg/L	1.0	100	90	110			
Method: E300.0									Batch: R169840	
Sample ID: ICB-020113-12	2	Method Blank				Run: IC2-C_130201A			02/01/13 14:37	
Chloride		0.02	mg/L	0.02						
Sulfate		0.2	mg/L	0.09						
Sample ID: LFB-020113-13	2	Laboratory Fortified Blank				Run: IC2-C_130201A			02/01/13 14:52	
Chloride		9.88	mg/L	1.0	99	90	110			
Sulfate		39.4	mg/L	1.0	98	90	110			
Sample ID: C13010849-001AMS	2	Sample Matrix Spike				Run: IC2-C_130201A			02/01/13 19:45	
Chloride		252	mg/L	1.0		90	110			A
Sulfate		646	mg/L	4.2	101	90	110			
Sample ID: C13010849-001AMSD	2	Sample Matrix Spike Duplicate				Run: IC2-C_130201A			02/01/13 20:00	
Chloride		251	mg/L	1.0		90	110	0.2	20	A
Sulfate		645	mg/L	4.2	100	90	110	0.2	20	

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

A - The analyte level was greater than four times the spike level. In accordance with the method % recovery is not calculated.

Standard Reporting Procedures

Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH, Dissolved Oxygen and Residual Chlorine, are qualified as being analyzed outside of recommended holding time.

Solid/soil samples are reported on a wet weight basis (as received) unless specifically indicated. If moisture corrected, data units are typically noted as –dry. For agricultural and mining soil parameters/characteristics, all samples are dried and ground prior to sample analysis.

Workorder Receipt Checklist

Rio Algom Mining Corporation LLC C13010849

Login completed by: Debra Williams
Date Received: 1/29/2013

Reviewed by: BL2000\kmiller
Received by: dw

Reviewed Date: 1/29/2013
Carrier name: FedEx

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on shipping container/cooler?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time? (Exclude analyses that are considered field parameters such as pH, DO, Res Cl, Sulfite, Ferrous Iron, etc.)	Yes ☑	No ☐	
Temp Blank received?	Yes ☑	No ☐	Not Applicable ☐
Container/Temp Blank temperature:	1.6°C On Ice		
Water - VOA vials have zero headspace?	Yes ☐	No ☐	No VOA vials submitted ☑
Water - pH acceptable upon receipt?	Yes ☑	No ☐	Not Applicable ☐

Contact and Corrective Action Comments:

None

Chain of Custody and Analytical Request Record

Page 1 of 1

PLEASE PRINT (Provide as much information as possible.)

Company Name: Eon Montgomery & Associates

Report Mail Address (Required): Leilani Bew, LBew@elmontgomery.com

❑ No Hard Copy Email:

Invoice Address (Required):

❑ No Hard Copy Email:

Special Report/Formats:
☐ DW ☐ EDD/EDT (Electronic Data)
☐ POTW/WWTP Format:
☐ State: ☐ LEVEL IV
☐ Other: ☐ NELAC

Project Name, PWS, Permit, Etc.: Rio Algom Mining - Lisbon, UT Facility

Contact Name: Phone/Fax: Cell:

Invoice Contact & Phone:

Sample Origin: State: Utah

EPA/State Compliance: Yes ☐ No ☐

Sampler: (Please Print): Josh Kerns

Purchase Order:

Quote/Bottle Order: ~~38695~~ 38150

Number of Containers
Sample Type: A W S V B O DW
Air Water Soils/Solids
Vegetation Bioassay Other
DW - Drinking Water

ANALYSIS REQUESTED

SEE ATTACHED

Standard Turnaround (TAT)

RUSH

Contact ELI prior to **RUSH** sample submittal for charges and scheduling – See Instruction Page

Comments: Metals samples filtered in field & preserved w/HNO3 in field.

Shipped by: Fedex E

Cooler ID(s): 3960

Receipt Temp: 1.6 °C

On Ice: (Y) N

Custody Seal: On Bottle Y (N) On Cooler (Y) N

Intact (Y) N

Signature Match (Y) N

	SAMPLE IDENTIFICATION (Name, Location, Interval, etc.)	Collection Date	Collection Time	MATRIX	See Attached Bottle Order # ~~38695~~ 38150
1	~~EF-8~~ 6307	28Jan2013	1140	W	X
2	~~RL-1~~ 6308	28Jan2013	1255	W	X
3					
4					
5					
6					
7					
8					
9					
10					

LABORATORY USE ONLY
1301049

Custody Record MUST be Signed

Relinquished by (print): Josh Kerns Date/Time: 28Jan2013 Signature:

Relinquished by (print): Date/Time: Signature:

Sample Disposal: Return to Client: Lab Disposal:

Received by (print): Date/Time: Signature:

Received by (print): Date/Time: Signature:

Received by Laboratory: Date/Time: 1-29-13 Signature: 930

In certain circumstances, samples submitted to Energy Laboratories, Inc. may be subcontracted to other certified laboratories in order to complete the analysis requested. This serves as notice of this possibility. All sub-contract data will be clearly notated on your analytical report.
Visit our web site at www.energylab.com for additional information, downloadable fee schedule, forms, and links.

ENERGY LABORATORIES www.energylab.com Analytical Excellence Since 1952
Helena, MT 877-472-0711 • Billings, MT 800-735-4489 • Casper, WY 888-235-0515
Gillette, WY 866-686-7175 • Rapid City, SD 888-672-1225 • College Station, TX 888-690-2218

BOTTLE ORDER 38695

SHIPPED TO: Rio Algom Mining Corporation LLC

Contact: Jason Brown

c/o Confluence Environmental Inc
3308 El Camino Ave Ste 300 #148
Sacramento CA 95821

Phone: (916) 759-8156

Project:

Order Created by: Kathryn (Kate) L.. Miller

Shipped From: Casper, WY

Ship Date: 1/8/2013

VIA: Ground

C-3636

Bottle Size/Type	Bottles Per Samp	Method	Tests	Critical Hold Time	Preservative	Notes	Num of Samp
500 mL Plastic	1	A2320 B	Alkalinity				4
		E300.0	E300.0 Anions				
		A2540 C	Solids, Total Dissolved				
		A2510 B	Conductivity				
		A4500-H B	pH	0.25 hrs			
250 mL Plastic	1	E200.7_8	Metals by ICP/ICPMS, Dissolved		■ HNO3	Filter before preservation	4

Comments

Bicarbonate, Carbonate, Cl, SO4, TDS, pH, Cond Ca, Mg, Na, K, As, Se, Mo, U.
Metals samples will be filtered in the field.

■ HNO3 - Nitric Acid ■ H2SO4 - Sulfuric Acid ■ NaOH - Sodium Hydroxide
■ ZnAc - Zinc Acetate ■ HCl - Hydrochloric Acid □ H3PO4 - Phosphoric Acid

We strongly suggest that the samples are shipped the same day as they are collected.

Material Safety Data Sheets(MSDS) Available @ EnergyLab.com ->Services -> MSDS Sheets

Corrosive Chemicals: Nitric, Sulfuric, Phosphoric, Hydrochloric Acids and Sodium Hydroxide. Zinc Acetate is a skin irritant.

Subcontracting of sample analyses to an outside laboratory may be required. If so, Energy Laboratories will utilize its branch laboratories or qualified contract laboratories for this service. Any such laboratories will be indicated within the Laboratory Analytical Report.

Water Level Measurements

Job Number: KI-130226 Date: 2-26-13 Client: Montgomery & Assoc.

Site: Rio Algom Mine - Lisbon Facility - Utah

Well I.D.	Time	Dia	Depth to NAPL	Thickness of NAPL	Depth to water (DTW)	Total Depth (measured)	Total Depth (historical)	Ref Point (TOC/ TOB)		
RL-1	1050	5			115.89	—	124.00	TOC		
EF-8	0953	4			74.03	—	244.00	1		

Confluence Environmental, Inc. 3308 El Camino Ave, Suite 300 #148, Sacramento CA, 95821, 916-760-7641

Well Maintenance Inspection Form

Client: ~~KI~~ Montgomery & Assoc Site: Rio Algom Mine - Lisbon Facility Date: 2-26-13

Job #: KI-130226 Technician: J. Kerns Page 1 of 1

Inspection Point	Well Inspected - No Corrective Action Required	Entry Indicates Deficiency: Cap non-functional	Lock non-functional	Lock missing	Bolts missing (# missing / # total tabs)	Tabs stripped (# stripped / # total tabs.)	Tabs broken (# broken / # of total tabs)	Annular seal incomplete	Apron damaged	Rim / Lid broken	Trip Hazard	Below Grade	Other (explain in notes)	Well Not Inspected (explain in notes)	Notes (Note any repairs made while on site)
RL-1	X														
EF-8	X														

Notes:

Repair codes: **rt**=retap/ bolts added or replaced **as**=annular seal repair,

Confluence Environmental, Inc 3308 El Camino Ave, Suite 300 #148, Sacramento CA, 95821, 916-760-7641

Purging And Sampling Data Sheet

Job#: 1350	**Sampler:** J Kerns	**Client:** Montgomery & Associates
Well ID: EF-8	**Date** (DDOct2012): 26 Feb 2013	**Site:** Rio Algom Mining, Lisbon, UT
Weather Conditions: Cold - Windy		**Sampler Signature:**
Well diam: 1/4" 1" 2" 3" (4") 6" Other:		**DTW:** 74.03 **Total Depth:** 244.00
Purge equip: ES - diam: Bladder Peri Waterra Positive Air Displacement Ext. System		
disp bailer teflon bailer other:	**Tubing:** OD: New Dedicated NA	
Purge method: 3-5 Case Volume Micro/Low-Flow Extraction Other:		
Pump depth/ intake:	**Multipliers:** 1"= 0.04 2"= 0.16 3"= 0.37 4"= 0.65 5"=1.02 6"= 1.47 Radius^2 X 0.163	
(TD - DTW X Multiplier = 1 Volume	80% Recovery (TD - DTW X 0.20 + DTW)	

1 Volume = _____ X _____ = _____ (Total Purge) 80%=_____

Time	Temp (°C / °F)	pH	Cond (mS / µS)	Turbidity (NTU)	Purge Rate (gal or ml / min)	Volume Removed (gal / L)	DO (mg/l)	ORP (mv)	DTW	Notes
1008	4.6	7.00	2236	2.3	200	1.0	7.60	169.2	74.15	
1011	7.3	7.54	2268	2.7	200	1.6	7.56	167.1	74.15	
1014	7.3	7.58	2287	2.5	200	3.2	7.90	168.3	74.16	
1017	7.6	7.58	2292	2.5	200	4.8	7.79	169.0	74.16	
1020	7.6	7.56	2298	2.6	200	5.4	7.89	169.5	74.16	
1023	7.6	7.56	2299	2.5	200	6.0	7.90	169.9	74.16	

Did well dewater? YES (NO)	Total volume removed: 6.0 (gal / L)	
Sample method: Disp Bailer Hydrasleeve New Tubing (Ext. Port) Other:		
Sample date: 2-26-13	Sample time: 1025	DTW at sample: 74.16
Sample ID: 6309	Lab: Energy Labs	Number of bottles: 2
Analysis: 500 ml NP poly - Alkalinity, Cl, SO4, TDS, EC, pH 250 ml HNO3 poly *field filtered - Dissolved Metals		
Equipment blank ID @	Field blank ID @	
Duplicate ID:	Pre-purge DO:	Post purge DO:
$Fe2^+$:	Pre-purge ORP:	Post purge ORP:
NAPL depth:	Volume of NAPL:	Volume removed: ml

Purging And Sampling Data Sheet

Job#: 1350	**Sampler:** J Kerns	**Client:** Montgomery & Associates
Well ID: RL-1	**Date** (DDOct2012): 26 Feb 2013	**Site:** Rio Algom Mining, Lisbon, UT
Weather Conditions: Cold - windy	**Sampler Signature:**	
Well diam: 1/4" 1" 2" 3" 4" 6" Other: (5)	**DTW:** 115.89 **Total Depth:** 124.00	
Purge equip: ES - diam: Bladder Peri Waterra Positive Air Displacement Ext. System		
disp bailer teflon bailer other: **Tubing:** OD: New Dedicated NA		
Purge method: 3-5 Case Volume Micro/Low-Flow Extraction Other:		
Pump depth/ intake:	**Multipliers:** 1"= 0.04 2"= 0.16 3"= 0.37 4"= 0.65 5"=1.02 6"= 1.47 Radius^2 X 0.163	
(TD - DTW X Multiplier = 1 Volume	80% Recovery (TD - DTW X 0.20 + DTW)	

1 Volume = _____ X _____ = _____ (Total Purge) 80%=_____

Time	Temp (°C / °F)	pH	Cond (mS / µS)	Turbidity (NTU)	Purge Rate (gal or mL / min)	Volume Removed (gal / L)	DO (mg/l)	ORP (mv)	DTW	Notes
1059	6.9	7.58	11617	7.9	300	1.0	7.26	196.7	115.93	
1102	10.1	7.21	12171	5.3	300	1.9	5.92	195.3	116.01	
1105	9.7	7.11	12256	4.9	200	2.5	5.83	192.8	116.04	
1108	9.3	7.09	12176	3.7	200	3.1	5.90	191.3	116.05	
1111	9.2	7.08	12224	3.1	200	3.7	5.91	189.6	116.06	
1114	9.4	7.09	12226	3.0	200	4.3	5.82	188.3	116.07	
1117	9.0	7.08	12229	3.2	200	4.9	5.91	188.0	116.08	
1120	9.0	7.08	12231	3.1	200	5.5	5.92	188.1	116.08	
1123	9.0	7.08	12229	3.1	200	6.1	5.94	188.1	116.08	

Did well dewater? YES (NO)	Total volume removed: (gal / L)	
Sample method: Disp Bailer Hydrasleeve New Tubing (Ext. Port) Other:		
Sample date: 2-26-13	Sample time: ~~6~~ 1125	DTW at sample:
Sample ID: 6310	Lab: Energy Labs	Number of bottles: 2
Analysis: 500 ml NP poly - Alkalinity, Cl, SO4, TDS, EC, pH 250 ml HNO3 poly *field filtered - Dissolved Metals		
Equipment blank ID @	Field blank ID @	
Duplicate ID:	Pre-purge DO:	Post purge DO:
$Fe2^+$:	Pre-purge ORP:	Post purge ORP:
NAPL depth:	Volume of NAPL:	Volume removed: ml

Purging And Sampling Data Sheet

Job#: 1350	**Sampler:** J Kerns	**Client:** Montgomery & Associates
Well ID:	**Date** (DDOct2012)**:**	**Site:** Rio Algom Mining, Lisbon, UT
Weather Conditions:		**Sampler Signature:**
Well diam: 1/4" 1" 2" 3" 4" 6" Other:		**DTW:** **Total Depth:**
Purge equip: ES - diam: Bladder Peri Waterra Positive Air Displacement Ext. System		
disp bailer teflon bailer other:	**Tubing:** OD: New Dedicated NA	
Purge method: 3-5 Case Volume Micro/Low-Flow Extraction Other:		
Pump depth/ intake:	**Multipliers:** 1"= 0.04 2"= 0.16 3"= 0.37 4"= 0.65 5"=1.02 6"= 1.47 Radius^2 X 0.163	
(TD - DTW X Multiplier = 1 Volume	80% Recovery (TD - DTW X 0.20 + DTW)	

1 Volume = _____ X _____ = _____ (Total Purge) 80%=_____

Time	Temp (°C / °F)	pH	Cond (mS / µS)	Turbidity (NTU)	Purge Rate (gal or mL/ min)	Volume Removed (gal / L)	DO (mg/l)	ORP (mv)	DTW	Notes

Did well dewater? YES NO	Total volume removed:	(gal / L)
Sample method: Disp Bailer Hydrasleeve New Tubing Ext. Port Other:		
Sample date:	Sample time:	DTW at sample:
Sample ID:	Lab: Energy Labs	Number of bottles: 2
Analysis: 500 ml NP poly - Alkalinity, Cl, SO4, TDS, EC, pH 250 ml HNO3 poly *field filtered - Dissolved Metals		
Equipment blank ID @	Field blank ID @	
Duplicate ID:	Pre-purge DO:	Post purge DO:
$Fe2^+$:	Pre-purge ORP:	Post purge ORP:
NAPL depth:	Volume of NAPL:	Volume removed: ml

Confluence Environmental, Inc

Equipment Calibration Log

Equipment make/model	Equipment ID/ serial number	Date	Time	Calibration Standards	Equipment Reading	Equipment Calibrated	Temp (°C/ °F)	Tech init.	Comments
YSI 556	16100621	2-26-13	0930	pH 4.0/7.0/10.0	4.0/7.0/10.0	✓	21°	JK	
				Cond 1413	1413	✓	21°	JK	
				D.O. 100%	93%	✓	—	JK	
				ORP 237.5	239	✓	22°	JK	

Notes/comments:

ANALYTICAL SUMMARY REPORT

March 07, 2013

Rio Algom Mining Corporation LLC
Hwy 605 and 509
Grants, NM 87020

Workorder No.: C13020788 Quote ID: C3636 - Groundwater

Project Name: Lisbon, UT Facility

Energy Laboratories, Inc. Casper WY received the following 2 samples for Rio Algom Mining Corporation LLC on 2/27/2013 for analysis.

Sample ID	Client Sample ID	Collect Date	Receive Date	Matrix	Test
C13020788-001	6309	02/26/13 10:25	02/27/13	Aqueous	Metals by ICP/ICPMS, Dissolved Alkalinity QA Calculations Conductivity E300.0 Anions Solids, Total Dissolved Solids, Total Dissolved - Calculated
C13020788-002	6310	02/26/13 11:25	02/27/13	Aqueous	Same As Above

The results as reported relate only to the item(s) submitted for testing. The analyses presented in this report were performed at Energy Laboratories, Inc., 2393 Salt Creek Hwy., Casper, WY 82601, unless otherwise noted. Radiochemistry analyses were performed at Energy Laboratories, Inc., 2325 Kerzell Lane, Casper, WY 82601, unless otherwise noted. Any exceptions or problems with the analyses are noted in the Laboratory Analytical Report, the QA/QC Summary Report, or the Case Narrative.

If you have any questions regarding these test results, please call.

Report Approved By:

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility
Lab ID: C13020788-001
Client Sample ID 6309

Report Date: 03/07/13
Collection Date: 02/26/13 10:25
DateReceived: 02/27/13
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Bicarbonate as HCO3	383	mg/L		5		A2320 B	02/27/13 17:10 / wc
Calcium	206	mg/L		1		E200.7	03/01/13 15:02 / sf
Chloride	205	mg/L		1		E300.0	03/01/13 13:06 / wc
Magnesium	54	mg/L		1		E200.7	03/01/13 15:02 / sf
Potassium	5	mg/L		1		E200.7	03/01/13 15:02 / sf
Sodium	151	mg/L		1		E200.7	03/01/13 15:02 / sf
Sulfate	451	mg/L	D	4		E300.0	03/01/13 13:06 / wc
PHYSICAL PROPERTIES							
Conductivity @ 25 C	1940	umhos/cm		1		A2510 B	02/28/13 09:16 / ab
Solids, Total Dissolved TDS @ 180 C	1380	mg/L		20		A2540 C	03/01/13 08:37 / ab
METALS - DISSOLVED							
Arsenic	0.041	mg/L		0.001		E200.8	02/28/13 15:33 / clm
Molybdenum	ND	mg/L		0.01		E200.8	02/28/13 15:33 / clm
Selenium	0.018	mg/L		0.001		E200.8	02/28/13 15:33 / clm
Uranium	0.600	mg/L		0.0003		E200.8	02/28/13 15:33 / clm
DATA QUALITY							
A/C Balance (± 5)	-1.07	%				A1030 E	03/07/13 07:09 / kbh
Anions	21.9	meq/L				A1030 E	03/07/13 07:09 / kbh
Cations	21.4	meq/L				A1030 E	03/07/13 07:09 / kbh
Solids, Total Dissolved Calculated	1300	mg/L				A1030 E	03/07/13 07:09 / kbh
TDS Balance (0.80 - 1.20)	1.06					A1030 E	03/07/13 07:09 / kbh

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility
Lab ID: C13020788-002
Client Sample ID 6310

Report Date: 03/07/13
Collection Date: 02/26/13 11:25
DateReceived: 02/27/13
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Bicarbonate as HCO3	1220	mg/L		5		A2320 B	02/27/13 17:20 / wc
Calcium	606	mg/L		1		E200.7	03/01/13 15:06 / sf
Chloride	679	mg/L	D	10		E300.0	03/01/13 13:21 / wc
Magnesium	204	mg/L		1		E200.7	03/01/13 15:06 / sf
Potassium	21	mg/L		1		E200.7	03/01/13 15:06 / sf
Sodium	2150	mg/L	D	2		E200.7	03/01/13 15:06 / sf
Sulfate	4660	mg/L	D	40		E300.0	03/01/13 13:21 / wc
PHYSICAL PROPERTIES							
Conductivity @ 25 C	10200	umhos/cm		1		A2510 B	02/28/13 09:19 / ab
Solids, Total Dissolved TDS @ 180 C	9110	mg/L		100		A2540 C	03/01/13 08:38 / ab
METALS - DISSOLVED							
Arsenic	0.005	mg/L		0.001		E200.8	02/28/13 15:36 / clm
Molybdenum	11.8	mg/L		0.01		E200.8	02/28/13 15:36 / clm
Selenium	0.094	mg/L	D	0.003		E200.8	02/28/13 15:36 / clm
Uranium	47.5	mg/L	D	0.001		E200.8	02/28/13 15:36 / clm
DATA QUALITY							
A/C Balance (± 5)	1.12	%				A1030 E	03/07/13 07:09 / kbh
Anions	138	meq/L				A1030 E	03/07/13 07:09 / kbh
Cations	141	meq/L				A1030 E	03/07/13 07:09 / kbh
Solids, Total Dissolved Calculated	9000	mg/L				A1030 E	03/07/13 07:09 / kbh
TDS Balance (0.80 - 1.20)	1.01					A1030 E	03/07/13 07:09 / kbh

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.

QA/QC Summary Report

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Report Date: 03/07/13
Project: Lisbon, UT Facility
Work Order: C13020788

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: A2320 B										Batch: R170804
Sample ID: MBLK	2	Method Blank				Run: MANTECH_130227A				02/27/13 15:24
Alkalinity, Total as CaCO3		1	mg/L	1						
Bicarbonate as HCO3		2	mg/L	1						
Sample ID: LCS_121003		Laboratory Control Sample				Run: MANTECH_130227A				02/27/13 15:39
Alkalinity, Total as CaCO3		150	mg/L	5.0	99	90	110			
Sample ID: C13020770-002AMS		Sample Matrix Spike				Run: MANTECH_130227A				02/27/13 16:18
Alkalinity, Total as CaCO3		446	mg/L	5.0	106	80	120			
Sample ID: C13020788-002ADUP	2	Sample Duplicate				Run: MANTECH_130227A				02/27/13 17:29
Alkalinity, Total as CaCO3		992	mg/L	5.0				0.8	10	
Bicarbonate as HCO3		1210	mg/L	5.0				0.8	10	

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

QA/QC Summary Report

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Report Date: 03/07/13
Project: Lisbon, UT Facility
Work Order: C13020788

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: A2510 B									Analytical Run: PHSC_101-C_130228A	
Sample ID: SC 100		Continuing Calibration Verification Standard							02/28/13 08:55	
Conductivity @ 25 C		103	umhos/cm	1.0	103	90	110			
Method: A2510 B									Batch: R170810	
Sample ID: SC 2ND 1413		Laboratory Control Sample				Run: PHSC_101-C_130228A			02/28/13 09:06	
Conductivity @ 25 C		1400	umhos/cm	1.0	99	90	110			
Sample ID: MBLK		Method Blank				Run: PHSC_101-C_130228A			02/28/13 09:11	
Conductivity @ 25 C		2	umhos/cm	0.2						
Sample ID: C13020797-002ADUP		Sample Duplicate				Run: PHSC_101-C_130228A			02/28/13 09:34	
Conductivity @ 25 C		4010	umhos/cm	1.0				2.0	10	

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

QA/QC Summary Report

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Report Date: 03/07/13
Project: Lisbon, UT Facility
Work Order: C13020788

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: A2540 C									Batch: TDS130301A	
Sample ID: MB-1_130301A	Method Blank					Run: BAL-19_130301A			03/01/13 08:36	
Solids, Total Dissolved TDS @ 180 C		ND	mg/L	10						
Sample ID: LCS-2_130301A	Laboratory Control Sample					Run: BAL-19_130301A			03/01/13 08:37	
Solids, Total Dissolved TDS @ 180 C		2000	mg/L	20	100	90	110			
Sample ID: C13020788-001A DUP	Sample Duplicate					Run: BAL-19_130301A			03/01/13 08:38	
Solids, Total Dissolved TDS @ 180 C		1360	mg/L	20				0.9	5	
Sample ID: C13020788-002A MS	Sample Matrix Spike					Run: BAL-19_130301A			03/01/13 08:38	
Solids, Total Dissolved TDS @ 180 C		18500	mg/L	100	94	90	110			

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

QA/QC Summary Report

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Report Date: 03/07/13
Project: Lisbon, UT Facility
Work Order: C13020788

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E200.7									Analytical Run: ICP4-C_130301A	
Sample ID: ICV	4	Initial Calibration Verification Standard							03/01/13 11:30	
Calcium		50.1	mg/L	0.50	100	95	105			
Magnesium		49.1	mg/L	0.50	98	95	105			
Potassium		47.8	mg/L	0.50	96	95	105			
Sodium		50.1	mg/L	0.50	100	95	105			
Sample ID: ICSA	4	Interference Check Sample A							03/01/13 11:44	
Calcium		443	mg/L	0.50	89	80	120			
Magnesium		488	mg/L	0.50	98	80	120			
Potassium		-0.0118	mg/L	0.50						
Sodium		0.495	mg/L	0.50						
Sample ID: ICSAB	4	Interference Check Sample AB							03/01/13 11:48	
Calcium		440	mg/L	0.50	88	80	120			
Magnesium		490	mg/L	0.50	98	80	120			
Potassium		-0.00349	mg/L	0.50						
Sodium		0.395	mg/L	0.50						
Method: E200.7									Batch: R170909	
Sample ID: MB-130301A	4	Method Blank				Run: ICP4-C_130301A			03/01/13 12:07	
Calcium		ND	mg/L	0.02						
Magnesium		ND	mg/L	0.02						
Potassium		ND	mg/L	0.04						
Sodium		ND	mg/L	0.2						
Sample ID: LFB-130301A	4	Laboratory Fortified Blank				Run: ICP4-C_130301A			03/01/13 12:11	
Calcium		48.5	mg/L	0.50	97	85	115			
Magnesium		47.2	mg/L	0.50	94	85	115			
Potassium		45.3	mg/L	0.50	91	85	115			
Sodium		47.2	mg/L	0.50	94	85	115			
Sample ID: C13020822-001BMS2	4	Sample Matrix Spike				Run: ICP4-C_130301A			03/01/13 15:25	
Calcium		103	mg/L	1.0	101	70	130			
Magnesium		102	mg/L	1.0	99	70	130			
Potassium		103	mg/L	1.0	101	70	130			
Sodium		126	mg/L	1.0	100	70	130			
Sample ID: C13020822-001BMSD	4	Sample Matrix Spike Duplicate				Run: ICP4-C_130301A			03/01/13 15:28	
Calcium		104	mg/L	1.0	102	70	130	1.0	20	
Magnesium		101	mg/L	1.0	99	70	130	0.3	20	
Potassium		105	mg/L	1.0	103	70	130	1.4	20	
Sodium		127	mg/L	1.0	101	70	130	1.2	20	

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

QA/QC Summary Report

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Report Date: 03/07/13
Project: Lisbon, UT Facility
Work Order: C13020788

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E200.8									Analytical Run: ICPMS2-C_130228A	
Sample ID: ICV	4	Initial Calibration Verification Standard							02/28/13 13:53	
Arsenic		0.0505	mg/L	0.0010	101	90	110			
Molybdenum		0.0510	mg/L	0.0010	102	90	110			
Selenium		0.0499	mg/L	0.0010	100	90	110			
Uranium		0.0512	mg/L	0.00030	102	90	110			
Method: E200.8									Batch: R170859	
Sample ID: LRB	4	Method Blank				Run: ICPMS2-C_130228A			02/28/13 14:18	
Arsenic		ND	mg/L	0.00010						
Molybdenum		ND	mg/L	4E-05						
Selenium		0.0007	mg/L	0.0002						
Uranium		ND	mg/L	1E-05						
Sample ID: LFB	4	Laboratory Fortified Blank				Run: ICPMS2-C_130228A			02/28/13 14:21	
Arsenic		0.0531	mg/L	0.0010	106	85	115			
Molybdenum		0.0519	mg/L	0.0010	104	85	115			
Selenium		0.0535	mg/L	0.0010	106	85	115			
Uranium		0.0538	mg/L	0.00030	108	85	115			
Sample ID: C13020712-007BMS4	4	Sample Matrix Spike				Run: ICPMS2-C_130228A			02/28/13 15:21	
Arsenic		0.268	mg/L	0.0010	107	70	130			
Molybdenum		0.272	mg/L	0.0010	108	70	130			
Selenium		1.42	mg/L	0.0013		70	130			A
Uranium		0.357	mg/L	0.00050	108	70	130			
Sample ID: C13020712-007BMSD	4	Sample Matrix Spike Duplicate				Run: ICPMS2-C_130228A			02/28/13 15:24	
Arsenic		0.266	mg/L	0.0010	106	70	130	0.9	20	
Molybdenum		0.270	mg/L	0.0010	107	70	130	0.7	20	
Selenium		1.44	mg/L	0.0013		70	130	1.0	20	A
Uranium		0.355	mg/L	0.00050	107	70	130	0.6	20	

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

A - The analyte level was greater than four times the spike level. In accordance with the method % recovery is not calculated.

QA/QC Summary Report

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Report Date: 03/07/13
Project: Lisbon, UT Facility
Work Order: C13020788

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E300.0									Analytical Run: IC2-C_130301A	
Sample ID: ICV-030113-11	2	Initial Calibration Verification Standard							03/01/13 10:01	
Chloride		9.49	mg/L	1.0	95	90	110			
Sulfate		38.2	mg/L	1.0	96	90	110			
Method: E300.0									Batch: R170972	
Sample ID: ICB-030113-12	2	Method Blank				Run: IC2-C_130301A			03/01/13 10:16	
Chloride		0.04	mg/L	0.02						
Sulfate		0.3	mg/L	0.09						
Sample ID: LFB-030113-14	2	Laboratory Fortified Blank				Run: IC2-C_130301A			03/01/13 10:47	
Chloride		9.60	mg/L	1.0	96	90	110			
Sulfate		38.7	mg/L	1.0	96	90	110			
Sample ID: LFBD-030113-15	2	Laboratory Fortified Blank Duplicate				Run: IC2-C_130301A			03/01/13 11:03	
Chloride		9.77	mg/L	1.0	97	90	110	1.8	20	
Sulfate		39.2	mg/L	1.0	97	90	110	1.1	20	
Sample ID: C13020834-001AMS	2	Sample Matrix Spike				Run: IC2-C_130301A			03/01/13 11:49	
Chloride		13.3	mg/L	1.0	99	90	110			
Sulfate		50.3	mg/L	1.0	100	90	110			
Sample ID: C13020834-001AMSD	2	Sample Matrix Spike Duplicate				Run: IC2-C_130301A			03/01/13 12:04	
Chloride		13.6	mg/L	1.0	101	90	110	1.6	20	
Sulfate		50.9	mg/L	1.0	102	90	110	1.3	20	

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

Standard Reporting Procedures

Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH, Dissolved Oxygen and Residual Chlorine, are qualified as being analyzed outside of recommended holding time.

Solid/soil samples are reported on a wet weight basis (as received) unless specifically indicated. If moisture corrected, data units are typically noted as –dry. For agricultural and mining soil parameters/characteristics, all samples are dried and ground prior to sample analysis.

Workorder Receipt Checklist

Rio Algom Mining Corporation LLC C13020788

Login completed by: Debra Williams
Date Received: 2/27/2013

Reviewed by: BL2000\cwagner
Received by: dw

Reviewed Date: 2/28/2013
Carrier name: FedEx

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on shipping container/cooler?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time? (Exclude analyses that are considered field parameters such as pH, DO, Res Cl, Sulfite, Ferrous Iron, etc.)	Yes ☑	No ☐	
Temp Blank received?	Yes ☐	No ☑	Not Applicable ☐
Container/Temp Blank temperature:	1.2°C On Ice		
Water - VOA vials have zero headspace?	Yes ☐	No ☐	No VOA vials submitted ☑
Water - pH acceptable upon receipt?	Yes ☑	No ☐	Not Applicable ☐

Contact and Corrective Action Comments:

None

Chain of Custody and Analytical Request Record

Page 1 of 1

PLEASE PRINT- Provide as much information as possible.

Company Name: Rio Algom Mining Corp	Project Name, PWS, Permit, Etc.: Lisbon, UT Facility	Sample Origin State: UT	EPA/State Compliance: Yes ☐ No ☐
Report Mail Address: Montgomery and Associates Results retrieved from Energy Source	Contact Name: John Laney Phone/Fax: (520) 425-2219 Email: jlaney@clmontgomery.com		Sampler: (Please Print) J.Kerns
Invoice Address: Email invoice to Gail PO Box 218 Grants, NM 87020	Invoice Contact & Phone: Gail Alexander (505) 287-8851	Purchase Order:	Quote/Bottle Order: C3636

Special Report/Formats – ELI must be notified prior to sample submittal for the following:

☐ DW ☐ A2LA
☐ GSA ☐ EDD/EDT (Electronic Data)
☐ POTW/WWTP Format: _____
☐ State: _____ ☐ LEVEL IV
☐ Other: _____ ☐ NELAC

Number of Containers
Sample Type: A W S V B O
Air Water Soils/Solids
Vegetation Bioassay Other

ANALYSIS REQUESTED

SEE ATTACHED

Normal Turnaround (TAT)

RUSH

Contact ELI prior to RUSH sample submittal for charges and scheduling – See Instruction Page

Comments:

Shipped by: FedEx E

Cooler ID(s): 4101

Receipt Temp: 1.2 °C ~~4~~ 2

On Ice: Yes No

Custody Seal Intact: Y N

Signature Match: Y N

	SAMPLE IDENTIFICATION (Name, Location, Interval, etc.)	Collection Date	Collection Time	MATRIX	C3636												
1	EF-8	26Feb2013	1025	W	X											6309	
2	RL-1	26Feb2013	1125	W	X											6310	
3																	
4																per J. Laney 3-5-13. KLS	
5																	
6																	
7																	
8																	
9																	
10																	

LABORATORY USE ONLY L13020788

Custody Record MUST be Signed

Relinquished by (print)	Date/Time	Signature	Received by (print)	Date/Time	Signature
J. Kerns	26Feb2013 / 1230				
Relinquished by (print)	Date/Time	Signature	Received by (print)	Date/Time	Signature
			Received by Laboratory:	Date/Time	Signature
				2-27-13	920

Sample Disposal: Return to Client: _____ Lab Disposal: _____

In certain circumstances, samples submitted to Energy Laboratories, Inc. may be subcontracted to other certified laboratories in order to complete the analysis requested. This serves as notice of this possibility. All sub-contract data will be clearly notated on your analytical report.

Visit our web site at www.energylab.com for additional information, downloadable fee schedule, forms and links.

Purging And Sampling Data Sheet

Job#: 1350.15	**Sampler:** J Kerns B Myers	**Client:** Montgomery & Associates
Well ID: RL-1	**Date** (DDOct2012): 31MAR2013	**Site:** Rio Algom Mining, Lisbon, UT
Weather Conditions: Windy - warm	**Sampler Signature:**	
Well diam: 1/4" 1" 2" 3" 4" 6" Other: 5"	**DTW:** 115.79 **Total Depth:** 124	

Purge equip: ES - diam: (Bladder) Peri Waterra Positive Air Displacement Ext. System
disp bailer teflon bailer other: **Tubing:** OD: New (Dedicated) NA

Purge method: 3-5 Case Volume (Micro/Low-Flow) Extraction Other:

Pump depth/ intake: 120 ~ **Multipliers:** 1"= 0.04 2"= 0.16 3"= 0.37 4"= 0.65 5"=1.02 6"= 1.47 Radius² X 0.163

(TD - DTW X Multiplier = 1 Volume | 80% Recovery (TD - DTW X 0.20 + DTW)

1 Volume = ~ X ____ = ~ (Total Purge) 80%=____

Time	Temp (°C) / °F)	pH	Cond (mS (µS))	Turbidity (NTU)	Purge Rate (gal or (mL) / min)	Volume Removed (gal / (L))	DO (mg/l)	ORP (mv)	DTW	Notes
1435	12.4	6.7	7808	23	200	1.0	8.94	176.5	115.92	
1438	12.8	7.0	7900	3.7	200	1.6	6.26	166.8	115.97	
1441	12.5	7.1	8003	4.3	200	2.2	5.01	164.1	116.01	
1444	12.4	7.1	7999	5.2	200	2.8	5.01	163.4	116.06	
1447	12.3	7.1	8000	5.5	200	3.4	5.04	162.3	116.07	
1450	12.7	7.1	7982	5.3	200	4.0	4.93	161.2	116.07	
1453	12.6	7.1	7996	5.5	200	4.6	4.99	160.1	116.07	

Did well dewater? YES (NO) Total volume removed: 4.6 (gal / (L))

Sample method: Disp Bailer Hydrasleeve New Tubing Ext. Port Other: Dedicated Tubing

Sample date: 3-31-13 Sample time: 1455 DTW at sample: 116.07

Sample ID: 6312 Lab: Energy Labs Number of bottles: 2

Analysis: 500 ml NP poly - Alkalinity, Cl, SO4, TDS, EC, pH 250 ml HNO3 poly *field filtered - Dissolved Metals

Equipment blank ID @ Field blank ID @

Duplicate ID: Pre-purge DO: Post purge DO:

$Fe2^{+}$: Pre-purge ORP: Post purge ORP:

NAPL depth: Volume of NAPL: Volume removed: ml

Purging And Sampling Data Sheet

Job#: 1350.15	**Sampler:** J Kerns B Myers	**Client:** Montgomery & Associates
Well ID: OW-MT-9	**Date** (DDOct2012): 31MAR2013	**Site:** Rio Algom Mining, Lisbon, UT
Weather Conditions: Warm	**Sampler Signature:**	
Well diam: 1/4" 1" 2" 3" 4" (6") Other:	**DTW:** 122.78 **Total Depth:** 142	
Purge equip: ES - diam: (Bladder) Peri Waterra Positive Air Displacement Ext. System		
disp bailer teflon bailer other:	**Tubing:** OD: New (Dedicated) NA	
Purge method: 3-5 Case Volume (Micro/Low-Flow) Extraction Other:		
Pump depth/ intake: 131	**Multipliers:** 1"= 0.04 2"= 0.16 3"= 0.37 4"= 0.65 5"=1.02 6"= 1.47 Radius² X 0.163	
(TD - DTW X Multiplier = 1 Volume	80% Recovery (TD - DTW X 0.20 + DTW)	

1 Volume = _____ X _____ = _____ (Total Purge) 80%=_____

Time	Temp (°C)/°F)	pH	SP Cond (mS/(uS))	Turbidity (NTU)	Purge Rate (gal or (mL)/min)	Volume Removed (gal/(L))	DO (mg/l)	ORP (mv)	DTW	Notes
1540	12.9	9.3	22079	5.9	500	1.0	ø.37	76.7	123.11	
1543	12.8	9.7	22897	4.2	500	2.5	ø.24	51.8	123.15	
1546	13.0	9.9	23064	2.9	500	4.0	ø.21	39.4	123.15	
1549	13.3	10.1	23328	7.3	500	5.5	ø.23	33.6	123.15	
1552	14.5	10.1	26069	5.9	500	7.0	ø.23	32.3	123.15	
1555	14.5	10.2	26113	5.3	500	8.5	ø.21	32.2	123.15	
1558	14.5	10.2	26975	4.9	500	10.0	ø.17	32.6	123.15	
1601	14.5	10.2	26570	3.7	500	11.5	ø.16	32.6	123.15	
1604	14.5	10.2	26750	3.9	500	13.0	ø.16	32.1	123.15	
	Add 3 vials of preservative					pH @	6.1			

Did well dewater? YES (NO) Total volume removed: 13.0 (gal (L)

Sample method: Disp Bailer Hydrasleeve New Tubing Ext. Port Other: Dedicated Tubing

Sample date: 31MAR2013	Sample time: 1605	DTW at sample: 123.15
Sample ID: 6313	Lab: Energy Labs	Number of bottles: 2
Analysis: 500 ml NP poly - Alkalinity, Cl, SO4, TDS, EC, pH 250 ml HNO3 poly *field filtered - Dissolved Metals		

Equipment blank ID @	Field blank ID @	
Duplicate ID:	Pre-purge DO:	Post purge DO:
$Fe2^{+}$:	Pre-purge ORP:	Post purge ORP:
NAPL depth:	Volume of NAPL:	Volume removed: ml

Purging And Sampling Data Sheet

Job#: 1350.15	**Sampler:** J Kerns B Myers	**Client:** Montgomery & Associates
Well ID: EF-8	**Date** (DDOct2012): 31Mar2013	**Site:** Rio Algom Mining, Lisbon, UT
Weather Conditions: Windy - Warm		**Sampler Signature:**
Well diam: 1/4" 1" 2" 3" (4") 6" Other:		**DTW:** 74.26 **Total Depth:** 244
Purge equip: ES - diam: (Bladder) Peri Waterra Positive Air Displacement Ext. System		
disp bailer teflon bailer other:	**Tubing:** OD: New (Dedicated) NA	
Purge method: 3-5 Case Volume (Micro/Low-Flow) Extraction Other:		
Pump depth/ intake: 229	**Multipliers:** 1"= 0.04 2"= 0.16 3"= 0.37 4"= 0.65 5"=1.02 6"= 1.47 Radius^2 X 0.163	
(TD - DTW X Multiplier = 1 Volume ___	80% Recovery (TD - DTW X 0.20 + DTW)	

1 Volume = ___ X ___ = ___ (Total Purge) 80%=___

Time	Temp (°C) °F)	pH	SP Cond (mS/µS)	Turbidity (NTU)	Purge Rate (gal or mL/min)	Volume Removed (gal /L)	DO (mg/l)	ORP (mv)	DTW	Notes
1327	12.7	7.6	1463	4.7	250	1.00	7.96	177.7	74.57	
1330	12.4	7.5	1491	4.3	250	1.75	8.25	168.2	74.62	
1333	12.6	7.4	1484	3.9	250	2.50	7.23	160.7	74.62	
1336	12.7	7.4	1476	3.9	250	3.25	7.31	154.7	74.62	
1339	12.6	7.4	1505	4.3	250	4.00	7.52	150.8	74.62	
1342	12.6	7.4	1507	4.5	250	4.75	7.51	147.7	74.62	
1345	12.6	7.4	1506	4.5	250	5.50	7.45	144.5	74.62	

Did well dewater? YES (NO)	Total volume removed: 5.5 (gal (L)	
Sample method: Disp Bailer Hydrasleeve New Tubing Ext. Port Other: Dedicated Tubing		
Sample date: 3-31-13	Sample time: 1350	DTW at sample: 74.62
Sample ID: 6311	Lab: Energy Labs	Number of bottles: 2
Analysis: 500 ml NP poly - Alkalinity, Cl, SO4, TDS, EC, pH 250 ml HNO3 poly *field filtered - Dissolved Metals		
Equipment blank ID @	Field blank ID @	
Duplicate ID:	Pre-purge DO:	Post purge DO:
$Fe2^+$:	Pre-purge ORP:	Post purge ORP:
NAPL depth:	Volume of NAPL:	Volume removed: ml

ANALYTICAL SUMMARY REPORT

April 26, 2013

Rio Algom Mining Corporation LLC
Hwy 605 and 509
Grants, NM 87020

Workorder No.: C13040727 Quote ID: C3636 - Groundwater

Project Name: Lisbon, UT Facility

Energy Laboratories, Inc. Casper WY received the following 3 samples for Rio Algom Mining Corporation LLC on 4/3/2013 for analysis.

Sample ID	Client Sample ID	Collect Date	Receive Date	Matrix	Test
C13040727-001	6311	03/31/13 13:50	04/03/13	Aqueous	Metals by ICP/ICPMS, Dissolved Alkalinity QA Calculations Conductivity E300.0 Anions pH Solids, Total Dissolved Solids, Total Dissolved - Calculated
C13040727-002	6312	03/31/13 14:55	04/03/13	Aqueous	Same As Above
C13040727-003	6313	03/31/13 16:05	04/03/13	Aqueous	Same As Above

The results as reported relate only to the item(s) submitted for testing. The analyses presented in this report were performed at Energy Laboratories, Inc., 2393 Salt Creek Hwy., Casper, WY 82601, unless otherwise noted. Radiochemistry analyses were performed at Energy Laboratories, Inc., 2325 Kerzell Lane, Casper, WY 82601, unless otherwise noted. Any exceptions or problems with the analyses are noted in the Laboratory Analytical Report, the QA/QC Summary Report, or the Case Narrative.

If you have any questions regarding these test results, please call.

Report Approved By:

CLIENT: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility
Sample Delivery Group: C13040727

Report Date: 04/26/13

CASE NARRATIVE

COMMENTS
Samples 6311, 6312, and 6313 were originally reported on workorder C13040135 and moved to a new workorder per client request.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility
Lab ID: C13040727-001
Client Sample ID 6311

Report Date: 04/26/13
Collection Date: 03/31/13 13:50
DateReceived: 04/03/13
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Carbonate as CO3	ND	mg/L		5		A2320 B	04/03/13 20:38 / jba
Bicarbonate as HCO3	391	mg/L		5		A2320 B	04/03/13 20:38 / jba
Calcium	205	mg/L		1		E200.7	04/04/13 19:36 / sf
Chloride	209	mg/L		1		E300.0	04/05/13 00:00 / wc
Magnesium	54	mg/L		1		E200.7	04/04/13 19:36 / sf
Potassium	5	mg/L		1		E200.7	04/04/13 19:36 / sf
Sodium	153	mg/L		1		E200.7	04/04/13 19:36 / sf
Sulfate	464	mg/L	D	4		E300.0	04/05/13 00:00 / wc
PHYSICAL PROPERTIES							
Conductivity @ 25 C	2090	umhos/cm		1		A2510 B	04/04/13 10:55 / ab
pH	7.65	s.u.	H	0.01		A4500-H B	04/04/13 10:55 / ab
Solids, Total Dissolved TDS @ 180 C	1390	mg/L		20		A2540 C	04/04/13 14:35 / ab
METALS - DISSOLVED							
Arsenic	0.036	mg/L		0.001		E200.8	04/05/13 03:15 / cp
Iron	ND	mg/L		0.03		E200.7	04/04/13 19:36 / sf
Molybdenum	ND	mg/L		0.01		E200.7	04/04/13 19:36 / sf
Selenium	0.012	mg/L		0.001		E200.8	04/05/13 03:15 / cp
Uranium	0.666	mg/L		0.0003		E200.8	04/05/13 03:15 / cp
DATA QUALITY							
A/C Balance (± 5)	-2.11	%				A1030 E	04/09/13 07:07 / kbh
Anions	22.4	meq/L				A1030 E	04/09/13 07:07 / kbh
Cations	21.5	meq/L				A1030 E	04/09/13 07:07 / kbh
Solids, Total Dissolved Calculated	1300	mg/L				A1030 E	04/09/13 07:07 / kbh
TDS Balance (0.80 - 1.20)	1.05					A1030 E	04/09/13 07:07 / kbh

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
H - Analysis performed past recommended holding time.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility
Lab ID: C13040727-002
Client Sample ID 6312

Report Date: 04/26/13
Collection Date: 03/31/13 14:55
DateReceived: 04/03/13
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Carbonate as CO3	ND	mg/L		5		A2320 B	04/03/13 20:48 / jba
Bicarbonate as HCO3	1250	mg/L		5		A2320 B	04/03/13 20:48 / jba
Calcium	565	mg/L		1		E200.7	04/04/13 19:39 / sf
Chloride	730	mg/L	D	10		E300.0	04/05/13 00:15 / wc
Magnesium	198	mg/L		1		E200.7	04/04/13 19:39 / sf
Potassium	19	mg/L		1		E200.7	04/04/13 19:39 / sf
Sodium	2000	mg/L	D	2		E200.7	04/04/13 19:39 / sf
Sulfate	4730	mg/L	D	40		E300.0	04/05/13 00:15 / wc
PHYSICAL PROPERTIES							
Conductivity @ 25 C	11000	umhos/cm		1		A2510 B	04/04/13 10:58 / ab
pH	7.20	s.u.	H	0.01		A4500-H B	04/04/13 10:58 / ab
Solids, Total Dissolved TDS @ 180 C	8940	mg/L		100		A2540 C	04/04/13 14:35 / ab
METALS - DISSOLVED							
Arsenic	0.003	mg/L		0.001		E200.8	04/05/13 03:20 / cp
Iron	ND	mg/L		0.03		E200.7	04/04/13 19:39 / sf
Molybdenum	10.9	mg/L	D	0.03		E200.7	04/04/13 19:39 / sf
Selenium	0.074	mg/L		0.001		E200.8	04/05/13 03:20 / cp
Uranium	48.8	mg/L		0.0003		E200.8	04/05/13 03:20 / cp
DATA QUALITY							
A/C Balance (± 5)	-3.24	%				A1030 E	04/09/13 07:07 / kbh
Anions	141	meq/L				A1030 E	04/09/13 07:07 / kbh
Cations	132	meq/L				A1030 E	04/09/13 07:07 / kbh
Solids, Total Dissolved Calculated	9000	mg/L				A1030 E	04/09/13 07:07 / kbh
TDS Balance (0.80 - 1.20)	1.00					A1030 E	04/09/13 07:07 / kbh

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
H - Analysis performed past recommended holding time.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility
Lab ID: C13040727-003
Client Sample ID 6313

Report Date: 04/26/13
Collection Date: 03/31/13 16:05
DateReceived: 04/03/13
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Carbonate as CO3	6120	mg/L		5		A2320 B	04/04/13 09:44 / jba
Bicarbonate as HCO3	9020	mg/L		5		A2320 B	04/04/13 09:44 / jba
Calcium	7	mg/L		1		E200.8	04/05/13 03:24 / cp
Chloride	1440	mg/L	D	40		E300.0	04/05/13 01:17 / wc
Magnesium	23	mg/L		1		E200.8	04/05/13 03:24 / cp
Potassium	18	mg/L		1		E200.8	04/05/13 03:24 / cp
Sodium	13200	mg/L		1		E200.8	04/05/13 03:24 / cp
Sulfate	10900	mg/L	D	200		E300.0	04/05/13 01:17 / wc
PHYSICAL PROPERTIES							
Conductivity @ 25 C	39700	umhos/cm		1		A2510 B	04/04/13 11:00 / ab
pH	9.50	s.u.	H	0.01		A4500-H B	04/04/13 11:00 / ab
Solids, Total Dissolved TDS @ 180 C	37400	mg/L		500		A2540 C	04/04/13 14:36 / ab
METALS - DISSOLVED							
Arsenic	2.68	mg/L	D	0.005		E200.8	04/05/13 03:24 / cp
Iron	0.07	mg/L	D	0.06		E200.8	04/05/13 03:24 / cp
Molybdenum	45.8	mg/L	D	0.1		E200.7	04/04/13 19:43 / sf
Selenium	0.030	mg/L	D	0.007		E200.8	04/05/13 03:24 / cp
Uranium	86.8	mg/L	D	0.0009		E200.8	04/05/13 03:24 / cp
DATA QUALITY							
A/C Balance (± 5)	-3.73	%				A1030 E	04/09/13 09:22 / kbh
Anions	622	meq/L				A1030 E	04/09/13 09:22 / kbh
Cations	577	meq/L				A1030 E	04/09/13 09:22 / kbh
Solids, Total Dissolved Calculated	36000	mg/L				A1030 E	04/09/13 09:22 / kbh
TDS Balance (0.80 - 1.20)	1.03					A1030 E	04/09/13 09:22 / kbh

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
H - Analysis performed past recommended holding time.

QA/QC Summary Report

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Report Date: 04/26/13
Project: Lisbon, UT Facility
Work Order: C13040727

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: A2320 B										Batch: R172078
Sample ID: MBLK	3	Method Blank				Run: MANTECH_130403A				04/03/13 14:18
Alkalinity, Total as CaCO3		1.77	mg/L	5.0						
Carbonate as CO3		ND	mg/L	5.0						
Bicarbonate as HCO3		2.16	mg/L	5.0						
Sample ID: LCS_130315		Laboratory Control Sample				Run: MANTECH_130403A				04/03/13 14:33
Alkalinity, Total as CaCO3		156	mg/L	5.0	103	90	110			
Sample ID: C13040090-001ADUP	3	Sample Duplicate				Run: MANTECH_130403A				04/03/13 14:49
Alkalinity, Total as CaCO3		171	mg/L	5.0				0.3	10	
Carbonate as CO3		ND	mg/L	5.0					10	
Bicarbonate as HCO3		209	mg/L	5.0				0.3	10	
Sample ID: C13040091-001AMS		Sample Matrix Spike				Run: MANTECH_130403A				04/03/13 15:05
Alkalinity, Total as CaCO3		291	mg/L	5.0	102	80	120			
Method: A2320 B										Batch: 130404_1_ALK-W
Sample ID: MBLK1_130404_	3	Method Blank				Run: TTR-ALK_130404A				04/04/13 08:52
Alkalinity, Total as CaCO3		1.25	mg/L	5.0						
Carbonate as CO3		ND	mg/L	5.0						
Bicarbonate as HCO3		1.52	mg/L	5.0						
Sample ID: LCS_130315_130404_		Laboratory Control Sample				Run: TTR-ALK_130404A				04/04/13 09:18
Alkalinity, Total as CaCO3		1000	mg/L	5.0	100	90	110			
Sample ID: C13040135-001ADUP	3	Sample Duplicate				Run: TTR-ALK_130404A				04/04/13 09:26
Alkalinity, Total as CaCO3		12700	mg/L	5.0				0.0	10	
Carbonate as CO3		4380	mg/L	5.0				1.4	10	
Bicarbonate as HCO3		6580	mg/L	5.0				1.8	10	

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

QA/QC Summary Report

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Report Date: 04/26/13
Project: Lisbon, UT Facility
Work Order: C13040727

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: A2510 B										Batch: R172091
Sample ID: SC 2ND 1413		Laboratory Control Sample				Run: PHSC_101-C_130404A				04/04/13 09:13
Conductivity @ 25 C		1510	umhos/cm	1.0	107	90	110			
Sample ID: MBLK		Method Blank				Run: PHSC_101-C_130404A				04/04/13 09:31
Conductivity @ 25 C		2	umhos/cm	0.2						
Sample ID: C13040135-006ADUP		Sample Duplicate				Run: PHSC_101-C_130404A				04/04/13 10:02
Conductivity @ 25 C		922	umhos/cm	1.0				0.2	10	

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

QA/QC Summary Report

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Report Date: 04/26/13
Project: Lisbon, UT Facility
Work Order: C13040727

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: A2540 C									Batch: TDS130404A	
Sample ID: MB-1_130404A		Method Blank				Run: BAL-19_130404A			04/04/13 14:24	
Solids, Total Dissolved TDS @ 180 C		ND	mg/L	10						
Sample ID: LCS-2_130404A		Laboratory Control Sample				Run: BAL-19_130404A			04/04/13 14:24	
Solids, Total Dissolved TDS @ 180 C		1990	mg/L	20	100	90	110			
Sample ID: C13040135-017A MS		Sample Matrix Spike				Run: BAL-19_130404A			04/04/13 14:34	
Solids, Total Dissolved TDS @ 180 C		4220	mg/L	20	99	90	110			
Sample ID: C13040135-018A DUP		Sample Duplicate				Run: BAL-19_130404A			04/04/13 14:34	
Solids, Total Dissolved TDS @ 180 C		2210	mg/L	20				1.0	5	

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

QA/QC Summary Report

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Report Date: 04/26/13
Project: Lisbon, UT Facility
Work Order: C13040727

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: A4500-H B									Analytical Run: PHSC_101-C_130404A	
Sample ID: pH 6.86	Initial Calibration Verification Standard								04/04/13 09:00	
pH		6.84	s.u.	0.010	100	98	102			
Sample ID: pH 6.86	Initial Calibration Verification Standard								04/04/13 12:12	
pH		6.84	s.u.	0.010	100	98	102			
Method: A4500-H B									Batch: R172091	
Sample ID: C13040135-006ADUP	Sample Duplicate					Run: PHSC_101-C_130404A			04/04/13 10:02	
pH		8.02	s.u.	0.010				0.0	3	

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

QA/QC Summary Report

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC **Report Date:** 04/26/13

Project: Lisbon, UT Facility **Work Order:** C13040727

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E200.7									Analytical Run: ICP4-C_130404A	
Sample ID: ICV	6	Initial Calibration Verification Standard							04/04/13 14:09	
Calcium		49.0	mg/L	0.50	98	95	105			
Iron		4.91	mg/L	0.030	98	95	105			
Magnesium		48.9	mg/L	0.50	98	95	105			
Molybdenum		0.976	mg/L	0.10	98	95	105			
Potassium		47.9	mg/L	0.50	96	95	105			
Sodium		49.3	mg/L	0.50	99	95	105			
Sample ID: ICSA	6	Interference Check Sample A							04/04/13 14:24	
Calcium		442	mg/L	0.50	88	80	120			
Iron		171	mg/L	0.030	86	80	120			
Magnesium		487	mg/L	0.50	97	80	120			
Molybdenum		0.000880	mg/L	0.10						
Potassium		-0.0164	mg/L	0.50						
Sodium		0.453	mg/L	0.50						
Sample ID: ICSAB	6	Interference Check Sample AB							04/04/13 14:28	
Calcium		442	mg/L	0.50	88	80	120			
Iron		173	mg/L	0.030	86	80	120			
Magnesium		488	mg/L	0.50	98	80	120			
Molybdenum		0.00259	mg/L	0.10						
Potassium		-0.00535	mg/L	0.50						
Sodium		0.407	mg/L	0.50						
Method: E200.7									Batch: R172148	
Sample ID: MB-130404A	6	Method Blank				Run: ICP4-C_130404A			04/04/13 14:47	
Calcium		ND	mg/L	0.02						
Iron		ND	mg/L	0.002						
Magnesium		0.06	mg/L	0.01						
Molybdenum		ND	mg/L	0.003						
Potassium		ND	mg/L	0.04						
Sodium		ND	mg/L	0.2						
Sample ID: LFB-130404A	6	Laboratory Fortified Blank				Run: ICP4-C_130404A			04/04/13 14:50	
Calcium		46.4	mg/L	0.50	93	85	115			
Iron		0.932	mg/L	0.030	93	85	115			
Magnesium		46.2	mg/L	0.50	92	85	115			
Molybdenum		0.959	mg/L	0.10	96	85	115			
Potassium		45.0	mg/L	0.50	90	85	115			
Sodium		45.4	mg/L	0.50	91	85	115			
Sample ID: C13040135-021BMS2	6	Sample Matrix Spike				Run: ICP4-C_130404A			04/04/13 19:25	
Calcium		935	mg/L	1.0	90	70	130			
Iron		9.48	mg/L	0.030	93	70	130			
Magnesium		680	mg/L	1.0	94	70	130			
Molybdenum		14.1	mg/L	0.030	93	70	130			
Potassium		486	mg/L	1.0	92	70	130			

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

QA/QC Summary Report

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Report Date: 04/26/13
Project: Lisbon, UT Facility
Work Order: C13040727

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E200.7										Batch: R172148
Sample ID: C13040135-021BMS2	6	Sample Matrix Spike				Run: ICP4-C_130404A				04/04/13 19:25
Sodium		2070	mg/L	2.1	80	70	130			
Sample ID: C13040135-021BMSD	6	Sample Matrix Spike Duplicate				Run: ICP4-C_130404A				04/04/13 19:28
Calcium		929	mg/L	1.0	89	70	130	0.6	20	
Iron		9.43	mg/L	0.030	92	70	130	0.5	20	
Magnesium		678	mg/L	1.0	93	70	130	0.3	20	
Molybdenum		14.1	mg/L	0.030	93	70	130	0.3	20	
Potassium		481	mg/L	1.0	91	70	130	0.9	20	
Sodium		2050	mg/L	2.1	77	70	130	0.8	20	

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

QA/QC Summary Report

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC **Report Date:** 04/26/13

Project: Lisbon, UT Facility **Work Order:** C13040727

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E200.8									Analytical Run: ICPMS4-C_130404A	
Sample ID: ICV	8	Initial Calibration Verification Standard							04/04/13 13:07	
Arsenic		0.0499	mg/L	0.0010	100	90	110			
Calcium		10.1	mg/L	0.0066	101	90	110			
Iron		0.991	mg/L	0.0010	99	90	110			
Magnesium		9.91	mg/L	0.0027	99	90	110			
Potassium		9.76	mg/L	0.0041	98	90	110			
Selenium		0.0490	mg/L	0.0010	98	90	110			
Sodium		9.97	mg/L	0.0043	100	90	110			
Uranium		0.0485	mg/L	0.00030	97	90	110			
Method: E200.8									Batch: R172153	
Sample ID: LRB	8	Method Blank				Run: ICPMS4-C_130404A			04/04/13 13:41	
Arsenic		ND	mg/L	5E-05						
Calcium		ND	mg/L	0.007						
Iron		ND	mg/L	0.0006						
Magnesium		ND	mg/L	0.003						
Potassium		0.005	mg/L	0.004						
Selenium		ND	mg/L	7E-05						
Sodium		0.009	mg/L	0.004						
Uranium		1E-05	mg/L	9E-06						
Sample ID: LFB	8	Laboratory Fortified Blank				Run: ICPMS4-C_130404A			04/04/13 13:46	
Arsenic		0.0511	mg/L	0.0010	102	85	115			
Calcium		12.6	mg/L	0.0066	101	85	115			
Iron		1.23	mg/L	0.0010	99	85	115			
Magnesium		12.3	mg/L	0.0027	98	85	115			
Potassium		12.3	mg/L	0.0041	99	85	115			
Selenium		0.0505	mg/L	0.0010	101	85	115			
Sodium		12.3	mg/L	0.0043	98	85	115			
Uranium		0.0515	mg/L	0.00030	103	85	115			
Sample ID: C13040136-007BMS4	8	Sample Matrix Spike				Run: ICPMS4-C_130404A			04/05/13 04:17	
Arsenic		0.0550	mg/L	0.0010	106	70	130			
Calcium		358	mg/L	1.0		70	130			A
Iron		1.29	mg/L	0.030	103	70	130			
Magnesium		45.3	mg/L	1.0	74	70	130			
Potassium		25.9	mg/L	1.0	96	70	130			
Selenium		0.0636	mg/L	0.0010	99	70	130			
Sodium		291	mg/L	1.0		70	130			A
Uranium		0.431	mg/L	0.00030		70	130			A
Sample ID: C13040136-007BMSD	8	Sample Matrix Spike Duplicate				Run: ICPMS4-C_130404A			04/05/13 04:22	
Arsenic		0.0570	mg/L	0.0010	110	70	130	3.7	20	
Calcium		374	mg/L	1.0		70	130	4.3	20	A
Iron		1.24	mg/L	0.030	99	70	130	3.8	20	
Magnesium		47.1	mg/L	1.0	88	70	130	3.9	20	

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

A - The analyte level was greater than four times the spike level. In accordance with the method % recovery is not calculated.

QA/QC Summary Report

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC **Report Date:** 04/26/13

Project: Lisbon, UT Facility **Work Order:** C13040727

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: **E200.8**									Batch: R172153	
Sample ID: **C13040136-007BMSD**	8	Sample Matrix Spike Duplicate				Run: ICPMS4-C_130404A			04/05/13 04:22	
Potassium		27.3	mg/L	1.0	107	70	130	5.0	20	
Selenium		0.0624	mg/L	0.0010	97	70	130	2.0	20	
Sodium		300	mg/L	1.0		70	130	3.0	20	A
Uranium		0.427	mg/L	0.00030		70	130	1.0	20	A

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

A - The analyte level was greater than four times the spike level. In accordance with the method % recovery is not calculated.

QA/QC Summary Report

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Report Date: 04/26/13
Project: Lisbon, UT Facility
Work Order: C13040727

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E300.0									Batch: R172171	
Sample ID: ICB-040413	2	Method Blank				Run: IC2-C_130404A			04/04/13 13:27	
Chloride		ND	mg/L	0.03						
Sulfate		0.09	mg/L	0.07						
Sample ID: LFB-040413-01	2	Laboratory Fortified Blank				Run: IC2-C_130404A			04/04/13 13:43	
Chloride		10.7	mg/L	1.0	107	90	110			
Sulfate		42.4	mg/L	1.0	106	90	110			
Sample ID: C13040727-003AMS	2	Sample Matrix Spike				Run: IC2-C_130404A			04/05/13 01:32	
Chloride		3650	mg/L	42	110	90	110			
Sulfate		19600	mg/L	170	109	90	110			
Sample ID: C13040727-003AMSD	2	Sample Matrix Spike Duplicate				Run: IC2-C_130404A			04/05/13 01:48	
Chloride		3660	mg/L	42	111	90	110	0.3	20	S
Sulfate		19600	mg/L	170	109	90	110	0.0	20	

Qualifiers:

RL - Analyte reporting limit.
ND - Not detected at the reporting limit.
S - Spike recovery outside of advisory limits.

Standard Reporting Procedures

Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH, Dissolved Oxygen and Residual Chlorine, are qualified as being analyzed outside of recommended holding time.

Solid/soil samples are reported on a wet weight basis (as received) unless specifically indicated. If moisture corrected, data units are typically noted as –dry. For agricultural and mining soil parameters/characteristics, all samples are dried and ground prior to sample analysis.

Workorder Receipt Checklist

Rio Algom Mining Corporation LLC C13040727

Login completed by: Kerri Schroeder
Date Received: 4/3/2013
Reviewed by: BL2000\kschroeder
Received by: th
Reviewed Date: 4/23/2013
Carrier name: NDA

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on shipping container/cooler?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time? (Exclude analyses that are considered field parameters such as pH, DO, Res Cl, Sulfite, Ferrous Iron, etc.)	Yes ☑	No ☐	
Temp Blank received?	Yes ☑	No ☐	Not Applicable ☐
Container/Temp Blank temperature:	0.4°C On Ice		
Water - VOA vials have zero headspace?	Yes ☐	No ☐	No VOA vials submitted ☑
Water - pH acceptable upon receipt?	Yes ☑	No ☐	Not Applicable ☐

Contact and Corrective Action Comments:

None

Chain of Custody and Analytical Request Record

Page 1 of 1

PLEASE PRINT- Provide as much information as possible.

Company Name: Rio Algom Mining Corp	Project Name, PWS, Permit, Etc.: Lisbon, UT Facility	Sample Origin State: UT	EPA/State Compliance: Yes ☐ No ☐
Report Mail Address: Montgomery and Associates. Results retrieved from Energy Source	Contact Name: John Laney — Phone/Fax: (520) 425-2219 — Email: jlaney@clmontgomery.com		Sampler: (Please Print) J. Kerns
Invoice Address: Email invoice to Gail, PO Box 218, Grants, NM 87020	Invoice Contact & Phone: Gail Alexander (505) 287-8851	Purchase Order:	Quote/Bottle Order: C3636

Special Report/Formats – ELI must be notified prior to sample submittal for the following:

☐ DW ☐ A2LA
☐ GSA ☐ EDD/EDT (Electronic Data) Format: _____
☐ POTW/WWTP ☐ LEVEL IV
☐ State: _____ ☐ NELAC
☐ Other: _____

Number of Containers; Sample Type: A Air, W Water, S Soils/Solids, V Vegetation, B Bioassay, O Other

ANALYSIS REQUESTED

SAMPLE IDENTIFICATION (Name, Location, Interval, etc.)	Collection Date	Collection Time	MATRIX	C3636	SEE ATTACHED	Normal Turnaround (TAT)	RUSH
1 6311	31 MAR 2013	1350	W	X			
2 6312	31 MAR 2013	1455	W	X			
3 6313	31 MAR 2013	1605	W	X			
4							
5							
6							
7							
8							
9							
10							

Contact ELI prior to RUSH sample submittal for charges and scheduling – See Instruction Page

Comments: ~~C1304 0135~~ KCS

C13040727

Shipped by: Fed Ex
Cooler ID(s): Various
Receipt Temp: 0.4 °C
On Ice: (Yes) No
Custody Seal Intact: Y N
Signature Match: Y N

LABORATORY USE ONLY

Custody Record MUST be Signed

Relinquished by (print)	Date/Time	Signature	Received by (print)	Date/Time	Signature
J. Kerns	02 APR 2013				
Relinquished by (print)	Date/Time	Signature	Received by (print)	Date/Time	Signature
			Received by Laboratory	Date/Time	Signature
				4-3-13	1000

Sample Disposal: Return to Client: _____ Lab Disposal: _____

In certain circumstances, samples submitted to Energy Laboratories, Inc. may be subcontracted to other certified laboratories in order to complete the analysis requested. This serves as notice of this possibility. All sub-contract data will be clearly notated on your analytical report.
Visit our web site at www.energylab.com for additional information, downloadable fee schedule, forms, and links.

Confluence Environmental, Inc

Equipment Calibration Log

Equipment make/model	Equipment ID/ serial number	Date	Time	Calibration Standards	Equipment Reading	Equipment Calibrated	Temp (°C) °F	Tech init.	Comments
ProScnes	#3	3/31/13	1200	4, 7, 10 1413	4.0, 7.0, 10.0 1413	Y	15	BM	
				100% 244	100% 244	Y	15	BM	
		4/1/13	815	4, 7, 10 1413	4.0, 7.0, 10.0 1413	Y	15	BM	
				100% 244	100% 244	Y	15	BM	
	#3	4/2/13	700	4, 7, 10 1413	4.0, 7.0, 10.0 1413	Y	20	BM	
				100% 237.5	100% 237.5	Y	20	BM	
	#2			4, 7, 10 1413	4.0, 7.0, 10.0 1413	Y	20	BM	
				100% 237.5	100% 237.5	Y	20	BM	
	#3	4/3/13	615	4, 7, 10 1413	4.0, 7.0, 10.0 1413	Y	20	BM	
				100% 237.5	100% 237.5	Y	20	BM	
	#2			4, 7, 10 1413	4.0, 7.0, 10.0 1413	Y	20	BM	
				100% 237.5	100% 237.5	Y	20	BM	

Notes/comments:

Confluence Environmental, Inc

Equipment Calibration Log

Equipment make/model	Equipment ID/ serial number	Date	Time	Calibration Standards	Equipment Reading	Equipment Calibrated	Temp (°C / °F)	Tech init.	Comments
ProSeries	#3	4/4/13	530	4, 7, 10	4.0, 7.0, 10.0				
				1413	1413	Y	20	BM	
				100%	100%				
				237.5	237.5	Y	20	BM	
	#2			4, 7, 10	4.0, 7.0, 10.0				
				1413	1413	Y	20	BM	
				100%	100%				
				237.5	237.5	Y	20	BM	
	#3	4/5/13	730	4, 7, 10	4.0, 7.0, 10.0				
				1413	1413	Y	20	BM	
				100%	100%				
				237.5	237.5	Y	20	BM	
	#2			4, 7, 10	4.0, 7.0, 10.0				
				1413	1413	Y	20	BM	
				100%	100%				
				237.5	237.5	Y	20	BM	
	#3	4/6/13	1100	4, 7, 10	4.0, 7.0, 10.0				
				1413	1413	Y	20	BM	
				100%	100%				
				237.5 %	237.5	Y	20	BM	

Notes/comments:

Sample Log

Job Number: 1350.15 Date: 3-31-2013 Client: Montgomery & Assoc

Site: Rio Algom Mine - Lisbon - NT Sampler: J. Kerns / B. Myers

Well ID	Sample ID	Date	Time	Sample Method (HS, LF, P)	QC Sample (dup, split, rinse)	Ship Date/Notes
EF-8	6311	3-31-13	1350	LF	N/A	4-2-2013
RL-1	6312	3-31-13	1455	LF	"	
OW-NT-9	6313	3-31-13	1605	LF	"	
OW-NT-9	6321	4-1-13	1315	HS	N/A	
OW-NT-9	6322	4-1-13	1405 ~~1605~~ JTC	P	N/A ~~Rinse~~ (JTC)	
OW-NT-9	6323	4-1-13	1420	Grab	Rinse ~~N/A~~ (JTC)	
EF-8	6324	4-1-13	1430	HS	N/A	
EF-8	6325	4-1-13	1605	P	"	
MW-102 OB	6314	4-2-13	0820	HS	N/A	
MW-102OB	6315	4-2-13	0925	LF	"	
MW-102OB	6316	4-2-13	1045	P	"	
MW-102OB	6317	4-2-13	1050	~~GF~~ P	Dup	
RL-1	6318	4-2-13	1130	HS	N/A	
RL-1	6319	4-2-13	1300	P	"	
ML-1	6326	4-2-13	0840	HS	N/A	
ML-1	6327	4-2-13	0910	LF	"	
ML-1	6328	4-2-13	1015	P	"	
EF-6	6329	4-2-13	1035	HS	"	
EF-6	6330	4-2-13	1040	HS	Dup	
EF-6	6331	4-2-13	1105	LF	N/A	
EF-6	6332	4-2-13	1200	P	"	
RL-3	6333	4-2-13	1230	HS	"	

Sample Log

Job Number: 1350.15 Date: 3-31-2013 Client: Montgomery & Assoc

Site: Rio Algom Mine - Lisbon - UT Sampler: J. Kerns / B. Myers

Well ID	Sample ID	Date	Time	Sample Method (HS, LF, P)	QC Sample (dup, split, rinse)	Ship Date/Notes
RL-3	6334	4-2-13	1310	LF	N/A	4-2-2013
RL-3	6335	4-2-13	1345	P	"	"
MW-102	6320	4-3-13	0810	HS	N/A	4-4-2013
MW-102	6371	4-3-13	0925	LF	"	"
MW-102	6372	4-3-13	0930	LF	Dup	"
MW-102	6373	4-3-13	1025	P	N/A	"
MW-102	6374	4-3-13	1030	Grab	Rinse	"
H-63	6377	4-3-13	1205	HS	N/A	"
H-63	6378	4-3-13	1250	LF	"	"
H-63	6379	4-3-13	1420	P	"	"
RL-6	6380	4-4-13	0650	HS	N/A	"
RL-6	6391	4-4-13	0740	LF	"	"
RL-6	6392	4-4-13	0805	P	"	"
MW-100	6393	4-4-13	0845	HS	N/A	"
MW-100	6394	4-4-13	0925	LF	"	"
MW-100	6395	4-4-13	1025	P	"	"
MW-100	6396	4-4-13	1030	P	Dup	"
MW-101	6397	4-4-13	1100	HS	N/A	"
MW-101	6398	4-4-13	1105	HS	Dup-ACZ	"
MW-101	6399	4-4-13	1210	LF	N/A	"
MW-101	6400	4-4-13	1215	LF	Dup-ACZ	"
MW-101	6401	4-4-13	1250	P	N/A	"

Sample Log

Job Number: 1350.15 Date: 3-31-2013 Client: Montgomery & Assoc

Site: Rio Algom Mine - Lisbon - UT Sampler: J. Kerns

Well ID	Sample ID	Date	Time	Sample Method (HS, LF, P)	QC Sample (dup, split, rinse)	Ship Date/Notes
MW-101	6402	4-4-13	1255	P	Dup - ACZ	4-4-2013
MW-101	6403	4-4-13	1300	Grab	rinse	〃
MW-103	6375	4-5-13	0835	HS	N/A	4-8-2013
MW-103	6376	4-5-13	0840	HS	Dup	〃
MW-103	6404	4-5-13	0915	LF	N/A	〃
MW-103	6405	4-5-13	1150	P	N/A	〃

Sample Log

Job Number: 1350.15 Date: 4/3/13 Client: Montgomery & Assoc.

Site: Rio Algom Mining, Lisbon, UT Sampler: BM

Well ID	Sample ID	Date	Time	Sample Method (HS, LF, P)	QC Sample (dup, split, rinse)	Ship Date/Notes
MW-1	6336	4/3/12	810	HS	N/A	Shipped 4/4/13
MW-1	6337	"	840	LF	N/A	
MW-1	6338	"	925	P	N/A	
MW-13	6339	"	950	HS	N/A	
MW-13	6340	"	1035	LF	N/A	
MW-13	6341	"	1040	LF	DUP	
MW-13	6342	"	1135	P	N/A	
MW-105	6343	"	1200	HS	N/A	
MW-105	6344	"	1235	LF	N/A	
MW-105	6345	"	1320	P	N/A	
MW-5	6346	"	1425	HS	N/A	
MW-5	6347	"	1505	LF	N/A	
RL-4	6348	4/4/12	650	HS	N/A	
RL-4	6349	"	700	HS	DUP	
RL-4	6350	"	730	LF	N/A	
RL-4	6351	"	810	P	N/A	
LW-1	6352	"	840	HS	N/A	
LW-1	6353	"	915	LF	N/A	
LW-1	6354	"	1015	P	N/A	
RL-5	6355	"	1100	HS	N/A	
RL-5	6356	"	1125	LF	N/A	
RL-5	6357	"	1130	LF	DUP	"

Sample Log

Job Number: 1350.15 Date: 4/4/13 Client: Montgomery

Site: Rio Algom Mining, Lisbon, UT Sampler: DM

Well ID	Sample ID	Date	Time	Sample Method (HS, LF, P)	QC Sample (dup, split, rinse)	Ship Date/Notes
RL-5	63558	4/4/13	1215	P	N/A	Shipped 4/4/13
MW-5	63559	4/4/13	1240	P	N/A	〃
EF-3A	63560	4/5/13	830	HS	N/A	Shipped 4/8/13
EF-3A	63561	〃	920	LF	N/A	〃
EF-3A	63562	〃	1150	P	N/A	〃
EF-3A	63563	〃	1155	P	DUP	〃
MW-104	63564	〃	1305	P	N/A	〃
MW-106	63565	〃	1330	P	N/A	〃
EF-8	63566	〃	1415	LF	N/A	〃
RL-1	63567	〃	1500	LF	N/A	〃

ACZ Laboratories, Inc.

2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

CHAIN of CUSTODY

Report to:

Name: John Laney
Company: Montgomery & Assoc.
E-mail: Jlaney@el montgomery.com
Address: P.O. Box 218
Grants NM 87020
Telephone: 520-425-2219

Copy of Report to:

Name:
Company:
E-mail:
Telephone:

Invoice to:

Name: John Laney
Company: Montgomery & Assoc.
E-mail: Jlaney@montgomery.com
Address: P.O. Box 218
Grants NM 87020
Telephone: 520-425-2219

If sample(s) received past holding time (HT), or if insufficient HT remains to complete analysis before expiration, shall ACZ proceed with requested short HT analyses? YES [X] NO [ ]

If "NO" then ACZ will contact client for further instruction. If neither "YES" nor "NO" is indicated, ACZ will proceed with the requested analyses, even if HT is expired, and data will be qualified

Are samples for SDWA Compliance Monitoring? Yes [ ] No [X]

If yes, please include state forms. Results will be reported to PQL for Colorado.

Sampler's Name: J. Kerns Sampler's site Information State UT Zip code Time Zone M

PROJECT INFORMATION

Quote #: Li-Ion-GW
Project/PO #: 1350.15
Reporting state for compliance testing: Utah
Check box if samples include NRC licensed material? [ ]

ANALYSES REQUESTED (attach list or use quote number)

SAMPLE IDENTIFICATION	DATE:TIME	Matrix	# of Containers	Li-Ion-GW
6398	04APR2013/1105	GW	3	X
6400	04APR2013/1215	GW	3	X
6407	04APR2013/1255	GW	3	✓

Matrix: SW (Surface Water) · GW (Ground Water) · WW (Waste Water) · DW (Drinking Water) · SL (Sludge) · SO (Soil) · OL (Oil) · Other (Specify)

REMARKS

Please refer to ACZ's terms & conditions located on the reverse side of this COC.

RELINQUISHED BY:	DATE:TIME	RECEIVED BY:	DATE:TIME
	4-4-13/1515		

Water Level Measurements

Job Number: ~~KT~~ 1350.15 Date: 3-31-13 Client: Montgomery & Assoc.

Site: Rio Algom Mine Lisbon UT

Well I.D.	Time	Dia	Depth to NAPL	Thickness of NAPL	Depth to water (DTW)	Total Depth (measured)	Total Depth (historical)	Ref Point (TOC/ TOB)	Screen	Depth top of HS set
EF-3A	1043	6			82.31	—	215	TOC	173-203	190-
EF-6	1241	4			71.53	—	137	TOC	105-135	122-
EF-8	1314	4			74.26	—	244	TOC	212-242	229-
H-63	1123	5			136.00	—	172	TOC	140-170	157-
LW-1	0950	4			146.09	—	233	TOC	203-233	220-
UW-1	1412	5			105.45	—	140	TOC	103-140	124.5-
ML-1	1257	4			42.55	—	157	TOC	137-157	149-
MW-13	1103	4			94.06	—	206	TOC	80-125	168- ~~111.5~~
MW-5	1208	6			153.46	—	197	TOC	165-195	182-
OW-UT-9	1528	6			122.78 ~~123.76~~ (55)	—	142	TOC	118-138	132.3
RL-1	1431	5			115.79	—	124	TOC	104-124	122-
RL-3	1423	5			170.03	—	183	TOC	163-183	178.5
RL-4	1020	5			156.37	—	178	TOC	137-177	168.4
RL-5	1010	5			151.77	—	186	TOC	150-186	170.8 ~~167~~
RL-6	1030	5			14.45	—	20	TOC	7.7-18	18.2
MW-100	0941	4			146.90	—	203	TOC	138-203	176.9 ~~176~~
MW-101	0920	4			150.70	—	159	TOC	139-159	156.5
MW-102	1220	4			125.19	—	136	TOC	116-136	132.5 ~~136~~
MW-102DB	1225	4			120.48	—	175	TOC	145-175	162-
MW-103	1055	4			83.05	—	111.5	TOC	81.5-111.5	99.3

Water Level Measurements

Job Number: 1350.15 Date: 3-31-13 Client: Montgomery & Assoc.

Site: Rio Algom Mine - Lisbon - UT

Well I.D.	Time	Dia	Depth to NAPL	Thickness of NAPL	Depth to water (DTW)	Total Depth (measured)	Total Depth (historical)	Ref Point (TOC/ TOB)	Screen	Depth top of HS set
MW-104	1147	4			93.96	—	108	TOC	68-98	—
MW-105	1113	4			73.61	—	135	TOC	65-135	106.3
MW-106	1137	4			227.02	—	264.5	TOC	234.5-264.5	—

Well Maintenance Inspection Form

Client: Montgomery & Assoc. Site: Rio Algom Mine - Lisbon - UT Date: 3-31-15

Job #: 1350.15 Technician: JK / BM Page 1 of 2

		Entry Indicates Deficiency													
Inspection Point	Well Inspected - No Corrective Action Required	Cap non-functional	Lock non-functional	Lock missing	Bolts missing (# missing / # total tabs)	Tabs stripped (# stripped / # total tabs.)	Tabs broken (# broken / # of total tabs)	Annular seal incomplete	Apron damaged	Rim / Lid broken	Trip Hazard	Below Grade	Other (explain in notes)	Well Not Inspected (explain in notes)	Notes (Note any repairs made while on site)
EF-3A	X														
EF-6	X														
EF-8	X														
H-63	X														
LW-1	X														
UW-1	X														
ML-1	X														
MW-13	X														
MW-5	X														
OW-UT-9	X														
RL-1	X														
RL-3	X														
RL-4	X														
RL-5	X														
RL-6	X														
MW-100	X														
MW-101	X														
MW-102	X														
MW-102DB	X														
MW-103	X														

Notes:

Repair codes: rt=retap/ bolts added or replaced as=annular seal repair.

Well Maintenance Inspection Form

Client: Montgomery & Assoc Site: Rio Algom Mine - Lisbon - UT Date: 3-31-15

Job #: 1350.15 Technician: JIC/RM

		Entry Indicates Deficiency													
Inspection Point	Well Inspected - No Corrective Action Required	Cap non-functional	Lock non-functional	Lock missing	Bolts missing (# missing / # total tabs)	Tabs stripped (# stripped / # total tabs.)	Tabs broken (# broken / # of total tabs)	Annular seal incomplete	Apron damaged	Rim / Lid broken	Trip Hazard	Below Grade	Other (explain in notes)	Well Not Inspected (explain in notes)	Notes (Note any repairs made while on site)
MW-104	X														
MW-105	X														
MW-106	X														

Notes:

Repair codes: **rt**=retap/ bolts added or replaced **as**=annular seal repair.

Purging And Sampling Data Sheet

Job#: 1350.15	**Sampler:** J Kerns (B Myers)	**Client:** Montgomery & Associates
Well ID: EF-3A	**Date** (DDOct2012): 05APR2013	**Site:** Rio Algom Mining, Lisbon, UT
Weather Conditions: cool	**Sampler Signature:**	
Well diam: 1/4" 1" 2" 3" 4" (6") Other:	**DTW:** 823.1 **Total Depth:** 215	
Purge equip: ES - diam: Bladder Peri Waterra Positive Air Displacement Ext. System disp bailer teflon bailer other: (HS)	**Tubing:** OD: New Dedicated (NA)	
Purge method: 3-5 Case Volume Micro/Low-Flow Extraction Other: (HS)		
Pump depth/ intake: 190	**Multipliers:** 1"= 0.04 2"= 0.16 3"= 0.37 4"= 0.65 5"=1.02 6"= 1.47 Radius² X 0.163	
(TD - DTW X Multiplier = 1 Volume	80% Recovery (TD - DTW X 0.20 + DTW)	

1 Volume = _____ X _____ = _____ (Total Purge) 80%= _____

Time	Temp (°C / °F)	pH	SP Cond (mS / µS)	Turbidity (NTU)	Purge Rate (gal or mL/ min)	Volume Removed (gal / L)	DO (mg/l)	ORP (mv)	DTW	Notes
830	12.4	6.6	5795	7	—	—	1.0	9	—	

Did well dewater? YES (NO) Total volume removed: — (gal / L)

Sample method: Disp Bailer (Hydrasleeve) New Tubing Ext. Port Other:

Sample date: 05APR2013	Sample time: 830	DTW at sample: —
Sample ID: 03600	Lab: Energy Labs	Number of bottles: (2)
Analysis: 500 ml NP poly - Alkalinity, Cl, SO4, TDS, EC, pH	250 ml HNO3 poly *field filtered - Dissolved Metals	
Equipment blank ID @	Field blank ID @	
Duplicate ID:	Pre-purge DO:	Post purge DO:
$Fe2^{+}$:	Pre-purge ORP:	Post purge ORP:
NAPL depth:	Volume of NAPL:	Volume removed: ml

Purging And Sampling Data Sheet

Job#: 1350.15	**Sampler:** J Kerns (B Myers)	**Client:** Montgomery & Associates
Well ID: EF-3A	**Date** (DDOct2012): 05APR2013	**Site:** Rio Algom Mining, Lisbon, UT
Weather Conditions: Cool	**Sampler Signature:**	
Well diam: 1/4" 1" 2" 3" 4" (6") Other:	**DTW:** 82.31	**Total Depth:** 215
Purge equip: (ES - diam:) Bladder Peri Waterra Positive Air Displacement Ext. System		
disp bailer teflon bailer other:	**Tubing:** OD: New (Dedicated) NA	
Purge method: 3-5 Case Volume (Micro/Low-Flow) Extraction Other:		
Pump depth/ intake: 188	**Multipliers:** 1"= 0.04 2"= 0.16 3"= 0.37 4"= 0.65 5"=1.02 6"= 1.47 Radius² X 0.163	
(TD - DTW X Multiplier = 1 Volume	80% Recovery (TD - DTW X 0.20 + DTW)	

1 Volume = _____ X _____ = _____ (Total Purge) 80%= _____

Time	Temp (°C) °F	pH	SP Cond (mS/µS)	Turbidity (NTU)	Purge Rate (gal or mL/min)	Volume Removed (gal/L)	DO (mg/l)	ORP (mv)	DTW	Notes
849	11.2	6.9	5031	4	500	1.5	0.71	-31	82.29	
852	11.3	6.7	5065	4	|	3	0.55	1	82.29	
855	11.3	6.5	6055	3	|	4.5	1.0	13	82.29	
858	11.3	6.5	6146	3	|	6	1.4	19	82.29	
901	11.3	6.5	6176	3	|	7.5	1.9	26	82.29	
904	11.4	6.4	6173	3	|	9	2.3	31	82.29	
907	11.6	6.4	6135	3	|	10.5	2.8	35	82.29	
910	11.6	6.4	6175	3	|	12	3.0	38	82.29	
913	11.7	6.4	6154	3	|	13.5	3.2	40	82.29	
916	11.7	6.4	6173	3	|	15	3.3	42	82.29	
919	11.7	6.4	6161	3	↓	16.5	3.3	44	82.29	

Did well dewater? YES (NO)	Total volume removed: 16.5 (gal/L)	
Sample method: Disp Bailer Hydrasleeve New Tubing Ext. Port Other: (std.)		
Sample date: 05APR2013	Sample time: 920	DTW at sample: 82.29
Sample ID: 6361	Lab: Energy Labs	Number of bottles: (2)
Analysis: 500 ml NP poly - Alkalinity, Cl, SO4, TDS, EC, pH 250 ml HNO3 poly *field filtered - Dissolved Metals		
Equipment blank ID @	Field blank ID @	
Duplicate ID:	Pre-purge DO:	Post purge DO:
$Fe2^+$:	Pre-purge ORP:	Post purge ORP:
NAPL depth:	Volume of NAPL:	Volume removed: ml

Purging And Sampling Data Sheet

Job#: 1350.15	**Sampler:** J Kerns (B Myers)	**Client:** Montgomery & Associates
Well ID: EF-31A	**Date** (DDOct2012): 05APR2013	**Site:** Rio Algom Mining, Lisbon, UT
Weather Conditions: Cool	**Sampler Signature:**	
Well diam: 1/4" 1" 2" 3" 4" (6") Other:	**DTW:** 82.31 **Total Depth:** 215.00	
Purge equip: (ES - diam:) Bladder Peri Waterra Positive Air Displacement Ext. System		
disp bailer teflon bailer other:	**Tubing:** OD: New (Dedicated) NA	
Purge method: (3-5 Case Volume) Micro/Low-Flow Extraction Other:		
Pump depth/ intake: 188	**Multipliers:** 1"= 0.04 2"= 0.16 3"= 0.37 4"= 0.65 5"=1.02 6"= 1.47 Radius² X 0.163	
(TD - DTW X Multiplier = 1 Volume	80% Recovery (TD - DTW X 0.20 + DTW)	

1 Volume = _____ X _____ = _____ (Total Purge) 80%= _____

Time	Temp (°C) °F)	pH	SP Cond (mS (µS))	Turbidity (NTU)	Purge Rate (gal) or mL/ min)	Volume Removed (gal) L)	DO (mg/l)	ORP (mv)	DTW	Notes
1010	12.3	6.8	5718	3	4	195	2.5	51	82.95	
1100	12.3	6.8	5767	3	1	390	2.3	50	82.97	
1150	12.4	6.8	5775	3	1	585	2.2	46	82.98	

Did well dewater? YES (NO)	Total volume removed: 585 (gal) L)		
Sample method: Disp Bailer Hydrasleeve New Tubing Ext. Port Other: (ded.)			
Sample date: 05APR2013	Sample time: 1150	DTW at sample: 82.98	
Sample ID: 60362	Lab: Energy Labs	Number of bottles: (2)	
Analysis: 500 ml NP poly - Alkalinity, Cl, SO4, TDS, EC, pH 250 ml HNO3 poly *field filtered - Dissolved Metals			
Equipment blank ID @	Field blank ID @		
Duplicate ID: 60363 @ 1155	Pre-purge DO:	Post purge DO:	
$Fe2^+$:	Pre-purge ORP:	Post purge ORP:	
NAPL depth:	Volume of NAPL:	Volume removed: ml	

Purging And Sampling Data Sheet

Job#: 1350.15	**Sampler:** J Kerns B Myers	**Client:** Montgomery & Associates
Well ID: EFC	**Date** (DDOct2012): 02JAN2013	**Site:** Rio Algom Mining, Lisbon, UT
Weather Conditions: warm	**Sampler Signature:**	
Well diam: 1/4" 1" 2" 3" (4") 6" Other:	**DTW:** 71.53 **Total Depth:** 137.00	
Purge equip: ES - diam: Bladder Peri Waterra Positive Air Displacement Ext. System disp bailer teflon bailer other: HS	**Tubing:** OD: New Dedicated (NA)	
Purge method: 3-5 Case Volume Micro/Low-Flow Extraction Other: HS		
Pump depth/ intake: 122'	**Multipliers:** 1"= 0.04 2"= 0.16 3"= 0.37 4"= 0.65 5"=1.02 6"= 1.47 Radius² X 0.163	
(TD - DTW X Multiplier = 1 Volume	80% Recovery (TD - DTW X 0.20 + DTW)	

1 Volume = _____ X _____ = _____ (Total Purge) 80%= _____

Time	Temp (°C / °F)	pH	SP Cond (mS / µS)	Turbidity (NTU)	Purge Rate (gal or mL/ min)	Volume Removed (gal / L)	DO (mg/l)	ORP (mv)	DTW	Notes
1035	12.9	7.0	4201	2	—	—	11.8	82	—	

Did well dewater? YES (NO)	Total volume removed: — (gal / L)		
Sample method: Disp Bailer (Hydrasleeve) New Tubing Ext. Port Other:			
Sample date: 02JAN2013	Sample time: 1035	DTW at sample: —	
Sample ID: 6329	Lab: Energy Labs	Number of bottles: (2) (2)	
Analysis: 500 ml NP poly - Alkalinity, Cl, SO4, TDS, EC, pH 250 ml HNO3 poly *field filtered - Dissolved Metals			
Equipment blank ID @	Field blank ID @		
Duplicate ID: 6330 @ 1040	Pre-purge DO:	Post purge DO:	
$Fe2^+$:	Pre-purge ORP:	Post purge ORP:	
NAPL depth:	Volume of NAPL:	Volume removed: ml	

Purging And Sampling Data Sheet

Job#: 1350.15	**Sampler:** J Kerns B Myers	**Client:** Montgomery & Associates
Well ID: EF-6	**Date** (DDOct2012): 02APR2013	**Site:** Rio Algom Mining, Lisbon, UT
Weather Conditions: warm	**Sampler Signature:**	
Well diam: 1/4" 1" 2" 3" (4") 6" Other:	**DTW:** 71.53 **Total Depth:** 137.00	
Purge equip: (ES - diam:) Bladder Peri Waterra Positive Air Displacement Ext. System		
disp bailer teflon bailer other:	**Tubing:** OD: New (Dedicated) NA	
Purge method: 3-5 Case Volume (Micro/Low-Flow) Extraction Other:		
Pump depth/ intake: 120'	**Multipliers:** 1"= 0.04 2"= 0.16 3"= 0.37 4"= 0.65 5"=1.02 6"= 1.47 Radius² X 0.163	
(TD - DTW X Multiplier = 1 Volume	80% Recovery (TD - DTW X 0.20 + DTW)	

1 Volume = _____ X _____ = _____ (Total Purge) 80%= _____

Time	Temp (°C) °F)	pH	SP Cond (mS (µS))	Turbidity (NTU)	Purge Rate (gal or (mL/ min))	Volume Removed (gal (L))	DO (mg/l)	ORP (mv)	DTW	Notes
1052	11.6	7.1	3410	2	400	1.2	12.2	85	72.06	
1055	11.8	7.1	3127	2		2.4	13.0	87	72.06	
1058	11.8	7.1	3116	2		3.6	13.1	89	72.06	
1101	11.9	7.1	3170	2		4.8	13.2	90	72.06	
1104	11.8	7.1	3187	2		6	13.2	91	72.06	

Did well dewater? YES (NO)		Total volume removed: 6 (gal (L))	
Sample method: Disp Bailer Hydrasleeve New Tubing Ext. Port Other: (ded.)			
Sample date: 02APR2013	Sample time: 1105	DTW at sample: 72.06	
Sample ID: ~~(330)~~ (331	Lab: Energy Labs	Number of bottles: (2)	
Analysis: 500 ml NP poly - Alkalinity, Cl, SO4, TDS, EC, pH 250 ml HNO3 poly *field filtered - Dissolved Metals			
Equipment blank ID @	Field blank ID @		
Duplicate ID:	Pre-purge DO:	Post purge DO:	
$Fe2^+$:	Pre-purge ORP:	Post purge ORP:	
NAPL depth:	Volume of NAPL:	Volume removed: ml	

Purging And Sampling Data Sheet

Job#: 1350.15	**Sampler:** J Kerns (B Myers)	**Client:** Montgomery & Associates
Well ID: EF-6	**Date** (DDOct2012): 02APR2013	**Site:** Rio Algom Mining, Lisbon, UT
Weather Conditions: Warm	**Sampler Signature:**	
Well diam: 1/4" 1" 2" 3" (4") 6" Other:	**DTW:** 71.53 **Total Depth:** 137.00	
Purge equip: (SS - diam:) Bladder Peri Waterra Positive Air Displacement Ext. System disp bailer teflon bailer other: **Tubing:** OD: New (Dedicated) NA		
Purge method: (3-5 Case Volume) Micro/Low-Flow Extraction Other:		
Pump depth/ intake: 120' **Multipliers:** 1"= 0.04 2"= 0.16 3"= 0.37 4"= 0.65 5"=1.02 6"= 1.47 Radius² X 0.163		
(TD - DTW X Multiplier = 1 Volume	80% Recovery (TD - DTW X 0.20 + DTW)	

1 Volume = 42.5 x 3 = 127.5 (Total Purge) 80%= 84.02

Time	Temp (°C) °F	pH	SP Cond (mS (µS)	Turbidity (NTU)	Purge Rate (gal or mL/ min)	Volume Removed (gal / L)	DO (mg/l)	ORP (mv)	DTW	Notes
1124	12.1	7.1	3144	2	3	42.5	11.0	94	89.97	
1138	12.2	7.0	3221	2	1	45	11.4	96	92.83	
1152	12.3	7.0	3227	2	1	127.5	11.3	97	93.30	
	waited for 80%									

Did well dewater? YES (NO)	Total volume removed: 127.5 ((gal) / L)	
Sample method: Disp Bailer Hydrasleeve New Tubing Ext. Port Other: (ded.)		
Sample date: 02APR2013	Sample time: 1200	DTW at sample: 84.02
Sample ID: 60337	Lab: Energy Labs	Number of bottles: (2)
Analysis: 500 ml NP poly - Alkalinity, Cl, SO4, TDS, EC, pH 250 ml HNO3 poly *field filtered - Dissolved Metals		
Equipment blank ID @	Field blank ID @	
Duplicate ID:	Pre-purge DO:	Post purge DO:
$Fe2^{+}$:	Pre-purge ORP:	Post purge ORP:
NAPL depth:	Volume of NAPL:	Volume removed: ml

Purging And Sampling Data Sheet

Job#: 1350.15	**Sampler:** J Kerns, B Myers	**Client:** Montgomery & Associates
Well ID: EF-8	**Date** (DDOct2012): 01APR2013	**Site:** Rio Algom Mining, Lisbon, UT
Weather Conditions: Windy	**Sampler Signature:**	
Well diam: 1/4" 1" 2" 3" (4") 6" Other:	**DTW:** 74.26 **Total Depth:** 244.00	
Purge equip: ES - diam: Bladder Peri Waterra Positive Air Displacement Ext. System disp bailer teflon bailer other: (HS)	**Tubing:** OD: New (Dedicated) NA	
Purge method: 3-5 Case Volume Micro/Low-Flow Extraction Other: (HS)		
Pump depth/ intake:	**Multipliers:** 1"= 0.04 2"= 0.16 3"= 0.37 4"= 0.65 5"=1.02 6"= 1.47 Radius² X 0.163	
(TD - DTW X Multiplier = 1 Volume	80% Recovery (TD - DTW X 0.20 + DTW)	

1 Volume = _____ X _____ = _____ (Total Purge) 80%= _____

Time	Temp (°C / °F)	pH	SP Cond (mS / µS)	Turbidity (NTU)	Purge Rate (gal or mL/ min)	Volume Removed (gal / L)	DO (mg/l)	ORP (mv)	DTW	Notes
1430	12.0	7.5	1943	3	—	—	7.4	Q	—	

Did well dewater? YES (NO) Total volume removed: — (gal / L)

Sample method: Disp Bailer (Hydrasleeve) New Tubing Ext. Port Other:

Sample date: 01APR2013 Sample time: 1430 DTW at sample: —

Sample ID: 6324 Lab: Energy Labs Number of bottles: (2)

Analysis: 500 ml NP poly - Alkalinity, Cl, SO4, TDS, EC, pH 250 ml HNO3 poly *field filtered - Dissolved Metals

Equipment blank ID @	Field blank ID @	
Duplicate ID:	Pre-purge DO:	Post purge DO:
$Fe2^{+}$:	Pre-purge ORP:	Post purge ORP:
NAPL depth:	Volume of NAPL:	Volume removed: ml

Purging And Sampling Data Sheet

Job#: 1350.15	**Sampler:** J Kerns B Myers	**Client:** Montgomery & Associates
Well ID: EF-8	**Date** (DDOct2012): 01APR2013	**Site:** Rio Algom Mining, Lisbon, UT
Weather Conditions: Windy	**Sampler Signature:**	
Well diam: 1/4" 1" 2" 3" (4") 6" Other:	**DTW:** 74.26 **Total Depth:** 244.00	
Purge equip: (S - diam) Bladder Peri Waterra Positive Air Displacement Ext. System		
disp bailer teflon bailer other:	**Tubing:** OD: New (Dedicated) NA	
Purge method: (3-5 Case Volume) Micro/Low-Flow Extraction Other:		
Pump depth/ intake:	**Multipliers:** 1"= 0.04 2"= 0.16 3"= 0.37 4"= 0.65 5"=1.02 6"= 1.47 Radius² X 0.163	
(TD - DTW X Multiplier = 1 Volume	80% Recovery (TD - DTW X 0.20 + DTW)	

1 Volume = 110.3 X 3 = 330.9 (Total Purge) 80%= 108.21

Time	Temp (°C) °F)	pH	SP Cond (mS /(uS))	Turbidity (NTU)	Purge Rate (gal) or mL/ min)	Volume Removed (gal) / L)	DO (mg/l)	ORP (mv)	DTW	Notes
1508	12.7	7.9	1591	4	4	110.3	7.1	53	87.60	
1530	12.8	7.6	1420	3	1	220.6	7.2	61	87.70	
1604	12.7	7.6	1421	3	1	331	7.4	52	87.70	

Did well dewater? YES (NO)	Total volume removed: 331 (gal) L)	
Sample method: Disp Bailer Hydrasleeve ~~New Tubing~~ Ext. Port Other: (ded.)		
Sample date: 01APR2013	Sample time: 1605	DTW at sample: 87.70
Sample ID: 0325	Lab: Energy Labs	Number of bottles: (2)
Analysis: 500 ml NP poly - Alkalinity, Cl, SO4, TDS, EC, pH 250 ml HNO3 poly *field filtered - Dissolved Metals		
Equipment blank ID @	Field blank ID @	
Duplicate ID:	Pre-purge DO:	Post purge DO:
$Fe2^{+}$:	Pre-purge ORP:	Post purge ORP:
NAPL depth:	Volume of NAPL:	Volume removed: ml

Purging And Sampling Data Sheet

Job#: 1350.15	**Sampler:** J Kerns (B Myers)	**Client:** Montgomery & Associates
Well ID: LW-1	**Date** (DDOct2012): 04APR2013	**Site:** Rio Algom Mining, Lisbon, UT
Weather Conditions: Cold	**Sampler Signature:**	
Well diam: 1/4" 1" 2" 3" (4") 6" Other:	**DTW:** 146.09	**Total Depth:** 233
Purge equip: ES - diam: Bladder Peri Waterra Positive Air Displacement Ext. System disp bailer teflon bailer other: (HS)	**Tubing:** OD: New Dedicated (NA)	
Purge method: 3-5 Case Volume Micro/Low-Flow Extraction Other: (HS)		
Pump depth/ intake: 220'	**Multipliers:** 1"= 0.04 2"= 0.16 3"= 0.37 4"= 0.65 5"=1.02 6"= 1.47 Radius² X 0.163	
(TD - DTW X Multiplier = 1 Volume	80% Recovery (TD - DTW X 0.20 + DTW)	

1 Volume = _____ X _____ = _____ (Total Purge) 80%= _____

Time	Temp (°C) °F)	pH	SP Cond (mS / µS)	Turbidity (NTU)	Purge Rate (gal or mL/ min)	Volume Removed (gal / L)	DO (mg/l)	ORP (mv)	DTW	Notes
840	11.7	7.1	490	3	—	—	4.8	116	—	

Did well dewater? YES (NO) Total volume removed: — (gal / L)

Sample method: Disp Bailer (Hydrasleeve) New Tubing Ext. Port Other:

Sample date: 04APR2013	Sample time: 840	DTW at sample: —
Sample ID: 0352	Lab: Energy Labs	Number of bottles: (2)
Analysis: 500 ml NP poly - Alkalinity, Cl, SO4, TDS, EC, pH 250 ml HNO3 poly *field filtered - Dissolved Metals		
Equipment blank ID @	Field blank ID @	
Duplicate ID:	Pre-purge DO:	Post purge DO:
$Fe2^+$:	Pre-purge ORP:	Post purge ORP:
NAPL depth:	Volume of NAPL:	Volume removed: ml

Purging And Sampling Data Sheet

Job#: 1350.15	**Sampler:** J Kerns (B Myers)	**Client:** Montgomery & Associates
Well ID: LW-1	**Date** (DDOct2012): 04APR2013	**Site:** Rio Algom Mining, Lisbon, UT
Weather Conditions: Cold	**Sampler Signature:**	
Well diam: 1/4" 1" 2" 3" (4") 6" Other:	**DTW:** 146.09 **Total Depth:** 233	
Purge equip: (ES - diam) Bladder Peri Waterra Positive Air Displacement Ext. System disp bailer teflon bailer other:	**Tubing:** OD: New (Dedicated) NA	
Purge method: 3-5 Case Volume (Micro/Low-Flow) Extraction Other:		
Pump depth/ intake:	**Multipliers:** 1"= 0.04 2"= 0.16 3"= 0.37 4"= 0.65 5"=1.02 6"= 1.47 Radius² X 0.163	
(TD - DTW X Multiplier = 1 Volume	80% Recovery (TD - DTW X 0.20 + DTW)	

1 Volume = _____ X _____ = _____ (Total Purge) 80%= _____

Time	Temp (°C) °F)	pH	SP Cond (mS / µS)	Turbidity (NTU)	Purge Rate (gal or mL/ min)	Volume Removed (gal (L))	DO (mg/l)	ORP (mv)	DTW	Notes
856	11.1	7.0	416	4	500	2	5.4	113	146.40	
859	11.3	7.0	418	3	|	3.5	5.3	111	146.40	
902	11.4	7.0	423	3	|	5	4.7	110	146.45	
905	11.5	7.0	438	3	|	6.5	5.2	109	146.45	
908	12.0	7.0	429	2	|	8	4.9	107	146.48	
911	12.5	7.0	428	2	|	9.5	4.8	106	146.48	
914	12.6	7.0	428	2	—	11.5	4.7	106	146.48	

Did well dewater? YES (NO)	Total volume removed: 11.5 (gal (L))	
Sample method: Disp Bailer Hydrasleeve New Tubing Ext. Port Other: (dedi)		
Sample date: 04APR2013	Sample time: 915	DTW at sample: 146.48
Sample ID: LW353	Lab: Energy Labs	Number of bottles: (2)
Analysis: 500 ml NP poly - Alkalinity, Cl, SO4, TDS, EC, pH 250 ml HNO3 poly *field filtered - Dissolved Metals		
Equipment blank ID @	Field blank ID @	
Duplicate ID:	Pre-purge DO:	Post purge DO:
$Fe2^+$:	Pre-purge ORP:	Post purge ORP:
NAPL depth:	Volume of NAPL:	Volume removed: ml

Purging And Sampling Data Sheet

Job#: 1350.15	**Sampler:** J Kerns (B Myers)	**Client:** Montgomery & Associates
Well ID: LW-1	**Date** (DDOct2012): 04APR2013	**Site:** Rio Algom Mining, Lisbon, UT
Weather Conditions: cool	**Sampler Signature:**	
Well diam: 1/4" 1" 2" 3" (4") 6" Other:	**DTW:** 146.09	**Total Depth:** 233

Purge equip: (ES - diam:) Bladder Peri Waterra Positive Air Displacement Ext. System
disp bailer teflon bailer other: **Tubing:** OD: New (Dedicated) NA

Purge method: (3-5 Case Volume) Micro/Low-Flow Extraction Other:

Pump depth/ intake: **Multipliers:** 1"= 0.04 2"= 0.16 3"= 0.37 4"= 0.65 5"=1.02 6"= 1.47 Radius² X 0.163

(TD - DTW X Multiplier = 1 Volume | 80% Recovery (TD - DTW X 0.20 + DTW)

1 Volume = 56.5 x 3 = 170 (Total Purge) 80%= 163.47

Time	Temp (°C) °F)	pH	SP Cond (mS /(µS))	Turbidity (NTU)	Purge Rate (gal) or mL/ min)	Volume Removed (gal/ L)	DO (mg/l)	ORP (mv)	DTW	Notes
936	12.3	7.0	304	3	3	56.5	5.2	104	149.15	
955	12.4	6.9	477	2	3	113	4.8	102	149.35	
1014	12.4	6.9	472	2	3	170	4.8	98	149.50	

Did well dewater? YES (NO) Total volume removed: 170 (gal)/ L)

Sample method: Disp Bailer Hydrasleeve New Tubing Ext. Port Other: (dedi:

Sample date: 04APR2013 Sample time: 1015 DTW at sample: 149.50

Sample ID: 6354 Lab: Energy Labs Number of bottles: (2)

Analysis: 500 ml NP poly - Alkalinity, Cl, SO4, TDS, EC, pH 250 ml HNO3 poly *field filtered - Dissolved Metals

Equipment blank ID @	Field blank ID @	
Duplicate ID:	Pre-purge DO:	Post purge DO:
$Fe2^+$:	Pre-purge ORP:	Post purge ORP:
NAPL depth:	Volume of NAPL:	Volume removed: ml

Purging And Sampling Data Sheet

Job#: 1350.15	**Sampler:** J Kerns (B Myers)	**Client:** Montgomery & Associates
Well ID: MW-1	**Date** (DDOct2012): 03APR2013	**Site:** Rio Algom Mining, Lisbon, UT
Weather Conditions: cold	**Sampler Signature:**	
Well diam: 1/4" 1" 2" 3" 4" 6" Other (5)	**DTW:** 105.45	**Total Depth:** 140.00
Purge equip: ES - diam: Bladder Peri Waterra Positive Air Displacement Ext. System disp bailer teflon bailer other: (HS)	**Tubing:** OD: New Dedicated (NA)	
Purge method: 3-5 Case Volume Micro/Low-Flow Extraction Other: (HS)		
Pump depth/ intake: 124	**Multipliers:** 1"= 0.04 2"= 0.16 3"= 0.37 4"= 0.65 5"=1.02 6"= 1.47 Radius² X 0.163	
(TD - DTW X Multiplier = 1 Volume	80% Recovery (TD - DTW X 0.20 + DTW)	

1 Volume = _____ X _____ = _____ (Total Purge) 80%= _____

Time	Temp (°C) (°F)	pH	SP Cond (mS / µS)	Turbidity (NTU)	Purge Rate (gal or mL/ min)	Volume Removed (gal / L)	DO (mg/l)	ORP (mv)	DTW	Notes
810	10.0	7.2	930	4	—	—	5.3	112	—	

Did well dewater? YES (NO) Total volume removed: — (gal / L)

Sample method: Disp Bailer ~~Hydrasleeve~~ New Tubing Ext. Port Other:

Sample date: 03APR2013	Sample time: 810	DTW at sample: —
Sample ID: 60336	Lab: Energy Labs	Number of bottles: (2)
Analysis: 500 ml NP poly - Alkalinity, Cl, SO4, TDS, EC, pH	250 ml HNO3 poly *field filtered - Dissolved Metals	
Equipment blank ID @	Field blank ID @	
Duplicate ID:	Pre-purge DO:	Post purge DO:
$Fe2^+$:	Pre-purge ORP:	Post purge ORP:
NAPL depth:	Volume of NAPL:	Volume removed: ml

Purging And Sampling Data Sheet

Job#: 1350.15	**Sampler:** J Kerns (B Myers)	**Client:** Montgomery & Associates
Well ID: MW-1	**Date** (DDOct2012): 03APR2013	**Site:** Rio Algom Mining, Lisbon, UT
Weather Conditions: Cold	**Sampler Signature:**	
Well diam: 1/4" 1" 2" 3" 4" 6" Other (5)	**DTW:** 105.45	**Total Depth:** 140.82
Purge equip: (ES - diam:) Bladder Peri Waterra Positive Air Displacement Ext. System		
disp bailer teflon bailer other:	**Tubing:** OD: New (Dedicated) NA	
Purge method: 3-5 Case Volume (Micro/Low-Flow) Extraction Other:		
Pump depth/ intake: 122	**Multipliers:** 1"= 0.04 2"= 0.16 3"= 0.37 4"= 0.65 5"=1.02 6"= 1.47 Radius² X 0.163	
(TD - DTW X Multiplier = 1 Volume	80% Recovery (TD - DTW X 0.20 + DTW)	

1 Volume = _____ X _____ = _____ (Total Purge) 80%= _____

Time	Temp (°C) °F)	pH	SP Cond (mS / µS)	Turbidity (NTU)	Purge Rate (gal or mL/ min)	Volume Removed (gal / L)	DO (mg/l)	ORP (mv)	DTW	Notes
827	10.2	6.9	852	3	500	1.5	1.9	95	105.94	
830	10.6	6.8	856	3	|	3	1.5	90	105.90	
833	11.0	6.7	842	3	|	4.5	1.6	88	105.90	
836	11.2	6.7	853	2	|	6	1.6	86	105.90	
839	11.5	6.7	842	2	—	7.5	1.7	85	105.90	

Did well dewater? YES (NO)	Total volume removed: 7.5	(gal (L))
Sample method: Disp Bailer Hydrasleeve New Tubing Ext. Port Other: ded.		
Sample date: 03APR2013	Sample time: 840	DTW at sample: 105.90
Sample ID: 0337	Lab: Energy Labs	Number of bottles (2)
Analysis: 500 ml NP poly - Alkalinity, Cl, SO4, TDS, EC, pH 250 ml HNO3 poly *field filtered - Dissolved Metals		
Equipment blank ID @	Field blank ID @	
Duplicate ID:	Pre-purge DO:	Post purge DO:
$Fe2^+$:	Pre-purge ORP:	Post purge ORP:
NAPL depth:	Volume of NAPL:	Volume removed: ml

Purging And Sampling Data Sheet

Job#: 1350.15	**Sampler:** J Kerns (B Myers)	**Client:** Montgomery & Associates
Well ID: MW-1	**Date** (DDDct2012): 03APR2013	**Site:** Rio Algom Mining, Lisbon, UT
Weather Conditions: Cold	**Sampler Signature:**	
Well diam: 1/4" 1" 2" 3" 4" 6" Other: (5)	**DTW:** 105.45	**Total Depth:** 140.00
Purge equip: (ES - diam): Bladder Peri Waterra Positive Air Displacement Ext. System disp bailer teflon bailer other:	**Tubing:** OD: New (Dedicated) NA	
Purge method: (3-5 Case Volume) Micro/Low-Flow Extraction Other:		
Pump depth/ intake: 122	**Multipliers:** 1"= 0.04 2"= 0.16 3"= 0.37 4"= 0.65 5"=1.02 6"= 1.47 Radius² X 0.163	
(TD - DTW X Multiplier = 1 Volume	80% Recovery (TD - DTW X 0.20 + DTW)	

1 Volume = 35 X 3 = 105 (Total Purge) 80%= 112.36

Time	Temp (°C) °F)	pH	SP Cond (mS (µS))	Turbidity (NTU)	Purge Rate (gal) or mL/ min)	Volume Removed (gal) L)	DO (mg/l)	ORP (mv)	DTW	Notes
856	12.3	6.5	8330	3	3	35	5.0	84	114.80	
908	12.1	6.5	7860	2	1	70	4.4	62	117.38	
920	12.1	6.5	7860	2	1	105	4.3	60	118.65	
	waited	very	briefly	for	80%					

Did well dewater? YES (NO) Total volume removed: 105 (gal) L)

Sample method: Disp Bailer Hydrasleeve New Tubing Ext. Port Other: (ded.)

Sample date: 03APR2013	Sample time: 925	DTW at sample: 112.36
Sample ID: 10338	Lab: Energy Labs	Number of bottles: (2)
Analysis: 500 ml NP poly - Alkalinity, Cl, SO4, TDS, EC, pH 250 ml HNO3 poly *field filtered - Dissolved Metals		
Equipment blank ID @	Field blank ID @	
Duplicate ID:	Pre-purge DO:	Post purge DO:
$Fe2^{+}$:	Pre-purge ORP:	Post purge ORP:
NAPL depth:	Volume of NAPL:	Volume removed: ml

Purging And Sampling Data Sheet

Job#: 1350.15	**Sampler:** J Kerns (B Myers)	**Client:** Montgomery & Associates
Well ID: ML-1	**Date** (DDOct2012): 02APR2013	**Site:** Rio Algom Mining, Lisbon, UT
Weather Conditions: warm	**Sampler Signature:**	
Well diam: 1/4" 1" 2" 3" (4") 6" Other:	**DTW:** 42.55 **Total Depth:** 157.00	
Purge equip: ES - diam: Bladder Peri Waterra Positive Air Displacement Ext. System disp bailer teflon bailer other: HS	**Tubing:** OD: New Dedicated (NA)	
Purge method: 3-5 Case Volume Micro/Low-Flow Extraction Other: HS		
Pump depth/ intake: 149'	**Multipliers:** 1"= 0.04 2"= 0.16 3"= 0.37 4"= 0.65 5"=1.02 6"= 1.47 Radius² X 0.163	
(TD - DTW X Multiplier = 1 Volume	80% Recovery (TD - DTW X 0.20 + DTW)	

1 Volume = _____ X _____ = _____ (Total Purge) 80%= _____

Time	Temp (°C) °F)	pH	SP Cond (mS / (S))	Turbidity (NTU)	Purge Rate (gal or mL/ min)	Volume Removed (gal / L)	DO (mg/l)	ORP (mv)	DTW	Notes
840	11.6	7.8	1897	2	—	—	4.7	91	—	

Did well dewater? YES (NO) Total volume removed: — (gal / L)

Sample method: Disp Bailer (Hydrasleeve) New Tubing Ext. Port Other:

Sample date: 02APR2013 Sample time: 840 DTW at sample: —

Sample ID: CA326 Lab: Energy Labs Number of bottles: (2)

Analysis: 500 ml NP poly - Alkalinity, Cl, SO4, TDS, EC, pH 250 ml HNO3 poly *field filtered - Dissolved Metals

Equipment blank ID @ Field blank ID @

Duplicate ID: Pre-purge DO: Post purge DO:

$Fe2^+$: Pre-purge ORP: Post purge ORP:

NAPL depth: Volume of NAPL: Volume removed: ml

Purging And Sampling Data Sheet

Job#: 1350.15	**Sampler:** J Kerns (B Myers)	**Client:** Montgomery & Associates
Well ID: ML-1	**Date** (DDOct2012): 02APR2013	**Site:** Rio Algom Mining, Lisbon, UT
Weather Conditions: WARM	**Sampler Signature:**	
Well diam: 1/4" 1" 2" 3" (4") 6" Other:	**DTW:** 42.55 **Total Depth:** 157.00	
Purge equip: (ES - diam) Bladder Peri Waterra Positive Air Displacement Ext. System disp bailer teflon bailer other:	**Tubing:** OD: New (Dedicated) NA	
Purge method: 3-5 Case Volume (Micro/Low-Flow) Extraction Other:		
Pump depth/ intake: 147	**Multipliers:** 1"= 0.04 2"= 0.16 3"= 0.37 4"= 0.65 5"=1.02 6"= 1.47 Radius² X 0.163	
(TD - DTW X Multiplier = 1 Volume	80% Recovery (TD - DTW X 0.20 + DTW)	

1 Volume = _____ X _____ = _____ (Total Purge) 80%= _____

Time	Temp (°C)/°F)	pH	SP Cond (mS /(µS))	Turbidity (NTU)	Purge Rate (gal or mL/ min)	Volume Removed (gal (L))	DO (mg/l)	ORP (mv)	DTW	Notes
851	10.5	7.8	1437	3	400	1.2L	5.4	64	42.76	
854	10.7	7.7	1428	2	|	2.4	5.5	60	42.76	
857	10.7	7.6	1439	2	|	3.6	5.5	57	42.76	
900	10.8	7.6	1442	2	|	4.8	5.5	57	42.76	
903	11.1	7.5	1432	2	|	6	5.4	55	42.76	
906	11.0	7.5	1434	2	|	7.2	5.5	54	42.76	
909	11.0	7.5	1441	2	—	8.4	5.5	53	42.76	

Did well dewater? YES (NO)	Total volume removed: 8.4 (gal/(L))	
Sample method: Disp Bailer Hydrasleeve New Tubing Ext. Port Other: (ded. tube)		
Sample date: 02APR2013 ~~02APR13~~	Sample time: 910	DTW at sample: 42.76
Sample ID: 0327	Lab: Energy Labs	Number of bottles (2)
Analysis: 500 ml NP poly - Alkalinity, Cl, SO4, TDS, EC, pH 250 ml HNO3 poly *field filtered - Dissolved Metals		
Equipment blank ID @	Field blank ID @	
Duplicate ID:	Pre-purge DO:	Post purge DO:
$Fe2^{+}$:	Pre-purge ORP:	Post purge ORP:
NAPL depth:	Volume of NAPL:	Volume removed: ml

Purging And Sampling Data Sheet

Job#: 1350.15	**Sampler:** J Kerns (B Myers)	**Client:** Montgomery & Associates
Well ID: ML-1	**Date** (DDOct2012): 02APR2013	**Site:** Rio Algom Mining, Lisbon, UT
Weather Conditions: warm	**Sampler Signature:**	
Well diam: 1/4" 1" 2" 3" (4") 6" Other:	**DTW:** 42.55 **Total Depth:** 157.00	
Purge equip: (ES - diam:) Bladder Peri Waterra Positive Air Displacement Ext. System		
disp bailer teflon bailer other: **Tubing:** OD: New (Dedicated) NA		
Purge method: (3-5 Case Volume) Micro/Low-Flow Extraction Other:		
Pump depth/ intake: 147 **Multipliers:** 1"= 0.04 2"= 0.16 3"= 0.37 4"= 0.65 5"=1.02 6"= 1.47 Radius² X 0.163		
(TD - DTW X Multiplier = 1 Volume	80% Recovery (TD - DTW X 0.20 + DTW)	

1 Volume = 74.4 x 3 = 223.2 (Total Purge) 80%= 65.44

Time	Temp (°C) °F)	pH	SP Cond (mS (µS))	Turbidity (NTU)	Purge Rate (gal or mL/ min)	Volume Removed (gal) L)	DO (mg/l)	ORP (mv)	DTW	Notes
935	11.7	7.4	1575	2	4	75	13.4	54	59.33	
954	11.7	7.4	1575	2	↓	150	14.4	45	59.50	
1013	11.7	7.4	1572	2	↓	225	14.5	51	59.58	

Did well dewater? YES (NO)	Total volume removed: 225 (gal) L)	
Sample method: Disp Bailer Hydrasleeve New Tubing Ext. Port Other: Grab		
Sample date: 02APR2013	Sample time: 1015	DTW at sample: 59.58
Sample ID: 6328	Lab: Energy Labs	Number of bottles: 2
Analysis: 500 ml NP poly - Alkalinity, Cl, SO4, TDS, EC, pH 250 ml HNO3 poly *field filtered - Dissolved Metals		
Equipment blank ID @	Field blank ID @	
Duplicate ID:	Pre-purge DO:	Post purge DO:
$Fe2^+$:	Pre-purge ORP:	Post purge ORP:
NAPL depth:	Volume of NAPL:	Volume removed: ml

Purging And Sampling Data Sheet

Job#: 1350.15	**Sampler:** J Kerns B Myers	**Client:** Montgomery & Associates
Well ID: H-63	**Date** (DDOct2012): 03APR2013	**Site:** Rio Algom Mining, Lisbon, UT
Weather Conditions: Warm - Blue Sky	**Sampler Signature:**	
Well diam: 1/4" 1" 2" 3" 4" 6" Other: (5")	**DTW:** 136.05 **Total Depth:** 172	
Purge equip: ES - diam: Bladder Peri Waterra Positive Air Displacement Ext. System disp bailer teflon bailer other: (HS)	**Tubing:** OD: New Dedicated (NA)	
Purge method: 3-5 Case Volume Micro/Low-Flow Extraction Other:		
Pump depth/ intake: 157	**Multipliers:** 1"= 0.04 2"= 0.16 3"= 0.37 4"= 0.65 5"=1.02 6"= 1.47 Radius² X 0.163	
(TD - DTW X Multiplier = 1 Volume	80% Recovery (TD - DTW X 0.20 + DTW)	

1 Volume = _____ X _____ = _____ (Total Purge) 80%= _____

Time	Temp (°C °F)	pH	SP Cond (mS µS)	Turbidity (NTU)	Purge Rate (gal or mL/ min)	Volume Removed (gal / L)	DO (mg/l)	ORP (mv)	DTW	Notes
1205	13.5	8.2	1406	3.3	—	—	4.33	-76.2	136.05	

Did well dewater? YES (NO)	Total volume removed: — (gal / L)	
Sample method: Disp Bailer (Hydrasleeve) New Tubing Ext. Port Other:		
Sample date: 03APR2013	Sample time: 1205	DTW at sample: 136.05
Sample ID: 6377	Lab: Energy Labs	Number of bottles: (2)
Analysis: 500 ml NP poly - Alkalinity, Cl, SO4, TDS, EC, pH 250 ml HNO3 poly *field filtered - Dissolved Metals		
Equipment blank ID @	Field blank ID @	
Duplicate ID:	Pre-purge DO:	Post purge DO:
$Fe2^+$:	Pre-purge ORP:	Post purge ORP:
NAPL depth:	Volume of NAPL:	Volume removed: ml

Purging And Sampling Data Sheet

Job#: 1350.15	**Sampler:** J Kerns B Myers	**Client:** Montgomery & Associates
Well ID: H-63	**Date** (DDOct2012): 03APR2013	**Site:** Rio Algom Mining, Lisbon, UT
Weather Conditions: Warm - Blue Sky	**Sampler Signature:**	
Well diam: 1/4" 1" 2" 3" 4" 6" Other: (5")	**DTW:** 136.05 **Total Depth:** 172 –	
Purge equip: (ES - diam:) Bladder Peri Waterra Positive Air Displacement Ext. System disp bailer teflon bailer other:	**Tubing:** OD: New (Dedicated) NA	
Purge method: 3-5 Case Volume (Micro/Low-Flow) Extraction Other:		
Pump depth/ intake: 155	**Multipliers:** 1"= 0.04 2"= 0.16 3"= 0.37 4"= 0.65 5"=1.02 6"= 1.47 Radius² X 0.163	
(TD - DTW X Multiplier = 1 Volume	80% Recovery (TD - DTW X 0.20 + DTW)	

1 Volume = _____ X _____ = _____ (Total Purge) 80%= _____

Time	Temp (°C / °F)	pH	SP Cond (mS / µS)	Turbidity (NTU)	Purge Rate (gal or mL / min)	Volume Removed (gal / L)	DO (mg/l)	ORP (mv)	DTW	Notes
1227	11.4	8.6	1014	3.3	500	1.0	5.04	-53.1	136.30	
1230	11.4	8.5	1000	2.1	500	2.5	4.82	-48.4	136.22	
1233	11.4	8.6	1018	1.9	500	4.0	4.88	-45.6	136.22	
1236	11.5	8.6	1040	3.1	500	5.5	4.86	-44.3	136.22	
1239	11.7	8.6	1043	2.9	500	7.0	4.76	-44.2	136.22	
1242	12.0	8.6	1038	2.7	500	8.5	4.69	-43.7	136.22	
1245	12.0	8.6	1042	2.9	500	10.0	4.60	-42.4	136.22	
1248	12.0	8.6	10	3.1	500	11.5	4.60	-42.8	136.22	

Did well dewater? YES (NO)	Total volume removed: 11.5 (gal / L)	
Sample method: Disp Bailer Hydrasleeve New Tubing Ext. Port Other: Dedicated Tubing		
Sample date: 03APR2013	Sample time: 1250	DTW at sample: 136.22
Sample ID: 6378	Lab: Energy Labs	Number of bottles: 2
Analysis: 500 ml NP poly - Alkalinity, Cl, SO4, TDS, EC, pH 250 ml HNO3 poly *field filtered - Dissolved Metals		
Equipment blank ID @	Field blank ID @	
Duplicate ID:	Pre-purge DO:	Post purge DO:
$Fe2^{+}$:	Pre-purge ORP:	Post purge ORP:
NAPL depth:	Volume of NAPL:	Volume removed: ml

Purging And Sampling Data Sheet

Job#: 1350.15	**Sampler:** J Kerns B Myers	**Client:** Montgomery & Associates
Well ID: H-63	**Date** (DDOct2012): 03APR2013	**Site:** Rio Algom Mining, Lisbon, UT
Weather Conditions: Blue Sky - Warm	**Sampler Signature:**	
Well diam: 1/4" 1" 2" 3" 4" 6" Other: (5")	**DTW:** 136.05 **Total Depth:** 172 –	
Purge equip: (ES - diam:) Bladder Peri Waterra Positive Air Displacement Ext. System disp bailer teflon bailer other:	**Tubing:** OD: New (Dedicated) NA	
Purge method: (3-5 Case Volume) Micro/Low-Flow Extraction Other:		
Pump depth/ intake: 155	**Multipliers:** 1"= 0.04 2"= 0.16 3"= 0.37 4"= 0.65 5"=1.02 6"= 1.47 Radius² X 0.163	
(TD - DTW X Multiplier = 1 Volume	80% Recovery (TD - DTW X 0.20 + DTW)	

1 Volume = 36.5 X 3 = 110 (Total Purge) 80%= 143.24

Time	Temp (°C °F)	pH	SP Cond (mS µS)	Turbidity (NTU)	Purge Rate (gal or mL/ min)	Volume Removed (gal L)	DO (mg/l)	ORP (mv)	DTW	Notes
1320	12.5	8.1	980	7.8	2.0	37	5.73	-7.2	138.40	
1400	12.2	8.0	986	10.1	2.0	~~74~~	6.09	6.3	138.42	Rinse Purge to off load water
1418	12.3	8.0	9	9.9	2.0	110	6.78	12.9	139.40	

Did well dewater? YES (NO)	Total volume removed: 110 (gal/ L)	
Sample method: Disp Bailer Hydrasleeve New Tubing Ext. Port Other: Dedicated Tubing		
Sample date: 03APR2013	Sample time: 1420	DTW at sample: 139.40
Sample ID: 6379	Lab: Energy Labs	Number of bottles: (2)
Analysis: 500 ml NP poly - Alkalinity, Cl, SO4, TDS, EC, pH 250 ml HNO3 poly *field filtered - Dissolved Metals		
Equipment blank ID @	Field blank ID @	
Duplicate ID:	Pre-purge DO:	Post purge DO:
$Fe2^+$:	Pre-purge ORP:	Post purge ORP:
NAPL depth:	Volume of NAPL:	Volume removed: ml

Purging And Sampling Data Sheet

Job#: 1350.15	**Sampler:** J Kerns (B Myers)	**Client:** Montgomery & Associates
Well ID: MW5	**Date** (DDOct2012): 03APR2013	**Site:** Rio Algom Mining, Lisbon, UT
Weather Conditions: cool, windy	**Sampler Signature:**	
Well diam: 1/4" 1" 2" 3" 4" (6") Other:	**DTW:** 153.46 **Total Depth:** 197.00	
Purge equip: ES - diam: Bladder Peri Waterra Positive Air Displacement Ext. System disp bailer teflon bailer other: (HS)	**Tubing:** OD: New Dedicated (NA)	
Purge method: 3-5 Case Volume Micro/Low-Flow Extraction Other: (HS)		
Pump depth/ intake: 182'	**Multipliers:** 1"= 0.04 2"= 0.16 3"= 0.37 4"= 0.65 5"=1.02 6"= 1.47 Radius² X 0.163	
(TD - DTW X Multiplier = 1 Volume	80% Recovery (TD - DTW X 0.20 + DTW)	

1 Volume = _____ X _____ = _____ (Total Purge) 80%= _____

Time	Temp (°C) °F)	pH	SP Cond (mS / µS)	Turbidity (NTU)	Purge Rate (gal or mL/ min)	Volume Removed (gal / L)	DO (mg/l)	ORP (mv)	DTW	Notes
1425	13.6	6.7	1441	2	—	—	0.78	78	—	

Did well dewater? YES (NO) Total volume removed: — (gal / L)

Sample method: Disp Bailer (Hydrasleeve) New Tubing Ext. Port Other:

Sample date: 03APR2013	Sample time: 1425	DTW at sample: —
Sample ID: CB346	Lab: Energy Labs	Number of bottles (2)
Analysis: 500 ml NP poly - Alkalinity, Cl, SO4, TDS, EC, pH 250 ml HNO3 poly *field filtered - Dissolved Metals		
Equipment blank ID @	Field blank ID @	
Duplicate ID:	Pre-purge DO:	Post purge DO:
$Fe2^+$:	Pre-purge ORP:	Post purge ORP:
NAPL depth:	Volume of NAPL:	Volume removed: ml

Purging And Sampling Data Sheet

Job#: 1350.15	**Sampler:** J Kerns (B Myers)	**Client:** Montgomery & Associates
Well ID: MW-5	**Date** (DDOct2012): 03APR2013	**Site:** Rio Algom Mining, Lisbon, UT
Weather Conditions: cool, windy	**Sampler Signature:**	
Well diam: 1/4" 1" 2" 3" 4" (6") Other:	**DTW:** 153.46 **Total Depth:** 197.00	
Purge equip: (ES - diam) Bladder Peri Waterra Positive Air Displacement Ext. System		
disp bailer teflon bailer other: **Tubing:** OD: New (Dedicated) NA		
Purge method: 3-5 Case Volume (Micro/Low-Flow) Extraction Other:		
Pump depth/ intake: 180 **Multipliers:** 1"= 0.04 2"= 0.16 3"= 0.37 4"= 0.65 5"=1.02 6"= 1.47 Radius² X 0.163		
(TD - DTW X Multiplier = 1 Volume	80% Recovery (TD - DTW X 0.20 + DTW)	

1 Volume = _____ X _____ = _____ (Total Purge) 80%= _____

Time	Temp (°C) °F)	pH	SP Cond (mS (µS)	Turbidity (NTU)	Purge Rate (gal or mL/ min)	Volume Removed (gal (L))	DO (mg/l)	ORP (mv)	DTW	Notes
1444	11.8	6.6	440	3	400	1.2	4.1	85	154.80	
1447	12.0	6.5	1854	3	|	2.4	0.81	85	154.85	
1450	11.5	6.5	1817	3	|	3.6	0.63	86	154.95	
1453	11.7	6.4	1809	3	|	4.8	0.62	86	155.02	
1456	12.0	6.4	1839	2	|	6	0.60	87	155.30	
1459	12.2	6.4	1834	2	|	7.2	0.65	87	155.31	
1502	12.4	6.4	1775	2	|	8.4	0.66	87	155.31	
1505	12.4	6.4	1797	2	1	9.6	0.67	87	155.32	

Did well dewater? YES (NO)	Total volume removed: 9.6 (gal (L))	
Sample method: Disp Bailer Hydrasleeve New Tubing Ext. Port Other: (Grab)		
Sample date: 03APR2013	Sample time: 1505	DTW at sample: 155.32
Sample ID: GW47	Lab: Energy Labs	Number of bottles (2)
Analysis: 500 ml NP poly - Alkalinity, Cl, SO4, TDS, EC, pH 250 ml HNO3 poly *field filtered - Dissolved Metals		
Equipment blank ID @	Field blank ID @	
Duplicate ID:	Pre-purge DO:	Post purge DO:
$Fe2^{+}$:	Pre-purge ORP:	Post purge ORP:
NAPL depth:	Volume of NAPL:	Volume removed: ml

Purging And Sampling Data Sheet

Job#: 1350.15	**Sampler:** J Kerns (B Myers)	**Client:** Montgomery & Associates
Well ID: MW5	**Date** (DDOct2012): 03APR2013	**Site:** Rio Algom Mining, Lisbon, UT
Weather Conditions: Cool, windy	**Sampler Signature:**	
Well diam: 1/4" 1" 2" 3" 4" (6") Other:	**DTW:** 153.46 **Total Depth:** 197.00	
Purge equip: (ES - diam:) Bladder Peri Waterra Positive Air Displacement Ext. System disp bailer teflon bailer other:	**Tubing:** OD: New (Dedicated) NA	
Purge method: (3-5 Case Volume) Micro/Low-Flow Extraction Other:		
Pump depth/ intake:	**Multipliers:** 1"= 0.04 2"= 0.16 3"= 0.37 4"= 0.65 5"=1.02 6"= 1.47 Radius² X 0.163	
(TD - DTW X Multiplier = 1 Volume	80% Recovery (TD - DTW X 0.20 + DTW)	

1 Volume = 14 X 2 = 192 (Total Purge) 80%= 162.17

	Time	Temp (°C) °F)	pH	SP Cond (mS /(µS))	Turbidity (NTU)	Purge Rate (gal) or mL/ min)	Volume Removed (gal/ L)	DO (mg/l)	ORP (mv)	DTW	Notes
4/3/13	1532	13.3	6.4	1399	3	3.5 2.5	64	1.2	86	188.73	
		well	dewate	red	@	70	gallons				
4/4/13	1240	11.6	6.9	1295	2	—	—	2.6	84	—	

Did well dewater? (YES) NO	Total volume removed: 70 (gal / L)	
Sample method: (Disp Bailer) Hydrasleeve New Tubing Ext. Port Other: (Acid)		
Sample date: 04APR2013	Sample time: 1240	DTW at sample: 155.53
Sample ID: 6359	Lab: Energy Labs	Number of bottles (2)
Analysis: 500 ml NP poly - Alkalinity, Cl, SO4, TDS, EC, pH 250 ml HNO3 poly *field filtered - Dissolved Metals		
Equipment blank ID @	Field blank ID @	
Duplicate ID:	Pre-purge DO:	Post purge DO:
$Fe2^+$:	Pre-purge ORP:	Post purge ORP:
NAPL depth:	Volume of NAPL:	Volume removed: ml

Purging And Sampling Data Sheet

Job#: 1350.15	**Sampler:** J Kerns (B Myers)	**Client:** Montgomery & Associates
Well ID: MW-13	**Date** (DDOct2012): 03APR2013	**Site:** Rio Algom Mining, Lisbon, UT
Weather Conditions: Warm	**Sampler Signature:**	
Well diam: 1/4" 1" 2" 3" (4") 6" Other:	**DTW:** 94.06	**Total Depth:** 206
Purge equip: ES - diam: Bladder Peri Waterra Positive Air Displacement Ext. System		
disp bailer teflon bailer other:	**Tubing:** OD: New Dedicated (NA)	
Purge method: 3-5 Case Volume Micro/Low-Flow Extraction Other: (HS)		
Pump depth/ intake: 110	**Multipliers:** 1"= 0.04 2"= 0.16 3"= 0.37 4"= 0.65 5"=1.02 6"= 1.47 Radius² X 0.163	
(TD - DTW X Multiplier = 1 Volume	80% Recovery (TD - DTW X 0.20 + DTW)	

1 Volume = _____ X _____ = _____ (Total Purge) 80%= _____

Time	Temp (°C) °F)	pH	SP Cond (mS / (µS))	Turbidity (NTU)	Purge Rate (gal or mL/ min)	Volume Removed (gal / L)	DO (mg/l)	ORP (mv)	DTW	Notes
950	12.2	6.68	723	2	—	—	1.1	30	—	

Did well dewater? YES (NO)	Total volume removed: — (gal / L)	
Sample method: Disp Bailer (Hydrasleeve) New Tubing Ext. Port Other:		
Sample date: 03APR2013	Sample time: 950	DTW at sample: —
Sample ID: 6339	Lab: Energy Labs	Number of bottles: (2)
Analysis: 500 ml NP poly - Alkalinity, Cl, SO4, TDS, EC, pH 250 ml HNO3 poly *field filtered - Dissolved Metals		
Equipment blank ID @	Field blank ID @	
Duplicate ID:	Pre-purge DO:	Post purge DO:
$Fe2^{+}$:	Pre-purge ORP:	Post purge ORP:
NAPL depth:	Volume of NAPL:	Volume removed: ml

Purging And Sampling Data Sheet

Job#: 1350.15	**Sampler:** J Kerns (B Myers)	**Client:** Montgomery & Associates
Well ID: MW-13	**Date** (DDOct2012): 03APR2013	**Site:** Rio Algom Mining, Lisbon, UT
Weather Conditions: warm	**Sampler Signature:**	
Well diam: 1/4" 1" 2" 3" (4") 6" Other:	**DTW:** 94.06 **Total Depth:** 206.18	
Purge equip: (ES - diam:) Bladder Peri Waterra Positive Air Displacement Ext. System		
disp bailer teflon bailer other:	**Tubing:** OD: New (Dedicated) NA	
Purge method: 3-5 Case Volume Micro/Low-Flow Extraction Other:		
Pump depth/ intake: 106	**Multipliers:** 1"= 0.04 2"= 0.16 3"= 0.37 4"= 0.65 5"=1.02 6"= 1.47 Radius² X 0.163	
(TD - DTW X Multiplier = 1 Volume	80% Recovery (TD - DTW X 0.20 + DTW)	

1 Volume = _____ X _____ = _____ (Total Purge) 80%= _____

Time	Temp (°C) °F)	pH	SP Cond (mS/mS)	Turbidity (NTU)	Purge Rate (gal or mL/ min)	Volume Removed (gal (L))	DO (mg/l)	ORP (mv)	DTW	Notes
1004	10.6	6.9	658	3	500	1.5	2.9	31	94.62	
1007	10.9	6.8	700	2		3	1.3	32	94.62	
1010	10.9	6.8	714	2		4.5	0.99	32	94.62	
1013	11.2	6.7	716	2		6	0.88	32	94.62	
1016	11.3	6.7	714	2		7.5	0.78	31	94.62	
1019	11.7	6.7	726	2		9	0.75	31	94.62	
1022	11.7	6.7	724	2		10.5	0.73	31	94.62	
1025	11.9	6.7	726	2		12	0.69	31	94.62	
1028	11.9	6.7	731	2		13.5	0.68	31	94.62	
1031	12.0	6.7	723	2		15	0.67	31	94.62	
1034	12.1	6.7	720	2	↓	16.5	0.67	31	94.62	

Did well dewater? YES (NO) Total volume removed: 16.5 (gal (L))

Sample method: Disp Bailer Hydrasleeve New Tubing Ext. Port Other: ded.

Sample date: 03APR2013	Sample time: 1035	DTW at sample: 94.62
Sample ID: 0340	Lab: Energy Labs	Number of bottles: (2) +(2)
Analysis: 500 ml NP poly - Alkalinity, Cl, SO4, TDS, EC, pH 250 ml HNO3 poly *field filtered - Dissolved Metals		
Equipment blank ID @	Field blank ID @	
Duplicate ID: 0341 @ 1040	Pre-purge DO:	Post purge DO:
$Fe2^+$:	Pre-purge ORP:	Post purge ORP:
NAPL depth:	Volume of NAPL:	Volume removed: ml

Purging And Sampling Data Sheet

Job#: 1350.15	**Sampler:** J Kerns (B Myers)	**Client:** Montgomery & Associates
Well ID: MW13	**Date** (DDOct2012): 03APR2013	**Site:** Rio Algom Mining, Lisbon, UT
Weather Conditions: warm	**Sampler Signature:**	
Well diam: 1/4" 1" 2" 3" (4") 6" Other:	**DTW:** 94.06 **Total Depth:** 206	
Purge equip: (ES - diam) Bladder Peri Waterra Positive Air Displacement Ext. System disp bailer teflon bailer other:	**Tubing:** OD: New (Dedicated) NA	
Purge method: (3-5 Case Volume) Micro/Low-Flow Extraction Other:		
Pump depth/ intake: 206	**Multipliers:** 1"= 0.04 2"= 0.16 3"= 0.37 4"= 0.65 5"=1.02 6"= 1.47 Radius² X 0.163	
(TD - DTW X Multiplier = 1 Volume	80% Recovery (TD - DTW X 0.20 + DTW)	

1 Volume = 72.8 X 3 = 218.4 (Total Purge) 80%= 116.45

Time	Temp (°C/°F)	pH	SP Cond (mS/(µS))	Turbidity (NTU)	Purge Rate (gal or mL/ min)	Volume Removed ((gal)/L)	DO (mg/l)	ORP (mv)	DTW	Notes
1058	12.1	6.7	700	2	4	73	1.0	36	94.64	
1116	12.1	6.7	701	2	|	146	0.75	38	94.64	
1134	12.1	6.7	703	2	|	219	0.70	39	94.64	

Did well dewater? YES (NO) Total volume removed: 219 (gal)/L)

Sample method: Disp Bailer Hydrasleeve New Tubing Ext. Port Other: (ded.)

Sample date: 03APR2013	Sample time: 1135	DTW at sample: 94.64
Sample ID: CA3/2	Lab: Energy Labs	Number of bottles: 2
Analysis: 500 ml NP poly - Alkalinity, Cl, SO4, TDS, EC, pH	250 ml HNO3 poly *field filtered - Dissolved Metals	
Equipment blank ID @	Field blank ID @	
Duplicate ID:	Pre-purge DO:	Post purge DO:
$Fe2^+$:	Pre-purge ORP:	Post purge ORP:
NAPL depth:	Volume of NAPL:	Volume removed: ml

Purging And Sampling Data Sheet

Job#: 1350.15	**Sampler:** J Kerns (B Myers)	**Client:** Montgomery & Associates
Well ID: OW-UT-9	**Date** (DDOct2012): 01APR2013	**Site:** Rio Algom Mining, Lisbon, UT
Weather Conditions: Windy	**Sampler Signature:**	
Well diam: 1/4" 1" 2" 3" 4" (6") Other:	**DTW:** 122.78 **Total Depth:** 142.08	
Purge equip: ES - diam: Bladder Peri Waterra Positive Air Displacement Ext. System disp bailer teflon bailer other: (HS)	**Tubing:** OD: New Dedicated (NA)	
Purge method: 3-5 Case Volume Micro/Low-Flow Extraction Other: (HS)		
Pump depth/ intake:	**Multipliers:** 1"= 0.04 2"= 0.16 3"= 0.37 4"= 0.65 5"=1.02 6"= 1.47 Radius² X 0.163	
(TD - DTW X Multiplier = 1 Volume	80% Recovery (TD - DTW X 0.20 + DTW)	

1 Volume = _____ X _____ = _____ (Total Purge) 80%= _____

Time	Temp (°C / °F)	pH	SP Cond (mS / µS)	Turbidity (NTU)	Purge Rate (gal or mL/ min)	Volume Removed (gal / L)	DO (mg/l)	ORP (mv)	DTW	Notes
1315	13.2	89.1	18958	7	—	—	1.5	57	—	
preserved	metals	bottle	w/	3	vials	of	HNO3	,	was	very
reactive										

Did well dewater? YES (NO)	Total volume removed: — (gal / L)		
Sample method: Disp Bailer (Hydrasleeve) New Tubing Ext. Port Other:			
Sample date: 3/1/13	Sample time: 1315	DTW at sample: —	
Sample ID: 0321	Lab: Energy Labs	Number of bottles: 2	
Analysis: 500 ml NP poly - Alkalinity, Cl, SO4, TDS, EC, pH 250 ml HNO3 poly *field filtered - Dissolved Metals			
Equipment blank ID @	Field blank ID @		
Duplicate ID:	Pre-purge DO:	Post purge DO:	
$Fe2^+$:	Pre-purge ORP:	Post purge ORP:	
NAPL depth:	Volume of NAPL:	Volume removed: ml	

Purging And Sampling Data Sheet

Job#: 1350.15	**Sampler:** J Kerns B Myers	**Client:** Montgomery & Associates
Well ID: MW-UT-9	**Date** (DDOct2012): 01 APR 2013	**Site:** Rio Algom Mining, Lisbon, UT
Weather Conditions: Windy	**Sampler Signature:**	
Well diam: 1/4" 1" 2" 3" 4" (6") Other:	**DTW:** 122.78	**Total Depth:** 147.02
Purge equip: (ES - diam) Bladder Peri Waterra Positive Air Displacement Ext. System		
disp bailer teflon bailer other:	**Tubing:** OD: New (Dedicated) NA	
Purge method: (3-5 Case Volume) Micro/Low-Flow Extraction Other:		
Pump depth/ intake:	**Multipliers:** 1"= 0.04 2"= 0.16 3"= 0.37 4"= 0.65 5"=1.02 6"= 1.47 Radius^2 X 0.163	
(TD - DTW X Multiplier = 1 Volume	80% Recovery (TD - DTW X 0.20 + DTW)	

1 Volume = 28.3 X 3 = 84.9 (Total Purge) 80%= 126.02

Time	Temp (°C) °F)	pH	SP Cond (mS (µS)	Turbidity (NTU)	Purge Rate (gal) or mL/ min)	Volume Removed (gal) L)	DO (mg/l)	ORP (mv)	DTW	Notes
1340	13.0	10.0	28537	5	3	28.3	0.12	30	127.55	
1350	13.0	10.1	27361	4	1	56.6	0.19	24	126.10	
1400	13.0	10.1	26937	4	1	85	0.18	19	128.20	
	water	briefly	Air	80%						

Did well dewater? YES (NO)	Total volume removed: 85 (gal) L)	
Sample method: Disp Bailer Hydrasleeve New Tubing Ext. Port Other: Ded. tubing		
Sample date: 01 APR 2013	Sample time: 1405	DTW at sample: 126.02
Sample ID: 0322	Lab: Energy Labs	Number of bottles: 2 + 2
Analysis: 500 ml NP poly - Alkalinity, Cl, SO4, TDS, EC, pH 250 ml HNO3 poly *field filtered - Dissolved Metals		
Equipment blank ID: 0323 @ 1420	Field blank ID @	
Duplicate ID:	Pre-purge DO:	Post purge DO:
$Fe2^+$:	Pre-purge ORP:	Post purge ORP:
NAPL depth:	Volume of NAPL:	Volume removed: ml

Purging And Sampling Data Sheet

Job#: 1350.15	**Sampler:** J Kerns B Myers	**Client:** Montgomery & Associates
Well ID: RL-1	**Date** (DDOct2012): 02APR2013	**Site:** Rio Algom Mining, Lisbon, UT
Weather Conditions: Windy		**Sampler Signature:**
Well diam: 1/4" 1" 2" 3" 4" 6" Other: (5")		**DTW:** 115.79 **Total Depth:** 124
Purge equip: ES - diam: Bladder Peri Waterra Positive Air Displacement Ext. System		
disp bailer teflon bailer other: H/S	**Tubing:** OD: New Dedicated (NA)	
Purge method: 3-5 Case Volume Micro/Low-Flow Extraction Other:		
Pump depth/ intake: 122 -	**Multipliers:** 1"= 0.04 2"= 0.16 3"= 0.37 4"= 0.65 5"=1.02 6"= 1.47 Radius² X 0.163	
(TD - DTW X Multiplier = 1 Volume	80% Recovery (TD - DTW X 0.20 + DTW)	

1 Volume = _____ X _____ = _____ (Total Purge) 80%= _____

Time	Temp (°C) °F)	pH	SP Cond (mS / µS)	Turbidity (NTU)	Purge Rate (gal or mL/ min)	Volume Removed (gal / L)	DO (mg/l)	ORP (mv)	DTW	Notes
1130	10.0	6.9	2082	3.7	—	—	4.99	82.5	115.79	

Did well dewater? YES (NO) Total volume removed: ——— (gal / L)

Sample method: Disp Bailer (Hydrasleeve) New Tubing Ext. Port Other:

Sample date: 02APR2013 Sample time: 1130 DTW at sample: 115.79

Sample ID: 6318 Lab: Energy Labs Number of bottles (2)

Analysis: 500 ml NP poly - Alkalinity, Cl, SO4, TDS, EC, pH 250 ml HNO3 poly *field filtered - Dissolved Metals

Equipment blank ID @	Field blank ID @	
Duplicate ID:	Pre-purge DO:	Post purge DO:
$Fe2^{+}$:	Pre-purge ORP:	Post purge ORP:
NAPL depth:	Volume of NAPL:	Volume removed: ml

Purging And Sampling Data Sheet

Job#: 1350.15	**Sampler:** J Kerns B Myers	**Client:** Montgomery & Associates
Well ID: RL-1	**Date** (DDOct2012): 02APR2013	**Site:** Rio Algom Mining, Lisbon, UT
Weather Conditions: Hail	**Sampler Signature:**	
Well diam: 1/4" 1" 2" 3" (4") 6" Other: (5)	**DTW:** 115.79 **Total Depth:** 124 –	
Purge equip: (ES - diam:) Bladder Peri Waterra Positive Air Displacement Ext. System		
disp bailer teflon bailer other:	**Tubing:** OD: New (Dedicated) NA	
Purge method: (3-5 Case Volume) Micro/Low-Flow Extraction Other:		
Pump depth/ intake: 122	**Multipliers:** 1"= 0.04 2"= 0.16 3"= 0.37 4"= 0.65 5"=1.02 6"= 1.47 Radius² X 0.163	
(TD - DTW X Multiplier = 1 Volume	80% Recovery (TD - DTW X 0.20 + DTW)	

1 Volume = 8.4 X 3 = 25.5 (Total Purge) 80%= 117.43

Time	Temp (°C/ °F)	pH	SP Cond (mS /µS)	Turbidity (NTU)	Purge Rate (gal or mL/ min)	Volume Removed (gal/ L)	DO (mg/l)	ORP (mv)	DTW	Notes
1205	13.4	7.1	10985	39	1.0	8.5	4.72	70.7	121.39	
1227	14.6	7.5	10670	11	Ø.5	17.0	5.11	57.7	120.55	
1245	14.6	7.2	10817	13	Ø.5	25.5	5.10	56.4	120.82	
–	Not @ 80% – Wait to Collect Sample									

Did well dewater? YES (NO)	Total volume removed: 25.5 (gal/ L)	
Sample method: Disp Bailer Hydrasleeve New Tubing Ext. Port Other: Dedicated Tubing		
Sample date: 02APR2013	Sample time: 1300	DTW at sample: 17.43
Sample ID: 6319	Lab: Energy Labs	Number of bottles: 2
Analysis: 500 ml NP poly - Alkalinity, Cl, SO4, TDS, EC, pH 250 ml HNO3 poly *field filtered - Dissolved Metals		
Equipment blank ID @	Field blank ID @	
Duplicate ID:	Pre-purge DO:	Post purge DO:
$Fe2^+$:	Pre-purge ORP:	Post purge ORP:
NAPL depth:	Volume of NAPL:	Volume removed: ml

Purging And Sampling Data Sheet

Job#: 1350.15	**Sampler:** J Kerns (B Myers)	**Client:** Montgomery & Associates
Well ID: RL-3	**Date** (DDOct2012): 02APR2013	**Site:** Rio Algom Mining, Lisbon, UT
Weather Conditions: Cloudy	**Sampler Signature:**	
Well diam: 1/4" 1" 2" 3" 4" 6" Other: (5)	**DTW:** 170.03 **Total Depth:** 183.02	
Purge equip: ES - diam: Bladder Peri Waterra Positive Air Displacement Ext. System		
disp bailer teflon bailer other: **Tubing:** OD: New Dedicated (NA)		
Purge method: 3-5 Case Volume Micro/Low-Flow Extraction Other: (NS)		
Pump depth/ intake: 176'	**Multipliers:** 1"= 0.04 2"= 0.16 3"= 0.37 4"= 0.65 5"=1.02 6"= 1.47 Radius² X 0.163	
(TD - DTW X Multiplier = 1 Volume	80% Recovery (TD - DTW X 0.20 + DTW)	

1 Volume = _____ X _____ = _____ (Total Purge) 80%= _____

Time	Temp (C) °F)	pH	SP Cond (mS / (µS))	Turbidity (NTU)	Purge Rate (gal or mL/ min)	Volume Removed (gal / L)	DO (mg/l)	ORP (mv)	DTW	Notes
1230	13.9	7.2	8493	4	—	—	6.5	112	—	

Did well dewater? YES (NO) Total volume removed: — (gal / L)

Sample method: Disp Bailer (Hydrasleeve) New Tubing Ext. Port Other:

Sample date: 02APR2013	Sample time: 1230	DTW at sample: —
Sample ID: 60333	Lab: Energy Labs	Number of bottles: (2)
Analysis: 500 ml NP poly - Alkalinity, Cl, SO4, TDS, EC, pH 250 ml HNO3 poly *field filtered - Dissolved Metals		
Equipment blank ID @	Field blank ID @	
Duplicate ID:	Pre-purge DO:	Post purge DO:
$Fe2^+$:	Pre-purge ORP:	Post purge ORP:
NAPL depth:	Volume of NAPL:	Volume removed: ml

Purging And Sampling Data Sheet

Job#: 1350.15	**Sampler:** J Kerns (B Myers)	**Client:** Montgomery & Associates
Well ID: RL-3	**Date** (DDOct2012): 02APR2013	**Site:** Rio Algom Mining, Lisbon, UT
Weather Conditions: Cloudy	**Sampler Signature:**	
Well diam: 1/4" 1" 2" 3" 4" 6" Other: (S)	**DTW:** 170.03	**Total Depth:** 183.00
Purge equip: (ES - diam) Bladder Peri Waterra Positive Air Displacement Ext. System		
disp bailer teflon bailer other:	**Tubing:** OD: New (Dedicated) NA	
Purge method: 3-5 Case Volume (Micro/Low-Flow) Extraction Other:		
Pump depth/ intake:	**Multipliers:** 1"= 0.04 2"= 0.16 3"= 0.37 4"= 0.65 5"=1.02 6"= 1.47 Radius² X 0.163	
(TD - DTW X Multiplier = 1 Volume	80% Recovery (TD - DTW X 0.20 + DTW)	

1 Volume = _____ X _____ = _____ (Total Purge) 80%= _____

Time	Temp (°C) °F	pH	SP Cond (mS (µS))	Turbidity (NTU)	Purge Rate (gal or mL/ min)	Volume Removed (gal (L)	DO (mg/l)	ORP (mv)	DTW	Notes
1246	12.0	7.2	9157	3	400	1.5	6.7	103	170.52	
1249	12.1	7.1	9029	3	|	3	6.9	100	170.36	
1252	12.2	7.1	9042	2	|	4.5	6.8	99	170.33	
1255	12.5	7.1	9049	2	|	6	6.4	96	170.32	
1258	12.8	7.1	9915	2	+	7.5	5.8	95	170.32	
1301	13.6	7.1	9349	2	|	9	5.9	94	170.32	
1304	14.0	7.0	9387	2	|	10.5	6.0	95	170.32	
1307	14.3	7.0	9380	2	+	12	5.9	96	170.32	
1310	14.5	7.0	9346	2	L	13.5	5.9	96	170.32	

Did well dewater? YES (NO)	Total volume removed: 13.5 (gal) (L)	
Sample method: Disp Bailer Hydrasleeve New Tubing Ext. Port Other: (Ded.)		
Sample date: 02APR2013	Sample time: 1310	DTW at sample: 170.32
Sample ID: 6334	Lab: Energy Labs	Number of bottles: 2
Analysis: 500 ml NP poly - Alkalinity, Cl, SO4, TDS, EC, pH 250 ml HNO3 poly *field filtered - Dissolved Metals		
Equipment blank ID @	Field blank ID @	
Duplicate ID:	Pre-purge DO:	Post purge DO:
$Fe2^+$:	Pre-purge ORP:	Post purge ORP:
NAPL depth:	Volume of NAPL:	Volume removed: ml

Purging And Sampling Data Sheet

Job#: 1350.15	**Sampler:** J Kerns (B Myers)	**Client:** Montgomery & Associates
Well ID: RL-3	**Date** (DDOct2012): 02APR2013	**Site:** Rio Algom Mining, Lisbon, UT
Weather Conditions: Cloudy	**Sampler Signature:**	
Well diam: 1/4" 1" 2" 3" 4" 6" Other: (5")	**DTW:** 170.03	**Total Depth:** 183.02
Purge equip: (ES - diam): Bladder Peri Waterra Positive Air Displacement Ext. System disp bailer teflon bailer other:	**Tubing:** OD: New (Dedicated) NA	
Purge method: (3-5 Case Volume) Micro/Low-Flow Extraction Other:		
Pump depth/ intake:	**Multipliers:** 1"= 0.04 2"= 0.16 3"= 0.37 4"= 0.65 5"=1.02 6"= 1.47 Radius² X 0.163	
(TD - DTW X Multiplier = 1 Volume	80% Recovery (TD - DTW X 0.20 + DTW)	

1 Volume = 13.2 X 3 = 39.6 (Total Purge) 80%= 172.62

Time	Temp (°C) °F)	pH	SP Cond (mS/ µS)	Turbidity (NTU)	Purge Rate (gal or mL/ min)	Volume Removed (gal / L)	DO (mg/l)	ORP (mv)	DTW	Notes
1325	13.9	7.1	10464	3	1.5	13.2	6.9	100	175.65	
1334	13.7	7.1	10973	3	↓	26.4	7.0	103	176.32	
1342	13.5	7.1	10941	3	↓	39.6	7.1	105	177.10	
	Waited for DO%									

Did well dewater? YES (NO) Total volume removed: 40 (gal / L)

Sample method: Disp Bailer Hydrasleeve New Tubing Ext. Port Other: (ded.)

Sample date: 02APR2013	Sample time: 1345	DTW at sample: 172.62
Sample ID: 0335	Lab: Energy Labs	Number of bottles: (2)
Analysis: 500 ml NP poly - Alkalinity, Cl, SO4, TDS, EC, pH 250 ml HNO3 poly *field filtered - Dissolved Metals		
Equipment blank ID @	Field blank ID @	
Duplicate ID:	Pre-purge DO:	Post purge DO:
$Fe2^+$:	Pre-purge ORP:	Post purge ORP:
NAPL depth:	Volume of NAPL:	Volume removed: ml

Purging And Sampling Data Sheet

Job#: 1350.15	**Sampler:** J Kerns B Myers	**Client:** Montgomery & Associates
Well ID: RL-4	**Date** (DDOct2012): 04APR2013	**Site:** Rio Algom Mining, Lisbon, UT
Weather Conditions: Cold	**Sampler Signature:**	
Well diam: 1/4" 1" 2" 3" 4" 6" Other: (4)	**DTW:** 156.37 **Total Depth:** 178.02	
Purge equip: ES - diam: Bladder Peri Waterra Positive Air Displacement Ext. System disp bailer teflon bailer other: (HS)	**Tubing:** OD: New Dedicated (NA)	
Purge method: 3-5 Case Volume Micro/Low-Flow Extraction Other: (HS)		
Pump depth/ intake: 168	**Multipliers:** 1"= 0.04 2"= 0.16 3"= 0.37 4"= 0.65 5"=1.02 6"= 1.47 Radius² X 0.163	
(TD - DTW X Multiplier = 1 Volume	80% Recovery (TD - DTW X 0.20 + DTW)	

1 Volume = _____ X _____ = _____ (Total Purge) 80%= _____

Time	Temp (°C) °F)	pH	SP Cond (mS / µS))	Turbidity (NTU)	Purge Rate (gal or mL/ min)	Volume Removed (gal / L)	DO (mg/l)	ORP (mv)	DTW	Notes
1450	10.2	6.7	1626	4	—	—	10.3	132	—	

Did well dewater? YES (NO)	Total volume removed: — (gal / L)	
Sample method: Disp Bailer (Hydrasleeve) New Tubing Ext. Port Other:		
Sample date: 04APR2013	Sample time: 1450	DTW at sample: —
Sample ID: 6348	Lab: Energy Labs	Number of bottles: (2) (2)
Analysis: 500 ml NP poly - Alkalinity, Cl, SO4, TDS, EC, pH 250 ml HNO3 poly *field filtered - Dissolved Metals		
Equipment blank ID @	Field blank ID @	
* Duplicate ID: 6349 @ 1400	Pre-purge DO:	Post purge DO:
$Fe2^+$:	Pre-purge ORP:	Post purge ORP:
NAPL depth:	Volume of NAPL:	Volume removed: ml

Purging And Sampling Data Sheet

Job#: 1350.15	**Sampler:** J Kerns / B Myers	**Client:** Montgomery & Associates
Well ID: RL-4	**Date** (DDOct2012): 04APR2013	**Site:** Rio Algom Mining, Lisbon, UT
Weather Conditions: Cold	**Sampler Signature:**	
Well diam: 1/4" 1" 2" 3" 4" 6" Other: (5)	**DTW:** 156.37 **Total Depth:** 178.00	
Purge equip: (ES - diam) Bladder Peri Waterra Positive Air Displacement Ext. System		
disp bailer teflon bailer other: **Tubing:** OD: New (Dedicated) NA		
Purge method: 3-5 Case Volume (Micro/Low-Flow) Extraction Other:		
Pump depth/ intake: 166 **Multipliers:** 1"= 0.04 2"= 0.16 3"= 0.37 4"= 0.65 5"=1.02 6"= 1.47 Radius² X 0.163		
(TD - DTW X Multiplier = 1 Volume	80% Recovery (TD - DTW X 0.20 + DTW)	

1 Volume = _____ X _____ = _____ (Total Purge) 80%= _____

Time	Temp (°C)/°F)	pH	SP Cond (mS / (S))	Turbidity (NTU)	Purge Rate (gal or mL/ min)	Volume Removed (gal (L))	DO (mg/l)	ORP (mv)	DTW	Notes
709	9.1	6.8	646	3	400	1.2	12.3	121	157.12	
712	9.1	6.9	647	3		2.4	11.9	119	157.00	
715	9.7	6.9	642	2		3.6	12.3	118	156.95	
718	9.5	6.9	642	2		4.8	12.5	117	156.93	
721	10.6	6.9	642	2		6	12.6	115	156.92	
724	10.8	6.9	641	2		7.2	12.5	114	156.92	
727	11.0	6.9	641	2		8.4	12.4	112	156.92	

Did well dewater? YES (NO)	Total volume removed: 8.4 (gal (L))
Sample method: Disp Bailer Hydrasleeve New Tubing Ext. Port Other: (dedi.)	
Sample date: 04APR2013	Sample time: 730 DTW at sample: 156.92
Sample ID: 0350 Lab: Energy Labs	Number of bottles: (2)
Analysis: 500 ml NP poly - Alkalinity, Cl, SO4, TDS, EC, pH 250 ml HNO3 poly *field filtered - Dissolved Metals	
Equipment blank ID @	Field blank ID @
Duplicate ID:	Pre-purge DO: Post purge DO:
$Fe2^{+}$:	Pre-purge ORP: Post purge ORP:
NAPL depth: Volume of NAPL:	Volume removed: ml

Purging And Sampling Data Sheet

Job#: 1350.15	**Sampler:** J Kerns (B Myers)	**Client:** Montgomery & Associates
Well ID: RL-4	**Date** (DDOct2012): 04APR2013	**Site:** Rio Algom Mining, Lisbon, UT
Weather Conditions: cold	**Sampler Signature:**	
Well diam: 1/4" 1" 2" 3" 4" 6" Other: (5)	**DTW:** 156.37	**Total Depth:** 178.02
Purge equip: (ES - diam:) Bladder Peri Waterra Positive Air Displacement Ext. System		
disp bailer teflon bailer other:	**Tubing:** OD: New (Dedicated) NA	
Purge method: (3-5 Case Volume) Micro/Low-Flow Extraction Other:		
Pump depth/ intake: 166	**Multipliers:** 1"= 0.04 2"= 0.16 3"= 0.37 4"= 0.65 5"=1.02 6"= 1.47 Radius^2 X 0.163	
(TD - DTW X Multiplier = 1 Volume	80% Recovery (TD - DTW X 0.20 + DTW)	

1 Volume = 21.7 X 3 = 65 (Total Purge) 80%= 160.63

Time	Temp (°C) °F)	pH	SP Cond (mS (µS)	Turbidity (NTU)	Purge Rate (gal) or mL/ min)	Volume Removed (gal) L)	DO (mg/l)	ORP (mv)	DTW	Notes
744	12.8	6.9	642	3	2	22 ~~21.7~~	10.7	112	162.70	
755	12.6	7.0	649	2	1	44	10.5	112	164.53	
806	12.8	7.0	655	2	1	65	10.4	111	160.71	
	Walked	bucket	for	80%						

Did well dewater? YES (NO) Total volume removed: 65 (gal) L)

Sample method: Disp Bailer Hydrasleeve New Tubing Ext. Port Other: (clod)

Sample date: 04APR2013	Sample time: 810	DTW at sample: 160.63
Sample ID: ~~RL-5~~ RL51	Lab: Energy Labs	Number of bottles: 2
Analysis: 500 ml NP poly - Alkalinity, Cl, SO4, TDS, EC, pH 250 ml HNO3 poly *field filtered - Dissolved Metals		
Equipment blank ID @	Field blank ID @	
Duplicate ID:	Pre-purge DO:	Post purge DO:
$Fe2^+$:	Pre-purge ORP:	Post purge ORP:
NAPL depth:	Volume of NAPL:	Volume removed: ml

Purging And Sampling Data Sheet

Job#: 1350.15	**Sampler:** J Kerns B Myers	**Client:** Montgomery & Associates
Well ID: RL-5	**Date** (DDOct2012): 04APR2013	**Site:** Rio Algom Mining, Lisbon, UT
Weather Conditions: warm	**Sampler Signature:**	
Well diam: 1/4" 1" 2" 3" 4" 6" Other: (5)	**DTW:** 151.77	**Total Depth:** 186
Purge equip: ES - diam: Bladder Peri Waterra Positive Air Displacement Ext. System		
disp bailer teflon bailer other: (NS)	**Tubing:** OD: New Dedicated (NA)	
Purge method: 3-5 Case Volume Micro/Low-Flow Extraction Other (NS)		
Pump depth/ intake: 171	**Multipliers:** 1"= 0.04 2"= 0.16 3"= 0.37 4"= 0.65 5"=1.02 6"= 1.47 Radius² X 0.163	
(TD - DTW X Multiplier = 1 Volume	80% Recovery (TD - DTW X 0.20 + DTW)	

1 Volume = _____ X _____ = _____ (Total Purge) 80%=_____

Time	Temp (°C) °F)	pH	SP Cond (mS /(µS))	Turbidity (NTU)	Purge Rate (gal or mL/ min)	Volume Removed (gal / L)	DO (mg/l)	ORP (mv)	DTW	Notes
1100	12.2	7.2	511	4	—	—	9.8	78	—	

Did well dewater? YES (NO) Total volume removed: — (gal / L)

Sample method: Disp Bailer (Hydrasleeve) New Tubing Ext. Port Other:

Sample date: 04APR2013	Sample time: 1100	DTW at sample: —
Sample ID: (0355	Lab: Energy Labs	Number of bottles: (2)
Analysis: 500 ml NP poly - Alkalinity, Cl, SO4, TDS, EC, pH 250 ml HNO3 poly *field filtered - Dissolved Metals		
Equipment blank ID @	Field blank ID @	
Duplicate ID:	Pre-purge DO:	Post purge DO:
$Fe2^+$:	Pre-purge ORP:	Post purge ORP:
NAPL depth:	Volume of NAPL:	Volume removed: ml

Purging And Sampling Data Sheet

Job#: 1350.15	**Sampler:** J Kerns (B Myers)	**Client:** Montgomery & Associates
Well ID: RC-5	**Date** (DDOct2012): 04APR2013	**Site:** Rio Algom Mining, Lisbon, UT
Weather Conditions: warm	**Sampler Signature:**	
Well diam: 1/4" 1" 2" 3" 4" 6" Other: (5)	**DTW:** 157.77	**Total Depth:** 186
Purge equip: (ES - diam:) Bladder Peri Waterra Positive Air Displacement Ext. System		
disp bailer teflon bailer other:	**Tubing:** OD: New (Dedicated) NA	
Purge method: 3-5 Case Volume (Micro/Low-Flow) Extraction Other:		
Pump depth/ intake: 169	**Multipliers:** 1"= 0.04 2"= 0.16 3"= 0.37 4"= 0.65 5"=1.02 6"= 1.47 Radius² X 0.163	
(TD - DTW X Multiplier = 1 Volume	80% Recovery (TD - DTW X 0.20 + DTW)	

1 Volume = _____ X _____ = _____ (Total Purge) 80%= _____

Time	Temp (°C) °F)	pH	SP Cond (mS (µS))	Turbidity (NTU)	Purge Rate (gal or (mL/ min))	Volume Removed (gal (L))	DO (mg/l)	ORP (mv)	DTW	Notes
1111	12.2	7.1	481	3	500	2	13.4	80	152.05	
1114	12.4	7.1	482	2		3.5	13.5	80	152.05	
1117	12.2	7.1	481	2		5	13.5	81	152.05	
1120	12.5	7.1	482	2		6.5	13.4	81	152.05	
1123	12.7	7.1	481	2		8	13.3	8.1	152.05	

Did well dewater? YES (NO)	Total volume removed: 8	(gal (L))
Sample method: Disp Bailer Hydrasleeve New Tubing Ext. Port Other: (sled)		
Sample date: 04APR2013	Sample time: 1125	DTW at sample: 152.05
Sample ID: 0356	Lab: Energy Labs	Number of bottles: (2)
Analysis: 500 ml NP poly - Alkalinity, Cl, SO4, TDS, EC, pH 250 ml HNO3 poly *field filtered - Dissolved Metals		
Equipment blank ID @	Field blank ID @	
* Duplicate ID: 0357 @ 1130	Pre-purge DO:	Post purge DO:
$Fe2^+$:	Pre-purge ORP:	Post purge ORP:
NAPL depth:	Volume of NAPL:	Volume removed: ml

Purging And Sampling Data Sheet

Job#: 1350.15	**Sampler:** J Kerns (B Myers)	**Client:** Montgomery & Associates
Well ID: RL-5	**Date** (DDOct2012): 04APR2013	**Site:** Rio Algom Mining, Lisbon, UT
Weather Conditions: Warm	**Sampler Signature:**	
Well diam: 1/4" 1" 2" 3" 4" 6" Other: (5)	**DTW:** 151.77 **Total Depth:** 186	
Purge equip: (ES - diam:) Bladder Peri Waterra Positive Air Displacement Ext. System		
disp bailer teflon bailer other:	**Tubing:** OD: New (Dedicated) NA	
Purge method: (3-5 Case Volume) Micro/Low-Flow Extraction Other:		
Pump depth/ intake: 169	**Multipliers:** 1"= 0.04 2"= 0.16 3"= 0.37 4"= 0.65 5"=1.02 6"= 1.47 Radius² X 0.163	
(TD - DTW X Multiplier = 1 Volume	80% Recovery (TD - DTW X 0.20 + DTW)	

1 Volume = 35 X 3 = 105 (Total Purge) 80%= 156.62

Time	Temp (C °F)	pH	SP Cond (mS / µS)	Turbidity (NTU)	Purge Rate (gal or mL/ min)	Volume Removed (gal / L)	DO (mg/l)	ORP (mv)	DTW	Notes
1144	12.66	7.1	4666	3	2.5	35	13.9	85	153.50	
1159	12.66	7.0	474	2	1	70	14.3	87	153.61	
1214	12.5	7.0	474	2	1	105	14.2	85	153.79	

Did well dewater? YES (NO) Total volume removed: 105 (gal / L)

Sample method: Disp Bailer Hydrasleeve New Tubing Ext. Port Other: (ded.)

Sample date: 04APR2013	Sample time: 1215	DTW at sample: 153.79
Sample ID: 0358	Lab: Energy Labs	Number of bottles: (2)
Analysis: 500 ml NP poly - Alkalinity, Cl, SO4, TDS, EC, pH 250 ml HNO3 poly *field filtered - Dissolved Metals		
Equipment blank ID @	Field blank ID @	
Duplicate ID:	Pre-purge DO:	Post purge DO:
$Fe2^+$:	Pre-purge ORP:	Post purge ORP:
NAPL depth:	Volume of NAPL:	Volume removed: ml

Purging And Sampling Data Sheet

Job#: 1350.15	**Sampler:** J Kerns B Myers	**Client:** Montgomery & Associates
Well ID: RL-6	**Date** (DDOct2012): 04APR2013	**Site:** Rio Algom Mining, Lisbon, UT
Weather Conditions: Cold - Clear Sky	**Sampler Signature:**	
Well diam: 1/4" 1" 2" 3" 4" 6" Other: (5")	**DTW:** 14.51	**Total Depth:** 20
Purge equip: ES - diam: Bladder Peri Waterra Positive Air Displacement Ext. System		
disp bailer teflon bailer other: (HS)	**Tubing:** OD: New Dedicated (NA)	
Purge method: 3-5 Case Volume Micro/Low-Flow Extraction Other:		
Pump depth/ intake: 18.2	**Multipliers:** 1"= 0.04 2"= 0.16 3"= 0.37 4"= 0.65 5"=1.02 6"= 1.47 Radius² X 0.163	
(TD - DTW X Multiplier = 1 Volume	80% Recovery (TD - DTW X 0.20 + DTW)	

1 Volume = _____ X _____ = _____ (Total Purge) 80%= _____

Time	Temp (°C/°F)	pH	Cond (mS / µS)	Turbidity (NTU)	Purge Rate (gal or mL/ min)	Volume Removed (gal / L)	DO (mg/l)	ORP (mv)	DTW	Notes
0650	7.2	7.1	1832	6.3	—	—	2.04	224.3	14.51	

Did well dewater? YES (NO) Total volume removed: — (gal / L)

Sample method: Disp Bailer (Hydrasleeve) New Tubing Ext. Port Other:

Sample date: 04APR2013 Sample time: 0650 DTW at sample: 14.51

Sample ID: 6380 Lab: Energy Labs Number of bottles (2)

Analysis: 500 ml NP poly - Alkalinity, Cl, SO4, TDS, EC, pH 250 ml HNO3 poly *field filtered - Dissolved Metals

Equipment blank ID @	Field blank ID @	
Duplicate ID:	Pre-purge DO:	Post purge DO:
$Fe2^{+}$:	Pre-purge ORP:	Post purge ORP:
NAPL depth:	Volume of NAPL:	Volume removed: ml

Purging And Sampling Data Sheet

Job#: 1350.15	**Sampler:** J Kerns B Myers	**Client:** Montgomery & Associates
Well ID: RL-6	**Date** (DDOct2012): 04APR2013	**Site:** Rio Algom Mining, Lisbon, UT
Weather Conditions: Cold - Clear Sky	**Sampler Signature:**	
Well diam: 1/4" 1" 2" 3" 4" 6" Other: (5")	**DTW:** 14.51 **Total Depth:** 20	
Purge equip: (ES - diam:) Bladder Peri Waterra Positive Air Displacement Ext. System disp bailer teflon bailer other: **Tubing:** OD: New (Dedicated) NA		
Purge method: 3-5 Case Volume (Micro/Low-Flow) Extraction Other:		
Pump depth/ intake: 18	**Multipliers:** 1"= 0.04 2"= 0.16 3"= 0.37 4"= 0.65 5"=1.02 6"= 1.47 Radius² X 0.163	
(TD - DTW X Multiplier = 1 Volume	80% Recovery (TD - DTW X 0.20 + DTW)	

1 Volume = — X — = — (Total Purge) 80%= —

Time	Temp (°C °F)	pH	SP Cond (mS / µS)	Turbidity (NTU)	Purge Rate (gal or (mL) min)	Volume Removed (gal / (L))	DO (mg/l)	ORP (mv)	DTW	Notes
0714	7.8	6.9	1908	459	200	1.0	1.49	173.9	14.51	
0717	8.2	6.9	1910	233	200	1.6	1.36	159.6	14.51	
0720	9.4	6.8	1907	109	200	2.2	1.09	131.4	14.51	
0723	9.9	6.8	1907	21	200	2.8	0.86	113.5	14.51	
0726	10.0	6.8	1909	20	200	3.4	0.75	104.8	14.51	
0729	10.0	6.8	1905	21	200	4.0	0.57	91.0	14.51	
0732	10.0	6.8	1906	21	200	4.6	0.57	89.3	14.51	
0735	10.0	6.8	1905	19	200	5.2	0.55	87.4	14.51	

Did well dewater? YES (NO)	Total volume removed: 5.2 (gal (L))	
Sample method: Disp Bailer Hydrasleeve New Tubing Ext. Port Other: Dedicated Tubing		
Sample date: 04APR2013	Sample time: 0740	DTW at sample: 14.51
Sample ID: 6391	Lab: Energy Labs	Number of bottles: (2)
Analysis: 500 ml NP poly - Alkalinity, Cl, SO4, TDS, EC, pH 250 ml HNO3 poly *field filtered - Dissolved Metals		
Equipment blank ID @	Field blank ID @	
Duplicate ID:	Pre-purge DO:	Post purge DO:
$Fe2^{+}$:	Pre-purge ORP:	Post purge ORP:
NAPL depth:	Volume of NAPL:	Volume removed: ml

Purging And Sampling Data Sheet

Job#: 1350.15	**Sampler:** J Kerns B Myers	**Client:** Montgomery & Associates
Well ID: RL-6	**Date** (DDOct2012): 04APR2013	**Site:** Rio Algom Mining, Lisbon, UT
Weather Conditions: Cold - Clear Sky	**Sampler Signature:**	
Well diam: 1/4" 1" 2" 3" 4" 6" Other: (5")	**DTW:** 14.51 **Total Depth:** 20	
Purge equip: (ES - diam:) Bladder Peri Waterra Positive Air Displacement Ext. System		
disp bailer teflon bailer other:	**Tubing:** OD: New (Dedicated) NA	
Purge method: (3-5 Case Volume) Micro/Low-Flow Extraction Other:		
Pump depth/ intake:	**Multipliers:** 1"= 0.04 2"= 0.16 3"= 0.37 4"= 0.65 5"=1.02 6"= 1.47 Radius² X 0.163	
(TD - DTW X Multiplier = 1 Volume	80% Recovery (TD - DTW X 0.20 + DTW)	

1 Volume = 5.6 X 3 = 16.8 (Total Purge) 80%= 15.61

Time	Temp (°C) °F)	pH	SP Cond (mS / (uS))	Turbidity (NTU)	Purge Rate (gal) or mL/ min)	Volume Removed ((gal)/ L)	DO (mg/l)	ORP (mv)	DTW	Notes
0750	8.7	7.0	1888	17	1.0	6.0	0.64	96.4	14.62	
0756	8.7	6.9	1886	15	1.0	12.0	0.88	85.8	14.62	
0802	8.6	6.9	1892	14	1.0	17.0	0.69	88.4	14.62	

Did well dewater? YES (NO) Total volume removed: 17.0 ((gal) L)

Sample method: Disp Bailer Hydrasleeve New Tubing Ext. Port Other: Dedicated Tubing

Sample date: 04APR2013	Sample time: 0805	DTW at sample: 14.62
Sample ID: 6392	Lab: Energy Labs	Number of bottles: (2)
Analysis: 500 ml NP poly - Alkalinity, Cl, SO4, TDS, EC, pH 250 ml HNO3 poly *field filtered - Dissolved Metals		
Equipment blank ID @	Field blank ID @	
Duplicate ID:	Pre-purge DO:	Post purge DO:
$Fe2^{+}$:	Pre-purge ORP:	Post purge ORP:
NAPL depth:	Volume of NAPL:	Volume removed: ml

Purging And Sampling Data Sheet

Job#: 1350.15	**Sampler:** J Kerns B Myers	**Client:** Montgomery & Associates
Well ID: MW-100	**Date** (DDOct2012): 04APR2013	**Site:** Rio Algom Mining, Lisbon, UT
Weather Conditions: Clear Sky - Chilly	**Sampler Signature:**	
Well diam: 1/4" 1" 2" 3" (4") 6" Other:	**DTW:** 146.90 **Total Depth:** 203	
Purge equip: ES - diam: Bladder Peri Waterra Positive Air Displacement Ext. System disp bailer teflon bailer other: (HS)	**Tubing:** OD: New Dedicated (NA)	
Purge method: 3-5 Case Volume Micro/Low-Flow Extraction (Other:)		
Pump depth/ intake: 176.9	**Multipliers:** 1"= 0.04 2"= 0.16 3"= 0.37 4"= 0.65 5"=1.02 6"= 1.47 Radius² X 0.163	
(TD - DTW X Multiplier = 1 Volume 176.9	80% Recovery (TD - DTW X 0.20 + DTW)	

1 Volume = _____ X _____ = _____ (Total Purge) 80%=_____

Time	Temp (°C/ °F)	pH	SP Cond (mS (µS))	Turbidity (NTU)	Purge Rate (gal or mL/ min)	Volume Removed (gal / L)	DO (mg/l)	ORP (mv)	DTW	Notes
0845	10.9	7.1	873	3.1	—	—	1.64	126.8	146.90	

Did well dewater? YES (NO) Total volume removed: — (gal / L)

Sample method: Disp Bailer (Hydrasleeve) New Tubing Ext. Port Other:

Sample date: 04APR2013	Sample time: 0845	DTW at sample: 146.90
Sample ID: 63933	Lab: Energy Labs	Number of bottles: (2)
Analysis: 500 ml NP poly - Alkalinity, Cl, SO4, TDS, EC, pH	250 ml HNO3 poly *field filtered - Dissolved Metals	
Equipment blank ID @	Field blank ID @	
Duplicate ID:	Pre-purge DO:	Post purge DO:
$Fe2^{+}$:	Pre-purge ORP:	Post purge ORP:
NAPL depth:	Volume of NAPL:	Volume removed: ml

Purging And Sampling Data Sheet

Job#: 1350.15	**Sampler:** J Kerns B Myers	**Client:** Montgomery & Associates
Well ID: MW-100	**Date** (DDOct2012): 04APR2013	**Site:** Rio Algom Mining, Lisbon, UT
Weather Conditions: Clear Sky		**Sampler Signature:**
Well diam: 1/4" 1" 2" 3" (4") 6" Other:		**DTW:** 146.90 **Total Depth:** 203
Purge equip: (ES - diam:) Bladder Peri Waterra Positive Air Displacement Ext. System		
disp bailer teflon bailer other:	**Tubing:** OD: New (Dedicated) NA	
Purge method: 3-5 Case Volume (Micro/Low-Flow) Extraction Other:		
Pump depth/ intake: 174 -	**Multipliers:** 1"= 0.04 2"= 0.16 3"= 0.37 4"= 0.65 5"=1.02 6"= 1.47 Radius² X 0.163	
(TD - DTW X Multiplier = 1 Volume	80% Recovery (TD - DTW X 0.20 + DTW)	

1 Volume = _____ X _____ = _____ (Total Purge) 80%=_____

Time	Temp (°C) °F)	pH	SP Cond (mS /µS))	Turbidity (NTU)	Purge Rate (gal or (L) min)	Volume Removed (gal /(L))	DO (mg/l)	ORP (mv)	DTW	Notes
0858	11.0	7.0	810	2.1	400	1.0	1.40	117.1	147.15	
0901	11.0	7.0	800	3.3	400	2.2	1.39	115.4	147.15	
0904	11.2	7.0	822	1.9	400	3.4	1.44	107.0	147.15	
0907	11.5	7.0	813	1.5	400	4.6	1.46	96.5	147.18	
0910	11.8	7.0	815	1.3	400	5.8	1.46	75.6	147.17	
0913	12.4	7.0	824	1.1	400	7.0	1.40	61.5	147.17	
0916	12.8	7.0	823	0.5	400	8.2	1.39	57.1	147.17	
0919	13.0	7.0	824	0.9	400	9.4	1.37	53.3	147.17	
0922	13.0	7.0	825	1.0	400	10.6	1.37	51.0	147.17	

Did well dewater? YES (NO)	Total volume removed: 10.6 (gal /(L))	
Sample method: Disp Bailer Hydrasleeve New Tubing Ext. Port Other: Dedicated Tubing		
Sample date: 04APR2013	Sample time: 0925	DTW at sample: 147.17
Sample ID: 6394	Lab: Energy Labs	Number of bottles: (2)
Analysis: 500 ml NP poly - Alkalinity, Cl, SO4, TDS, EC, pH 250 ml HNO3 poly *field filtered - Dissolved Metals		
Equipment blank ID @	Field blank ID @	
Duplicate ID:	Pre-purge DO:	Post purge DO:
$Fe2^+$:	Pre-purge ORP:	Post purge ORP:
NAPL depth:	Volume of NAPL:	Volume removed: ml

Purging And Sampling Data Sheet

Job#: 1350.15	**Sampler:** J Kerns B Myers	**Client:** Montgomery & Associates
Well ID: MW-100	**Date** (DDOct2012): 04APR2013	**Site:** Rio Algom Mining, Lisbon, UT
Weather Conditions: Clear Sky	**Sampler Signature:**	
Well diam: 1/4" 1" 2" 3" (4") 6" Other:	**DTW:** 147.17 **Total Depth:** 207 -	
Purge equip: (ES - diam) Bladder Peri Waterra Positive Air Displacement Ext. System		
disp bailer teflon bailer other:	**Tubing:** OD: New (Dedicated) NA	
Purge method: (3-5 Case Volume) Micro/Low-Flow Extraction Other:		
Pump depth/ intake: 174 -	**Multipliers:** 1"= 0.04 2"= 0.16 3"= 0.37 4"= 0.65 5"=1.02 6"= 1.47 Radius² X 0.163	
(TD - DTW X Multiplier = 1 Volume	80% Recovery (TD - DTW X 0.20 + DTW)	

1 Volume = 36.3 X 3 = 109 (Total Purge) 80%= 158.34

Time	Temp (°C/ °F)	pH	SP Cond (mS / (uS))	Turbidity (NTU)	Purge Rate (gal or mL/ min)	Volume Removed (gal/ L)	DO (mg/l)	ORP (mv)	DTW	Notes
0945	12.7	7.0	821	2.7	2.0	37	1.32	73.7	149.25	
1003	12.6	7.0	814	0.3	2.0	74	1.43	73.3	149.39	
1021	12.5	7.1	812	0.5	2.0	109	1.47	71.6	149.50	

Did well dewater? YES (NO)	Total volume removed: (gal) L)
Sample method: Disp Bailer Hydrasleeve New Tubing Ext. Port Other: Dedicated Tubing	
Sample date: 04APR2013 Sample time: 1025	DTW at sample:
Sample ID: 6395 Lab: Energy Labs	Number of bottles: (2) +(2)
Analysis: 500 ml NP poly - Alkalinity, Cl, SO4, TDS, EC, pH 250 ml HNO3 poly *field filtered - Dissolved Metals	
Equipment blank ID @	Field blank ID @
Duplicate ID: 6396 @ 1030	Pre-purge DO: Post purge DO:
$Fe2^+$:	Pre-purge ORP: Post purge ORP:
NAPL depth: Volume of NAPL:	Volume removed: ml

Purging And Sampling Data Sheet

Job#: 1350.15	**Sampler:** J Kerns B Myers	**Client:** Montgomery & Associates
Well ID: MW-101	**Date** (DDOct2012): 04APR2013	**Site:** Rio Algom Mining, Lisbon, UT
Weather Conditions: Warm Blue Sky	**Sampler Signature:**	
Well diam: 1/4" 1" 2" 3" (4") 6" Other:	**DTW:** 150.70 **Total Depth:** 159	
Purge equip: ES - diam: Bladder Peri Waterra Positive Air Displacement Ext. System disp bailer teflon bailer other: (HS)	**Tubing:** OD: New Dedicated (NA)	
Purge method: 3-5 Case Volume Micro/Low-Flow Extraction Other:		
Pump depth/ intake: 156.5	**Multipliers:** 1"= 0.04 2"= 0.16 3"= 0.37 4"= 0.65 5"=1.02 6"= 1.47 Radius² X 0.163	
(TD - DTW X Multiplier = 1 Volume	80% Recovery (TD - DTW X 0.20 + DTW)	

1 Volume = _____ X _____ = _____ (Total Purge) 80%=_____

Time	Temp (°C / °F)	~~SC~~ pH	SP Cond (mS / µS)	Turbidity (NTU)	Purge Rate (gal or mL/ min)	Volume Removed (gal / L)	DO (mg/l)	ORP (mv)	DTW	Notes
1100	16.2	6.9	16370	11	—	—	3.90	117.0	150.70	

Did well dewater? YES (NO)		Total volume removed: — (gal / L)	
Sample method: Disp Bailer (Hydrasleeve)		New Tubing Ext. Port Other:	
Sample date: 04APR2013	Sample time: 1100	DTW at sample: 150.70	
Sample ID: 6397	Lab: Energy Labs + ACZ	Number of bottles: (2) + (3)	
Analysis: 500 ml NP poly - Alkalinity, Cl, SO4, TDS, EC, pH 250 ml HNO3 poly *field filtered - Dissolved Metals			
Equipment blank ID @		Field blank ID @	
Duplicate ID: 6398 @ 1105		Pre-purge DO:	Post purge DO:
$Fe2^+$:		Pre-purge ORP:	Post purge ORP:
NAPL depth:	Volume of NAPL:	Volume removed:	ml

Purging And Sampling Data Sheet

Job#: 1350.15	**Sampler:** J Kerns B Myers	**Client:** Montgomery & Associates
Well ID: MW-101	**Date** (DDOct2012): 04APR2013	**Site:** Rio Algom Mining, Lisbon, UT
Weather Conditions: Warm - Blue Sky	**Sampler Signature:**	
Well diam: 1/4" 1" 2" 3" (4") 6" Other:	**DTW:** 150.70 **Total Depth:** 159 –	
Purge equip: (ES - diam:) Bladder Peri Waterra Positive Air Displacement Ext. System		
disp bailer teflon bailer other:	**Tubing:** OD: New (Dedicated) NA	
Purge method: 3-5 Case Volume (Micro/Low-Flow) Extraction Other:		
Pump depth/ intake: 158	**Multipliers:** 1"= 0.04 2"= 0.16 3"= 0.37 4"= 0.65 5"=1.02 6"= 1.47 Radius² X 0.163	
(TD - DTW X Multiplier = 1 Volume	80% Recovery (TD - DTW X 0.20 + DTW)	

1 Volume = _____ X _____ = _____ (Total Purge) 80%= _____

Time	Temp (°C) / °F)	pH	SP Cond (mS / (µS))	Turbidity (NTU)	Purge Rate (gal or (mL) min)	Volume Removed (gal / (L))	DO (mg/l)	ORP (mv)	DTW	Notes
1135	12.9	7.1	16708	13	200	1.0	3.83	103.2	151.18	
1138	12.7	8.8	16678	9	200	1.6	4.03	100.0	151.11	
1141	12.6	8.5	16707	11	200	2.2	3.63	91.0	151.11	
1144	13.3	8.3	16698	8	200	2.8	3.80	81.3	151.09	
1147	13.7	7.2	16710	5	200	3.4	3.73	69.8	151.09	
1150	14.1	8.3	16732	7	200	4.0	3.74	61.4	151.09	
1153	14.5	7.2	16636	6	200	4.6	3.64	57.4	151.09	
1156	16.2	8.5	16672	3	200	5.2	3.96	41.7	151.09	
1159	17.7	8.0	16700	4	200	5.8	3.79	34.9	151.09	
1202	17.8	8.0	16740	5	200	6.4	3.70	31.3	151.09	
1205	17.8	8.0	16758	5	200	7.0	3.72	33.2	151.09	

Did well dewater? YES (NO) Total volume removed: 7.0 (gal (L))

Sample method: Disp Bailer Hydrasleeve New Tubing Ext. Port Other: Dedicated Tubing

Sample date: 04APR2013	Sample time: 1210	DTW at sample: 151.09
Sample ID: 6399	Lab: Energy Labs + ACZ	Number of bottles: (2) + (3)
Analysis: 500 ml NP poly - Alkalinity, Cl, SO4, TDS, EC, pH 250 ml HNO3 poly *field filtered - Dissolved Metals		
Equipment blank ID @	Field blank ID @	
Duplicate ID: 6400 @ 1215	Pre-purge DO:	Post purge DO:
$Fe2^+$:	Pre-purge ORP:	Post purge ORP:
NAPL depth:	Volume of NAPL:	Volume removed: ml

Purging And Sampling Data Sheet

Job#: 1350.15	**Sampler:** J Kerns B Myers	**Client:** Montgomery & Associates
Well ID: MW-101	**Date** (DDOct2012): 04APR2013	**Site:** Rio Algom Mining, Lisbon, UT
Weather Conditions: Warm - Blue Sky	**Sampler Signature:**	
Well diam: 1/4" 1" 2" 3" (4") 6" Other:	**DTW:** 151.09 **Total Depth:** 159 —	
Purge equip: (ES - diam:) Bladder Peri Waterra Positive Air Displacement Ext. System		
disp bailer teflon bailer other:	**Tubing:** OD: New (Dedicated) NA	
Purge method: (3-5 Case Volume) Micro/Low-Flow Extraction Other:		
Pump depth/ intake: 158	**Multipliers:** 1"= 0.04 2"= 0.16 3"= 0.37 4"= 0.65 5"=1.02 6"= 1.47 Radius² X 0.163	
(TD - DTW X Multiplier = 1 Volume	80% Recovery (TD - DTW X 0.20 + DTW)	

1 Volume = 5 X 3 = 15 (Total Purge) 80%= 152.67

Time	Temp (°C) °F)	pH	SP Cond (mS (µS))	Turbidity (NTU)	Purge Rate (gal or mL/ min)	Volume Removed (gal / L)	DO (mg/l)	ORP (mv)	DTW	Notes
1229	18.8	7.3	16812	29	Ø.5	5	4.02	48.7	152.19	
1239	16.1	7.8	16796	32	Ø.5	10	4.16	56.1	152.55	
1249	16.1	7.9	16745	37	Ø.5	15	4.19	58.1	152.55	

Did well dewater? YES (NO) Total volume removed: 15 (gal / L)

Sample method: Disp Bailer Hydrasleeve New Tubing Ext. Port Other: Dedicated Tubing

Sample date: 04APR2013	Sample time: 1250	DTW at sample: 152.55
Sample ID: 6401	Lab: Energy Labs + ACZ	Number of bottles (2) + (3)

Analysis: 500 ml NP poly - Alkalinity, Cl, SO4, TDS, EC, pH 250 ml HNO3 poly *field filtered - Dissolved Metals

Equipment blank ID 6403 @ 1300	Field blank ID @	
Duplicate ID: 6402 @ 1255	Pre-purge DO:	Post purge DO:
$Fe2^+$:	Pre-purge ORP:	Post purge ORP:
NAPL depth:	Volume of NAPL:	Volume removed: ml

Purging And Sampling Data Sheet

Job#: 1350.15	**Sampler:** J Kerns B Myers	**Client:** Montgomery & Associates
Well ID: MW-102	**Date** (DDOct2012): 03APR2013	**Site:** Rio Algom Mining, Lisbon, UT
Weather Conditions: Cold - Blue Sky	**Sampler Signature:**	
Well diam: 1/4" 1" 2" 3" (4") 6" Other:	**DTW:** 125.62 **Total Depth:** 136	
Purge equip: ES - diam: Bladder Peri Waterra Positive Air Displacement Ext. System		
disp bailer teflon bailer other: (HS) **Tubing:** OD: New Dedicated (NA)		
Purge method: 3-5 Case Volume Micro/Low-Flow Extraction Other:		
Pump depth/ intake: 132.5 **Multipliers:** 1"= 0.04 2"= 0.16 3"= 0.37 4"= 0.65 5"=1.02 6"= 1.47 Radius² X 0.163		
(TD - DTW X Multiplier = 1 Volume	80% Recovery (TD - DTW X 0.20 + DTW)	

1 Volume = — X — = — (Total Purge) 80%= —

Time	Temp (C) °F)	pH	SP Cond (mS / µS)	Turbidity (NTU)	Purge Rate (gal or mL/ min)	Volume Removed (gal / L)	DO (mg/l)	ORP (mv)	DTW	Notes
0810	9.0	8.0	18033	23	—	—	0.17	-130.8	125.62	Dark Tint (Fine color)

Did well dewater? YES (NO) Total volume removed: — (gal / L)

Sample method: Disp Bailer (Hydrasleeve) New Tubing Ext. Port Other:

Sample date: 03APR2013 Sample time: 0810 DTW at sample: 125.62

Sample ID: ~~MW~~-r 6320 Lab: Energy Labs Number of bottles: (2)

Analysis: 500 ml NP poly - Alkalinity, Cl, SO4, TDS, EC, pH 250 ml HNO3 poly *field filtered - Dissolved Metals

Equipment blank ID @	Field blank ID @	
Duplicate ID:	Pre-purge DO:	Post purge DO:
$Fe2^+$:	Pre-purge ORP:	Post purge ORP:
NAPL depth:	Volume of NAPL:	Volume removed: ml

Purging And Sampling Data Sheet

Job#: 1350.15	**Sampler:** J Kerns B Myers	**Client:** Montgomery & Associates
Well ID: MW-102	**Date** (DDOct2012): 03APR2013	**Site:** Rio Algom Mining, Lisbon, UT
Weather Conditions: Cold - Blue sky	**Sampler Signature:**	
Well diam: 1/4" 1" 2" 3" (4") 6" Other:	**DTW:** 125.62 **Total Depth:** 136 -	
Purge equip: (ES - diam:) Bladder Peri Waterra Positive Air Displacement Ext. System		
disp bailer teflon bailer other:	**Tubing:** OD: New (Dedicated) NA	
Purge method: 3-5 Case Volume (Micro/Low-Flow) Extraction Other:		
Pump depth/ intake: 130	**Multipliers:** 1"= 0.04 2"= 0.16 3"= 0.37 4"= 0.65 5"=1.02 6"= 1.47 Radius² X 0.163	
(TD - DTW X Multiplier = 1 Volume	80% Recovery (TD - DTW X 0.20 + DTW)	

1 Volume = — X — = — (Total Purge) 80%= —

Time	Temp (°C / °F)	pH	SP Cond (mS / µS)	Turbidity (NTU)	Purge Rate (gal or mL/min)	Volume Removed (gal / L)	DO (mg/l)	ORP (mv)	DTW	Notes
0850	9.5	9.1	18753	37	300	1.0	0.05	-151.2	125.35	
0853	9.7	8.8	19091	29	300	1.9	0.43	-208.2	125.85	
0856	10.4	8.7	18969	23	300	2.8	0.34	-207.5	126.39	
0859	11.1	8.5	19705	15	300	3.7	0.34	-231.5	126.51	
0902	12.0	8.4	18506	33	300	4.6	0.29	-237.3	126.51	
0905	14.2	8.3	19301	29	300	5.5	0.31	-228.9	126.51	
0908	14.9	8.3	18514	27	300	6.4	0.30	-247.7	126.51	
0911	15.5	8.3	18612	25	300	7.3	0.30	-256.3	126.51	
0914	15.5	8.3	18725	29	300	8.2	0.30	-260.3	126.51	
0917	15.5	8.2	18687	32	300	9.1	0.30	-259.2	126.51	
0920	15.5	8.2	18731	28	300	10.0	0.30	-262.2	126.51	

Did well dewater? YES (NO) Total volume removed: 10.0 (gal / (L))

Sample method: Disp Bailer Hydrasleeve New Tubing Ext. Port Other: Dedicated

Sample date: 03APR2013	Sample time: 0925	DTW at sample: 126.51
Sample ID: 6371	Lab: Energy Labs	Number of bottles: 2 (+2)
Analysis: 500 ml NP poly - Alkalinity, Cl, SO4, TDS, EC, pH 250 ml HNO3 poly *field filtered - Dissolved Metals		
Equipment blank ID @	Field blank ID @	
Duplicate ID: 6372 @ 0930	Pre-purge DO:	Post purge DO:
$Fe2^+$:	Pre-purge ORP:	Post purge ORP:
NAPL depth:	Volume of NAPL:	Volume removed: ml

Purging And Sampling Data Sheet

Job#: 1350.15	**Sampler:** J Kerns B Myers	**Client:** Montgomery & Associates
Well ID: MW-102	**Date** (DDOct2012): 03APR2013	**Site:** Rio Algom Mining, Lisbon, UT
Weather Conditions: Cold - Blue Sky	**Sampler Signature:**	
Well diam: 1/4" 1" 2" 3" (4") 6" Other:	**DTW:** 125.62 **Total Depth:** 136 –	
Purge equip: (ES - diam:) Bladder Peri Waterra Positive Air Displacement Ext. System		
disp bailer teflon bailer other:	**Tubing:** OD: New (Dedicated) NA	
Purge method: (3-5 Case Volume) Micro/Low-Flow Extraction Other:		
Pump depth/ intake: 134	**Multipliers:** 1"= 0.04 2"= 0.16 3"= 0.37 4"= 0.65 5"=1.02 6"= 1.47 Radius² X 0.163	
(TD - DTW X Multiplier = 1 Volume	80% Recovery (TD - DTW X 0.20 + DTW)	

1 Volume = 6.7 X 3 = 20.5 (Total Purge) 80%= 129.70

Time	Temp (°C/ °F)	pH	Cond (mS (µS))	Turbidity (NTU)	Purge Rate (gal or mL/ min)	Volume Removed (gal/ L)	DO (mg/l)	ORP (mv)	DTW	Notes
0950	14.5	8.2	18840	32	Ø.5	7.0	Ø.01	-215.1	129.50	
1005	13.0	8.3	18164	27	Ø.5	14.0	Ø.01	-200.2	130.61	
1018	13.0	8.3	18814	28	Ø.5	20.5	Ø.01	-199.3	131.31	
Not @ 80% - wait to Collect Sample										

Did well dewater? YES (NO)	Total volume removed: 20.5 (gal/ L)		
Sample method: Disp Bailer Hydrasleeve New Tubing Ext. Port Other: dedicated Tubing			
Sample date: 03APR2013	Sample time: 1025	DTW at sample: 129.20	
Sample ID: 6373	Lab: Energy Labs	Number of bottles: (2) + 2	
Analysis: 500 ml NP poly - Alkalinity, Cl, SO4, TDS, EC, pH 250 ml HNO3 poly *field filtered - Dissolved Metals			
Equipment blank ID 6374@ 1030	Field blank ID @		
Duplicate ID:	Pre-purge DO:	Post purge DO:	
$Fe2^+$:	Pre-purge ORP:	Post purge ORP:	
NAPL depth:	Volume of NAPL:	Volume removed: ml	

Field Notes

Job Number: 1350.15 Date: 4-3-13 Client: Montgomery & Assoc

Site: Rio Algom Mine - Lisbon - UT

- Water levels @ MW-102DB ; collected during purge @ MW-102

Time	DTW	Time	DTW
0933	123.92	0950	123.92
0934	123.92	0952	123.90
0935	123.92	0954	123.89
0936	123.92	0956	123.89
0937	123.92	0958	123.89
0938	123.92	1000	123.90
0939	123.92	1002	123.90
0940	123.92	1004	123.90
0941	123.92	1006	123.90
0942	123.92	1011	123.89
0943	123.92	1016	123.89
0944	123.92	1021	123.89
0945	123.92		
0946	123.92		
0947	123.92		
0948	123.92		

Purging And Sampling Data Sheet

Job#: 1350.15	**Sampler:** J Kerns B Myers	**Client:** Montgomery & Associates
Well ID: MW-102-08	**Date** (DDOct2012): 02APR2013	**Site:** Rio Algom Mining, Lisbon, UT
Weather Conditions: Cool - Blue Sky	**Sampler Signature:**	
Well diam: 1/4" 1" 2" 3" 4" 6" Other:	**DTW:** 120.45 **Total Depth:** 175.00	
Purge equip: ES - diam: Bladder Peri Waterra Positive Air Displacement Ext. System		
disp bailer teflon bailer other: (HS) **Tubing:** OD: New Dedicated (NA)		
Purge method: 3-5 Case Volume Micro/Low-Flow Extraction Other:		
Pump depth/ intake:	**Multipliers:** 1"= 0.04 2"= 0.16 3"= 0.37 4"= 0.65 5"=1.02 6"= 1.47 Radius² X 0.163	
(TD - DTW X Multiplier = 1 Volume	80% Recovery (TD - DTW X 0.20 + DTW)	

1 Volume = _____ X _____ = _____ (Total Purge) 80%= _____

Time	Temp (°C / °F)	pH	SP Cond (mS µS)	Turbidity (NTU)	Purge Rate (gal or mL/ min)	Volume Removed (gal / L)	DO (mg/l)	ORP (mv)	DTW	Notes
0820	12.9	8.4	923	3.5	—	—	0.72	-122.8	120.45	

Did well dewater? YES (NO) Total volume removed: — (gal / L)

Sample method: Disp Bailer (Hydrasleeve) New Tubing Ext. Port Other:

Sample date: 02APR2013 Sample time: 0820 DTW at sample: 120.45

Sample ID: 6314 Lab: Energy Labs Number of bottles: (2)

Analysis: 500 ml NP poly - Alkalinity, Cl, SO4, TDS, EC, pH 250 ml HNO3 poly *field filtered - Dissolved Metals

Equipment blank ID @ Field blank ID @

Duplicate ID: Pre-purge DO: Post purge DO:

$Fe2^{+}$: Pre-purge ORP: Post purge ORP:

NAPL depth: Volume of NAPL: Volume removed: ml

Purging And Sampling Data Sheet

Job#: 1350.15	**Sampler:** J Kerns B Myers	**Client:** Montgomery & Associates
Well ID: MW-102 DS	**Date** (DDOct2012): 02APR2013	**Site:** Rio Algom Mining, Lisbon, UT
Weather Conditions: Sunny - Warm	**Sampler Signature:**	
Well diam: 1/4" 1" 2" 3" (4") 6" Other:	**DTW:** 120.45 **Total Depth:** 175.00	
Purge equip: (ES - diam: 2") Bladder Peri Waterra Positive Air Displacement Ext. System		
disp bailer teflon bailer other:	**Tubing:** OD: New (Dedicated) NA	
Purge method: 3-5 Case Volume (Micro/Low-Flow) Extraction Other:		
Pump depth/ intake: 160	**Multipliers:** 1"= 0.04 2"= 0.16 3"= 0.37 4"= 0.65 5"=1.02 6"= 1.47 Radius² X 0.163	
(TD - DTW X Multiplier = 1 Volume	80% Recovery (TD - DTW X 0.20 + DTW)	

1 Volume = ___ X ___ = ___ (Total Purge) 80%= ___

Time	Temp (°C °F)	pH	SP Cond (mS (µS))	Turbidity (NTU)	Purge Rate (gal or (mL) min)	Volume Removed (gal (L))	DO (mg/l)	ORP (mv)	DTW	Notes
0853	10.4	8.8	900	3.2	400	1.0	Ø.38	-151.6	120.33	
0856	10.6	8.9	921	2.3	400	2.2	Ø.18	-165.3	121.14	
0859	10.8	8.9	929	4.2	400	3.4	Ø.14	-172.4	121.14	
0902	10.9	8.9	919	3.1	400	4.6	Ø.11	-178.2	121.14	
0905	11.1	9.0	912	3.5	400	5.8	Ø.10	-173.8	121.14	
0908	11.1	8.7	896	3.9	400	7.0	Ø.08	-176.3	121.14	
0911	11.1	8.7	892	3.6	400	8.2	Ø.08	-174.2	121.14	
0914	11.1	8.7	880	3.6	400	9.4	Ø.08	-174.5	121.14	
0917	11.1	8.7	878	3.9	400	10.6	Ø.06	-180.6	121.14	
0920	11.1	8.7	875	3.7	400	12.8	Ø.06	-175.5	121.14	
0923	11.1	8.7	874	3.6	400	14.0	Ø.06	-175.9	121.14	

Did well dewater? YES (NO) Total volume removed: 14.0 (gal (L))

Sample method: Disp Bailer Hydrasleeve New Tubing Ext. Port Other: Dedicated Tubing

Sample date: 02APR2013	Sample time: 0925	DTW at sample: 121.14
Sample ID: 6315	Lab: Energy Labs	Number of bottles: 2

Analysis: 500 ml NP poly - Alkalinity, Cl, SO4, TDS, EC, pH 250 ml HNO3 poly *field filtered - Dissolved Metals

Equipment blank ID @	Field blank ID @	
Duplicate ID:	Pre-purge DO:	Post purge DO:
$Fe2^+$:	Pre-purge ORP:	Post purge ORP:
NAPL depth:	Volume of NAPL:	Volume removed: ml

Purging And Sampling Data Sheet

Job#: 1350.15	**Sampler:** J Kerns B Myers	**Client:** Montgomery & Associates
Well ID: MW-102DD	**Date** (DDOct2012): 02APR2013	**Site:** Rio Algom Mining, Lisbon, UT
Weather Conditions: Sunny - warm	**Sampler Signature:**	
Well diam: 1/4" 1" 2" 3" (4") 6" Other:	**DTW:** 121.14 **Total Depth:** 175.00	
Purge equip: (ES - diam:) Bladder Peri Waterra Positive Air Displacement Ext. System		
disp bailer teflon bailer other:	**Tubing:** OD: New (Dedicated) NA	
Purge method: (3-5 Case Volume) Micro/Low-Flow Extraction Other:		
Pump depth/ intake: 160	**Multipliers:** 1"= 0.04 2"= 0.16 3"= 0.37 4"= 0.65 5"=1.02 6"= 1.47 Radius² X 0.163	
(TD - DTW X Multiplier = 1 Volume	80% Recovery (TD - DTW X 0.20 + DTW)	

1 Volume = 35 X 3 = 105 (Total Purge) 80%= 131.91

Time	Temp (C) °F	pH	SP Cond (mS / µS)	Turbidity (NTU)	Purge Rate (gal or mL/ min)	Volume Removed (gal / L)	DO (mg/l)	ORP (mv)	DTW	Notes
0958	12.5	8.8	780	7.3	2.0	35	0.06	-171.2	130.11	
1015	12.2	8.2	772	5.3	2.0	70	0.43	-167.9	136.60	
1032	12.4	8.6	772	4.9	2.0	105	0.41	-165.9	138.50	
—	Wait for 80% Recharge									
1045	—	—	—	—	—	—	—	—	131.50	

Did well dewater? YES (NO) Total volume removed: 105 (gal / L)

Sample method: Disp Bailer Hydrasleeve New Tubing Ext. Port Other: Dedicated Tubing

Sample date: 02APR2013	Sample time: 1045	DTW at sample: 131.50
Sample ID: 6316	Lab: Energy Labs	Number of bottles: 2 +7
Analysis: 500 ml NP poly - Alkalinity, Cl, SO4, TDS, EC, pH 250 ml HNO3 poly *field filtered - Dissolved Metals		
Equipment blank ID @	Field blank ID @	
* Duplicate ID: 6317 @ 1050	Pre-purge DO:	Post purge DO:
$Fe2^+$:	Pre-purge ORP:	Post purge ORP:
NAPL depth:	Volume of NAPL:	Volume removed: ml

Field Notes

Job Number: 1350.15 Date: 02 APR 2013 Client: Montgomery & Assoc.

Site: Rio Algom Mine - Lisbon - UT

- Water levels @ MW-102 : Collected during purge @ MW-102OB

Time	DTW	Time	DTW
0940	125.10	0957	125.10
0941	125.10	0959	125.10
0942	125.10	1001	125.10
0943	125.10	1003	125.10
0944	125.10	1005	125.10
0945	125.10	1007	125.60
0946	125.10	1009	125.10
0947	125.10	1011	125.10
0948	125.10	1013	125.10
0949	125.10	1015	125.10
0950	125.10	1017	125.10
0951	125.10	1019	125.10
0952	125.10	1021	125.10
0953	125.10	1023	125.10
0954	125.10	1025	125.10
0955	125.10	1030	125.10

Purging And Sampling Data Sheet

Job#: 1350.15	**Sampler:** J Kerns B Myers	**Client:** Montgomery & Associates
Well ID: MW-103	**Date** (DDOct2012): 03APR2013	**Site:** Rio Algom Mining, Lisbon, UT
Weather Conditions: Warm - Blue Sky	**Sampler Signature:**	
Well diam: 1/4" 1" 2" 3" (4") 6" Other:	**DTW:** 83.05 **Total Depth:** 111.5	
Purge equip: ES - diam: Bladder Peri Waterra Positive Air Displacement Ext. System		
disp bailer teflon bailer other: (HS) **Tubing:** OD: New Dedicated (NA)		
Purge method: 3-5 Case Volume Micro/Low-Flow Extraction Other: HS		
Pump depth/ intake: 99.3	**Multipliers:** 1"= 0.04 2"= 0.16 3"= 0.37 4"= 0.65 5"=1.02 6"= 1.47 Radius^2 X 0.163	
(TD - DTW X Multiplier = 1 Volume	80% Recovery (TD - DTW X 0.20 + DTW)	

1 Volume = ____ X ____ = ____ (Total Purge) 80%= ____

Time	Temp (°C) °F)	pH	SP Cond (mS µS)	Turbidity (NTU)	Purge Rate (gal or mL/ min)	Volume Removed (gal / L)	DO (mg/l)	ORP (mv)	DTW	Notes
—	Pulled HS - Top of				HS	broke away		from body of		
	HS. Had to retrieve HS w/ retrieval tool.									
—	Re-hung HS on 03Apr2013 @									
0835	Well	6.5	3904	7	—		1.1	129	—	

Did well dewater? YES (NO) Total volume removed: — (gal / L)

Sample method: Disp Bailer (Hydrasleeve) New Tubing Ext. Port Other:

Sample date: ~~03APR2013~~ 03APR2013 Sample time: ~~HS~~ 0835 DTW at sample: —

Sample ID: 6375 Lab: Energy Labs Number of bottles: 2 + 2

Analysis: 500 ml NP poly - Alkalinity, Cl, SO4, TDS, EC, pH 250 ml HNO3 poly *field filtered - Dissolved Metals

Equipment blank ID @	Field blank ID @	
Duplicate ID: 6376 @ 0840 HHDK	Pre-purge DO:	Post purge DO:
$Fe2^+$:	Pre-purge ORP:	Post purge ORP:
NAPL depth:	Volume of NAPL:	Volume removed: ml

Purging And Sampling Data Sheet

Job#: 1350.15	**Sampler:** J Kerns B Myers	**Client:** Montgomery & Associates
Well ID: MW-109	**Date** (DDOct2012): 05APR2013	**Site:** Rio Algom Mining, Lisbon, UT
Weather Conditions: Cool - Clear Sky		**Sampler Signature:**
Well diam: 1/4" 1" 2" 3" (4") 6" Other:		**DTW:** 83.05 **Total Depth:** 111.5
Purge equip: (ES - diam:) Bladder Peri Waterra Positive Air Displacement Ext. System		
disp bailer teflon bailer other:	**Tubing:** OD: New (Dedicated) NA	
Purge method: 3-5 Case Volume (Micro/Low-Flow) Extraction Other:		
Pump depth/ intake: 97 -	**Multipliers:** 1"= 0.04 2"= 0.16 3"= 0.37 4"= 0.65 5"=1.02 6"= 1.47 Radius² X 0.163	
(TD - DTW X Multiplier = 1 Volume	80% Recovery (TD - DTW X 0.20 + DTW)	

1 Volume = ____ X ____ = ____ (Total Purge) 80%= ____

Time	Temp (C / °F)	pH	SP Cond (mS / uS)	Turbidity (NTU)	Purge Rate (gal or (ml) / min)	Volume Removed (gal / (L))	DO (mg/l)	ORP (mv)	DTW	Notes
0842	10.9	6.2	6586	243	300	1.0	Ø.03	-23.7	84.02	
0845	10.8	6.9	6575	391	300	1.9	Ø.02	-37.6	84.05	
0848	10.8	7.0	6592	139	300	2.8	Ø.02 ✓✓	-35.7	84.05	re-checked calibration
0851	10.6	7.0	6479	58	300	3.7	Ø.13	-36.3	84.10	
0854	10.6	7.0	6494	32	300	4.6	Ø.09	-41.2	84.11	
0857	10.6	7.0	6483	31	300	5.4	Ø.05	-42.4	84.12	
0900	10.6	7.0	6449	27	300	6.3	Ø.04	-41.8	84.19	
0903	10.6	7.0	6451	29	300	(6.3) 7.2	Ø.05	-40.8	84.19	
0906	10.7	7.0	6436	21	300	8.1	Ø.05	-38.9	84.21	
0909	10.8	7.0	6432	17	300	9.0	Ø.06	-35.7	84.23	
0912	10.8	7.0	6429	15	300	9.9	Ø.06	-34.4	84.21	

Did well dewater? YES (NO) Total volume removed: 9.9 (gal / (L))

Sample method: Disp Bailer Hydrasleeve New Tubing Ext. Port Other: Dedicated

Sample date: 05APR2013	Sample time: 0915	DTW at sample: 84.21
Sample ID: 6404	Lab: Energy Labs	Number of bottles: 2
Analysis: 500 ml NP poly - Alkalinity, Cl, SO4, TDS, EC, pH	250 ml HNO3 poly *field filtered - Dissolved Metals	
Equipment blank ID @	Field blank ID @	
Duplicate ID:	Pre-purge DO:	Post purge DO:
$Fe2^{+}$:	Pre-purge ORP:	Post purge ORP:
NAPL depth:	Volume of NAPL:	Volume removed: ml

Purging And Sampling Data Sheet

Job#: 1350.15	**Sampler:** J Kerns B Myers	**Client:** Montgomery & Associates
Well ID: MW-103	**Date** (DDOct2012): 05APR2017	**Site:** Rio Algom Mining, Lisbon, UT
Weather Conditions: Cool - Clear Sky	**Sampler Signature:**	
Well diam: 1/4" 1" 2" 3" (4") 6" Other:	**DTW:** 84.21 **Total Depth:** 111.5	
Purge equip: (ES - diam:) Bladder Peri Waterra Positive Air Displacement Ext. System		
disp bailer teflon bailer other:	**Tubing:** OD: New (Dedicated) NA	
Purge method: (3-5 Case Volume) Micro/Low-Flow Extraction Other:		
Pump depth/ intake: 110	**Multipliers:** 1"= 0.04 2"= 0.16 3"= 0.37 4"= 0.65 5"=1.02 6"= 1.47 Radius² X 0.163	
(TD - DTW X Multiplier = 1 Volume	80% Recovery (TD - DTW X 0.20 + DTW)	

1 Volume = 17.5 X 3 = 52.5 (Total Purge) 80%= 88.74

Time	Temp (°C) °F	pH	SP Cond (mS (µS))	Turbidity (NTU)	Purge Rate (gal or mL/ min)	Volume Removed (gal) L)	DO (mg/l)	ORP (mv)	DTW	Notes
~~0948~~ 0948 (1)	13.1	7.0	5092	17	1.0	17.5	0.01	28.5	93.50	
~~0903~~ 1008 (2)	12.5	7.0	5893	79	1.0	35.0	0.19	-10.9	105.21	
—	well dewatered @		approx = 50 gallons						69.4	
1145	11.6	7.0	6764	23	—	—	3.62		88.50	

Did well dewater? (YES) NO	Total volume removed: 50 (gal) L)		
Sample method: Disp Bailer Hydrasleeve New Tubing Ext. Port Other: Dedicated Tubing			
Sample date: 05APR2017	Sample time: 1150	DTW at sample: 88.50	
Sample ID: 6405	Lab: Energy Labs	Number of bottles (2)	
Analysis: 500 ml NP poly - Alkalinity, Cl, SO4, TDS, EC, pH 250 ml HNO3 poly *field filtered - Dissolved Metals			
Equipment blank ID @	Field blank ID @		
Duplicate ID:	Pre-purge DO:	Post purge DO:	
$Fe2^+$:	Pre-purge ORP:	Post purge ORP:	
NAPL depth:	Volume of NAPL:	Volume removed: ml	

Purging And Sampling Data Sheet

Job#: 1350.15	**Sampler:** J Kerns B Myers	**Client:** Montgomery & Associates
Well ID: MW-104	**Date** (DDOct2012): 01APR2013	**Site:** Rio Algom Mining, Lisbon, UT
Weather Conditions: Windy	**Sampler Signature:**	
Well diam: 1/4" 1" 2" 3" (4") 6" Other:	**DTW:** 93.96 **Total Depth:** 108.00	
Purge equip: ES - diam: Bladder Peri Waterra Positive Air Displacement Ext. System		
(disp bailer) teflon bailer other:	**Tubing:** OD: New Dedicated (NA)	
Purge method: (3-5 Case Volume) Micro/Low-Flow Extraction Other:		
Pump depth/ intake:	**Multipliers:** 1"= 0.04 2"= 0.16 3"= 0.37 4"= 0.65 5"=1.02 6"= 1.47 Radius² X 0.163	
(TD - DTW X Multiplier = 1 Volume	80% Recovery (TD - DTW X 0.20 + DTW)	

1 Volume = 9.1 X 3 = 27.3 (Total Purge) 80%= 96.77

	Time	Temp (°C / °F)	pH	Cond (mS / µS)	Turbidity (NTU)	Purge Rate (gal or mL/ min)	Volume Removed (gal / L)	DO (mg/l)	ORP (mv)	DTW	Notes
4/1	1226	10.6	8.2	1452	23	—	—	2.15	39.5	—	Initial
	1242	10.7	7.7	1425	>1000	—	10	2.83	48.3	—	
		well dewatered @				15 gallons					
4/5	1305 70	12.6	7.9	1241	21	—	—	7.6	63	—	

Did well dewater? (YES) NO Total volume removed: 15 (gal) / L)

Sample method: (Disp Bailer) Hydrasleeve New Tubing Ext. Port Other:

Sample date: 05APR2013	Sample time: 1305	DTW at sample: 104.70
Sample ID: 63604	Lab: Energy Labs	Number of bottles: 2
Analysis: 500 ml NP poly - Alkalinity, Cl, SO4, TDS, EC, pH 250 ml HNO3 poly *field filtered - Dissolved Metals		
Equipment blank ID @	Field blank ID @	
Duplicate ID:	Pre-purge DO:	Post purge DO:
$Fe2^+$:	Pre-purge ORP:	Post purge ORP:
NAPL depth:	Volume of NAPL:	Volume removed: ml

Purging And Sampling Data Sheet

Job#: 1350.15	**Sampler:** J Kerns (B Myers)	**Client:** Montgomery & Associates
Well ID: MW-105	**Date** (DDOct2012): 03APR2013	**Site:** Rio Algom Mining, Lisbon, UT
Weather Conditions: Cool	**Sampler Signature:**	
Well diam: 1/4" 1" 2" 3" (4") 6" Other:	**DTW:** 73.61	**Total Depth:** 135.00

Purge equip: ES - diam: Bladder Peri Waterra Positive Air Displacement Ext. System

disp bailer teflon bailer other: (HS) **Tubing:** OD: New Dedicated (NA)

Purge method: 3-5 Case Volume Micro/Low-Flow Extraction Other: (HS)

Pump depth/ intake: 100 **Multipliers:** 1"= 0.04 2"= 0.16 3"= 0.37 4"= 0.65 5"=1.02 6"= 1.47 Radius^2 X 0.163

(TD - DTW X Multiplier = 1 Volume | 80% Recovery (TD - DTW X 0.20 + DTW)

1 Volume = _____ X _____ = _____ (Total Purge) 80%= _____

Time	Temp (°C) °F)	pH	SP Cond (mS / µS)	Turbidity (NTU)	Purge Rate (gal or mL/ min)	Volume Removed (gal / L)	DO (mg/l)	ORP (mv)	DTW	Notes
1200	11.4	6.7	968	2	—	—	0.56	56	—	

Did well dewater? YES (NO) Total volume removed: — (gal / L)

Sample method: Disp Bailer (Hydrasleeve) New Tubing Ext. Port Other:

Sample date: 03APR2013 | Sample time: 1200 | DTW at sample: —

Sample ID: GW43 | Lab: Energy Labs | Number of bottles: 2

Analysis: 500 ml NP poly - Alkalinity, Cl, SO4, TDS, EC, pH 250 ml HNO3 poly *field filtered - Dissolved Metals

Equipment blank ID @ | Field blank ID @

Duplicate ID: | Pre-purge DO: | Post purge DO:

$Fe2^+$: | Pre-purge ORP: | Post purge ORP:

NAPL depth: | Volume of NAPL: | Volume removed: ml

Purging And Sampling Data Sheet

Job#: 1350.15	**Sampler:** J Kerns (B Myers)	**Client:** Montgomery & Associates
Well ID: MW105	**Date** (DDOct2012): 03APR2013	**Site:** Rio Algom Mining, Lisbon, UT
Weather Conditions: Cool	**Sampler Signature:**	
Well diam: 1/4" 1" 2" 3" (4") 6" Other:	**DTW:** 73.61	**Total Depth:** 135.00
Purge equip: (ES - diam) Bladder Peri Waterra Positive Air Displacement Ext. System		
disp bailer teflon bailer other:	**Tubing:** OD: New (Dedicated) NA	
Purge method: 3-5 Case Volume (Micro/Low-Flow) Extraction Other:		
Pump depth/ intake: 104	**Multipliers:** 1"= 0.04 2"= 0.16 3"= 0.37 4"= 0.65 5"=1.02 6"= 1.47 Radius² X 0.163	
(TD - DTW X Multiplier = 1 Volume	80% Recovery (TD - DTW X 0.20 + DTW)	

1 Volume = _____ X _____ = _____ (Total Purge) 80%= _____

Time	Temp (C) °F	pH	SP Cond (mS / (S))	Turbidity (NTU)	Purge Rate (gal or (mL/ min))	Volume Removed (gal / L)	DO (mg/l)	ORP (mv)	DTW	Notes
1217	11.5	6.6	1258	3	500	1.5	0.26	61	73.71	
1220	11.5	6.6	1286	3		3	0.17	60	73.71	
1223	11.5	6.6	1296	2		4.5	0.16	60	73.71	
1226	11.7	6.6	1315	2		6	0.18	59	73.71	
1229	12.0	6.6	1306	2		7.5	0.21	58	73.71	
1232 ~~1332~~	12.2	6.6	1314	2		9	0.20	57	73.71	
1235 ~~1335~~	12.3	6.6	1322	2	↓	10.5	0.19	56	73.71	

Did well dewater? YES (NO) Total volume removed: 10.5 (gal /L)

Sample method: Disp Bailer Hydrasleeve New Tubing Ext. Port Other: (ded)

Sample date: 03APR2013	Sample time: 1235	DTW at sample: 73.71
Sample ID: 0344	Lab: Energy Labs	Number of bottles: 2
Analysis: 500 ml NP poly - Alkalinity, Cl, SO4, TDS, EC, pH	250 ml HNO3 poly *field filtered - Dissolved Metals	
Equipment blank ID @	Field blank ID @	
Duplicate ID:	Pre-purge DO:	Post purge DO:
$Fe2^+$:	Pre-purge ORP:	Post purge ORP:
NAPL depth:	Volume of NAPL:	Volume removed: ml

Purging And Sampling Data Sheet

Job#: 1350.15	**Sampler:** J Kerns (B Myers)	**Client:** Montgomery & Associates
Well ID: MW-105	**Date** (DDOct2012): 03APR2013	**Site:** Rio Algom Mining, Lisbon, UT
Weather Conditions: cool	**Sampler Signature:**	
Well diam: 1/4" 1" 2" 3" (4") 6" Other:	**DTW:** 73.61 **Total Depth:** 135.08	
Purge equip: (ES - diam) Bladder Peri Waterra Positive Air Displacement Ext. System		
disp bailer teflon bailer other: **Tubing:** OD: New (Dedicated) NA		
Purge method: (3-5 Case Volume) Micro/Low-Flow Extraction Other:		
Pump depth/ intake: 104 **Multipliers:** 1"= 0.04 2"= 0.16 3"= 0.37 4"= 0.65 5"=1.02 6"= 1.47 Radius² X 0.163		
(TD - DTW X Multiplier = 1 Volume	80% Recovery (TD - DTW X 0.20 + DTW)	

1 Volume = 40 X 3 = 120 (Total Purge) 80%= 85.89

Time	Temp (°C) °F)	pH	SP Cond (mS (µS)	Turbidity (NTU)	Purge Rate (gal or mL/ min)	Volume Removed (gal / L)	DO (mg/l)	ORP (mv)	DTW	Notes
1254	12.0	6.7	915	3	3	40	0.92	50	73.72	
1307	11.9	6.7	913	2	1	80	1.5	51	73.72	
1320	11.9	6.7	916	2	1	120	1.5	51	73.72	

Did well dewater? YES (NO) Total volume removed: 120 (gal/ L)

Sample method: Disp Bailer Hydrasleeve New Tubing Ext. Port Other: (ded.)

Sample date: 03APR2013	Sample time: 1320	DTW at sample: 73.72
Sample ID: 0345	Lab: Energy Labs	Number of bottles: 2
Analysis: 500 ml NP poly - Alkalinity, Cl, SO4, TDS, EC, pH 250 ml HNO3 poly *field filtered - Dissolved Metals		
Equipment blank ID @	Field blank ID @	
Duplicate ID:	Pre-purge DO:	Post purge DO:
$Fe2^+$:	Pre-purge ORP:	Post purge ORP:
NAPL depth:	Volume of NAPL:	Volume removed: ml

Purging And Sampling Data Sheet

Job#: 1350.15	**Sampler:** J Kerns B Myers	**Client:** Montgomery & Associates
Well ID: MW-106	**Date** (DDOct2012): 01APR2013	**Site:** Rio Algom Mining, Lisbon, UT
Weather Conditions: cloudy, cool	**Sampler Signature:**	
Well diam: 1/4" 1" 2" 3" (4") 6" Other:	**DTW:** 227.02 **Total Depth:** ~~241.5~~ 241.5	
Purge equip: ES - diam: Bladder Peri Waterra Positive Air Displacement Ext. System		
(disp bailer) teflon bailer other:	**Tubing:** OD: New Dedicated (NA)	
Purge method: (3-5 Case Volume) Micro/Low-Flow Extraction Other:		
Pump depth/ intake:	**Multipliers:** 1"= 0.04 2"= 0.16 3"= 0.37 4"= 0.65 5"=1.02 6"= 1.47 Radius² X 0.163	
(TD - DTW X Multiplier = 1 Volume	80% Recovery (TD - DTW X 0.20 + DTW)	

1 Volume = 24.4 X 3 = 73.2 (Total Purge) 80%= 234.52

	Time	Temp (°C) °F)	pH	SP Cond (mS / µS)	Turbidity (NTU)	Purge Rate (gal or mL/ min)	Volume Removed (gal / L)	DO (mg/l)	ORP (mv)	DTW	Notes
4/1	915	11.2	7.5	2590	>1000	—	—	1.4	206	—	
	1038	12.9	7.5	2202	>1000	—	24.5	2.5	94	—	
	1106	12.2	7.7	2283	>1000	—	49	1.60	73	—	
4/5	1330	12.5	7.3	2677	19	—	—	60.4	77	252.52	

Did well dewater? (YES) NO	Total volume removed: 50 (gal/ L)	
Sample method: (Disp Bailer) Hydrasleeve New Tubing Ext. Port Other:		
Sample date: 05APR2013	Sample time: 1330	DTW at sample: 252.52
Sample ID: 03405	Lab: Energy Labs	Number of bottles: 2
Analysis: 500 ml NP poly - Alkalinity, Cl, SO4, TDS, EC, pH 250 ml HNO3 poly *field filtered - Dissolved Metals		
Equipment blank ID @	Field blank ID @	
Duplicate ID:	Pre-purge DO:	Post purge DO:
$Fe2^{+}$:	Pre-purge ORP:	Post purge ORP:
NAPL depth:	Volume of NAPL:	Volume removed: ml

ANALYTICAL SUMMARY REPORT

April 26, 2013

Rio Algom Mining Corporation LLC
Hwy 605 and 509
Grants, NM 87020

Workorder No.: C13040135 Quote ID: C3636 - Groundwater

Project Name: Lisbon, UT Facility

Energy Laboratories, Inc. Casper WY received the following 21 samples for Rio Algom Mining Corporation LLC on 4/3/2013 for analysis.

Sample ID	Client Sample ID	Collect Date	Receive Date	Matrix	Test
C13040135-001	6321	04/01/13 13:15	04/03/13	Aqueous	Metals by ICP/ICPMS, Dissolved Alkalinity QA Calculations Conductivity E300.0 Anions pH Solids, Total Dissolved Solids, Total Dissolved - Calculated
C13040135-002	6322	04/01/13 14:05	04/03/13	Aqueous	Same As Above
C13040135-003	6323	04/01/13 14:20	04/03/13	Aqueous	Same As Above
C13040135-004	6324	04/01/13 14:30	04/03/13	Aqueous	Same As Above
C13040135-005	6325	04/01/13 16:05	04/03/13	Aqueous	Same As Above
C13040135-006	6314	04/02/13 8:20	04/03/13	Aqueous	Same As Above
C13040135-007	6315	04/02/13 9:25	04/03/13	Aqueous	Same As Above
C13040135-008	6316	04/02/13 10:45	04/03/13	Aqueous	Same As Above
C13040135-009	6317	04/02/13 10:50	04/03/13	Aqueous	Same As Above
C13040135-010	6318	04/02/13 11:30	04/03/13	Aqueous	Same As Above
C13040135-011	6319	04/02/13 13:00	04/03/13	Aqueous	Same As Above
C13040135-012	6326	04/02/13 8:40	04/03/13	Aqueous	Same As Above
C13040135-013	6327	04/02/13 9:10	04/03/13	Aqueous	Same As Above
C13040135-014	6328	04/02/13 10:15	04/03/13	Aqueous	Same As Above
C13040135-015	6329	04/02/13 10:35	04/03/13	Aqueous	Same As Above
C13040135-016	6330	04/02/13 10:40	04/03/13	Aqueous	Same As Above
C13040135-017	6331	04/02/13 11:05	04/03/13	Aqueous	Same As Above
C13040135-018	6332	04/02/13 12:00	04/03/13	Aqueous	Same As Above
C13040135-019	6333	04/02/13 12:30	04/03/13	Aqueous	Same As Above
C13040135-020	6334	04/02/13 13:10	04/03/13	Aqueous	Same As Above
C13040135-021	6335	04/02/13 13:45	04/03/13	Aqueous	Same As Above

ANALYTICAL SUMMARY REPORT

The results as reported relate only to the item(s) submitted for testing. The analyses presented in this report were performed at Energy Laboratories, Inc., 2393 Salt Creek Hwy., Casper, WY 82601, unless otherwise noted. Radiochemistry analyses were performed at Energy Laboratories, Inc., 2325 Kerzell Lane, Casper, WY 82601, unless otherwise noted. Any exceptions or problems with the analyses are noted in the Laboratory Analytical Report, the QA/QC Summary Report, or the Case Narrative.

If you have any questions regarding these test results, please call.

Report Approved By:

CLIENT: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility
Sample Delivery Group: C13040135

Revised Date: 04/26/13
Report Date: 04/12/13

CASE NARRATIVE

REVISED/SUPPLEMENTAL REPORT
The attached analytical report has been revised from a previously submitted report due to the request by Leilani Bew to move samples 6311, 6312, and 6313 to a new workorder. The report has been revised and replaces any previously issued report in its entirety.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility
Lab ID: C13040135-001
Client Sample ID 6321

Revised Date: 04/26/13
Report Date: 04/12/13
Collection Date: 04/01/13 13:15
DateReceived: 04/03/13
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Carbonate as CO3	4320	mg/L		5		A2320 B	04/04/13 09:22 / jba
Bicarbonate as HCO3	6700	mg/L		5		A2320 B	04/04/13 09:22 / jba
Calcium	4	mg/L		1		E200.7	04/04/13 16:31 / sf
Chloride	1160	mg/L	D	40		E300.0	04/09/13 17:23 / wc
Magnesium	24	mg/L		1		E200.7	04/04/13 16:31 / sf
Potassium	18	mg/L		1		E200.8	04/04/13 23:00 / cp
Sodium	12000	mg/L	D	10		E200.7	04/04/13 16:31 / sf
Sulfate	8260	mg/L	D	200		E300.0	04/09/13 17:23 / wc
PHYSICAL PROPERTIES							
Conductivity @ 25 C	31800	umhos/cm		1		A2510 B	04/04/13 09:45 / ab
pH	9.55	s.u.	H	0.01		A4500-H B	04/04/13 09:45 / ab
Solids, Total Dissolved TDS @ 180 C	28300	mg/L		500		A2540 C	04/04/13 14:27 / ab
METALS - DISSOLVED							
Arsenic	1.54	mg/L	D	0.005		E200.8	04/04/13 23:00 / cp
Iron	ND	mg/L	D	0.06		E200.8	04/04/13 23:00 / cp
Molybdenum	45.2	mg/L	D	0.1		E200.7	04/04/13 16:31 / sf
Selenium	0.025	mg/L	D	0.007		E200.8	04/04/13 23:00 / cp
Uranium	24	mg/L	D	20		E200.7	04/04/13 16:31 / sf
DATA QUALITY							
A/C Balance (± 5)	6.43	%				A1030 E	04/11/13 15:13 / kbh
Anions	461	meq/L				A1030 E	04/11/13 15:13 / kbh
Cations	524	meq/L				A1030 E	04/11/13 15:13 / kbh
Solids, Total Dissolved Calculated	29000	mg/L				A1030 E	04/11/13 15:13 / kbh
TDS Balance (0.80 - 1.20)	0.970					A1030 E	04/11/13 15:13 / kbh

- The Anion / Cation balance was confirmed by re-analysis.

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
H - Analysis performed past recommended holding time.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility
Lab ID: C13040135-002
Client Sample ID 6322

Revised Date: 04/26/13
Report Date: 04/12/13
Collection Date: 04/01/13 14:05
DateReceived: 04/03/13
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Carbonate as CO3	6120	mg/L		5		A2320 B	04/04/13 09:34 / jba
Bicarbonate as HCO3	8650	mg/L		5		A2320 B	04/04/13 09:34 / jba
Calcium	4	mg/L		1		E200.7	04/04/13 16:35 / sf
Chloride	1410	mg/L	D	40		E300.0	04/04/13 16:48 / wc
Magnesium	23	mg/L		1		E200.7	04/04/13 16:35 / sf
Potassium	19	mg/L		1		E200.8	04/04/13 23:17 / cp
Sodium	13300	mg/L	D	10		E200.7	04/05/13 18:16 / sf
Sulfate	10800	mg/L	D	200		E300.0	04/04/13 16:48 / wc
PHYSICAL PROPERTIES							
Conductivity @ 25 C	39500	umhos/cm		1		A2510 B	04/04/13 09:48 / ab
pH	9.53	s.u.	H	0.01		A4500-H B	04/04/13 09:48 / ab
Solids, Total Dissolved TDS @ 180 C	36800	mg/L		500		A2540 C	04/04/13 14:28 / ab
METALS - DISSOLVED							
Arsenic	2.65	mg/L	D	0.005		E200.8	04/04/13 23:17 / cp
Iron	ND	mg/L	D	0.06		E200.8	04/04/13 23:17 / cp
Molybdenum	46.5	mg/L	D	0.1		E200.7	04/04/13 16:35 / sf
Selenium	0.023	mg/L	D	0.007		E200.8	04/04/13 23:17 / cp
Uranium	79	mg/L	D	20		E200.7	04/04/13 16:35 / sf
DATA QUALITY							
A/C Balance (± 5)	-2.69	%				A1030 E	04/09/13 08:34 / kbh
Anions	612	meq/L				A1030 E	04/09/13 08:34 / kbh
Cations	580	meq/L				A1030 E	04/09/13 08:34 / kbh
Solids, Total Dissolved Calculated	36000	mg/L				A1030 E	04/09/13 08:34 / kbh
TDS Balance (0.80 - 1.20)	1.03					A1030 E	04/09/13 08:34 / kbh

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
H - Analysis performed past recommended holding time.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility
Lab ID: C13040135-003
Client Sample ID 6323

Revised Date: 04/26/13
Report Date: 04/12/13
Collection Date: 04/01/13 14:20
DateReceived: 04/03/13
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Carbonate as CO3	ND	mg/L		5		A2320 B	04/03/13 17:05 / jba
Bicarbonate as HCO3	40	mg/L		5		A2320 B	04/03/13 17:05 / jba
Calcium	9	mg/L		1		E200.7	04/04/13 16:42 / sf
Chloride	4	mg/L		1		E300.0	04/04/13 17:03 / wc
Magnesium	3	mg/L		1		E200.7	04/04/13 16:42 / sf
Potassium	ND	mg/L		1		E200.8	04/04/13 23:21 / cp
Sodium	3	mg/L		1		E200.7	04/04/13 16:42 / sf
Sulfate	11	mg/L		1		E300.0	04/04/13 17:03 / wc
PHYSICAL PROPERTIES							
Conductivity @ 25 C	122	umhos/cm		1		A2510 B	04/04/13 09:50 / ab
pH	8.01	s.u.	H	0.01		A4500-H B	04/04/13 09:50 / ab
Solids, Total Dissolved TDS @ 180 C	46	mg/L		10		A2540 C	04/05/13 15:20 / ab
METALS - DISSOLVED							
Arsenic	ND	mg/L		0.001		E200.8	04/04/13 23:21 / cp
Iron	ND	mg/L		0.03		E200.7	04/04/13 16:42 / sf
Molybdenum	ND	mg/L		0.01		E200.7	04/04/13 16:42 / sf
Selenium	ND	mg/L		0.001		E200.8	04/04/13 23:21 / cp
Uranium	0.0005	mg/L		0.0003		E200.8	04/04/13 23:21 / cp
DATA QUALITY							
A/C Balance (± 5)	-12.3	%				A1030 E	04/09/13 08:35 / kbh
Anions	1.03	meq/L				A1030 E	04/09/13 08:35 / kbh
Cations	0.802	meq/L				A1030 E	04/09/13 08:35 / kbh
Solids, Total Dissolved Calculated	58	mg/L				A1030 E	04/09/13 08:35 / kbh
TDS Balance (0.80 - 1.20)	0.790					A1030 E	04/09/13 08:35 / kbh

- The ion balance is not appropriate for samples having a conductivity less than 300 umhos/cm.

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
H - Analysis performed past recommended holding time.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility
Lab ID: C13040135-004
Client Sample ID 6324

Revised Date: 04/26/13
Report Date: 04/12/13
Collection Date: 04/01/13 14:30
DateReceived: 04/03/13
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Carbonate as CO3	ND	mg/L		5		A2320 B	04/03/13 17:13 / jba
Bicarbonate as HCO3	316	mg/L		5		A2320 B	04/03/13 17:13 / jba
Calcium	196	mg/L		1		E200.7	04/04/13 16:53 / sf
Chloride	179	mg/L		1		E300.0	04/09/13 17:38 / wc
Magnesium	51	mg/L		1		E200.7	04/04/13 16:53 / sf
Potassium	5	mg/L		1		E200.8	04/04/13 23:26 / cp
Sodium	140	mg/L		1		E200.7	04/04/13 16:53 / sf
Sulfate	341	mg/L	D	4		E300.0	04/09/13 17:38 / wc
PHYSICAL PROPERTIES							
Conductivity @ 25 C	1710	umhos/cm		1		A2510 B	04/04/13 09:54 / ab
pH	7.61	s.u.	H	0.01		A4500-H B	04/04/13 09:54 / ab
Solids, Total Dissolved TDS @ 180 C	1100	mg/L		10		A2540 C	04/04/13 14:29 / ab
METALS - DISSOLVED							
Arsenic	0.036	mg/L		0.001		E200.8	04/04/13 23:26 / cp
Iron	ND	mg/L		0.03		E200.7	04/04/13 16:53 / sf
Molybdenum	0.01	mg/L		0.01		E200.7	04/04/13 16:53 / sf
Selenium	0.011	mg/L		0.001		E200.8	04/04/13 23:26 / cp
Uranium	0.620	mg/L		0.0003		E200.8	04/04/13 23:26 / cp
DATA QUALITY							
A/C Balance (± 5)	6.67	%				A1030 E	04/11/13 15:19 / kbh
Anions	17.7	meq/L				A1030 E	04/11/13 15:19 / kbh
Cations	20.2	meq/L				A1030 E	04/11/13 15:19 / kbh
Solids, Total Dissolved Calculated	1100	mg/L				A1030 E	04/11/13 15:19 / kbh
TDS Balance (0.80 - 1.20)	0.990					A1030 E	04/11/13 15:19 / kbh

- The Anion / Cation balance was confirmed by re-analysis.

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
H - Analysis performed past recommended holding time.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility
Lab ID: C13040135-005
Client Sample ID 6325

Revised Date: 04/26/13
Report Date: 04/12/13
Collection Date: 04/01/13 16:05
DateReceived: 04/03/13
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Carbonate as CO3	ND	mg/L		5		A2320 B	04/03/13 17:21 / jba
Bicarbonate as HCO3	384	mg/L		5		A2320 B	04/03/13 17:21 / jba
Calcium	206	mg/L		1		E200.7	04/04/13 17:37 / sf
Chloride	214	mg/L		1		E300.0	04/04/13 18:36 / wc
Magnesium	54	mg/L		1		E200.7	04/04/13 17:37 / sf
Potassium	5	mg/L		1		E200.7	04/04/13 17:37 / sf
Sodium	152	mg/L		1		E200.7	04/04/13 17:37 / sf
Sulfate	471	mg/L	D	4		E300.0	04/04/13 18:36 / wc
PHYSICAL PROPERTIES							
Conductivity @ 25 C	2060	umhos/cm		1		A2510 B	04/04/13 09:56 / ab
pH	7.63	s.u.	H	0.01		A4500-H B	04/04/13 09:56 / ab
Solids, Total Dissolved TDS @ 180 C	1360	mg/L		20		A2540 C	04/04/13 14:29 / ab
METALS - DISSOLVED							
Arsenic	0.037	mg/L		0.001		E200.8	04/04/13 23:30 / cp
Iron	ND	mg/L		0.03		E200.7	04/04/13 17:37 / sf
Molybdenum	ND	mg/L		0.01		E200.7	04/04/13 17:37 / sf
Selenium	0.011	mg/L		0.001		E200.8	04/04/13 23:30 / cp
Uranium	0.633	mg/L		0.0003		E200.8	04/04/13 23:30 / cp
DATA QUALITY							
A/C Balance (± 5)	-2.43	%				A1030 E	04/09/13 07:05 / kbh
Anions	22.6	meq/L				A1030 E	04/09/13 07:05 / kbh
Cations	21.5	meq/L				A1030 E	04/09/13 07:05 / kbh
Solids, Total Dissolved Calculated	1300	mg/L				A1030 E	04/09/13 07:05 / kbh
TDS Balance (0.80 - 1.20)	1.01					A1030 E	04/09/13 07:05 / kbh

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
H - Analysis performed past recommended holding time.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility
Lab ID: C13040135-006
Client Sample ID 6314

Revised Date: 04/26/13
Report Date: 04/12/13
Collection Date: 04/02/13 08:20
DateReceived: 04/03/13
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Carbonate as CO3	ND	mg/L		5		A2320 B	04/03/13 17:29 / jba
Bicarbonate as HCO3	391	mg/L		5		A2320 B	04/03/13 17:29 / jba
Calcium	26	mg/L		1		E200.7	04/04/13 17:41 / sf
Chloride	43	mg/L		1		E300.0	04/04/13 18:51 / wc
Magnesium	9	mg/L		1		E200.7	04/04/13 17:41 / sf
Potassium	4	mg/L		1		E200.7	04/04/13 17:41 / sf
Sodium	172	mg/L		1		E200.7	04/04/13 17:41 / sf
Sulfate	89	mg/L	D	2		E300.0	04/04/13 18:51 / wc
PHYSICAL PROPERTIES							
Conductivity @ 25 C	924	umhos/cm		1		A2510 B	04/04/13 09:59 / ab
pH	8.02	s.u.	H	0.01		A4500-H B	04/04/13 09:59 / ab
Solids, Total Dissolved TDS @ 180 C	538	mg/L		10		A2540 C	04/04/13 14:29 / ab
METALS - DISSOLVED							
Arsenic	0.003	mg/L		0.001		E200.8	04/04/13 23:52 / cp
Iron	1.01	mg/L		0.03		E200.7	04/04/13 17:41 / sf
Molybdenum	0.02	mg/L		0.01		E200.7	04/04/13 17:41 / sf
Selenium	ND	mg/L		0.001		E200.8	04/04/13 23:52 / cp
Uranium	0.0282	mg/L		0.0003		E200.8	04/04/13 23:52 / cp
DATA QUALITY							
A/C Balance (± 5)	0.542	%				A1030 E	04/09/13 07:05 / kbh
Anions	9.58	meq/L				A1030 E	04/09/13 07:05 / kbh
Cations	9.68	meq/L				A1030 E	04/09/13 07:05 / kbh
Solids, Total Dissolved Calculated	550	mg/L				A1030 E	04/09/13 07:05 / kbh
TDS Balance (0.80 - 1.20)	0.980					A1030 E	04/09/13 07:05 / kbh

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
H - Analysis performed past recommended holding time.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility
Lab ID: C13040135-007
Client Sample ID 6315

Revised Date: 04/26/13
Report Date: 04/12/13
Collection Date: 04/02/13 09:25
DateReceived: 04/03/13
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Carbonate as CO3	ND	mg/L		5		A2320 B	04/03/13 17:38 / jba
Bicarbonate as HCO3	375	mg/L		5		A2320 B	04/03/13 17:38 / jba
Calcium	20	mg/L		1		E200.7	04/04/13 17:45 / sf
Chloride	40	mg/L		1		E300.0	04/04/13 19:07 / wc
Magnesium	7	mg/L		1		E200.7	04/04/13 17:45 / sf
Potassium	4	mg/L		1		E200.7	04/04/13 17:45 / sf
Sodium	165	mg/L		1		E200.7	04/04/13 17:45 / sf
Sulfate	75	mg/L	D	2		E300.0	04/04/13 19:07 / wc
PHYSICAL PROPERTIES							
Conductivity @ 25 C	883	umhos/cm		1		A2510 B	04/04/13 10:04 / ab
pH	8.11	s.u.	H	0.01		A4500-H B	04/04/13 10:04 / ab
Solids, Total Dissolved TDS @ 180 C	512	mg/L		10		A2540 C	04/04/13 14:30 / ab
METALS - DISSOLVED							
Arsenic	0.003	mg/L		0.001		E200.8	04/04/13 23:57 / cp
Iron	0.64	mg/L		0.03		E200.7	04/04/13 17:45 / sf
Molybdenum	0.02	mg/L		0.01		E200.7	04/04/13 17:45 / sf
Selenium	ND	mg/L		0.001		E200.8	04/04/13 23:57 / cp
Uranium	0.0136	mg/L		0.0003		E200.8	04/04/13 23:57 / cp
DATA QUALITY							
A/C Balance (± 5)	-0.321	%				A1030 E	04/09/13 07:05 / kbh
Anions	8.95	meq/L				A1030 E	04/09/13 07:05 / kbh
Cations	8.89	meq/L				A1030 E	04/09/13 07:05 / kbh
Solids, Total Dissolved Calculated	510	mg/L				A1030 E	04/09/13 07:05 / kbh
TDS Balance (0.80 - 1.20)	1.00					A1030 E	04/09/13 07:05 / kbh

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
H - Analysis performed past recommended holding time.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility
Lab ID: C13040135-008
Client Sample ID 6316

Revised Date: 04/26/13
Report Date: 04/12/13
Collection Date: 04/02/13 10:45
DateReceived: 04/03/13
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Carbonate as CO3	ND	mg/L		5		A2320 B	04/03/13 17:45 / jba
Bicarbonate as HCO3	345	mg/L		5		A2320 B	04/03/13 17:45 / jba
Calcium	14	mg/L		1		E200.7	04/04/13 17:52 / sf
Chloride	34	mg/L		1		E300.0	04/04/13 19:22 / wc
Magnesium	6	mg/L		1		E200.7	04/04/13 17:52 / sf
Potassium	4	mg/L		1		E200.7	04/04/13 17:52 / sf
Sodium	155	mg/L		1		E200.7	04/04/13 17:52 / sf
Sulfate	54	mg/L	D	2		E300.0	04/04/13 19:22 / wc
PHYSICAL PROPERTIES							
Conductivity @ 25 C	788	umhos/cm		1		A2510 B	04/04/13 10:07 / ab
pH	8.12	s.u.	H	0.01		A4500-H B	04/04/13 10:07 / ab
Solids, Total Dissolved TDS @ 180 C	457	mg/L		10		A2540 C	04/04/13 14:30 / ab
METALS - DISSOLVED							
Arsenic	0.005	mg/L		0.001		E200.8	04/05/13 00:01 / cp
Iron	0.16	mg/L		0.03		E200.7	04/04/13 17:52 / sf
Molybdenum	0.01	mg/L		0.01		E200.7	04/04/13 17:52 / sf
Selenium	ND	mg/L		0.001		E200.8	04/05/13 00:01 / cp
Uranium	0.0052	mg/L		0.0003		E200.8	04/05/13 00:01 / cp
DATA QUALITY							
A/C Balance (± 5)	0.364	%				A1030 E	04/09/13 07:06 / kbh
Anions	7.94	meq/L				A1030 E	04/09/13 07:06 / kbh
Cations	8.00	meq/L				A1030 E	04/09/13 07:06 / kbh
Solids, Total Dissolved Calculated	450	mg/L				A1030 E	04/09/13 07:06 / kbh
TDS Balance (0.80 - 1.20)	1.01					A1030 E	04/09/13 07:06 / kbh

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
H - Analysis performed past recommended holding time.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility
Lab ID: C13040135-009
Client Sample ID 6317

Revised Date: 04/26/13
Report Date: 04/12/13
Collection Date: 04/02/13 10:50
DateReceived: 04/03/13
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Carbonate as CO3	ND	mg/L		5		A2320 B	04/03/13 17:53 / jba
Bicarbonate as HCO3	343	mg/L		5		A2320 B	04/03/13 17:53 / jba
Calcium	14	mg/L		1		E200.7	04/04/13 17:56 / sf
Chloride	34	mg/L		1		E300.0	04/04/13 19:38 / wc
Magnesium	6	mg/L		1		E200.7	04/04/13 17:56 / sf
Potassium	3	mg/L		1		E200.7	04/04/13 17:56 / sf
Sodium	152	mg/L		1		E200.7	04/04/13 17:56 / sf
Sulfate	56	mg/L	D	2		E300.0	04/04/13 19:38 / wc
PHYSICAL PROPERTIES							
Conductivity @ 25 C	791	umhos/cm		1		A2510 B	04/04/13 10:10 / ab
pH	8.11	s.u.	H	0.01		A4500-H B	04/04/13 10:10 / ab
Solids, Total Dissolved TDS @ 180 C	458	mg/L		10		A2540 C	04/04/13 14:30 / ab
METALS - DISSOLVED							
Arsenic	0.005	mg/L		0.001		E200.8	04/05/13 00:06 / cp
Iron	0.15	mg/L		0.03		E200.7	04/04/13 17:56 / sf
Molybdenum	ND	mg/L		0.01		E200.7	04/04/13 17:56 / sf
Selenium	ND	mg/L		0.001		E200.8	04/05/13 00:06 / cp
Uranium	0.0054	mg/L		0.0003		E200.8	04/05/13 00:06 / cp
DATA QUALITY							
A/C Balance (± 5)	-0.589	%				A1030 E	04/09/13 07:06 / kbh
Anions	7.96	meq/L				A1030 E	04/09/13 07:06 / kbh
Cations	7.86	meq/L				A1030 E	04/09/13 07:06 / kbh
Solids, Total Dissolved Calculated	450	mg/L				A1030 E	04/09/13 07:06 / kbh
TDS Balance (0.80 - 1.20)	1.02					A1030 E	04/09/13 07:06 / kbh

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
H - Analysis performed past recommended holding time.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility
Lab ID: C13040135-010
Client Sample ID 6318

Revised Date: 04/26/13
Report Date: 04/12/13
Collection Date: 04/02/13 11:30
DateReceived: 04/03/13
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Carbonate as CO3	ND	mg/L		5		A2320 B	04/03/13 18:23 / jba
Bicarbonate as HCO3	1140	mg/L		5		A2320 B	04/03/13 18:23 / jba
Calcium	528	mg/L		1		E200.7	04/04/13 18:00 / sf
Chloride	690	mg/L	D	10		E300.0	04/04/13 19:53 / wc
Magnesium	182	mg/L		1		E200.7	04/04/13 18:00 / sf
Potassium	19	mg/L		1		E200.7	04/04/13 18:00 / sf
Sodium	1930	mg/L	D	2		E200.7	04/04/13 18:00 / sf
Sulfate	4620	mg/L	D	40		E300.0	04/04/13 19:53 / wc
PHYSICAL PROPERTIES							
Conductivity @ 25 C	10600	umhos/cm		1		A2510 B	04/04/13 10:12 / ab
pH	7.26	s.u.	H	0.01		A4500-H B	04/04/13 10:12 / ab
Solids, Total Dissolved TDS @ 180 C	8580	mg/L		100		A2540 C	04/04/13 14:30 / ab
METALS - DISSOLVED							
Arsenic	0.003	mg/L		0.001		E200.8	04/05/13 00:10 / cp
Iron	ND	mg/L		0.03		E200.7	04/04/13 18:00 / sf
Molybdenum	10.3	mg/L	D	0.03		E200.7	04/04/13 18:00 / sf
Selenium	0.068	mg/L		0.001		E200.8	04/05/13 00:10 / cp
Uranium	40	mg/L	D	3		E200.7	04/04/13 18:00 / sf
DATA QUALITY							
A/C Balance (± 5)	-3.89	%				A1030 E	04/09/13 07:06 / kbh
Anions	136	meq/L				A1030 E	04/09/13 07:06 / kbh
Cations	126	meq/L				A1030 E	04/09/13 07:06 / kbh
Solids, Total Dissolved Calculated	8600	mg/L				A1030 E	04/09/13 07:06 / kbh
TDS Balance (0.80 - 1.20)	0.990					A1030 E	04/09/13 07:06 / kbh

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
H - Analysis performed past recommended holding time.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility
Lab ID: C13040135-011
Client Sample ID 6319

Revised Date: 04/26/13
Report Date: 04/12/13
Collection Date: 04/02/13 13:00
DateReceived: 04/03/13
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Carbonate as CO3	ND	mg/L		5		A2320 B	04/03/13 18:43 / jba
Bicarbonate as HCO3	1390	mg/L		5		A2320 B	04/03/13 18:43 / jba
Calcium	575	mg/L		1		E200.7	04/04/13 18:04 / sf
Chloride	722	mg/L	D	10		E300.0	04/04/13 20:08 / wc
Magnesium	192	mg/L		1		E200.7	04/04/13 18:04 / sf
Potassium	19	mg/L		1		E200.7	04/04/13 18:04 / sf
Sodium	2210	mg/L	D	2		E200.7	04/04/13 18:04 / sf
Sulfate	4960	mg/L	D	40		E300.0	04/04/13 20:08 / wc
PHYSICAL PROPERTIES							
Conductivity @ 25 C	11500	umhos/cm		1		A2510 B	04/04/13 10:15 / ab
pH	7.31	s.u.	H	0.01		A4500-H B	04/04/13 10:15 / ab
Solids, Total Dissolved TDS @ 180 C	9360	mg/L		100		A2540 C	04/04/13 14:31 / ab
METALS - DISSOLVED							
Arsenic	0.006	mg/L		0.001		E200.8	04/05/13 00:15 / cp
Iron	ND	mg/L		0.03		E200.7	04/04/13 18:04 / sf
Molybdenum	12.4	mg/L	D	0.03		E200.7	04/04/13 18:04 / sf
Selenium	0.092	mg/L		0.001		E200.8	04/05/13 00:15 / cp
Uranium	44	mg/L	D	3		E200.7	04/04/13 18:04 / sf
DATA QUALITY							
A/C Balance (± 5)	-2.42	%				A1030 E	04/09/13 07:06 / kbh
Anions	148	meq/L				A1030 E	04/09/13 07:06 / kbh
Cations	141	meq/L				A1030 E	04/09/13 07:06 / kbh
Solids, Total Dissolved Calculated	9500	mg/L				A1030 E	04/09/13 07:06 / kbh
TDS Balance (0.80 - 1.20)	0.990					A1030 E	04/09/13 07:06 / kbh

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
H - Analysis performed past recommended holding time.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility
Lab ID: C13040135-012
Client Sample ID 6326

Revised Date: 04/26/13
Report Date: 04/12/13
Collection Date: 04/02/13 08:40
DateReceived: 04/03/13
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Carbonate as CO3	ND	mg/L		5		A2320 B	04/03/13 19:02 / jba
Bicarbonate as HCO3	237	mg/L		5		A2320 B	04/03/13 19:02 / jba
Calcium	144	mg/L		1		E200.7	04/04/13 18:07 / sf
Chloride	149	mg/L		1		E300.0	04/04/13 20:24 / wc
Magnesium	40	mg/L		1		E200.7	04/04/13 18:07 / sf
Potassium	6	mg/L		1		E200.7	04/04/13 18:07 / sf
Sodium	92	mg/L		1		E200.7	04/04/13 18:07 / sf
Sulfate	318	mg/L	D	4		E300.0	04/04/13 20:24 / wc
PHYSICAL PROPERTIES							
Conductivity @ 25 C	1470	umhos/cm		1		A2510 B	04/04/13 10:18 / ab
pH	7.46	s.u.	H	0.01		A4500-H B	04/04/13 10:18 / ab
Solids, Total Dissolved TDS @ 180 C	941	mg/L		10		A2540 C	04/04/13 14:31 / ab
METALS - DISSOLVED							
Arsenic	0.007	mg/L		0.001		E200.8	04/05/13 00:50 / cp
Iron	ND	mg/L		0.03		E200.7	04/04/13 18:07 / sf
Molybdenum	0.01	mg/L		0.01		E200.7	04/04/13 18:07 / sf
Selenium	0.008	mg/L		0.001		E200.8	04/05/13 00:50 / cp
Uranium	0.0192	mg/L		0.0003		E200.8	04/05/13 00:50 / cp
DATA QUALITY							
A/C Balance (± 5)	-1.27	%				A1030 E	04/09/13 07:06 / kbh
Anions	15.1	meq/L				A1030 E	04/09/13 07:06 / kbh
Cations	14.7	meq/L				A1030 E	04/09/13 07:06 / kbh
Solids, Total Dissolved Calculated	900	mg/L				A1030 E	04/09/13 07:06 / kbh
TDS Balance (0.80 - 1.20)	1.04					A1030 E	04/09/13 07:06 / kbh

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
H - Analysis performed past recommended holding time.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility
Lab ID: C13040135-013
Client Sample ID 6327

Revised Date: 04/26/13
Report Date: 04/12/13
Collection Date: 04/02/13 09:10
DateReceived: 04/03/13
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Carbonate as CO3	ND	mg/L		5		A2320 B	04/03/13 19:09 / jba
Bicarbonate as HCO3	238	mg/L		5		A2320 B	04/03/13 19:09 / jba
Calcium	144	mg/L		1		E200.7	04/04/13 18:36 / sf
Chloride	149	mg/L		1		E300.0	04/04/13 20:39 / wc
Magnesium	40	mg/L		1		E200.7	04/04/13 18:36 / sf
Potassium	6	mg/L		1		E200.7	04/04/13 18:36 / sf
Sodium	91	mg/L		1		E200.7	04/04/13 18:36 / sf
Sulfate	319	mg/L	D	4		E300.0	04/04/13 20:39 / wc
PHYSICAL PROPERTIES							
Conductivity @ 25 C	1460	umhos/cm		1		A2510 B	04/04/13 10:20 / ab
pH	7.50	s.u.	H	0.01		A4500-H B	04/04/13 10:20 / ab
Solids, Total Dissolved TDS @ 180 C	927	mg/L		10		A2540 C	04/04/13 14:31 / ab
METALS - DISSOLVED							
Arsenic	0.007	mg/L		0.001		E200.8	04/05/13 00:54 / cp
Iron	ND	mg/L		0.03		E200.7	04/04/13 18:36 / sf
Molybdenum	0.01	mg/L		0.01		E200.7	04/04/13 18:36 / sf
Selenium	0.008	mg/L		0.001		E200.8	04/05/13 00:54 / cp
Uranium	0.0193	mg/L		0.0003		E200.8	04/05/13 00:54 / cp
DATA QUALITY							
A/C Balance (± 5)	-1.82	%				A1030 E	04/09/13 07:06 / kbh
Anions	15.1	meq/L				A1030 E	04/09/13 07:06 / kbh
Cations	14.6	meq/L				A1030 E	04/09/13 07:06 / kbh
Solids, Total Dissolved Calculated	900	mg/L				A1030 E	04/09/13 07:06 / kbh
TDS Balance (0.80 - 1.20)	1.03					A1030 E	04/09/13 07:06 / kbh

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
H - Analysis performed past recommended holding time.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility
Lab ID: C13040135-014
Client Sample ID 6328

Revised Date: 04/26/13
Report Date: 04/12/13
Collection Date: 04/02/13 10:15
DateReceived: 04/03/13
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Carbonate as CO3	ND	mg/L		5		A2320 B	04/03/13 19:17 / jba
Bicarbonate as HCO3	255	mg/L		5		A2320 B	04/03/13 19:17 / jba
Calcium	161	mg/L		1		E200.7	04/04/13 18:40 / sf
Chloride	164	mg/L		1		E300.0	04/04/13 21:25 / wc
Magnesium	44	mg/L		1		E200.7	04/04/13 18:40 / sf
Potassium	6	mg/L		1		E200.7	04/04/13 18:40 / sf
Sodium	90	mg/L		1		E200.7	04/04/13 18:40 / sf
Sulfate	350	mg/L	D	4		E300.0	04/04/13 21:25 / wc
PHYSICAL PROPERTIES							
Conductivity @ 25 C	1570	umhos/cm		1		A2510 B	04/04/13 10:23 / ab
pH	7.52	s.u.	H	0.01		A4500-H B	04/04/13 10:23 / ab
Solids, Total Dissolved TDS @ 180 C	1020	mg/L		10		A2540 C	04/04/13 14:31 / ab
METALS - DISSOLVED							
Arsenic	0.022	mg/L		0.001		E200.8	04/05/13 00:59 / cp
Iron	ND	mg/L		0.03		E200.7	04/04/13 18:40 / sf
Molybdenum	ND	mg/L		0.01		E200.7	04/04/13 18:40 / sf
Selenium	0.010	mg/L		0.001		E200.8	04/05/13 00:59 / cp
Uranium	0.0155	mg/L		0.0003		E200.8	04/05/13 00:59 / cp
DATA QUALITY							
A/C Balance (± 5)	-2.41	%				A1030 E	04/09/13 07:06 / kbh
Anions	16.5	meq/L				A1030 E	04/09/13 07:06 / kbh
Cations	15.7	meq/L				A1030 E	04/09/13 07:06 / kbh
Solids, Total Dissolved Calculated	980	mg/L				A1030 E	04/09/13 07:06 / kbh
TDS Balance (0.80 - 1.20)	1.04					A1030 E	04/09/13 07:06 / kbh

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
H - Analysis performed past recommended holding time.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility
Lab ID: C13040135-015
Client Sample ID 6329

Revised Date: 04/26/13
Report Date: 04/12/13
Collection Date: 04/02/13 10:35
DateReceived: 04/03/13
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Carbonate as CO3	ND	mg/L		5		A2320 B	04/03/13 19:26 / jba
Bicarbonate as HCO3	486	mg/L		5		A2320 B	04/03/13 19:26 / jba
Calcium	212	mg/L		1		E200.7	04/04/13 18:44 / sf
Chloride	413	mg/L	D	2		E300.0	04/04/13 22:12 / wc
Magnesium	56	mg/L		1		E200.7	04/04/13 18:44 / sf
Potassium	6	mg/L		1		E200.7	04/04/13 18:44 / sf
Sodium	465	mg/L		1		E200.7	04/04/13 18:44 / sf
Sulfate	818	mg/L	D	8		E300.0	04/04/13 22:12 / wc
PHYSICAL PROPERTIES							
Conductivity @ 25 C	3340	umhos/cm		1		A2510 B	04/04/13 10:26 / ab
pH	7.25	s.u.	H	0.01		A4500-H B	04/04/13 10:26 / ab
Solids, Total Dissolved TDS @ 180 C	2240	mg/L		20		A2540 C	04/04/13 14:32 / ab
METALS - DISSOLVED							
Arsenic	0.015	mg/L		0.001		E200.8	04/05/13 01:03 / cp
Iron	ND	mg/L		0.03		E200.7	04/04/13 18:44 / sf
Molybdenum	ND	mg/L		0.01		E200.8	04/05/13 01:03 / cp
Selenium	0.013	mg/L		0.001		E200.8	04/05/13 01:03 / cp
Uranium	2.36	mg/L		0.0003		E200.8	04/05/13 01:03 / cp
DATA QUALITY							
A/C Balance (± 5)	-2.26	%				A1030 E	04/09/13 07:06 / kbh
Anions	37.2	meq/L				A1030 E	04/09/13 07:06 / kbh
Cations	35.5	meq/L				A1030 E	04/09/13 07:06 / kbh
Solids, Total Dissolved Calculated	2300	mg/L				A1030 E	04/09/13 07:06 / kbh
TDS Balance (0.80 - 1.20)	0.990					A1030 E	04/09/13 07:06 / kbh

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
H - Analysis performed past recommended holding time.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility
Lab ID: C13040135-016
Client Sample ID 6330

Revised Date: 04/26/13
Report Date: 04/12/13
Collection Date: 04/02/13 10:40
DateReceived: 04/03/13
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Carbonate as CO3	ND	mg/L		5		A2320 B	04/03/13 19:34 / jba
Bicarbonate as HCO3	470	mg/L		5		A2320 B	04/03/13 19:34 / jba
Calcium	210	mg/L		1		E200.7	04/04/13 18:47 / sf
Chloride	406	mg/L	D	2		E300.0	04/04/13 22:27 / wc
Magnesium	55	mg/L		1		E200.7	04/04/13 18:47 / sf
Potassium	6	mg/L		1		E200.7	04/04/13 18:47 / sf
Sodium	457	mg/L		1		E200.7	04/04/13 18:47 / sf
Sulfate	804	mg/L	D	8		E300.0	04/04/13 22:27 / wc
PHYSICAL PROPERTIES							
Conductivity @ 25 C	3310	umhos/cm		1		A2510 B	04/04/13 10:28 / ab
pH	7.25	s.u.	H	0.01		A4500-H B	04/04/13 10:28 / ab
Solids, Total Dissolved TDS @ 180 C	2190	mg/L		20		A2540 C	04/04/13 14:32 / ab
METALS - DISSOLVED							
Arsenic	0.015	mg/L		0.001		E200.8	04/05/13 01:08 / cp
Iron	ND	mg/L		0.03		E200.7	04/04/13 18:47 / sf
Molybdenum	ND	mg/L		0.01		E200.8	04/05/13 01:08 / cp
Selenium	0.014	mg/L		0.001		E200.8	04/05/13 01:08 / cp
Uranium	2.31	mg/L		0.0003		E200.8	04/05/13 01:08 / cp
DATA QUALITY							
A/C Balance (± 5)	-1.19	%				A1030 E	04/09/13 07:06 / kbh
Anions	35.9	meq/L				A1030 E	04/09/13 07:06 / kbh
Cations	35.0	meq/L				A1030 E	04/09/13 07:06 / kbh
Solids, Total Dissolved Calculated	2200	mg/L				A1030 E	04/09/13 07:06 / kbh
TDS Balance (0.80 - 1.20)	1.00					A1030 E	04/09/13 07:06 / kbh

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
H - Analysis performed past recommended holding time.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility
Lab ID: C13040135-017
Client Sample ID 6331

Revised Date: 04/26/13
Report Date: 04/12/13
Collection Date: 04/02/13 11:05
DateReceived: 04/03/13
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Carbonate as CO3	ND	mg/L		5		A2320 B	04/03/13 19:42 / jba
Bicarbonate as HCO3	479	mg/L		5		A2320 B	04/03/13 19:42 / jba
Calcium	212	mg/L		1		E200.7	04/04/13 18:51 / sf
Chloride	400	mg/L	D	2		E300.0	04/04/13 22:43 / wc
Magnesium	56	mg/L		1		E200.7	04/04/13 18:51 / sf
Potassium	6	mg/L		1		E200.7	04/04/13 18:51 / sf
Sodium	445	mg/L		1		E200.7	04/04/13 18:51 / sf
Sulfate	803	mg/L	D	8		E300.0	04/04/13 22:43 / wc
PHYSICAL PROPERTIES							
Conductivity @ 25 C	3370	umhos/cm		1		A2510 B	04/04/13 10:42 / ab
pH	7.22	s.u.	H	0.01		A4500-H B	04/04/13 10:42 / ab
Solids, Total Dissolved TDS @ 180 C	2230	mg/L		20		A2540 C	04/04/13 14:33 / ab
METALS - DISSOLVED							
Arsenic	0.015	mg/L		0.001		E200.8	04/05/13 01:12 / cp
Iron	ND	mg/L		0.03		E200.7	04/04/13 18:51 / sf
Molybdenum	ND	mg/L		0.01		E200.8	04/05/13 01:12 / cp
Selenium	0.014	mg/L		0.001		E200.8	04/05/13 01:12 / cp
Uranium	2	mg/L	D	2		E200.7	04/04/13 18:51 / sf
DATA QUALITY							
A/C Balance (± 5)	-2.35	%				A1030 E	04/09/13 07:06 / kbh
Anions	36.4	meq/L				A1030 E	04/09/13 07:06 / kbh
Cations	34.7	meq/L				A1030 E	04/09/13 07:06 / kbh
Solids, Total Dissolved Calculated	2200	mg/L				A1030 E	04/09/13 07:06 / kbh
TDS Balance (0.80 - 1.20)	1.01					A1030 E	04/09/13 07:06 / kbh

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
H - Analysis performed past recommended holding time.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility
Lab ID: C13040135-018
Client Sample ID 6332

Revised Date: 04/26/13
Report Date: 04/12/13
Collection Date: 04/02/13 12:00
DateReceived: 04/03/13
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Carbonate as CO3	ND	mg/L		5		A2320 B	04/03/13 19:52 / jba
Bicarbonate as HCO3	472	mg/L		5		A2320 B	04/03/13 19:52 / jba
Calcium	244	mg/L		1		E200.7	04/04/13 18:55 / sf
Chloride	378	mg/L	D	2		E300.0	04/04/13 22:58 / wc
Magnesium	65	mg/L		1		E200.7	04/04/13 18:55 / sf
Potassium	6	mg/L		1		E200.7	04/04/13 18:55 / sf
Sodium	375	mg/L		1		E200.7	04/04/13 18:55 / sf
Sulfate	862	mg/L	D	8		E300.0	04/04/13 22:58 / wc
PHYSICAL PROPERTIES							
Conductivity @ 25 C	3240	umhos/cm		1		A2510 B	04/04/13 10:44 / ab
pH	7.18	s.u.	H	0.01		A4500-H B	04/04/13 10:44 / ab
Solids, Total Dissolved TDS @ 180 C	2180	mg/L		20		A2540 C	04/04/13 14:34 / ab
METALS - DISSOLVED							
Arsenic	0.013	mg/L		0.001		E200.8	04/05/13 01:16 / cp
Iron	ND	mg/L		0.03		E200.7	04/04/13 18:55 / sf
Molybdenum	ND	mg/L		0.01		E200.8	04/05/13 01:16 / cp
Selenium	0.011	mg/L		0.001		E200.8	04/05/13 01:16 / cp
Uranium	1.15	mg/L		0.0003		E200.8	04/05/13 01:16 / cp
DATA QUALITY							
A/C Balance (± 5)	-3.96	%				A1030 E	04/09/13 07:07 / kbh
Anions	36.8	meq/L				A1030 E	04/09/13 07:07 / kbh
Cations	34.0	meq/L				A1030 E	04/09/13 07:07 / kbh
Solids, Total Dissolved Calculated	2200	mg/L				A1030 E	04/09/13 07:07 / kbh
TDS Balance (0.80 - 1.20)	0.990					A1030 E	04/09/13 07:07 / kbh

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
H - Analysis performed past recommended holding time.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility
Lab ID: C13040135-019
Client Sample ID 6333

Revised Date: 04/26/13
Report Date: 04/12/13
Collection Date: 04/02/13 12:30
DateReceived: 04/03/13
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Carbonate as CO3	ND	mg/L		5		A2320 B	04/03/13 20:00 / jba
Bicarbonate as HCO3	927	mg/L		5		A2320 B	04/03/13 20:00 / jba
Calcium	446	mg/L		1		E200.7	04/04/13 19:13 / sf
Chloride	575	mg/L	D	10		E300.0	04/04/13 23:13 / wc
Magnesium	188	mg/L		1		E200.7	04/04/13 19:13 / sf
Potassium	16	mg/L		1		E200.7	04/04/13 19:13 / sf
Sodium	1260	mg/L	D	2		E200.7	04/04/13 19:13 / sf
Sulfate	3080	mg/L	D	40		E300.0	04/04/13 23:13 / wc
PHYSICAL PROPERTIES							
Conductivity @ 25 C	7820	umhos/cm		1		A2510 B	04/04/13 10:47 / ab
pH	7.27	s.u.	H	0.01		A4500-H B	04/04/13 10:47 / ab
Solids, Total Dissolved TDS @ 180 C	6020	mg/L		100		A2540 C	04/04/13 14:34 / ab
METALS - DISSOLVED							
Arsenic	0.002	mg/L		0.001		E200.8	04/05/13 01:21 / cp
Iron	ND	mg/L		0.03		E200.7	04/04/13 19:13 / sf
Molybdenum	2.29	mg/L		0.01		E200.8	04/05/13 01:21 / cp
Selenium	0.058	mg/L		0.001		E200.8	04/05/13 01:21 / cp
Uranium	19	mg/L	D	3		E200.7	04/04/13 19:13 / sf
DATA QUALITY							
A/C Balance (± 5)	-2.24	%				A1030 E	04/09/13 07:07 / kbh
Anions	97.3	meq/L				A1030 E	04/09/13 07:07 / kbh
Cations	93.0	meq/L				A1030 E	04/09/13 07:07 / kbh
Solids, Total Dissolved Calculated	6200	mg/L				A1030 E	04/09/13 07:07 / kbh
TDS Balance (0.80 - 1.20)	0.980					A1030 E	04/09/13 07:07 / kbh

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
H - Analysis performed past recommended holding time.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility
Lab ID: C13040135-020
Client Sample ID 6334

Revised Date: 04/26/13
Report Date: 04/12/13
Collection Date: 04/02/13 13:10
DateReceived: 04/03/13
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Carbonate as CO3	ND	mg/L		5		A2320 B	04/03/13 20:10 / jba
Bicarbonate as HCO3	1190	mg/L		5		A2320 B	04/03/13 20:10 / jba
Calcium	492	mg/L		1		E200.7	04/10/13 13:25 / sf
Chloride	672	mg/L	D	10		E300.0	04/09/13 17:54 / wc
Magnesium	209	mg/L		1		E200.7	04/10/13 13:25 / sf
Potassium	17	mg/L		1		E200.7	04/10/13 13:25 / sf
Sodium	1630	mg/L	D	2		E200.7	04/10/13 13:25 / sf
Sulfate	3820	mg/L	D	40		E300.0	04/09/13 17:54 / wc
PHYSICAL PROPERTIES							
Conductivity @ 25 C	9550	umhos/cm		1		A2510 B	04/04/13 10:50 / ab
pH	7.28	s.u.	H	0.01		A4500-H B	04/04/13 10:50 / ab
Solids, Total Dissolved TDS @ 180 C	7620	mg/L		100		A2540 C	04/04/13 14:35 / ab
METALS - DISSOLVED							
Arsenic	0.002	mg/L		0.001		E200.8	04/05/13 01:26 / cp
Iron	0.03	mg/L		0.03		E200.7	04/04/13 19:17 / sf
Molybdenum	4.56	mg/L	D	0.03		E200.7	04/04/13 19:17 / sf
Selenium	0.066	mg/L		0.001		E200.8	04/05/13 01:26 / cp
Uranium	26	mg/L	D	3		E200.7	04/04/13 19:17 / sf
DATA QUALITY							
A/C Balance (± 5)	-2.95	%				A1030 E	04/11/13 15:19 / kbh
Anions	120	meq/L				A1030 E	04/11/13 15:19 / kbh
Cations	113	meq/L				A1030 E	04/11/13 15:19 / kbh
Solids, Total Dissolved Calculated	7600	mg/L				A1030 E	04/11/13 15:19 / kbh
TDS Balance (0.80 - 1.20)	1.01					A1030 E	04/11/13 15:19 / kbh

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
H - Analysis performed past recommended holding time.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility
Lab ID: C13040135-021
Client Sample ID 6335

Revised Date: 04/26/13
Report Date: 04/12/13
Collection Date: 04/02/13 13:45
DateReceived: 04/03/13
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Carbonate as CO3	ND	mg/L		5		A2320 B	04/03/13 20:30 / jba
Bicarbonate as HCO3	1200	mg/L		5		A2320 B	04/03/13 20:30 / jba
Calcium	474	mg/L		1		E200.7	04/04/13 19:21 / sf
Chloride	664	mg/L	D	10		E300.0	04/04/13 23:44 / wc
Magnesium	202	mg/L		1		E200.7	04/04/13 19:21 / sf
Potassium	16	mg/L		1		E200.7	04/04/13 19:21 / sf
Sodium	1660	mg/L	D	2		E200.7	04/04/13 19:21 / sf
Sulfate	3740	mg/L	D	40		E300.0	04/04/13 23:44 / wc
PHYSICAL PROPERTIES							
Conductivity @ 25 C	9320	umhos/cm		1		A2510 B	04/04/13 10:52 / ab
pH	7.29	s.u.	H	0.01		A4500-H B	04/04/13 10:52 / ab
Solids, Total Dissolved TDS @ 180 C	7310	mg/L		100		A2540 C	04/04/13 14:35 / ab
METALS - DISSOLVED							
Arsenic	0.002	mg/L		0.001		E200.8	04/05/13 01:48 / cp
Iron	ND	mg/L		0.03		E200.7	04/04/13 19:21 / sf
Molybdenum	4.64	mg/L	D	0.03		E200.7	04/04/13 19:21 / sf
Selenium	0.063	mg/L		0.001		E200.8	04/05/13 01:48 / cp
Uranium	26	mg/L	D	3		E200.7	04/04/13 19:21 / sf
DATA QUALITY							
A/C Balance (± 5)	-2.19	%				A1030 E	04/09/13 07:07 / kbh
Anions	118	meq/L				A1030 E	04/09/13 07:07 / kbh
Cations	113	meq/L				A1030 E	04/09/13 07:07 / kbh
Solids, Total Dissolved Calculated	7500	mg/L				A1030 E	04/09/13 07:07 / kbh
TDS Balance (0.80 - 1.20)	0.980					A1030 E	04/09/13 07:07 / kbh

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
H - Analysis performed past recommended holding time.

QA/QC Summary Report

Prepared by Casper, WY Branch

Revised Date: 04/26/13
Report Date: 04/12/13
Work Order: C13040135

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: A2320 B										Batch: R172078
Sample ID: MBLK	3	Method Blank				Run: MANTECH_130403A				04/03/13 14:18
Alkalinity, Total as CaCO3		2	mg/L	1						
Carbonate as CO3		ND	mg/L	1						
Bicarbonate as HCO3		2	mg/L	1						
Sample ID: LCS_130315		Laboratory Control Sample				Run: MANTECH_130403A				04/03/13 14:33
Alkalinity, Total as CaCO3		156	mg/L	5.0	103	90	110			
Sample ID: C13040091-001AMS		Sample Matrix Spike				Run: MANTECH_130403A				04/03/13 15:05
Alkalinity, Total as CaCO3		291	mg/L	5.0	102	80	120			
Sample ID: C13040135-010ADUP	3	Sample Duplicate				Run: MANTECH_130403A				04/03/13 18:33
Alkalinity, Total as CaCO3		937	mg/L	5.0				0.2	10	
Carbonate as CO3		ND	mg/L	5.0					10	
Bicarbonate as HCO3		1140	mg/L	5.0				0.2	10	
Method: A2320 B										Batch: 130404_1_ALK-W
Sample ID: MBLK1_130404_	3	Method Blank				Run: TTR-ALK_130404A				04/04/13 08:52
Alkalinity, Total as CaCO3		1	mg/L	1						
Carbonate as CO3		ND	mg/L	1						
Bicarbonate as HCO3		2	mg/L	1						
Sample ID: LCS_130315_130404_		Laboratory Control Sample				Run: TTR-ALK_130404A				04/04/13 09:18
Alkalinity, Total as CaCO3		1000	mg/L	5.0	100	90	110			
Sample ID: C13040135-001ADUP	3	Sample Duplicate				Run: TTR-ALK_130404A				04/04/13 09:26
Alkalinity, Total as CaCO3		12700	mg/L	5.0				0.0	10	
Carbonate as CO3		4380	mg/L	5.0				1.4	10	
Bicarbonate as HCO3		6580	mg/L	5.0				1.8	10	

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

QA/QC Summary Report

Prepared by Casper, WY Branch

Revised Date: 04/26/13
Report Date: 04/12/13
Work Order: C13040135

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: A2510 B									Analytical Run: PHSC_101-C_130404A	
Sample ID: SC 100		Continuing Calibration Verification Standard							04/04/13 09:02	
Conductivity @ 25 C		106	umhos/cm	1.0	106	90	110			
Method: A2510 B									Batch: R172091	
Sample ID: SC 2ND 1413		Laboratory Control Sample				Run: PHSC_101-C_130404A			04/04/13 09:13	
Conductivity @ 25 C		1510	umhos/cm	1.0	107	90	110			
Sample ID: MBLK		Method Blank				Run: PHSC_101-C_130404A			04/04/13 09:31	
Conductivity @ 25 C		2	umhos/cm	0.2						
Sample ID: C13040135-006ADUP		Sample Duplicate				Run: PHSC_101-C_130404A			04/04/13 10:02	
Conductivity @ 25 C		922	umhos/cm	1.0				0.2	10	
Sample ID: C13040135-016ADUP		Sample Duplicate				Run: PHSC_101-C_130404A			04/04/13 10:31	
Conductivity @ 25 C		3310	umhos/cm	1.0				0.1	10	

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

QA/QC Summary Report

Prepared by Casper, WY Branch

Revised Date: 04/26/13
Report Date: 04/12/13
Work Order: C13040135

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: A2540 C										Batch: TDS130404A
Sample ID: MB-1_130404A		Method Blank				Run: BAL-19_130404A				04/04/13 14:24
Solids, Total Dissolved TDS @ 180 C		ND	mg/L	10						
Sample ID: LCS-2_130404A		Laboratory Control Sample				Run: BAL-19_130404A				04/04/13 14:24
Solids, Total Dissolved TDS @ 180 C		1990	mg/L	20	100	90	110			
Sample ID: C13040135-001A DUP		Sample Duplicate				Run: BAL-19_130404A				04/04/13 14:27
Solids, Total Dissolved TDS @ 180 C		28200	mg/L	500				0.4	5	
Sample ID: C13040135-002A MS		Sample Matrix Spike				Run: BAL-19_130404A				04/04/13 14:28
Solids, Total Dissolved TDS @ 180 C		86000	mg/L	500	98	90	110			
Method: A2540 C										Batch: TDS130405A
Sample ID: MB-1_130405A		Method Blank				Run: BAL-19_130405B				04/05/13 15:19
Solids, Total Dissolved TDS @ 180 C		ND	mg/L	10						
Sample ID: LCS-2_130405A		Laboratory Control Sample				Run: BAL-19_130405B				04/05/13 15:19
Solids, Total Dissolved TDS @ 180 C		1990	mg/L	20	99	90	110			
Sample ID: C13040135-003A DUP		Sample Duplicate				Run: BAL-19_130405B				04/05/13 15:21
Solids, Total Dissolved TDS @ 180 C		45.0	mg/L	10				2.2	5	
Sample ID: C13040136-013A MS		Sample Matrix Spike				Run: BAL-19_130405B				04/05/13 15:22
Solids, Total Dissolved TDS @ 180 C		4880	mg/L	40	100	90	110			

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

QA/QC Summary Report

Prepared by Casper, WY Branch

Revised Date: 04/26/13
Report Date: 04/12/13
Work Order: C13040135

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: A4500-H B									Analytical Run: PHSC_101-C_130404A	
Sample ID: pH 6.86	Initial Calibration Verification Standard								04/04/13 09:00	
pH		6.84	s.u.	0.010	100	98	102			
Method: A4500-H B									Batch: R172091	
Sample ID: C13040135-006ADUP	Sample Duplicate					Run: PHSC_101-C_130404A			04/04/13 10:02	
pH		8.02	s.u.	0.010				0.0	3	
Sample ID: C13040135-016ADUP	Sample Duplicate					Run: PHSC_101-C_130404A			04/04/13 10:31	
pH		7.25	s.u.	0.010				0.0	3	
Sample ID: C13040136-002ADUP	Sample Duplicate					Run: PHSC_101-C_130404A			04/04/13 11:08	
pH		8.12	s.u.	0.010				0.0	3	

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

QA/QC Summary Report

Prepared by Casper, WY Branch

Revised Date: 04/26/13
Report Date: 04/12/13
Work Order: C13040135

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E200.7									Analytical Run: ICP4-C_130404A	
Sample ID: ICV	7	Initial Calibration Verification Standard							04/04/13 14:09	
Calcium		49.0	mg/L	0.50	98	95	105			
Iron		4.91	mg/L	0.030	98	95	105			
Magnesium		48.9	mg/L	0.50	98	95	105			
Molybdenum		0.976	mg/L	0.10	98	95	105			
Potassium		47.9	mg/L	0.50	96	95	105			
Sodium		49.3	mg/L	0.50	99	95	105			
Uranium		5.08	mg/L	1.0	102	95	105			
Sample ID: ICSA	7	Interference Check Sample A							04/04/13 14:24	
Calcium		442	mg/L	0.50	88	80	120			
Iron		171	mg/L	0.030	86	80	120			
Magnesium		487	mg/L	0.50	97	80	120			
Molybdenum		0.000880	mg/L	0.10						
Potassium		-0.0164	mg/L	0.50						
Sodium		0.453	mg/L	0.50						
Uranium		0.00172	mg/L	1.0						
Sample ID: ICSAB	7	Interference Check Sample AB							04/04/13 14:28	
Calcium		442	mg/L	0.50	88	80	120			
Iron		173	mg/L	0.030	86	80	120			
Magnesium		488	mg/L	0.50	98	80	120			
Molybdenum		0.00259	mg/L	0.10						
Potassium		-0.00535	mg/L	0.50						
Sodium		0.407	mg/L	0.50						
Uranium		-0.0471	mg/L	1.0						
Method: E200.7									Batch: R172148	
Sample ID: MB-130404A	7	Method Blank				Run: ICP4-C_130404A			04/04/13 14:47	
Calcium		ND	mg/L	0.02						
Iron		ND	mg/L	0.002						
Magnesium		0.06	mg/L	0.01						
Molybdenum		ND	mg/L	0.003						
Potassium		ND	mg/L	0.04						
Sodium		ND	mg/L	0.2						
Uranium		ND	mg/L	0.3						
Sample ID: LFB-130404A	7	Laboratory Fortified Blank				Run: ICP4-C_130404A			04/04/13 14:50	
Calcium		46.4	mg/L	0.50	93	85	115			
Iron		0.932	mg/L	0.030	93	85	115			
Magnesium		46.2	mg/L	0.50	92	85	115			
Molybdenum		0.959	mg/L	0.10	96	85	115			
Potassium		45.0	mg/L	0.50	90	85	115			
Sodium		45.4	mg/L	0.50	91	85	115			
Uranium		4.82	mg/L	1.0	96	85	115			

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

QA/QC Summary Report

Prepared by Casper, WY Branch

Revised Date: 04/26/13
Report Date: 04/12/13
Work Order: C13040135

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E200.7										Batch: R172148
Sample ID: C13040135-003BMS2	7	Sample Matrix Spike				Run: ICP4-C_130404A				04/04/13 16:46
Calcium		104	mg/L	1.0	93	70	130			
Iron		1.84	mg/L	0.030	90	70	130			
Magnesium		96.9	mg/L	1.0	92	70	130			
Molybdenum		1.93	mg/L	0.0059	94	70	130			
Potassium		90.5	mg/L	1.0	88	70	130			
Sodium		94.5	mg/L	1.0	90	70	130			
Uranium		9.09	mg/L	0.61	89	70	130			
Sample ID: C13040135-003BMSD	7	Sample Matrix Spike Duplicate				Run: ICP4-C_130404A				04/04/13 16:49
Calcium		102	mg/L	1.0	92	70	130	1.0	20	
Iron		1.81	mg/L	0.030	89	70	130	1.5	20	
Magnesium		96.2	mg/L	1.0	92	70	130	0.7	20	
Molybdenum		1.91	mg/L	0.0059	94	70	130	0.6	20	
Potassium		89.0	mg/L	1.0	87	70	130	1.7	20	
Sodium		93.7	mg/L	1.0	89	70	130	0.8	20	
Uranium		8.95	mg/L	0.61	88	70	130	1.6	20	
Sample ID: C13040135-012BMS2	7	Sample Matrix Spike				Run: ICP4-C_130404A				04/04/13 18:26
Calcium		238	mg/L	1.0	92	70	130			
Iron		1.89	mg/L	0.030	93	70	130			
Magnesium		134	mg/L	1.0	92	70	130			
Molybdenum		2.02	mg/L	0.0059	98	70	130			
Potassium		102	mg/L	1.0	94	70	130			
Sodium		185	mg/L	1.0	91	70	130			
Uranium		9.14	mg/L	0.61	90	70	130			
Sample ID: C13040135-012BMSD	7	Sample Matrix Spike Duplicate				Run: ICP4-C_130404A				04/04/13 18:29
Calcium		234	mg/L	1.0	88	70	130	1.6	20	
Iron		1.87	mg/L	0.030	91	70	130	1.5	20	
Magnesium		133	mg/L	1.0	91	70	130	1.0	20	
Molybdenum		1.99	mg/L	0.0059	97	70	130	1.3	20	
Potassium		100	mg/L	1.0	92	70	130	1.3	20	
Sodium		182	mg/L	1.0	88	70	130	1.4	20	
Uranium		8.88	mg/L	0.61	87	70	130	2.9	20	
Sample ID: C13040135-021BMS2	7	Sample Matrix Spike				Run: ICP4-C_130404A				04/04/13 19:25
Calcium		935	mg/L	1.0	90	70	130			
Iron		9.48	mg/L	0.030	93	70	130			
Magnesium		680	mg/L	1.0	94	70	130			
Molybdenum		14.1	mg/L	0.030	93	70	130			
Potassium		486	mg/L	1.0	92	70	130			
Sodium		2070	mg/L	2.1	80	70	130			
Uranium		72.1	mg/L	3.1	91	70	130			
Sample ID: C13040135-021BMSD	7	Sample Matrix Spike Duplicate				Run: ICP4-C_130404A				04/04/13 19:28
Calcium		929	mg/L	1.0	89	70	130	0.6	20	

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

QA/QC Summary Report

Prepared by Casper, WY Branch

Revised Date: 04/26/13
Report Date: 04/12/13
Work Order: C13040135

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E200.7										Batch: R172148
Sample ID: C13040135-021BMSD	7	Sample Matrix Spike Duplicate				Run: ICP4-C_130404A				04/04/13 19:28
Iron		9.43	mg/L	0.030	92	70	130	0.5	20	
Magnesium		678	mg/L	1.0	93	70	130	0.3	20	
Molybdenum		14.1	mg/L	0.030	93	70	130	0.3	20	
Potassium		481	mg/L	1.0	91	70	130	0.9	20	
Sodium		2050	mg/L	2.1	77	70	130	0.8	20	
Uranium		71.0	mg/L	3.1	89	70	130	1.5	20	
Method: E200.7										Analytical Run: ICP4-C_130405C
Sample ID: ICV		Initial Calibration Verification Standard								04/05/13 13:03
Sodium		49.2	mg/L	0.50	98	95	105			
Sample ID: ICSA		Interference Check Sample A								04/05/13 13:17
Sodium		-0.0255	mg/L	0.50						
Sample ID: ICSAB		Interference Check Sample AB								04/05/13 13:21
Sodium		-0.117	mg/L	0.50						
Method: E200.7										Batch: R172205
Sample ID: LFB-130405A		Laboratory Fortified Blank				Run: ICP4-C_130405C				04/05/13 13:39
Sodium		45.8	mg/L	0.50	91	85	115			
Sample ID: MB-130405A		Method Blank				Run: ICP4-C_130405C				04/05/13 13:43
Sodium		0.2	mg/L	0.2						
Sample ID: C13040135-003BMS2		Sample Matrix Spike				Run: ICP4-C_130405C				04/05/13 18:27
Sodium		109	mg/L	1.0	103	70	130			
Sample ID: C13040135-003BMSD		Sample Matrix Spike Duplicate				Run: ICP4-C_130405C				04/05/13 18:30
Sodium		110	mg/L	1.0	104	70	130	1.0	20	

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

QA/QC Summary Report

Prepared by Casper, WY Branch

Revised Date: 04/26/13
Report Date: 04/12/13
Work Order: C13040135

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E200.7									Analytical Run: ICP4-C_130410A	
Sample ID: ICV	4	Initial Calibration Verification Standard							04/10/13 11:57	
Calcium		50.5	mg/L	0.50	101	95	105			
Magnesium		49.4	mg/L	0.50	99	95	105			
Potassium		49.3	mg/L	0.50	99	95	105			
Sodium		50.7	mg/L	0.50	101	95	105			
Sample ID: ICSA	4	Interference Check Sample A							04/10/13 12:11	
Calcium		443	mg/L	0.50	89	80	120			
Magnesium		485	mg/L	0.50	97	80	120			
Potassium		0.0149	mg/L	0.50						
Sodium		0.372	mg/L	0.50						
Sample ID: ICSAB	4	Interference Check Sample AB							04/10/13 12:16	
Calcium		450	mg/L	0.50	90	80	120			
Magnesium		489	mg/L	0.50	98	80	120			
Potassium		0.00999	mg/L	0.50						
Sodium		0.266	mg/L	0.50						
Method: E200.7										Batch: R172340
Sample ID: MB-1304010A	4	Method Blank				Run: ICP4-C_130410A			04/10/13 12:34	
Calcium		ND	mg/L	0.02						
Magnesium		0.04	mg/L	0.01						
Potassium		ND	mg/L	0.04						
Sodium		ND	mg/L	0.2						
Sample ID: LFB-1304010A	4	Laboratory Fortified Blank				Run: ICP4-C_130410A			04/10/13 12:38	
Calcium		48.6	mg/L	0.50	97	85	115			
Magnesium		47.5	mg/L	0.50	95	85	115			
Potassium		47.8	mg/L	0.50	96	85	115			
Sodium		48.1	mg/L	0.50	96	85	115			
Sample ID: C13040322-001BMS2	4	Sample Matrix Spike				Run: ICP4-C_130410A			04/10/13 12:52	
Calcium		751	mg/L	1.0	92	70	130			
Magnesium		532	mg/L	1.0	93	70	130			
Potassium		483	mg/L	1.0	94	70	130			
Sodium		521	mg/L	2.1	93	70	130			
Sample ID: C13040322-001BMSD	4	Sample Matrix Spike Duplicate				Run: ICP4-C_130410A			04/10/13 12:56	
Calcium		744	mg/L	1.0	90	70	130	0.9	20	
Magnesium		530	mg/L	1.0	93	70	130	0.3	20	
Potassium		479	mg/L	1.0	93	70	130	0.9	20	
Sodium		519	mg/L	2.1	93	70	130	0.5	20	

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

QA/QC Summary Report

Prepared by Casper, WY Branch

Revised Date: 04/26/13
Report Date: 04/12/13
Work Order: C13040135

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E200.8									Analytical Run: ICPMS4-C_130404A	
Sample ID: ICV	6	Initial Calibration Verification Standard							04/04/13 13:07	
Arsenic		0.0499	mg/L	0.0010	100	90	110			
Iron		0.991	mg/L	0.0010	99	90	110			
Molybdenum		0.0487	mg/L	0.0010	97	90	110			
Potassium		9.76	mg/L	0.0041	98	90	110			
Selenium		0.0490	mg/L	0.0010	98	90	110			
Uranium		0.0485	mg/L	0.00030	97	90	110			
Method: E200.8									Batch: R172153	
Sample ID: LRB	6	Method Blank				Run: ICPMS4-C_130404A			04/04/13 13:41	
Arsenic		ND	mg/L	5E-05						
Iron		ND	mg/L	0.0006						
Molybdenum		8E-05	mg/L	3E-05						
Potassium		0.005	mg/L	0.004						
Selenium		ND	mg/L	7E-05						
Uranium		1E-05	mg/L	9E-06						
Sample ID: LFB	6	Laboratory Fortified Blank				Run: ICPMS4-C_130404A			04/04/13 13:46	
Arsenic		0.0511	mg/L	0.0010	102	85	115			
Iron		1.23	mg/L	0.0010	99	85	115			
Molybdenum		0.0498	mg/L	0.0010	100	85	115			
Potassium		12.3	mg/L	0.0041	99	85	115			
Selenium		0.0505	mg/L	0.0010	101	85	115			
Uranium		0.0515	mg/L	0.00030	103	85	115			
Sample ID: C13040136-007BMS4	6	Sample Matrix Spike				Run: ICPMS4-C_130404A			04/05/13 04:17	
Arsenic		0.0550	mg/L	0.0010	106	70	130			
Iron		1.29	mg/L	0.030	103	70	130			
Molybdenum		0.0547	mg/L	0.0010	106	70	130			
Potassium		25.9	mg/L	1.0	96	70	130			
Selenium		0.0636	mg/L	0.0010	99	70	130			
Uranium		0.431	mg/L	0.00030		70	130			A
Sample ID: C13040136-007BMSD	6	Sample Matrix Spike Duplicate				Run: ICPMS4-C_130404A			04/05/13 04:22	
Arsenic		0.0570	mg/L	0.0010	110	70	130	3.7	20	
Iron		1.24	mg/L	0.030	99	70	130	3.8	20	
Molybdenum		0.0550	mg/L	0.0010	107	70	130	0.5	20	
Potassium		27.3	mg/L	1.0	107	70	130	5.0	20	
Selenium		0.0624	mg/L	0.0010	97	70	130	2.0	20	
Uranium		0.427	mg/L	0.00030		70	130	1.0	20	A

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

A - The analyte level was greater than four times the spike level. In accordance with the method % recovery is not calculated.

QA/QC Summary Report

Prepared by Casper, WY Branch

Revised Date: 04/26/13
Report Date: 04/12/13
Work Order: C13040135

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E300.0									Analytical Run: IC2-C_130404A	
Sample ID: ICV-040413	2	Initial Calibration Verification Standard							04/04/13 13:12	
Chloride		10.1	mg/L	1.0	101	90	110			
Sulfate		40.4	mg/L	1.0	101	90	110			
Method: E300.0									Batch: R172171	
Sample ID: ICB-040413	2	Method Blank				Run: IC2-C_130404A			04/04/13 13:27	
Chloride		ND	mg/L	0.03						
Sulfate		0.09	mg/L	0.07						
Sample ID: LFB-040413-01	2	Laboratory Fortified Blank				Run: IC2-C_130404A			04/04/13 13:43	
Chloride		10.7	mg/L	1.0	107	90	110			
Sulfate		42.4	mg/L	1.0	106	90	110			
Sample ID: C13040727-003AMS	2	Sample Matrix Spike				Run: IC2-C_130404A			04/05/13 01:32	
Chloride		3650	mg/L	42	110	90	110			
Sulfate		19600	mg/L	170	109	90	110			
Sample ID: C13040727-003AMSD	2	Sample Matrix Spike Duplicate				Run: IC2-C_130404A			04/05/13 01:48	
Chloride		3660	mg/L	42	111	90	110	0.3	20	S
Sulfate		19600	mg/L	170	109	90	110	0.0	20	
Method: E300.0									Analytical Run: IC2-C_130409B	
Sample ID: ICV-040913	2	Initial Calibration Verification Standard							04/09/13 13:24	
Chloride		10.1	mg/L	1.0	101	90	110			
Sulfate		39.8	mg/L	1.0	100	90	110			
Method: E300.0									Batch: R172320	
Sample ID: ICB-040913	2	Method Blank				Run: IC2-C_130409B			04/09/13 15:50	
Chloride		ND	mg/L	0.03						
Sulfate		0.1	mg/L	0.07						
Sample ID: LFB-040913-01	2	Laboratory Fortified Blank				Run: IC2-C_130409B			04/09/13 16:06	
Chloride		10.6	mg/L	1.0	106	90	110			
Sulfate		42.1	mg/L	1.0	105	90	110			
Sample ID: C13040302-001AMS	2	Sample Matrix Spike				Run: IC2-C_130409B			04/09/13 16:52	
Chloride		46.0	mg/L	1.0	108	90	110			
Sulfate		306	mg/L	1.7	103	90	110			
Sample ID: C13040302-001AMSD	2	Sample Matrix Spike Duplicate				Run: IC2-C_130409B			04/09/13 17:08	
Chloride		45.8	mg/L	1.0	107	90	110	0.6	20	
Sulfate		305	mg/L	1.7	101	90	110	0.5	20	

Qualifiers:

RL - Analyte reporting limit.
ND - Not detected at the reporting limit.
S - Spike recovery outside of advisory limits.

Standard Reporting Procedures

Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH, Dissolved Oxygen and Residual Chlorine, are qualified as being analyzed outside of recommended holding time.

Solid/soil samples are reported on a wet weight basis (as received) unless specifically indicated. If moisture corrected, data units are typically noted as –dry. For agricultural and mining soil parameters/characteristics, all samples are dried and ground prior to sample analysis.

Workorder Receipt Checklist

Rio Algom Mining Corporation LLC C13040135

Login completed by: Dorian Quis
Date Received: 4/3/2013
Reviewed by: BL2000\kmiller
Received by: dw
Reviewed Date: 4/4/2013
Carrier name: NDA

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on shipping container/cooler?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time? (Exclude analyses that are considered field parameters such as pH, DO, Res Cl, Sulfite, Ferrous Iron, etc.)	Yes ☑	No ☐	
Temp Blank received?	Yes ☑	No ☐	Not Applicable ☐
Container/Temp Blank temperature:	0.4°C On Ice		
Water - VOA vials have zero headspace?	Yes ☐	No ☐	No VOA vials submitted ☑
Water - pH acceptable upon receipt?	Yes ☑	No ☐	Not Applicable ☐

Contact and Corrective Action Comments:

Samples for 6321 were received at a Ph of 7. 2 mLs HNO3 were added to preserve to a Ph <2. Samples for 6322 were received at a Ph of 7. 2 mLs HNO3 were added to preserve to a Ph <2.

Chain of Custody and Analytical Request Record

PLEASE PRINT- Provide as much information as possible.

Company Name: Rio Algom Mining Corp	Project Name, PWS, Permit, Etc.: Lisbon, UT Facility	Sample Origin State: UT	EPA/State Compliance: Yes ☐ No ☐
Report Mail Address: Montgomery and Associates; Results retrieved from Energy Source	Contact Name: John Laney; Phone/Fax: (520) 425-2219; Email: jlaney@clmontgomery.com		Sampler: (Please Print) J. Kerns / B. Myers
Invoice Address: Email invoice to Gail, PO Box 218, Grants, NM 87020	Invoice Contact & Phone: Gail Alexander (505) 287-8851	Purchase Order:	Quote/Bottle Order: C3636

Special Report/Formats – ELI must be notified prior to sample submittal for the following:

☐ DW ☐ GSA ☐ POTW/WWTP ☐ State: _____ ☐ Other: _____
☐ A2LA ☐ EDD/EDT (Electronic Data) Format: _____ ☐ LEVEL IV ☐ NELAC

Shipped by: Fed Ex
Cooler ID(s): Owens
Receipt Temp: 4 °C
On Ice: (Yes) No
Custody Seal (Y) N
Intact (Y) N
Signature Match (Y) N

Contact ELI prior to **RUSH** sample submittal for charges and scheduling – See Instruction Page

Comments:

SAMPLE IDENTIFICATION (Name, Location, Interval, etc.)	Collection Date	Collection Time	MATRIX	Number of Containers / Sample Type: A W S V B O / Air Water Soils/Solids Vegetation Bioassay Other	ANALYSIS REQUESTED: C3636	SEE ATTACHED	Normal Turnaround (TAT)	RUSH	Comments
1 6321	01APR2013	1315	Water		X				
2 6322	01APR2013	1405	Water		X				
3 6323	01APR2013	1420	Water		X				
4 6324	01APR2013	1430	Water		X				C13040135
5 6325	01APR2013	1605	Water		X				
6 6314	02APR2013	0820	Water		X				
7 6315	02APR2013	0925	Water		X				
8 6316	02APR2013	1045	Water		X				
9 6317	02APR2013	1050	Water		X				
10 6318	02APR2013	1130	Water		X				

Custody Record MUST be Signed

Relinquished by (print): J. Kerns	Date/Time: 02APR2013	Signature:	Received by (print):	Date/Time:	Signature:
Relinquished by (print):	Date/Time:	Signature:	Received by (print):	Date/Time:	Signature:
			Received by Laboratory: D. Willis	Date/Time: 4-3-13 10:00	Signature:

Sample Disposal: Return to Client: _____ Lab Disposal: _____

LABORATORY USE ONLY

In certain circumstances, samples submitted to Energy Laboratories, Inc. may be subcontracted to other certified laboratories in order to complete the analysis requested.
This serves as notice of this possibility. All sub-contract data will be clearly notated on your analytical report.
Visit our web site at www.energylab.com for additional information, downloadable fee schedule, forms, and links.

Chain of Custody and Analytical Request Record

PLEASE PRINT- Provide as much information as possible.

Company Name:	Project Name, PWS, Permit, Etc.	Sample Origin	EPA/State Compliance:
Rio Algom Mining Corp	Lisbon, UT Facility	State: UT	Yes ☐ No ☐
Report Mail Address: Montgomery and Associates Results retrieved from Energy Source	**Contact Name:** John Laney **Phone/Fax:** (520) 425-2219 **Email:** jlaney@clmontgomery.com		**Sampler: (Please Print)** J.Kerns / B.Myers
Invoice Address: Email invoice to Gail PO Box 218 Grants, NM 87020	**Invoice Contact & Phone:** Gail Alexander (505) 287-8851	**Purchase Order:**	**Quote/Bottle Order:** C3636

Special Report/Formats – ELI must be notified prior to sample submittal for the following:

- ☐ DW
- ☐ GSA
- ☐ POTW/WWTP
- ☐ State: _____
- ☐ Other: _____
- ☐ A2LA
- ☐ EDD/EDT (Electronic Data) Format: _____
- ☐ LEVEL IV
- ☐ NELAC

Number of Containers
Sample Type: A W S V B O
Air Water Soils/Solids Vegetation Biosassay Other

ANALYSIS REQUESTED

C3636

SEE ATTACHED

Normal Turnaround (TAT)

RUSH

Contact ELI prior to **RUSH** sample submittal for charges and scheduling – See Instruction Page

Comments:

Shipped by: Fed Ex

Cooler ID(s): Various

Receipt Temp 4 °C

On Ice: (Yes) No

Custody Seal Y N
Intact Y N
Signature Match Y N

	SAMPLE IDENTIFICATION (Name, Location, Interval, etc.)	Collection Date	Collection Time	MATRIX
1	6319	02APR2013	1300	W
2	6326		0840	
3	6327		0910	
4	6328		1015	
5	6329		1035	
6	6330		1040	
7	6331		1105	
8	6332		1200	
9	6333		1230	
10	6334		1310	

C1304D135

LABORATORY USE ONLY

Custody Record MUST be Signed

	Relinquished by (print):	Date/Time:	Signature:	Received by (print):	Date/Time:	Signature:
	J.Kerns	02APR 2013				
	Relinquished by (print):	Date/Time:	Signature:	Received by (print):	Date/Time:	Signature:
				Received by Laboratory:	Date/Time: 4-13-13	Signature: 1000

Sample Disposal: Return to Client: _____ Lab Disposal: _____

In certain circumstances, samples submitted to Energy Laboratories, Inc. may be subcontracted to other certified laboratories in order to complete the analysis requested.
This serves as notice of this possibility. All sub-contract data will be clearly notated on your analytical report.
Visit our web site at www.energylab.com for additional information, downloadable fee schedule, forms, and links.

Chain of Custody and Analytical Request Record

PLEASE PRINT- Provide as much information as possible.

Company Name: Rio Algom Mining Corp	Project Name, PWS, Permit, Etc.: Lisbon, UT Facility	Sample Origin State: UT	EPA/State Compliance: Yes ☐ No ☐
Report Mail Address: Montgomery and Associates Results retrieved from Energy Source	Contact Name: John Laney Phone/Fax: (520) 425-2219 Email: jlaney@clmontgomery.com		Sampler: (Please Print) JKerns / B Myers
Invoice Address: Email invoice to Gail PO Box 218 Grants, NM 87020	Invoice Contact & Phone: Gail Alexander (505) 287-8851	Purchase Order:	Quote/Bottle Order: C3636

Special Report/Formats – ELI must be notified prior to sample submittal for the following:

- ☐ DW
- ☐ GSA
- ☐ POTW/WWTP
- ☐ State: _____
- ☐ Other: _____
- ☐ A2LA
- ☐ EDD/EDT (Electronic Data) Format: _____
- ☐ LEVEL IV
- ☐ NELAC

Number of Containers
Sample Type: A Air W Water S Soils/Solids V Vegetation B Bioassay O Other

ANALYSIS REQUESTED

SEE ATTACHED

Normal Turnaround (TAT)

RUSH

Contact ELI prior to **RUSH** sample submittal for charges and scheduling – See Instruction Page

Comments:

Shipped by: Fed Ex

Cooler ID(s): Coolers

Receipt Temp: 4 °C

On Ice: (Yes) No

Custody Seal Intact: Y N

Signature Match: Y N

SAMPLE IDENTIFICATION (Name, Location, Interval, etc.)	Collection Date	Collection Time	MATRIX	C3636	Comments
1 6335	02APR2013	1345	water	X	
2					
3					
4					C13040135
5					
6					
7					
8					
9					
10					

LABORATORY USE ONLY

Custody Record MUST be Signed

Relinquished by (print): J. Kerns	Date/Time: 02APR2013	Signature:	Received by (print):	Date/Time:	Signature:
Relinquished by (print):	Date/Time:	Signature:	Received by (print):	Date/Time:	Signature:
			Received by Laboratory:	Date/Time: 4-3-13 1000	Signature:

Sample Disposal: Return to Client: _____ Lab Disposal: _____

In certain circumstances, samples submitted to Energy Laboratories, Inc. may be subcontracted to other certified laboratories in order to complete the analysis requested.
This serves as notice of this possibility. All sub-contract data will be clearly notated on your analytical report.
Visit our web site at www.energylab.com for additional information, downloadable fee schedule, forms, and links.

ANALYTICAL SUMMARY REPORT

May 17, 2013

Rio Algom Mining Corporation LLC
Hwy 605 and 509
Grants, NM 87020

Workorder No.: C13040264 Quote ID: C3636 - Groundwater

Project Name: Lisbon, UT Facility

Energy Laboratories, Inc. Casper WY received the following 43 samples for Rio Algom Mining Corporation LLC on 4/5/2013 for analysis.

Sample ID	Client Sample ID	Collect Date	Receive Date	Matrix	Test
C13040264-001	6320	04/03/13 8:10	04/05/13	Groundwater	Metals by ICP/ICPMS, Dissolved Alkalinity QA Calculations Conductivity E300.0 Anions pH Solids, Total Dissolved Solids, Total Dissolved - Calculated
C13040264-002	6371	04/03/13 9:25	04/05/13	Groundwater	Same As Above
C13040264-003	6372	04/03/13 9:30	04/05/13	Groundwater	Same As Above
C13040264-004	6373	04/03/13 10:25	04/05/13	Groundwater	Same As Above
C13040264-005	6374	04/03/13 10:30	04/05/13	Groundwater	Same As Above
C13040264-006	6377	04/03/13 12:05	04/05/13	Groundwater	Same As Above
C13040264-007	6378	04/03/13 12:50	04/05/13	Groundwater	Same As Above
C13040264-008	6379	04/03/13 14:20	04/05/13	Groundwater	Same As Above
C13040264-009	6380	04/04/13 6:50	04/05/13	Groundwater	Same As Above
C13040264-010	6391	04/04/13 7:40	04/05/13	Groundwater	Same As Above
C13040264-011	6392	04/04/13 8:05	04/05/13	Groundwater	Same As Above
C13040264-012	6393	04/04/13 8:45	04/05/13	Groundwater	Same As Above
C13040264-013	6394	04/04/13 9:25	04/05/13	Groundwater	Same As Above
C13040264-014	6395	04/04/13 10:25	04/05/13	Groundwater	Same As Above
C13040264-015	6396	04/04/13 10:30	04/05/13	Groundwater	Same As Above
C13040264-016	6397	04/04/13 11:00	04/05/13	Groundwater	Same As Above
C13040264-017	6399	04/04/13 12:10	04/05/13	Groundwater	Same As Above
C13040264-018	6401	04/04/13 12:50	04/05/13	Groundwater	Same As Above
C13040264-019	6403	04/04/13 13:00	04/05/13	Groundwater	Same As Above
C13040264-020	6336	04/03/13 8:10	04/05/13	Groundwater	Same As Above
C13040264-021	6337	04/03/13 8:40	04/05/13	Groundwater	Same As Above
C13040264-022	6338	04/03/13 9:25	04/05/13	Groundwater	Same As Above
C13040264-023	6339	04/03/13 9:50	04/05/13	Groundwater	Same As Above
C13040264-024	6340	04/03/13 10:35	04/05/13	Groundwater	Same As Above

ANALYTICAL SUMMARY REPORT

C13040264-025	6341	04/03/13 10:40	04/05/13	Groundwater	Same As Above
C13040264-026	6342	04/03/13 11:35	04/05/13	Groundwater	Same As Above
C13040264-027	6343	04/03/13 12:00	04/05/13	Groundwater	Same As Above
C13040264-028	6344	04/03/13 12:35	04/05/13	Groundwater	Same As Above
C13040264-029	6345	04/03/13 13:20	04/05/13	Groundwater	Same As Above
C13040264-030	6346	04/03/13 14:25	04/05/13	Groundwater	Same As Above
C13040264-031	6347	04/03/13 15:05	04/05/13	Groundwater	Same As Above
C13040264-032	6348	04/04/13 6:50	04/05/13	Groundwater	Same As Above
C13040264-033	6349	04/04/13 7:00	04/05/13	Groundwater	Same As Above
C13040264-034	6350	04/04/13 7:30	04/05/13	Groundwater	Same As Above
C13040264-035	6351	04/04/13 8:10	04/05/13	Groundwater	Same As Above
C13040264-036	6352	04/04/13 8:40	04/05/13	Groundwater	Same As Above
C13040264-037	6353	04/04/13 9:15	04/05/13	Groundwater	Same As Above
C13040264-038	6354	04/04/13 10:15	04/05/13	Groundwater	Same As Above
C13040264-039	6355	04/04/13 11:00	04/05/13	Groundwater	Same As Above
C13040264-040	6356	04/04/13 11:25	04/05/13	Groundwater	Same As Above
C13040264-041	6357	04/04/13 11:30	04/05/13	Groundwater	Same As Above
C13040264-042	6358	04/04/13 12:15	04/05/13	Groundwater	Same As Above
C13040264-043	6359	04/04/13 12:40	04/05/13	Groundwater	Same As Above

The results as reported relate only to the item(s) submitted for testing. The analyses presented in this report were performed at Energy Laboratories, Inc., 2393 Salt Creek Hwy., Casper, WY 82601, unless otherwise noted. Radiochemistry analyses were performed at Energy Laboratories, Inc., 2325 Kerzell Lane, Casper, WY 82601, unless otherwise noted. Any exceptions or problems with the analyses are noted in the Laboratory Analytical Report, the QA/QC Summary Report, or the Case Narrative.

If you have any questions regarding these test results, please call.

Report Approved By:

CLIENT: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility
Sample Delivery Group: C13040264

Revised Date: 05/17/13
Report Date: 04/19/13

CASE NARRATIVE

REVISED/SUPPLEMENTAL REPORT
The attached analytical report has been revised from a previously submitted report due to the request by Leilani Bew on May 9, 2013 to correct the sample date to 4/3/13 on samples -026 through -029 The report has been revised and replaces any previously issued report in its entirety.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility
Lab ID: C13040264-001
Client Sample ID 6320

Revised Date: 05/17/13
Report Date: 04/19/13
Collection Date: 04/03/13 08:10
DateReceived: 04/05/13
Matrix: Groundwater

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Carbonate as CO3	180	mg/L		5		A2320 B	04/11/13 08:24 / jba
Bicarbonate as HCO3	4510	mg/L		5		A2320 B	04/11/13 08:24 / jba
Calcium	62	mg/L		1		E200.7	04/10/13 13:29 / sf
Chloride	1250	mg/L	D	20		E300.0	04/09/13 03:38 / wc
Magnesium	66	mg/L		1		E200.7	04/10/13 13:29 / sf
Potassium	9	mg/L		1		E200.7	04/10/13 13:29 / sf
Sodium	5110	mg/L	D	4		E200.7	04/10/13 13:29 / sf
Sulfate	6100	mg/L	D	80		E300.0	04/09/13 03:38 / wc
PHYSICAL PROPERTIES							
Conductivity @ 25 C	18800	umhos/cm		1		A2510 B	04/08/13 10:51 / ab
pH	8.37	s.u.	H	0.01		A4500-H B	04/08/13 10:51 / ab
Solids, Total Dissolved TDS @ 180 C	15100	mg/L		200		A2540 C	04/09/13 12:33 / jz
METALS - DISSOLVED							
Arsenic	0.021	mg/L		0.001		E200.8	04/08/13 22:32 / clm
Iron	0.60	mg/L	D	0.04		E200.7	04/10/13 13:29 / sf
Molybdenum	21.6	mg/L		0.01		E200.8	04/08/13 22:32 / clm
Selenium	0.078	mg/L	D	0.003		E200.8	04/08/13 22:32 / clm
Uranium	139	mg/L	D	0.001		E200.8	04/08/13 22:32 / clm
DATA QUALITY							
A/C Balance (± 5)	-2.39	%				A1030 E	04/12/13 06:55 / kbh
Anions	242	meq/L				A1030 E	04/12/13 06:55 / kbh
Cations	231	meq/L				A1030 E	04/12/13 06:55 / kbh
Solids, Total Dissolved Calculated	15000	mg/L				A1030 E	04/12/13 06:55 / kbh
TDS Balance (0.80 - 1.20)	1.01					A1030 E	04/12/13 06:55 / kbh

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
H - Analysis performed past recommended holding time.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility
Lab ID: C13040264-002
Client Sample ID 6371

Revised Date: 05/17/13
Report Date: 04/19/13
Collection Date: 04/03/13 09:25
DateReceived: 04/05/13
Matrix: Groundwater

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Carbonate as CO3	120	mg/L		5		A2320 B	04/11/13 08:41 / jba
Bicarbonate as HCO3	4940	mg/L		5		A2320 B	04/11/13 08:41 / jba
Calcium	59	mg/L		1		E200.7	04/10/13 13:33 / sf
Chloride	1260	mg/L	D	20		E300.0	04/09/13 03:56 / wc
Magnesium	65	mg/L		1		E200.7	04/10/13 13:33 / sf
Potassium	9	mg/L		1		E200.7	04/10/13 13:33 / sf
Sodium	5030	mg/L	D	4		E200.7	04/10/13 13:33 / sf
Sulfate	6160	mg/L	D	80		E300.0	04/09/13 03:56 / wc
PHYSICAL PROPERTIES							
Conductivity @ 25 C	18900	umhos/cm		1		A2510 B	04/08/13 10:53 / ab
pH	8.41	s.u.	H	0.01		A4500-H B	04/08/13 10:53 / ab
Solids, Total Dissolved TDS @ 180 C	14900	mg/L		200		A2540 C	04/09/13 12:33 / jz
METALS - DISSOLVED							
Arsenic	0.046	mg/L		0.001		E200.8	04/08/13 22:35 / clm
Iron	0.81	mg/L	D	0.04		E200.7	04/10/13 13:33 / sf
Molybdenum	21.5	mg/L		0.01		E200.8	04/08/13 22:35 / clm
Selenium	0.093	mg/L	D	0.003		E200.8	04/08/13 22:35 / clm
Uranium	143	mg/L	D	0.001		E200.8	04/08/13 22:35 / clm
DATA QUALITY							
A/C Balance (± 5)	-4.49	%				A1030 E	04/12/13 06:55 / kbh
Anions	249	meq/L				A1030 E	04/12/13 06:55 / kbh
Cations	227	meq/L				A1030 E	04/12/13 06:55 / kbh
Solids, Total Dissolved Calculated	15000	mg/L				A1030 E	04/12/13 06:55 / kbh
TDS Balance (0.80 - 1.20)	0.990					A1030 E	04/12/13 06:55 / kbh

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
H - Analysis performed past recommended holding time.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility
Lab ID: C13040264-003
Client Sample ID 6372

Revised Date: 05/17/13
Report Date: 04/19/13
Collection Date: 04/03/13 09:30
DateReceived: 04/05/13
Matrix: Groundwater

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Carbonate as CO3	480	mg/L		5		A2320 B	04/11/13 09:07 / jba
Bicarbonate as HCO3	3960	mg/L		5		A2320 B	04/11/13 09:07 / jba
Calcium	58	mg/L		1		E200.7	04/10/13 13:40 / sf
Chloride	1240	mg/L	D	40		E300.0	04/09/13 05:05 / wc
Magnesium	65	mg/L		1		E200.7	04/10/13 13:40 / sf
Potassium	8	mg/L		1		E200.7	04/10/13 13:40 / sf
Sodium	4960	mg/L	D	4		E200.7	04/10/13 13:40 / sf
Sulfate	5980	mg/L	D	200		E300.0	04/09/13 05:05 / wc
PHYSICAL PROPERTIES							
Conductivity @ 25 C	18800	umhos/cm		1		A2510 B	04/08/13 10:56 / ab
pH	8.42	s.u.	H	0.01		A4500-H B	04/08/13 10:56 / ab
Solids, Total Dissolved TDS @ 180 C	15300	mg/L		200		A2540 C	04/09/13 12:33 / jz
METALS - DISSOLVED							
Arsenic	0.042	mg/L		0.001		E200.8	04/08/13 22:38 / clm
Iron	0.77	mg/L	D	0.04		E200.7	04/10/13 13:40 / sf
Molybdenum	21.0	mg/L		0.01		E200.8	04/08/13 22:38 / clm
Selenium	0.100	mg/L	D	0.003		E200.8	04/08/13 22:38 / clm
Uranium	140	mg/L	D	0.001		E200.8	04/08/13 22:38 / clm
DATA QUALITY							
A/C Balance (± 5)	-3.46	%				A1030 E	04/12/13 06:56 / kbh
Anions	240	meq/L				A1030 E	04/12/13 06:56 / kbh
Cations	224	meq/L				A1030 E	04/12/13 06:56 / kbh
Solids, Total Dissolved Calculated	15000	mg/L				A1030 E	04/12/13 06:56 / kbh
TDS Balance (0.80 - 1.20)	1.04					A1030 E	04/12/13 06:56 / kbh

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
H - Analysis performed past recommended holding time.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility
Lab ID: C13040264-004
Client Sample ID 6373

Revised Date: 05/17/13
Report Date: 04/19/13
Collection Date: 04/03/13 10:25
DateReceived: 04/05/13
Matrix: Groundwater

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Carbonate as CO3	600	mg/L		5		A2320 B	04/11/13 09:30 / jba
Bicarbonate as HCO3	3900	mg/L		5		A2320 B	04/11/13 09:30 / jba
Calcium	33	mg/L		1		E200.7	04/10/13 13:44 / sf
Chloride	1250	mg/L	D	20		E300.0	04/09/13 05:57 / wc
Magnesium	54	mg/L		1		E200.7	04/10/13 13:44 / sf
Potassium	10	mg/L		1		E200.7	04/10/13 13:44 / sf
Sodium	5100	mg/L	D	4		E200.7	04/10/13 13:44 / sf
Sulfate	6110	mg/L	D	80		E300.0	04/09/13 05:57 / wc
PHYSICAL PROPERTIES							
Conductivity @ 25 C	19100	umhos/cm		1		A2510 B	04/08/13 10:59 / ab
pH	8.63	s.u.	H	0.01		A4500-H B	04/08/13 10:59 / ab
Solids, Total Dissolved TDS @ 180 C	15300	mg/L		200		A2540 C	04/09/13 12:33 / jz
METALS - DISSOLVED							
Arsenic	0.144	mg/L		0.001		E200.8	04/08/13 22:42 / clm
Iron	0.58	mg/L	D	0.04		E200.7	04/10/13 13:44 / sf
Molybdenum	24.9	mg/L		0.01		E200.8	04/08/13 22:42 / clm
Selenium	0.119	mg/L	D	0.003		E200.8	04/08/13 22:42 / clm
Uranium	144	mg/L	D	0.001		E200.8	04/08/13 22:42 / clm
DATA QUALITY							
A/C Balance (± 5)	-4.01	%				A1030 E	04/12/13 06:56 / kbh
Anions	247	meq/L				A1030 E	04/12/13 06:56 / kbh
Cations	228	meq/L				A1030 E	04/12/13 06:56 / kbh
Solids, Total Dissolved Calculated	15000	mg/L				A1030 E	04/12/13 06:56 / kbh
TDS Balance (0.80 - 1.20)	1.01					A1030 E	04/12/13 06:56 / kbh

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
H - Analysis performed past recommended holding time.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility
Lab ID: C13040264-005
Client Sample ID 6374

Revised Date: 05/17/13
Report Date: 04/19/13
Collection Date: 04/03/13 10:30
DateReceived: 04/05/13
Matrix: Groundwater

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Carbonate as CO3	ND	mg/L		5		A2320 B	04/08/13 15:56 / jba
Bicarbonate as HCO3	69	mg/L		5		A2320 B	04/08/13 15:56 / jba
Calcium	11	mg/L		1		E200.7	04/10/13 13:48 / sf
Chloride	2	mg/L		1		E300.0	04/09/13 06:15 / wc
Magnesium	4	mg/L		1		E200.7	04/10/13 13:48 / sf
Potassium	2	mg/L		1		E200.7	04/10/13 13:48 / sf
Sodium	4	mg/L		1		E200.7	04/10/13 13:48 / sf
Sulfate	ND	mg/L		1		E300.0	04/09/13 06:15 / wc
PHYSICAL PROPERTIES							
Conductivity @ 25 C	119	umhos/cm		1		A2510 B	04/08/13 11:01 / ab
pH	7.11	s.u.	H	0.01		A4500-H B	04/08/13 11:01 / ab
Solids, Total Dissolved TDS @ 180 C	99	mg/L		10		A2540 C	04/09/13 12:33 / jz
METALS - DISSOLVED							
Arsenic	ND	mg/L		0.001		E200.8	04/08/13 23:07 / clm
Iron	ND	mg/L		0.03		E200.7	04/10/13 13:48 / sf
Molybdenum	0.02	mg/L		0.01		E200.8	04/08/13 23:07 / clm
Selenium	ND	mg/L		0.001		E200.8	04/19/13 03:48 / cp
Uranium	0.003	mg/L	D	0.001		E200.8	04/08/13 23:07 / clm
DATA QUALITY							
A/C Balance (± 5)	-5.68	%				A1030 E	04/12/13 06:56 / kbh
Anions	1.21	meq/L				A1030 E	04/12/13 06:56 / kbh
Cations	1.08	meq/L				A1030 E	04/12/13 06:56 / kbh
Solids, Total Dissolved Calculated	120	mg/L				A1030 E	04/12/13 06:56 / kbh
TDS Balance (0.80 - 1.20)	0.830					A1030 E	04/12/13 06:56 / kbh

- The ion balance is not appropriate for samples having a conductivity less than 300 umhos/cm.

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
H - Analysis performed past recommended holding time.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility
Lab ID: C13040264-006
Client Sample ID 6377

Revised Date: 05/17/13
Report Date: 04/19/13
Collection Date: 04/03/13 12:05
DateReceived: 04/05/13
Matrix: Groundwater

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Carbonate as CO3	ND	mg/L		5		A2320 B	04/08/13 16:04 / jba
Bicarbonate as HCO3	245	mg/L		5		A2320 B	04/08/13 16:04 / jba
Calcium	33	mg/L		1		E200.7	04/10/13 13:52 / sf
Chloride	68	mg/L		1		E300.0	04/09/13 06:32 / wc
Magnesium	7	mg/L		1		E200.7	04/10/13 13:52 / sf
Potassium	3	mg/L		1		E200.7	04/10/13 13:52 / sf
Sodium	176	mg/L		1		E200.7	04/10/13 13:52 / sf
Sulfate	189	mg/L	D	4		E300.0	04/09/13 06:32 / wc
PHYSICAL PROPERTIES							
Conductivity @ 25 C	1040	umhos/cm		1		A2510 B	04/08/13 11:04 / ab
pH	8.20	s.u.	H	0.01		A4500-H B	04/08/13 11:04 / ab
Solids, Total Dissolved TDS @ 180 C	624	mg/L		10		A2540 C	04/09/13 12:33 / jz
METALS - DISSOLVED							
Arsenic	0.046	mg/L		0.001		E200.8	04/08/13 23:10 / clm
Iron	ND	mg/L		0.03		E200.7	04/10/13 13:52 / sf
Molybdenum	0.01	mg/L		0.01		E200.8	04/08/13 23:10 / clm
Selenium	0.005	mg/L		0.001		E200.8	04/08/13 23:10 / clm
Uranium	0.0099	mg/L		0.0003		E200.8	04/09/13 21:06 / clm
DATA QUALITY							
A/C Balance (± 5)	-0.789	%				A1030 E	04/12/13 06:56 / kbh
Anions	10.1	meq/L				A1030 E	04/12/13 06:56 / kbh
Cations	9.92	meq/L				A1030 E	04/12/13 06:56 / kbh
Solids, Total Dissolved Calculated	630	mg/L				A1030 E	04/12/13 06:56 / kbh
TDS Balance (0.80 - 1.20)	0.990					A1030 E	04/12/13 06:56 / kbh

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
H - Analysis performed past recommended holding time.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility
Lab ID: C13040264-007
Client Sample ID 6378

Revised Date: 05/17/13
Report Date: 04/19/13
Collection Date: 04/03/13 12:50
DateReceived: 04/05/13
Matrix: Groundwater

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Carbonate as CO3	ND	mg/L		5		A2320 B	04/08/13 16:13 / jba
Bicarbonate as HCO3	262	mg/L		5		A2320 B	04/08/13 16:13 / jba
Calcium	32	mg/L		1		E200.7	04/10/13 14:21 / sf
Chloride	68	mg/L		1		E300.0	04/09/13 06:50 / wc
Magnesium	7	mg/L		1		E200.7	04/10/13 14:21 / sf
Potassium	3	mg/L		1		E200.7	04/10/13 14:21 / sf
Sodium	176	mg/L		1		E200.7	04/10/13 14:21 / sf
Sulfate	192	mg/L	D	4		E300.0	04/09/13 06:50 / wc
PHYSICAL PROPERTIES							
Conductivity @ 25 C	1060	umhos/cm		1		A2510 B	04/08/13 11:09 / ab
pH	8.20	s.u.	H	0.01		A4500-H B	04/08/13 11:09 / ab
Solids, Total Dissolved TDS @ 180 C	635	mg/L		10		A2540 C	04/09/13 12:33 / jz
METALS - DISSOLVED							
Arsenic	0.045	mg/L		0.001		E200.8	04/08/13 23:14 / clm
Iron	ND	mg/L		0.03		E200.7	04/10/13 14:21 / sf
Molybdenum	0.04	mg/L		0.01		E200.8	04/08/13 23:14 / clm
Selenium	0.007	mg/L		0.001		E200.8	04/09/13 21:19 / clm
Uranium	0.137	mg/L	D	0.0005		E200.8	04/08/13 23:14 / clm
DATA QUALITY							
A/C Balance (± 5)	-2.65	%				A1030 E	04/12/13 06:56 / kbh
Anions	10.4	meq/L				A1030 E	04/12/13 06:56 / kbh
Cations	9.87	meq/L				A1030 E	04/12/13 06:56 / kbh
Solids, Total Dissolved Calculated	640	mg/L				A1030 E	04/12/13 06:56 / kbh
TDS Balance (0.80 - 1.20)	0.990					A1030 E	04/12/13 06:56 / kbh

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
H - Analysis performed past recommended holding time.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility
Lab ID: C13040264-008
Client Sample ID 6379

Revised Date: 05/17/13
Report Date: 04/19/13
Collection Date: 04/03/13 14:20
DateReceived: 04/05/13
Matrix: Groundwater

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Carbonate as CO3	ND	mg/L		5		A2320 B	04/08/13 16:21 / jba
Bicarbonate as HCO3	227	mg/L		5		A2320 B	04/08/13 16:21 / jba
Calcium	62	mg/L		1		E200.7	04/10/13 14:25 / sf
Chloride	64	mg/L		1		E300.0	04/09/13 07:07 / wc
Magnesium	12	mg/L		1		E200.7	04/10/13 14:25 / sf
Potassium	3	mg/L		1		E200.7	04/10/13 14:25 / sf
Sodium	120	mg/L		1		E200.7	04/10/13 14:25 / sf
Sulfate	186	mg/L	D	2		E300.0	04/09/13 07:07 / wc
PHYSICAL PROPERTIES							
Conductivity @ 25 C	954	umhos/cm		1		A2510 B	04/08/13 11:12 / ab
pH	7.78	s.u.	H	0.01		A4500-H B	04/08/13 11:12 / ab
Solids, Total Dissolved TDS @ 180 C	594	mg/L		10		A2540 C	04/09/13 12:33 / jz
METALS - DISSOLVED							
Arsenic	0.028	mg/L		0.001		E200.8	04/08/13 23:17 / clm
Iron	ND	mg/L		0.03		E200.7	04/10/13 14:25 / sf
Molybdenum	ND	mg/L		0.01		E200.8	04/08/13 23:17 / clm
Selenium	0.007	mg/L		0.001		E200.8	04/09/13 21:22 / clm
Uranium	0.0100	mg/L		0.0003		E200.8	04/09/13 21:22 / clm
DATA QUALITY							
A/C Balance (± 5)	-0.539	%				A1030 E	04/12/13 06:56 / kbh
Anions	9.50	meq/L				A1030 E	04/12/13 06:56 / kbh
Cations	9.40	meq/L				A1030 E	04/12/13 06:56 / kbh
Solids, Total Dissolved Calculated	580	mg/L				A1030 E	04/12/13 06:56 / kbh
TDS Balance (0.80 - 1.20)	1.02					A1030 E	04/12/13 06:56 / kbh

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
H - Analysis performed past recommended holding time.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility
Lab ID: C13040264-009
Client Sample ID 6380

Revised Date: 05/17/13
Report Date: 04/19/13
Collection Date: 04/04/13 06:50
DateReceived: 04/05/13
Matrix: Groundwater

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Carbonate as CO3	ND	mg/L		5		A2320 B	04/08/13 16:28 / jba
Bicarbonate as HCO3	329	mg/L		5		A2320 B	04/08/13 16:28 / jba
Calcium	270	mg/L		1		E200.7	04/10/13 14:29 / sf
Chloride	40	mg/L		1		E300.0	04/09/13 07:25 / wc
Magnesium	90	mg/L		1		E200.7	04/10/13 14:29 / sf
Potassium	2	mg/L		1		E200.7	04/10/13 14:29 / sf
Sodium	48	mg/L		1		E200.7	04/10/13 14:29 / sf
Sulfate	832	mg/L	D	4		E300.0	04/09/13 07:25 / wc
PHYSICAL PROPERTIES							
Conductivity @ 25 C	1950	umhos/cm		1		A2510 B	04/08/13 11:15 / ab
pH	7.34	s.u.	H	0.01		A4500-H B	04/08/13 11:15 / ab
Solids, Total Dissolved TDS @ 180 C	1590	mg/L		20		A2540 C	04/09/13 12:33 / jz
METALS - DISSOLVED							
Arsenic	0.002	mg/L		0.001		E200.8	04/08/13 23:20 / clm
Iron	ND	mg/L		0.03		E200.7	04/10/13 14:29 / sf
Molybdenum	0.02	mg/L		0.01		E200.8	04/08/13 23:20 / clm
Selenium	0.004	mg/L		0.001		E200.8	04/09/13 21:25 / clm
Uranium	0.0163	mg/L		0.0003		E200.8	04/09/13 21:25 / clm
DATA QUALITY							
A/C Balance (± 5)	-1.87	%				A1030 E	04/12/13 06:56 / kbh
Anions	23.9	meq/L				A1030 E	04/12/13 06:56 / kbh
Cations	23.0	meq/L				A1030 E	04/12/13 06:56 / kbh
Solids, Total Dissolved Calculated	1500	mg/L				A1030 E	04/12/13 06:56 / kbh
TDS Balance (0.80 - 1.20)	1.08					A1030 E	04/12/13 06:56 / kbh

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
H - Analysis performed past recommended holding time.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility
Lab ID: C13040264-010
Client Sample ID 6391

Revised Date: 05/17/13
Report Date: 04/19/13
Collection Date: 04/04/13 07:40
DateReceived: 04/05/13
Matrix: Groundwater

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Carbonate as CO3	ND	mg/L		5		A2320 B	04/08/13 16:36 / jba
Bicarbonate as HCO3	330	mg/L		5		A2320 B	04/08/13 16:36 / jba
Calcium	265	mg/L		1		E200.7	04/10/13 14:32 / sf
Chloride	38	mg/L		1		E300.0	04/09/13 07:42 / wc
Magnesium	89	mg/L		1		E200.7	04/10/13 14:32 / sf
Potassium	2	mg/L		1		E200.7	04/10/13 14:32 / sf
Sodium	48	mg/L		1		E200.7	04/10/13 14:32 / sf
Sulfate	796	mg/L	D	4		E300.0	04/09/13 07:42 / wc
PHYSICAL PROPERTIES							
Conductivity @ 25 C	1850	umhos/cm		1		A2510 B	04/08/13 11:17 / ab
pH	7.36	s.u.	H	0.01		A4500-H B	04/08/13 11:17 / ab
Solids, Total Dissolved TDS @ 180 C	1580	mg/L		20		A2540 C	04/09/13 12:33 / jz
METALS - DISSOLVED							
Arsenic	0.002	mg/L		0.001		E200.8	04/08/13 23:23 / clm
Iron	ND	mg/L		0.03		E200.7	04/10/13 14:32 / sf
Molybdenum	0.02	mg/L		0.01		E200.8	04/08/13 23:23 / clm
Selenium	0.004	mg/L		0.001		E200.8	04/09/13 21:29 / clm
Uranium	0.0173	mg/L		0.0003		E200.8	04/09/13 21:29 / clm
DATA QUALITY							
A/C Balance (± 5)	-0.899	%				A1030 E	04/12/13 06:56 / kbh
Anions	23.1	meq/L				A1030 E	04/12/13 06:56 / kbh
Cations	22.7	meq/L				A1030 E	04/12/13 06:56 / kbh
Solids, Total Dissolved Calculated	1400	mg/L				A1030 E	04/12/13 06:56 / kbh
TDS Balance (0.80 - 1.20)	1.10					A1030 E	04/12/13 06:56 / kbh

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
H - Analysis performed past recommended holding time.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility
Lab ID: C13040264-011
Client Sample ID 6392

Revised Date: 05/17/13
Report Date: 04/19/13
Collection Date: 04/04/13 08:05
DateReceived: 04/05/13
Matrix: Groundwater

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Carbonate as CO3	ND	mg/L		5		A2320 B	04/08/13 16:53 / jba
Bicarbonate as HCO3	342	mg/L		5		A2320 B	04/08/13 16:53 / jba
Calcium	266	mg/L		1		E200.7	04/10/13 14:36 / sf
Chloride	40	mg/L		1		E300.0	04/09/13 07:59 / wc
Magnesium	89	mg/L		1		E200.7	04/10/13 14:36 / sf
Potassium	2	mg/L		1		E200.7	04/10/13 14:36 / sf
Sodium	47	mg/L		1		E200.7	04/10/13 14:36 / sf
Sulfate	825	mg/L	D	4		E300.0	04/09/13 07:59 / wc
PHYSICAL PROPERTIES							
Conductivity @ 25 C	1940	umhos/cm		1		A2510 B	04/08/13 11:20 / ab
pH	7.31	s.u.	H	0.01		A4500-H B	04/08/13 11:20 / ab
Solids, Total Dissolved TDS @ 180 C	1580	mg/L		20		A2540 C	04/09/13 12:33 / jz
METALS - DISSOLVED							
Arsenic	0.002	mg/L		0.001		E200.8	04/09/13 21:45 / clm
Iron	ND	mg/L		0.03		E200.7	04/10/13 14:36 / sf
Molybdenum	0.01	mg/L		0.01		E200.8	04/09/13 21:45 / clm
Selenium	0.004	mg/L		0.001		E200.8	04/09/13 21:45 / clm
Uranium	0.0160	mg/L		0.0003		E200.8	04/09/13 21:45 / clm
DATA QUALITY							
A/C Balance (± 5)	-2.68	%				A1030 E	04/12/13 06:56 / kbh
Anions	23.9	meq/L				A1030 E	04/12/13 06:56 / kbh
Cations	22.7	meq/L				A1030 E	04/12/13 06:56 / kbh
Solids, Total Dissolved Calculated	1500	mg/L				A1030 E	04/12/13 06:56 / kbh
TDS Balance (0.80 - 1.20)	1.08					A1030 E	04/12/13 06:56 / kbh

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
H - Analysis performed past recommended holding time.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility
Lab ID: C13040264-012
Client Sample ID 6393

Revised Date: 05/17/13
Report Date: 04/19/13
Collection Date: 04/04/13 08:45
DateReceived: 04/05/13
Matrix: Groundwater

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Carbonate as CO3	ND	mg/L		5		A2320 B	04/08/13 17:01 / jba
Bicarbonate as HCO3	359	mg/L		5		A2320 B	04/08/13 17:01 / jba
Calcium	76	mg/L		1		E200.7	04/10/13 14:39 / sf
Chloride	10	mg/L		1		E300.0	04/09/13 08:17 / wc
Magnesium	55	mg/L		1		E200.7	04/10/13 14:39 / sf
Potassium	3	mg/L		1		E200.7	04/10/13 14:39 / sf
Sodium	10	mg/L		1		E200.7	04/10/13 14:39 / sf
Sulfate	150	mg/L	D	2		E300.0	04/09/13 08:17 / wc
PHYSICAL PROPERTIES							
Conductivity @ 25 C	839	umhos/cm		1		A2510 B	04/08/13 11:23 / ab
pH	7.53	s.u.	H	0.01		A4500-H B	04/08/13 11:23 / ab
Solids, Total Dissolved TDS @ 180 C	508	mg/L		10		A2540 C	04/09/13 12:33 / jz
METALS - DISSOLVED							
Arsenic	ND	mg/L		0.001		E200.8	04/09/13 21:58 / clm
Iron	ND	mg/L		0.03		E200.7	04/10/13 14:39 / sf
Molybdenum	ND	mg/L		0.01		E200.8	04/09/13 21:58 / clm
Selenium	0.006	mg/L		0.001		E200.8	04/09/13 21:58 / clm
Uranium	0.0027	mg/L		0.0003		E200.8	04/09/13 21:58 / clm
DATA QUALITY							
A/C Balance (± 5)	-2.43	%				A1030 E	04/12/13 06:57 / kbh
Anions	9.33	meq/L				A1030 E	04/12/13 06:57 / kbh
Cations	8.88	meq/L				A1030 E	04/12/13 06:57 / kbh
Solids, Total Dissolved Calculated	500	mg/L				A1030 E	04/12/13 06:57 / kbh
TDS Balance (0.80 - 1.20)	1.02					A1030 E	04/12/13 06:57 / kbh

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
H - Analysis performed past recommended holding time.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility
Lab ID: C13040264-013
Client Sample ID 6394

Revised Date: 05/17/13
Report Date: 04/19/13
Collection Date: 04/04/13 09:25
DateReceived: 04/05/13
Matrix: Groundwater

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Carbonate as CO3	ND	mg/L		5		A2320 B	04/08/13 17:09 / jba
Bicarbonate as HCO3	359	mg/L		5		A2320 B	04/08/13 17:09 / jba
Calcium	76	mg/L		1		E200.7	04/10/13 15:24 / sf
Chloride	10	mg/L		1		E300.0	04/09/13 09:09 / wc
Magnesium	57	mg/L		1		E200.7	04/10/13 15:24 / sf
Potassium	3	mg/L		1		E200.7	04/10/13 15:24 / sf
Sodium	11	mg/L		1		E200.7	04/10/13 15:24 / sf
Sulfate	149	mg/L	D	2		E300.0	04/09/13 09:09 / wc
PHYSICAL PROPERTIES							
Conductivity @ 25 C	843	umhos/cm		1		A2510 B	04/08/13 11:25 / ab
pH	7.50	s.u.	H	0.01		A4500-H B	04/08/13 11:25 / ab
Solids, Total Dissolved TDS @ 180 C	511	mg/L		10		A2540 C	04/09/13 12:33 / jz
METALS - DISSOLVED							
Arsenic	ND	mg/L		0.001		E200.8	04/09/13 22:01 / clm
Iron	ND	mg/L		0.03		E200.7	04/10/13 15:24 / sf
Molybdenum	ND	mg/L		0.01		E200.8	04/09/13 22:01 / clm
Selenium	0.006	mg/L		0.001		E200.8	04/09/13 22:01 / clm
Uranium	0.0041	mg/L		0.0003		E200.8	04/09/13 22:01 / clm
DATA QUALITY							
A/C Balance (± 5)	-1.58	%				A1030 E	04/12/13 06:57 / kbh
Anions	9.32	meq/L				A1030 E	04/12/13 06:57 / kbh
Cations	9.03	meq/L				A1030 E	04/12/13 06:57 / kbh
Solids, Total Dissolved Calculated	500	mg/L				A1030 E	04/12/13 06:57 / kbh
TDS Balance (0.80 - 1.20)	1.02					A1030 E	04/12/13 06:57 / kbh

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
H - Analysis performed past recommended holding time.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility
Lab ID: C13040264-014
Client Sample ID 6395

Revised Date: 05/17/13
Report Date: 04/19/13
Collection Date: 04/04/13 10:25
DateReceived: 04/05/13
Matrix: Groundwater

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Carbonate as CO3	ND	mg/L		5		A2320 B	04/08/13 17:17 / jba
Bicarbonate as HCO3	351	mg/L		5		A2320 B	04/08/13 17:17 / jba
Calcium	73	mg/L		1		E200.7	04/10/13 15:28 / sf
Chloride	10	mg/L		1		E300.0	04/09/13 10:01 / wc
Magnesium	55	mg/L		1		E200.7	04/10/13 15:28 / sf
Potassium	3	mg/L		1		E200.7	04/10/13 15:28 / sf
Sodium	11	mg/L		1		E200.7	04/10/13 15:28 / sf
Sulfate	146	mg/L	D	2		E300.0	04/09/13 10:01 / wc
PHYSICAL PROPERTIES							
Conductivity @ 25 C	826	umhos/cm		1		A2510 B	04/08/13 11:28 / ab
pH	7.52	s.u.	H	0.01		A4500-H B	04/08/13 11:28 / ab
Solids, Total Dissolved TDS @ 180 C	507	mg/L		10		A2540 C	04/09/13 12:34 / jz
METALS - DISSOLVED							
Arsenic	ND	mg/L		0.001		E200.8	04/09/13 22:04 / clm
Iron	ND	mg/L		0.03		E200.7	04/10/13 15:28 / sf
Molybdenum	ND	mg/L		0.01		E200.8	04/09/13 22:04 / clm
Selenium	0.006	mg/L		0.001		E200.8	04/09/13 22:04 / clm
Uranium	0.0029	mg/L		0.0003		E200.8	04/09/13 22:04 / clm
DATA QUALITY							
A/C Balance (± 5)	-1.89	%				A1030 E	04/12/13 06:57 / kbh
Anions	9.10	meq/L				A1030 E	04/12/13 06:57 / kbh
Cations	8.76	meq/L				A1030 E	04/12/13 06:57 / kbh
Solids, Total Dissolved Calculated	490	mg/L				A1030 E	04/12/13 06:57 / kbh
TDS Balance (0.80 - 1.20)	1.04					A1030 E	04/12/13 06:57 / kbh

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
H - Analysis performed past recommended holding time.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility
Lab ID: C13040264-015
Client Sample ID 6396

Revised Date: 05/17/13
Report Date: 04/19/13
Collection Date: 04/04/13 10:30
DateReceived: 04/05/13
Matrix: Groundwater

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Carbonate as CO3	ND	mg/L		5		A2320 B	04/08/13 17:26 / jba
Bicarbonate as HCO3	363	mg/L		5		A2320 B	04/08/13 17:26 / jba
Calcium	75	mg/L		1		E200.7	04/10/13 15:31 / sf
Chloride	10	mg/L		1		E300.0	04/09/13 10:19 / wc
Magnesium	56	mg/L		1		E200.7	04/10/13 15:31 / sf
Potassium	3	mg/L		1		E200.7	04/10/13 15:31 / sf
Sodium	12	mg/L		1		E200.7	04/10/13 15:31 / sf
Sulfate	149	mg/L	D	2		E300.0	04/09/13 10:19 / wc
PHYSICAL PROPERTIES							
Conductivity @ 25 C	827	umhos/cm		1		A2510 B	04/08/13 11:31 / ab
pH	7.49	s.u.	H	0.01		A4500-H B	04/08/13 11:31 / ab
Solids, Total Dissolved TDS @ 180 C	502	mg/L		10		A2540 C	04/09/13 12:34 / jz
METALS - DISSOLVED							
Arsenic	ND	mg/L		0.001		E200.8	04/09/13 22:07 / clm
Iron	ND	mg/L		0.03		E200.7	04/10/13 15:31 / sf
Molybdenum	ND	mg/L		0.01		E200.8	04/09/13 22:07 / clm
Selenium	0.006	mg/L		0.001		E200.8	04/09/13 22:07 / clm
Uranium	0.0028	mg/L		0.0003		E200.8	04/09/13 22:07 / clm
DATA QUALITY							
A/C Balance (± 5)	-2.42	%				A1030 E	04/12/13 06:57 / kbh
Anions	9.36	meq/L				A1030 E	04/12/13 06:57 / kbh
Cations	8.92	meq/L				A1030 E	04/12/13 06:57 / kbh
Solids, Total Dissolved Calculated	500	mg/L				A1030 E	04/12/13 06:57 / kbh
TDS Balance (0.80 - 1.20)	1.00					A1030 E	04/12/13 06:57 / kbh

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
H - Analysis performed past recommended holding time.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility
Lab ID: C13040264-016
Client Sample ID 6397

Revised Date: 05/17/13
Report Date: 04/19/13
Collection Date: 04/04/13 11:00
DateReceived: 04/05/13
Matrix: Groundwater

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Carbonate as CO3	ND	mg/L		5		A2320 B	04/08/13 17:41 / jba
Bicarbonate as HCO3	2960	mg/L		5		A2320 B	04/08/13 17:41 / jba
Calcium	420	mg/L		1		E200.7	04/10/13 15:46 / sf
Chloride	1080	mg/L	D	20		E300.0	04/09/13 10:36 / wc
Magnesium	150	mg/L		1		E200.7	04/10/13 15:46 / sf
Potassium	11	mg/L		1		E200.7	04/10/13 15:46 / sf
Sodium	4100	mg/L	D	4		E200.7	04/10/13 15:46 / sf
Sulfate	6720	mg/L	D	80		E300.0	04/09/13 10:36 / wc
PHYSICAL PROPERTIES							
Conductivity @ 25 C	17000	umhos/cm		1		A2510 B	04/08/13 11:33 / ab
pH	7.33	s.u.	H	0.01		A4500-H B	04/08/13 11:33 / ab
Solids, Total Dissolved TDS @ 180 C	14000	mg/L		100		A2540 C	04/09/13 12:34 / jz
METALS - DISSOLVED							
Arsenic	0.007	mg/L		0.001		E200.8	04/09/13 22:11 / clm
Iron	ND	mg/L		0.03		E200.7	04/11/13 19:43 / sf
Molybdenum	29.7	mg/L		0.01		E200.8	04/09/13 22:11 / clm
Selenium	0.072	mg/L	D	0.003		E200.8	04/09/13 22:11 / clm
Uranium	77.2	mg/L	D	0.001		E200.8	04/09/13 22:11 / clm
DATA QUALITY							
A/C Balance (± 5)	-2.14	%				A1030 E	04/12/13 06:57 / kbh
Anions	221	meq/L				A1030 E	04/12/13 06:57 / kbh
Cations	212	meq/L				A1030 E	04/12/13 06:57 / kbh
Solids, Total Dissolved Calculated	14000	mg/L				A1030 E	04/12/13 06:57 / kbh
TDS Balance (0.80 - 1.20)	0.990					A1030 E	04/12/13 06:57 / kbh

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
H - Analysis performed past recommended holding time.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility
Lab ID: C13040264-017
Client Sample ID 6399

Revised Date: 05/17/13
Report Date: 04/19/13
Collection Date: 04/04/13 12:10
DateReceived: 04/05/13
Matrix: Groundwater

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Carbonate as CO3	ND	mg/L		5		A2320 B	04/08/13 17:56 / jba
Bicarbonate as HCO3	2930	mg/L		5		A2320 B	04/08/13 17:56 / jba
Calcium	420	mg/L		1		E200.7	04/10/13 15:50 / sf
Chloride	1080	mg/L	D	20		E300.0	04/09/13 10:53 / wc
Magnesium	152	mg/L		1		E200.7	04/10/13 15:50 / sf
Potassium	12	mg/L		1		E200.7	04/10/13 15:50 / sf
Sodium	4120	mg/L	D	4		E200.7	04/10/13 15:50 / sf
Sulfate	6700	mg/L	D	80		E300.0	04/09/13 10:53 / wc
PHYSICAL PROPERTIES							
Conductivity @ 25 C	17000	umhos/cm		1		A2510 B	04/08/13 12:15 / ab
pH	7.33	s.u.	H	0.01		A4500-H B	04/08/13 12:15 / ab
Solids, Total Dissolved TDS @ 180 C	13700	mg/L		100		A2540 C	04/09/13 12:34 / jz
METALS - DISSOLVED							
Arsenic	0.009	mg/L		0.001		E200.8	04/09/13 22:27 / clm
Iron	0.11	mg/L		0.03		E200.7	04/11/13 19:47 / sf
Molybdenum	27.7	mg/L		0.01		E200.8	04/09/13 22:27 / clm
Selenium	0.074	mg/L	D	0.003		E200.8	04/09/13 22:27 / clm
Uranium	74.0	mg/L	D	0.001		E200.8	04/09/13 22:27 / clm
DATA QUALITY							
A/C Balance (± 5)	-1.74	%				A1030 E	04/12/13 06:57 / kbh
Anions	220	meq/L				A1030 E	04/12/13 06:57 / kbh
Cations	213	meq/L				A1030 E	04/12/13 06:57 / kbh
Solids, Total Dissolved Calculated	14000	mg/L				A1030 E	04/12/13 06:57 / kbh
TDS Balance (0.80 - 1.20)	0.970					A1030 E	04/12/13 06:57 / kbh

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
H - Analysis performed past recommended holding time.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility
Lab ID: C13040264-018
Client Sample ID 6401

Revised Date: 05/17/13
Report Date: 04/19/13
Collection Date: 04/04/13 12:50
DateReceived: 04/05/13
Matrix: Groundwater

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Carbonate as CO3	ND	mg/L		5		A2320 B	04/08/13 18:11 / jba
Bicarbonate as HCO3	2920	mg/L		5		A2320 B	04/08/13 18:11 / jba
Calcium	408	mg/L		1		E200.7	04/10/13 15:54 / sf
Chloride	1090	mg/L	D	20		E300.0	04/09/13 11:11 / wc
Magnesium	149	mg/L		1		E200.7	04/10/13 15:54 / sf
Potassium	11	mg/L		1		E200.7	04/10/13 15:54 / sf
Sodium	3980	mg/L	D	4		E200.7	04/10/13 15:54 / sf
Sulfate	6760	mg/L	D	80		E300.0	04/09/13 11:11 / wc
PHYSICAL PROPERTIES							
Conductivity @ 25 C	16900	umhos/cm		1		A2510 B	04/08/13 12:17 / ab
pH	7.25	s.u.	H	0.01		A4500-H B	04/08/13 12:17 / ab
Solids, Total Dissolved TDS @ 180 C	13800	mg/L		100		A2540 C	04/09/13 12:34 / jz
METALS - DISSOLVED							
Arsenic	0.009	mg/L		0.001		E200.8	04/09/13 22:30 / clm
Iron	ND	mg/L		0.03		E200.7	04/11/13 19:55 / sf
Molybdenum	28.2	mg/L		0.01		E200.8	04/09/13 22:30 / clm
Selenium	0.075	mg/L	D	0.003		E200.8	04/09/13 22:30 / clm
Uranium	74.8	mg/L	D	0.001		E200.8	04/09/13 22:30 / clm
DATA QUALITY							
A/C Balance (± 5)	-3.65	%				A1030 E	04/12/13 06:57 / kbh
Anions	222	meq/L				A1030 E	04/12/13 06:57 / kbh
Cations	206	meq/L				A1030 E	04/12/13 06:57 / kbh
Solids, Total Dissolved Calculated	14000	mg/L				A1030 E	04/12/13 06:57 / kbh
TDS Balance (0.80 - 1.20)	0.990					A1030 E	04/12/13 06:57 / kbh

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
H - Analysis performed past recommended holding time.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility
Lab ID: C13040264-019
Client Sample ID 6403

Revised Date: 05/17/13
Report Date: 04/19/13
Collection Date: 04/04/13 13:00
DateReceived: 04/05/13
Matrix: Groundwater

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Carbonate as CO3	ND	mg/L		5		A2320 B	04/08/13 18:18 / jba
Bicarbonate as HCO3	32	mg/L		5		A2320 B	04/08/13 18:18 / jba
Calcium	9	mg/L		1		E200.7	04/10/13 16:12 / sf
Chloride	4	mg/L		1		E300.0	04/09/13 11:28 / wc
Magnesium	3	mg/L		1		E200.7	04/10/13 16:12 / sf
Potassium	ND	mg/L		1		E200.7	04/10/13 16:12 / sf
Sodium	3	mg/L		1		E200.7	04/10/13 16:12 / sf
Sulfate	11	mg/L		1		E300.0	04/09/13 11:28 / wc
PHYSICAL PROPERTIES							
Conductivity @ 25 C	99	umhos/cm		1		A2510 B	04/08/13 12:20 / ab
pH	7.38	s.u.	H	0.01		A4500-H B	04/08/13 12:20 / ab
Solids, Total Dissolved TDS @ 180 C	57	mg/L		10		A2540 C	04/09/13 12:34 / jz
METALS - DISSOLVED							
Arsenic	ND	mg/L		0.001		E200.8	04/09/13 22:33 / clm
Iron	ND	mg/L		0.03		E200.7	04/10/13 16:12 / sf
Molybdenum	ND	mg/L		0.01		E200.8	04/09/13 22:33 / clm
Selenium	ND	mg/L		0.001		E200.8	04/09/13 22:33 / clm
Uranium	0.0012	mg/L		0.0003		E200.8	04/09/13 22:33 / clm
DATA QUALITY							
A/C Balance (± 5)	-6.90	%				A1030 E	04/12/13 06:57 / kbh
Anions	0.916	meq/L				A1030 E	04/12/13 06:57 / kbh
Cations	0.798	meq/L				A1030 E	04/12/13 06:57 / kbh
Solids, Total Dissolved Calculated	55	mg/L				A1030 E	04/12/13 06:57 / kbh
TDS Balance (0.80 - 1.20)	1.04					A1030 E	04/12/13 06:57 / kbh

- The ion balance is not appropriate for samples having a conductivity less than 300 umhos/cm.

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
H - Analysis performed past recommended holding time.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility
Lab ID: C13040264-020
Client Sample ID 6336

Revised Date: 05/17/13
Report Date: 04/19/13
Collection Date: 04/03/13 08:10
DateReceived: 04/05/13
Matrix: Groundwater

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Carbonate as CO3	ND	mg/L		5		A2320 B	04/08/13 18:47 / jba
Bicarbonate as HCO3	395	mg/L		5		A2320 B	04/08/13 18:47 / jba
Calcium	96	mg/L		1		E200.7	04/10/13 16:16 / sf
Chloride	20	mg/L		1		E300.0	04/09/13 11:46 / wc
Magnesium	62	mg/L		1		E200.7	04/10/13 16:16 / sf
Potassium	4	mg/L		1		E200.7	04/10/13 16:16 / sf
Sodium	29	mg/L		1		E200.7	04/10/13 16:16 / sf
Sulfate	230	mg/L	D	4		E300.0	04/09/13 11:46 / wc
PHYSICAL PROPERTIES							
Conductivity @ 25 C	1070	umhos/cm		1		A2510 B	04/08/13 12:23 / ab
pH	7.36	s.u.	H	0.01		A4500-H B	04/08/13 12:23 / ab
Solids, Total Dissolved TDS @ 180 C	691	mg/L		10		A2540 C	04/09/13 12:34 / jz
METALS - DISSOLVED							
Arsenic	0.004	mg/L		0.001		E200.8	04/09/13 22:36 / clm
Iron	ND	mg/L		0.03		E200.7	04/10/13 16:16 / sf
Molybdenum	ND	mg/L		0.01		E200.8	04/09/13 22:36 / clm
Selenium	0.011	mg/L		0.001		E200.8	04/09/13 22:36 / clm
Uranium	0.0247	mg/L		0.0003		E200.8	04/09/13 22:36 / clm
DATA QUALITY							
A/C Balance (± 5)	-3.00	%				A1030 E	04/12/13 06:57 / kbh
Anions	11.9	meq/L				A1030 E	04/12/13 06:57 / kbh
Cations	11.2	meq/L				A1030 E	04/12/13 06:57 / kbh
Solids, Total Dissolved Calculated	660	mg/L				A1030 E	04/12/13 06:57 / kbh
TDS Balance (0.80 - 1.20)	1.04					A1030 E	04/12/13 06:57 / kbh

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
H - Analysis performed past recommended holding time.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility
Lab ID: C13040264-021
Client Sample ID 6337

Revised Date: 05/17/13
Report Date: 04/19/13
Collection Date: 04/03/13 08:40
DateReceived: 04/05/13
Matrix: Groundwater

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Carbonate as CO3	ND	mg/L		5		A2320 B	04/08/13 19:04 / jba
Bicarbonate as HCO3	394	mg/L		5		A2320 B	04/08/13 19:04 / jba
Calcium	105	mg/L		1		E200.7	04/10/13 16:19 / sf
Chloride	20	mg/L		1		E300.0	04/09/13 12:03 / wc
Magnesium	58	mg/L		1		E200.7	04/10/13 16:19 / sf
Potassium	4	mg/L		1		E200.7	04/10/13 16:19 / sf
Sodium	29	mg/L		1		E200.7	04/10/13 16:19 / sf
Sulfate	240	mg/L	D	4		E300.0	04/09/13 12:03 / wc
PHYSICAL PROPERTIES							
Conductivity @ 25 C	1070	umhos/cm		1		A2510 B	04/08/13 12:25 / ab
pH	7.41	s.u.	H	0.01		A4500-H B	04/08/13 12:25 / ab
Solids, Total Dissolved TDS @ 180 C	711	mg/L		10		A2540 C	04/09/13 12:34 / jz
METALS - DISSOLVED							
Arsenic	0.002	mg/L		0.001		E200.8	04/11/13 16:50 / clm
Iron	0.03	mg/L		0.03		E200.7	04/10/13 16:19 / sf
Molybdenum	0.02	mg/L		0.01		E200.7	04/10/13 16:19 / sf
Selenium	0.010	mg/L		0.001		E200.8	04/11/13 16:50 / clm
Uranium	0.0256	mg/L		0.0003		E200.8	04/11/13 16:50 / clm
DATA QUALITY							
A/C Balance (± 5)	-3.25	%				A1030 E	04/12/13 06:58 / kbh
Anions	12.1	meq/L				A1030 E	04/12/13 06:58 / kbh
Cations	11.4	meq/L				A1030 E	04/12/13 06:58 / kbh
Solids, Total Dissolved Calculated	670	mg/L				A1030 E	04/12/13 06:58 / kbh
TDS Balance (0.80 - 1.20)	1.05					A1030 E	04/12/13 06:58 / kbh

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
H - Analysis performed past recommended holding time.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility
Lab ID: C13040264-022
Client Sample ID 6338

Revised Date: 05/17/13
Report Date: 04/19/13
Collection Date: 04/03/13 09:25
DateReceived: 04/05/13
Matrix: Groundwater

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Carbonate as CO3	ND	mg/L		5		A2320 B	04/08/13 19:21 / jba
Bicarbonate as HCO3	384	mg/L		5		A2320 B	04/08/13 19:21 / jba
Calcium	105	mg/L		1		E200.7	04/10/13 16:23 / sf
Chloride	20	mg/L		1		E300.0	04/09/13 12:20 / wc
Magnesium	53	mg/L		1		E200.7	04/10/13 16:23 / sf
Potassium	4	mg/L		1		E200.7	04/10/13 16:23 / sf
Sodium	28	mg/L		1		E200.7	04/10/13 16:23 / sf
Sulfate	234	mg/L	D	4		E300.0	04/09/13 12:20 / wc
PHYSICAL PROPERTIES							
Conductivity @ 25 C	1060	umhos/cm		1		A2510 B	04/08/13 12:28 / ab
pH	7.42	s.u.	H	0.01		A4500-H B	04/08/13 12:28 / ab
Solids, Total Dissolved TDS @ 180 C	698	mg/L		10		A2540 C	04/09/13 12:34 / jz
METALS - DISSOLVED							
Arsenic	0.003	mg/L		0.001		E200.8	04/11/13 17:02 / clm
Iron	0.31	mg/L		0.03		E200.7	04/10/13 16:23 / sf
Molybdenum	0.01	mg/L		0.01		E200.7	04/10/13 16:23 / sf
Selenium	0.008	mg/L		0.001		E200.8	04/11/13 17:02 / clm
Uranium	0.0238	mg/L		0.0003		E200.8	04/11/13 17:02 / clm
DATA QUALITY							
A/C Balance (± 5)	-4.17	%				A1030 E	04/12/13 06:58 / kbh
Anions	11.8	meq/L				A1030 E	04/12/13 06:58 / kbh
Cations	10.9	meq/L				A1030 E	04/12/13 06:58 / kbh
Solids, Total Dissolved Calculated	650	mg/L				A1030 E	04/12/13 06:58 / kbh
TDS Balance (0.80 - 1.20)	1.07					A1030 E	04/12/13 06:58 / kbh

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
H - Analysis performed past recommended holding time.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility
Lab ID: C13040264-023
Client Sample ID 6339

Revised Date: 05/17/13
Report Date: 04/19/13
Collection Date: 04/03/13 09:50
DateReceived: 04/05/13
Matrix: Groundwater

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Carbonate as CO3	ND	mg/L		5		A2320 B	04/08/13 19:29 / jba
Bicarbonate as HCO3	247	mg/L		5		A2320 B	04/08/13 19:29 / jba
Calcium	77	mg/L		1		E200.7	04/10/13 16:31 / sf
Chloride	39	mg/L		1		E300.0	04/09/13 13:13 / wc
Magnesium	29	mg/L		1		E200.7	04/10/13 16:31 / sf
Potassium	4	mg/L		1		E200.7	04/10/13 16:31 / sf
Sodium	56	mg/L		1		E200.7	04/10/13 16:31 / sf
Sulfate	164	mg/L	D	2		E300.0	04/09/13 13:13 / wc
PHYSICAL PROPERTIES							
Conductivity @ 25 C	836	umhos/cm		1		A2510 B	04/08/13 12:31 / ab
pH	7.53	s.u.	H	0.01		A4500-H B	04/08/13 12:31 / ab
Solids, Total Dissolved TDS @ 180 C	524	mg/L		10		A2540 C	04/09/13 12:34 / jz
METALS - DISSOLVED							
Arsenic	0.030	mg/L		0.001		E200.8	04/11/13 17:06 / clm
Iron	ND	mg/L		0.03		E200.7	04/10/13 16:31 / sf
Molybdenum	0.02	mg/L		0.01		E200.7	04/10/13 16:31 / sf
Selenium	0.010	mg/L		0.001		E200.8	04/11/13 17:06 / clm
Uranium	0.0115	mg/L		0.0003		E200.8	04/11/13 17:06 / clm
DATA QUALITY							
A/C Balance (± 5)	0.778	%				A1030 E	04/12/13 06:58 / kbh
Anions	8.64	meq/L				A1030 E	04/12/13 06:58 / kbh
Cations	8.77	meq/L				A1030 E	04/12/13 06:58 / kbh
Solids, Total Dissolved Calculated	510	mg/L				A1030 E	04/12/13 06:58 / kbh
TDS Balance (0.80 - 1.20)	1.03					A1030 E	04/12/13 06:58 / kbh

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
H - Analysis performed past recommended holding time.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility
Lab ID: C13040264-024
Client Sample ID 6340

Revised Date: 05/17/13
Report Date: 04/19/13
Collection Date: 04/03/13 10:35
DateReceived: 04/05/13
Matrix: Groundwater

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Carbonate as CO3	ND	mg/L		5		A2320 B	04/08/13 19:37 / jba
Bicarbonate as HCO3	243	mg/L		5		A2320 B	04/08/13 19:37 / jba
Calcium	77	mg/L		1		E200.7	04/10/13 16:34 / sf
Chloride	52	mg/L		1		E300.0	04/09/13 14:05 / wc
Magnesium	29	mg/L		1		E200.7	04/10/13 16:34 / sf
Potassium	4	mg/L		1		E200.7	04/10/13 16:34 / sf
Sodium	56	mg/L		1		E200.7	04/10/13 16:34 / sf
Sulfate	173	mg/L	D	2		E300.0	04/09/13 14:05 / wc
PHYSICAL PROPERTIES							
Conductivity @ 25 C	918	umhos/cm		1		A2510 B	04/08/13 12:33 / ab
pH	7.46	s.u.	H	0.01		A4500-H B	04/08/13 12:33 / ab
Solids, Total Dissolved TDS @ 180 C	580	mg/L		10		A2540 C	04/09/13 12:34 / jz
METALS - DISSOLVED							
Arsenic	0.029	mg/L		0.001		E200.8	04/11/13 17:09 / clm
Iron	ND	mg/L		0.03		E200.7	04/10/13 16:34 / sf
Molybdenum	0.02	mg/L		0.01		E200.7	04/10/13 16:34 / sf
Selenium	0.010	mg/L		0.001		E200.8	04/11/13 17:09 / clm
Uranium	0.0111	mg/L		0.0003		E200.8	04/11/13 17:09 / clm
DATA QUALITY							
A/C Balance (± 5)	-2.06	%				A1030 E	04/12/13 06:58 / kbh
Anions	9.15	meq/L				A1030 E	04/12/13 06:58 / kbh
Cations	8.78	meq/L				A1030 E	04/12/13 06:58 / kbh
Solids, Total Dissolved Calculated	530	mg/L				A1030 E	04/12/13 06:58 / kbh
TDS Balance (0.80 - 1.20)	1.09					A1030 E	04/12/13 06:58 / kbh

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
H - Analysis performed past recommended holding time.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility
Lab ID: C13040264-025
Client Sample ID 6341

Revised Date: 05/17/13
Report Date: 04/19/13
Collection Date: 04/03/13 10:40
DateReceived: 04/05/13
Matrix: Groundwater

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Carbonate as CO3	ND	mg/L		5		A2320 B	04/08/13 19:45 / jba
Bicarbonate as HCO3	255	mg/L		5		A2320 B	04/08/13 19:45 / jba
Calcium	75	mg/L		1		E200.7	04/10/13 17:00 / sf
Chloride	53	mg/L		1		E300.0	04/09/13 14:22 / wc
Magnesium	28	mg/L		1		E200.7	04/10/13 17:00 / sf
Potassium	4	mg/L		1		E200.7	04/10/13 17:00 / sf
Sodium	55	mg/L		1		E200.7	04/10/13 17:00 / sf
Sulfate	177	mg/L	D	2		E300.0	04/09/13 14:22 / wc
PHYSICAL PROPERTIES							
Conductivity @ 25 C	917	umhos/cm		1		A2510 B	04/08/13 12:36 / ab
pH	7.47	s.u.	H	0.01		A4500-H B	04/08/13 12:36 / ab
Solids, Total Dissolved TDS @ 180 C	574	mg/L		10		A2540 C	04/09/13 12:34 / jz
METALS - DISSOLVED							
Arsenic	0.028	mg/L		0.001		E200.8	04/09/13 22:40 / clm
Iron	ND	mg/L		0.03		E200.7	04/10/13 17:00 / sf
Molybdenum	0.01	mg/L		0.01		E200.8	04/09/13 22:40 / clm
Selenium	0.009	mg/L		0.001		E200.8	04/09/13 22:40 / clm
Uranium	0.0110	mg/L		0.0003		E200.8	04/09/13 22:40 / clm
DATA QUALITY							
A/C Balance (± 5)	-4.78	%				A1030 E	04/12/13 06:58 / kbh
Anions	9.45	meq/L				A1030 E	04/12/13 06:58 / kbh
Cations	8.59	meq/L				A1030 E	04/12/13 06:58 / kbh
Solids, Total Dissolved Calculated	540	mg/L				A1030 E	04/12/13 06:58 / kbh
TDS Balance (0.80 - 1.20)	1.07					A1030 E	04/12/13 06:58 / kbh

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
H - Analysis performed past recommended holding time.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility
Lab ID: C13040264-026
Client Sample ID 6342

Revised Date: 05/17/13
Report Date: 04/19/13
Collection Date: 04/03/13 11:35
DateReceived: 04/05/13
Matrix: Groundwater

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Carbonate as CO3	ND	mg/L		5		A2320 B	04/08/13 19:53 / jba
Bicarbonate as HCO3	244	mg/L		5		A2320 B	04/08/13 19:53 / jba
Calcium	77	mg/L		1		E200.7	04/10/13 17:03 / sf
Chloride	49	mg/L		1		E300.0	04/09/13 14:40 / wc
Magnesium	29	mg/L		1		E200.7	04/10/13 17:03 / sf
Potassium	4	mg/L		1		E200.7	04/10/13 17:03 / sf
Sodium	52	mg/L		1		E200.7	04/10/13 17:03 / sf
Sulfate	173	mg/L	D	2		E300.0	04/09/13 14:40 / wc
PHYSICAL PROPERTIES							
Conductivity @ 25 C	895	umhos/cm		1		A2510 B	04/08/13 12:39 / ab
pH	7.50	s.u.	H	0.01		A4500-H B	04/08/13 12:39 / ab
Solids, Total Dissolved TDS @ 180 C	563	mg/L		10		A2540 C	04/09/13 12:34 / jz
METALS - DISSOLVED							
Arsenic	0.027	mg/L		0.001		E200.8	04/09/13 22:52 / clm
Iron	ND	mg/L		0.03		E200.7	04/10/13 17:03 / sf
Molybdenum	0.01	mg/L		0.01		E200.8	04/09/13 22:52 / clm
Selenium	0.009	mg/L		0.001		E200.8	04/09/13 22:52 / clm
Uranium	0.0106	mg/L		0.0003		E200.8	04/09/13 22:52 / clm
DATA QUALITY							
A/C Balance (± 5)	-2.85	%				A1030 E	04/12/13 06:58 / kbh
Anions	9.10	meq/L				A1030 E	04/12/13 06:58 / kbh
Cations	8.59	meq/L				A1030 E	04/12/13 06:58 / kbh
Solids, Total Dissolved Calculated	520	mg/L				A1030 E	04/12/13 06:58 / kbh
TDS Balance (0.80 - 1.20)	1.07					A1030 E	04/12/13 06:58 / kbh

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
H - Analysis performed past recommended holding time.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility
Lab ID: C13040264-027
Client Sample ID 6343

Revised Date: 05/17/13
Report Date: 04/19/13
Collection Date: 04/03/13 12:00
DateReceived: 04/05/13
Matrix: Groundwater

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Carbonate as CO3	ND	mg/L		5		A2320 B	04/08/13 20:01 / jba
Bicarbonate as HCO3	244	mg/L		5		A2320 B	04/08/13 20:01 / jba
Calcium	115	mg/L		1		E200.7	04/15/13 18:15 / sf
Chloride	101	mg/L		1		E300.0	04/15/13 16:27 / wc
Magnesium	30	mg/L		1		E200.7	04/15/13 18:15 / sf
Potassium	4	mg/L		1		E200.7	04/16/13 14:25 / sf
Sodium	72	mg/L		1		E200.7	04/15/13 18:15 / sf
Sulfate	181	mg/L	D	4		E300.0	04/15/13 16:27 / wc
PHYSICAL PROPERTIES							
Conductivity @ 25 C	1180	umhos/cm		1		A2510 B	04/08/13 12:44 / ab
pH	7.43	s.u.	H	0.01		A4500-H B	04/08/13 12:44 / ab
Solids, Total Dissolved TDS @ 180 C	743	mg/L		10		A2540 C	04/09/13 12:34 / jz
METALS - DISSOLVED							
Arsenic	0.008	mg/L		0.001		E200.8	04/09/13 23:08 / clm
Iron	ND	mg/L		0.03		E200.7	04/10/13 17:07 / sf
Molybdenum	ND	mg/L		0.01		E200.8	04/09/13 23:08 / clm
Selenium	0.011	mg/L		0.001		E200.8	04/09/13 23:08 / clm
Uranium	0.0130	mg/L		0.0003		E200.8	04/09/13 23:08 / clm
DATA QUALITY							
A/C Balance (± 5)	-1.05	%				A1030 E	04/18/13 14:45 / kbh
Anions	11.7	meq/L				A1030 E	04/18/13 14:45 / kbh
Cations	11.5	meq/L				A1030 E	04/18/13 14:45 / kbh
Solids, Total Dissolved Calculated	710	mg/L				A1030 E	04/18/13 14:45 / kbh
TDS Balance (0.80 - 1.20)	1.05					A1030 E	04/18/13 14:45 / kbh

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
H - Analysis performed past recommended holding time.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility
Lab ID: C13040264-028
Client Sample ID 6344

Revised Date: 05/17/13
Report Date: 04/19/13
Collection Date: 04/03/13 12:35
DateReceived: 04/05/13
Matrix: Groundwater

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Carbonate as CO3	ND	mg/L		5		A2320 B	04/08/13 20:09 / jba
Bicarbonate as HCO3	248	mg/L		5		A2320 B	04/08/13 20:09 / jba
Calcium	156	mg/L		1		E200.7	04/10/13 17:11 / sf
Chloride	156	mg/L		1		E300.0	04/09/13 15:15 / wc
Magnesium	42	mg/L		1		E200.7	04/10/13 17:11 / sf
Potassium	4	mg/L		1		E200.7	04/10/13 17:11 / sf
Sodium	93	mg/L		1		E200.7	04/10/13 17:11 / sf
Sulfate	212	mg/L	D	4		E300.0	04/09/13 15:15 / wc
PHYSICAL PROPERTIES							
Conductivity @ 25 C	1660	umhos/cm		1		A2510 B	04/08/13 12:47 / ab
pH	7.46	s.u.	H	0.01		A4500-H B	04/08/13 12:47 / ab
Solids, Total Dissolved TDS @ 180 C	1050	mg/L		10		A2540 C	04/09/13 12:34 / jz
METALS - DISSOLVED							
Arsenic	0.011	mg/L		0.001		E200.8	04/09/13 23:12 / clm
Iron	ND	mg/L		0.03		E200.7	04/10/13 17:11 / sf
Molybdenum	0.01	mg/L		0.01		E200.8	04/09/13 23:12 / clm
Selenium	0.011	mg/L		0.001		E200.8	04/09/13 23:12 / clm
Uranium	0.0217	mg/L		0.0003		E200.8	04/09/13 23:12 / clm
DATA QUALITY							
A/C Balance (± 5)	-3.02	%				A1030 E	04/12/13 06:58 / kbh
Anions	16.3	meq/L				A1030 E	04/12/13 06:58 / kbh
Cations	15.4	meq/L				A1030 E	04/12/13 06:58 / kbh
Solids, Total Dissolved Calculated	1000	mg/L				A1030 E	04/12/13 06:58 / kbh
TDS Balance (0.80 - 1.20)	1.03					A1030 E	04/12/13 06:58 / kbh

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
H - Analysis performed past recommended holding time.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility
Lab ID: C13040264-029
Client Sample ID 6345

Revised Date: 05/17/13
Report Date: 04/19/13
Collection Date: 04/03/13 13:20
DateReceived: 04/05/13
Matrix: Groundwater

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Carbonate as CO3	ND	mg/L		5		A2320 B	04/08/13 20:16 / jba
Bicarbonate as HCO3	238	mg/L		5		A2320 B	04/08/13 20:16 / jba
Calcium	109	mg/L		1		E200.7	04/10/13 17:18 / sf
Chloride	87	mg/L		1		E300.0	04/09/13 15:32 / wc
Magnesium	29	mg/L		1		E200.7	04/10/13 17:18 / sf
Potassium	3	mg/L		1		E200.7	04/10/13 17:18 / sf
Sodium	60	mg/L		1		E200.7	04/10/13 17:18 / sf
Sulfate	185	mg/L	D	4		E300.0	04/09/13 15:32 / wc
PHYSICAL PROPERTIES							
Conductivity @ 25 C	1130	umhos/cm		1		A2510 B	04/08/13 12:49 / ab
pH	7.48	s.u.	H	0.01		A4500-H B	04/08/13 12:49 / ab
Solids, Total Dissolved TDS @ 180 C	718	mg/L		10		A2540 C	04/09/13 12:34 / jz
METALS - DISSOLVED							
Arsenic	0.019	mg/L		0.001		E200.8	04/09/13 23:15 / clm
Iron	ND	mg/L		0.03		E200.7	04/10/13 17:18 / sf
Molybdenum	ND	mg/L		0.01		E200.8	04/09/13 23:15 / clm
Selenium	0.012	mg/L		0.001		E200.8	04/09/13 23:15 / clm
Uranium	0.0138	mg/L		0.0003		E200.8	04/09/13 23:15 / clm
DATA QUALITY							
A/C Balance (± 5)	-3.67	%				A1030 E	04/12/13 06:58 / kbh
Anions	11.3	meq/L				A1030 E	04/12/13 06:58 / kbh
Cations	10.5	meq/L				A1030 E	04/12/13 06:58 / kbh
Solids, Total Dissolved Calculated	680	mg/L				A1030 E	04/12/13 06:58 / kbh
TDS Balance (0.80 - 1.20)	1.06					A1030 E	04/12/13 06:58 / kbh

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
H - Analysis performed past recommended holding time.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility
Lab ID: C13040264-030
Client Sample ID 6346

Revised Date: 05/17/13
Report Date: 04/19/13
Collection Date: 04/03/13 14:25
DateReceived: 04/05/13
Matrix: Groundwater

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Carbonate as CO3	ND	mg/L		5		A2320 B	04/08/13 20:25 / jba
Bicarbonate as HCO3	320	mg/L		5		A2320 B	04/08/13 20:25 / jba
Calcium	258	mg/L		1		E200.7	04/10/13 17:22 / sf
Chloride	12	mg/L		1		E300.0	04/09/13 15:49 / wc
Magnesium	81	mg/L		1		E200.7	04/10/13 17:22 / sf
Potassium	3	mg/L		1		E200.7	04/10/13 17:22 / sf
Sodium	17	mg/L		1		E200.7	04/10/13 17:22 / sf
Sulfate	803	mg/L	D	4		E300.0	04/09/13 15:49 / wc
PHYSICAL PROPERTIES							
Conductivity @ 25 C	1790	umhos/cm		1		A2510 B	04/08/13 12:52 / ab
pH	7.16	s.u.	H	0.01		A4500-H B	04/08/13 12:52 / ab
Solids, Total Dissolved TDS @ 180 C	1470	mg/L		10		A2540 C	04/09/13 12:34 / jz
METALS - DISSOLVED							
Arsenic	ND	mg/L		0.001		E200.8	04/09/13 23:18 / clm
Iron	ND	mg/L		0.03		E200.7	04/10/13 17:22 / sf
Molybdenum	ND	mg/L		0.01		E200.8	04/09/13 23:18 / clm
Selenium	0.061	mg/L		0.001		E200.8	04/09/13 23:18 / clm
Uranium	0.0073	mg/L		0.0003		E200.8	04/09/13 23:18 / clm
DATA QUALITY							
A/C Balance (± 5)	-4.67	%				A1030 E	04/12/13 06:58 / kbh
Anions	22.3	meq/L				A1030 E	04/12/13 06:58 / kbh
Cations	20.3	meq/L				A1030 E	04/12/13 06:58 / kbh
Solids, Total Dissolved Calculated	1400	mg/L				A1030 E	04/12/13 06:58 / kbh
TDS Balance (0.80 - 1.20)	1.09					A1030 E	04/12/13 06:58 / kbh

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
H - Analysis performed past recommended holding time.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility
Lab ID: C13040264-031
Client Sample ID 6347

Revised Date: 05/17/13
Report Date: 04/19/13
Collection Date: 04/03/13 15:05
DateReceived: 04/05/13
Matrix: Groundwater

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Carbonate as CO3	ND	mg/L		5		A2320 B	04/08/13 20:41 / jba
Bicarbonate as HCO3	319	mg/L		5		A2320 B	04/08/13 20:41 / jba
Calcium	272	mg/L		1		E200.7	04/10/13 17:26 / sf
Chloride	11	mg/L		1		E300.0	04/09/13 16:07 / wc
Magnesium	84	mg/L		1		E200.7	04/10/13 17:26 / sf
Potassium	4	mg/L		1		E200.7	04/10/13 17:26 / sf
Sodium	17	mg/L		1		E200.7	04/10/13 17:26 / sf
Sulfate	808	mg/L	D	4		E300.0	04/09/13 16:07 / wc
PHYSICAL PROPERTIES							
Conductivity @ 25 C	1820	umhos/cm		1		A2510 B	04/08/13 12:54 / ab
pH	7.18	s.u.	H	0.01		A4500-H B	04/08/13 12:54 / ab
Solids, Total Dissolved TDS @ 180 C	1520	mg/L		20		A2540 C	04/09/13 12:34 / jz
METALS - DISSOLVED							
Arsenic	ND	mg/L		0.001		E200.8	04/11/13 17:12 / clm
Iron	0.04	mg/L		0.03		E200.7	04/10/13 17:26 / sf
Molybdenum	0.01	mg/L		0.01		E200.7	04/10/13 17:26 / sf
Selenium	0.064	mg/L		0.001		E200.8	04/11/13 17:12 / clm
Uranium	0.0078	mg/L		0.0003		E200.8	04/11/13 17:12 / clm
DATA QUALITY							
A/C Balance (± 5)	-2.49	%				A1030 E	04/12/13 06:59 / kbh
Anions	22.4	meq/L				A1030 E	04/12/13 06:59 / kbh
Cations	21.3	meq/L				A1030 E	04/12/13 06:59 / kbh
Solids, Total Dissolved Calculated	1400	mg/L				A1030 E	04/12/13 06:59 / kbh
TDS Balance (0.80 - 1.20)	1.11					A1030 E	04/12/13 06:59 / kbh

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
H - Analysis performed past recommended holding time.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility
Lab ID: C13040264-032
Client Sample ID 6348

Revised Date: 05/17/13
Report Date: 04/19/13
Collection Date: 04/04/13 06:50
DateReceived: 04/05/13
Matrix: Groundwater

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Carbonate as CO3	ND	mg/L		5		A2320 B	04/08/13 20:49 / jba
Bicarbonate as HCO3	228	mg/L		5		A2320 B	04/08/13 20:49 / jba
Calcium	82	mg/L		1		E200.7	04/10/13 17:29 / sf
Chloride	47	mg/L		1		E300.0	04/09/13 16:24 / wc
Magnesium	28	mg/L		1		E200.7	04/10/13 17:29 / sf
Potassium	3	mg/L		1		E200.7	04/10/13 17:29 / sf
Sodium	47	mg/L		1		E200.7	04/10/13 17:29 / sf
Sulfate	175	mg/L	D	2		E300.0	04/09/13 16:24 / wc
PHYSICAL PROPERTIES							
Conductivity @ 25 C	867	umhos/cm		1		A2510 B	04/08/13 12:57 / ab
pH	7.64	s.u.	H	0.01		A4500-H B	04/08/13 12:57 / ab
Solids, Total Dissolved TDS @ 180 C	548	mg/L		10		A2540 C	04/09/13 12:34 / jz
METALS - DISSOLVED							
Arsenic	ND	mg/L		0.001		E200.8	04/11/13 17:28 / clm
Iron	ND	mg/L		0.03		E200.7	04/10/13 17:29 / sf
Molybdenum	ND	mg/L		0.01		E200.7	04/10/13 17:29 / sf
Selenium	0.005	mg/L		0.001		E200.8	04/11/13 17:28 / clm
Uranium	0.0029	mg/L		0.0003		E200.8	04/11/13 17:28 / clm
DATA QUALITY							
A/C Balance (± 5)	-1.90	%				A1030 E	04/12/13 06:59 / kbh
Anions	8.87	meq/L				A1030 E	04/12/13 06:59 / kbh
Cations	8.54	meq/L				A1030 E	04/12/13 06:59 / kbh
Solids, Total Dissolved Calculated	520	mg/L				A1030 E	04/12/13 06:59 / kbh
TDS Balance (0.80 - 1.20)	1.05					A1030 E	04/12/13 06:59 / kbh

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
H - Analysis performed past recommended holding time.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility
Lab ID: C13040264-033
Client Sample ID 6349

Revised Date: 05/17/13
Report Date: 04/19/13
Collection Date: 04/04/13 07:00
DateReceived: 04/05/13
Matrix: Groundwater

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Carbonate as CO3	ND	mg/L		5		A2320 B	04/08/13 20:57 / jba
Bicarbonate as HCO3	227	mg/L		5		A2320 B	04/08/13 20:57 / jba
Calcium	86	mg/L		1		E200.7	04/10/13 18:14 / sf
Chloride	47	mg/L		1		E300.0	04/09/13 17:34 / wc
Magnesium	29	mg/L		1		E200.7	04/10/13 18:14 / sf
Potassium	3	mg/L		1		E200.7	04/10/13 18:14 / sf
Sodium	49	mg/L		1		E200.7	04/10/13 18:14 / sf
Sulfate	175	mg/L	D	2		E300.0	04/09/13 17:34 / wc
PHYSICAL PROPERTIES							
Conductivity @ 25 C	873	umhos/cm		1		A2510 B	04/08/13 13:00 / ab
pH	7.65	s.u.	H	0.01		A4500-H B	04/08/13 13:00 / ab
Solids, Total Dissolved TDS @ 180 C	550	mg/L		10		A2540 C	04/09/13 12:34 / jz
METALS - DISSOLVED							
Arsenic	ND	mg/L		0.001		E200.8	04/11/13 17:32 / clm
Iron	ND	mg/L		0.03		E200.7	04/10/13 18:14 / sf
Molybdenum	ND	mg/L		0.01		E200.7	04/10/13 18:14 / sf
Selenium	0.005	mg/L		0.001		E200.8	04/11/13 17:32 / clm
Uranium	0.0029	mg/L		0.0003		E200.8	04/11/13 17:32 / clm
DATA QUALITY							
A/C Balance (± 5)	0.390	%				A1030 E	04/12/13 06:59 / kbh
Anions	8.85	meq/L				A1030 E	04/12/13 06:59 / kbh
Cations	8.92	meq/L				A1030 E	04/12/13 06:59 / kbh
Solids, Total Dissolved Calculated	530	mg/L				A1030 E	04/12/13 06:59 / kbh
TDS Balance (0.80 - 1.20)	1.04					A1030 E	04/12/13 06:59 / kbh

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
H - Analysis performed past recommended holding time.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility
Lab ID: C13040264-034
Client Sample ID 6350

Revised Date: 05/17/13
Report Date: 04/19/13
Collection Date: 04/04/13 07:30
DateReceived: 04/05/13
Matrix: Groundwater

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Carbonate as CO3	ND	mg/L		5		A2320 B	04/08/13 21:05 / jba
Bicarbonate as HCO3	227	mg/L		5		A2320 B	04/08/13 21:05 / jba
Calcium	84	mg/L		1		E200.7	04/10/13 18:28 / sf
Chloride	46	mg/L		1		E300.0	04/09/13 18:26 / wc
Magnesium	29	mg/L		1		E200.7	04/10/13 18:28 / sf
Potassium	3	mg/L		1		E200.7	04/10/13 18:28 / sf
Sodium	48	mg/L		1		E200.7	04/10/13 18:28 / sf
Sulfate	171	mg/L	D	2		E300.0	04/09/13 18:26 / wc
PHYSICAL PROPERTIES							
Conductivity @ 25 C	868	umhos/cm		1		A2510 B	04/08/13 13:02 / ab
pH	7.66	s.u.	H	0.01		A4500-H B	04/08/13 13:02 / ab
Solids, Total Dissolved TDS @ 180 C	550	mg/L		10		A2540 C	04/09/13 12:34 / jz
METALS - DISSOLVED							
Arsenic	ND	mg/L		0.001		E200.8	04/11/13 17:35 / clm
Iron	ND	mg/L		0.03		E200.7	04/10/13 18:28 / sf
Molybdenum	ND	mg/L		0.01		E200.7	04/10/13 18:28 / sf
Selenium	0.005	mg/L		0.001		E200.8	04/11/13 17:35 / clm
Uranium	0.0031	mg/L		0.0003		E200.8	04/11/13 17:35 / clm
DATA QUALITY							
A/C Balance (± 5)	-0.0942	%				A1030 E	04/12/13 06:59 / kbh
Anions	8.74	meq/L				A1030 E	04/12/13 06:59 / kbh
Cations	8.72	meq/L				A1030 E	04/12/13 06:59 / kbh
Solids, Total Dissolved Calculated	520	mg/L				A1030 E	04/12/13 06:59 / kbh
TDS Balance (0.80 - 1.20)	1.06					A1030 E	04/12/13 06:59 / kbh

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
H - Analysis performed past recommended holding time.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility
Lab ID: C13040264-035
Client Sample ID 6351

Revised Date: 05/17/13
Report Date: 04/19/13
Collection Date: 04/04/13 08:10
DateReceived: 04/05/13
Matrix: Groundwater

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Carbonate as CO3	ND	mg/L		5		A2320 B	04/08/13 21:13 / jba
Bicarbonate as HCO3	226	mg/L		5		A2320 B	04/08/13 21:13 / jba
Calcium	84	mg/L		1		E200.7	04/10/13 18:32 / sf
Chloride	48	mg/L		1		E300.0	04/09/13 18:44 / wc
Magnesium	29	mg/L		1		E200.7	04/10/13 18:32 / sf
Potassium	3	mg/L		1		E200.7	04/10/13 18:32 / sf
Sodium	48	mg/L		1		E200.7	04/10/13 18:32 / sf
Sulfate	176	mg/L	D	2		E300.0	04/09/13 18:44 / wc
PHYSICAL PROPERTIES							
Conductivity @ 25 C	884	umhos/cm		1		A2510 B	04/08/13 13:05 / ab
pH	7.73	s.u.	H	0.01		A4500-H B	04/08/13 13:05 / ab
Solids, Total Dissolved TDS @ 180 C	562	mg/L		10		A2540 C	04/09/13 12:34 / jz
METALS - DISSOLVED							
Arsenic	ND	mg/L		0.001		E200.8	04/11/13 17:38 / clm
Iron	ND	mg/L		0.03		E200.7	04/10/13 18:32 / sf
Molybdenum	ND	mg/L		0.01		E200.7	04/10/13 18:32 / sf
Selenium	0.006	mg/L		0.001		E200.8	04/11/13 17:38 / clm
Uranium	0.0030	mg/L		0.0003		E200.8	04/11/13 17:38 / clm
DATA QUALITY							
A/C Balance (± 5)	-0.613	%				A1030 E	04/12/13 06:59 / kbh
Anions	8.91	meq/L				A1030 E	04/12/13 06:59 / kbh
Cations	8.80	meq/L				A1030 E	04/12/13 06:59 / kbh
Solids, Total Dissolved Calculated	530	mg/L				A1030 E	04/12/13 06:59 / kbh
TDS Balance (0.80 - 1.20)	1.07					A1030 E	04/12/13 06:59 / kbh

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
H - Analysis performed past recommended holding time.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility
Lab ID: C13040264-036
Client Sample ID 6352

Revised Date: 05/17/13
Report Date: 04/19/13
Collection Date: 04/04/13 08:40
DateReceived: 04/05/13
Matrix: Groundwater

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Carbonate as CO3	ND	mg/L		5		A2320 B	04/08/13 21:21 / jba
Bicarbonate as HCO3	221	mg/L		5		A2320 B	04/08/13 21:21 / jba
Calcium	66	mg/L		1		E200.7	04/10/13 18:36 / sf
Chloride	10	mg/L		1		E300.0	04/09/13 19:01 / wc
Magnesium	16	mg/L		1		E200.7	04/10/13 18:36 / sf
Potassium	3	mg/L		1		E200.7	04/10/13 18:36 / sf
Sodium	32	mg/L		1		E200.7	04/10/13 18:36 / sf
Sulfate	111	mg/L	D	2		E300.0	04/09/13 19:01 / wc
PHYSICAL PROPERTIES							
Conductivity @ 25 C	593	umhos/cm		1		A2510 B	04/08/13 13:08 / ab
pH	7.59	s.u.	H	0.01		A4500-H B	04/08/13 13:08 / ab
Solids, Total Dissolved TDS @ 180 C	368	mg/L		10		A2540 C	04/09/13 12:34 / jz
METALS - DISSOLVED							
Arsenic	ND	mg/L		0.001		E200.8	04/11/13 17:41 / clm
Iron	ND	mg/L		0.03		E200.7	04/10/13 18:36 / sf
Molybdenum	ND	mg/L		0.01		E200.7	04/10/13 18:36 / sf
Selenium	0.002	mg/L		0.001		E200.8	04/11/13 17:41 / clm
Uranium	0.0018	mg/L		0.0003		E200.8	04/11/13 17:41 / clm
DATA QUALITY							
A/C Balance (± 5)	-1.21	%				A1030 E	04/12/13 06:59 / kbh
Anions	6.22	meq/L				A1030 E	04/12/13 06:59 / kbh
Cations	6.07	meq/L				A1030 E	04/12/13 06:59 / kbh
Solids, Total Dissolved Calculated	360	mg/L				A1030 E	04/12/13 06:59 / kbh
TDS Balance (0.80 - 1.20)	1.01					A1030 E	04/12/13 06:59 / kbh

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
H - Analysis performed past recommended holding time.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility
Lab ID: C13040264-037
Client Sample ID 6353

Revised Date: 05/17/13
Report Date: 04/19/13
Collection Date: 04/04/13 09:15
DateReceived: 04/05/13
Matrix: Groundwater

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Carbonate as CO3	ND	mg/L		5		A2320 B	04/08/13 21:29 / jba
Bicarbonate as HCO3	208	mg/L		5		A2320 B	04/08/13 21:29 / jba
Calcium	65	mg/L		1		E200.7	04/10/13 18:39 / sf
Chloride	10	mg/L		1		E300.0	04/09/13 19:18 / wc
Magnesium	16	mg/L		1		E200.7	04/10/13 18:39 / sf
Potassium	3	mg/L		1		E200.7	04/10/13 18:39 / sf
Sodium	31	mg/L		1		E200.7	04/10/13 18:39 / sf
Sulfate	112	mg/L	D	2		E300.0	04/09/13 19:18 / wc
PHYSICAL PROPERTIES							
Conductivity @ 25 C	591	umhos/cm		1		A2510 B	04/08/13 13:21 / ab
pH	7.58	s.u.	H	0.01		A4500-H B	04/08/13 13:21 / ab
Solids, Total Dissolved TDS @ 180 C	367	mg/L		10		A2540 C	04/09/13 12:34 / jz
METALS - DISSOLVED							
Arsenic	ND	mg/L		0.001		E200.8	04/11/13 17:45 / clm
Iron	ND	mg/L		0.03		E200.7	04/10/13 18:39 / sf
Molybdenum	ND	mg/L		0.01		E200.7	04/10/13 18:39 / sf
Selenium	0.003	mg/L		0.001		E200.8	04/11/13 17:45 / clm
Uranium	0.0018	mg/L		0.0003		E200.8	04/11/13 17:45 / clm
DATA QUALITY							
A/C Balance (± 5)	-0.219	%				A1030 E	04/12/13 06:59 / kbh
Anions	6.02	meq/L				A1030 E	04/12/13 06:59 / kbh
Cations	5.99	meq/L				A1030 E	04/12/13 06:59 / kbh
Solids, Total Dissolved Calculated	360	mg/L				A1030 E	04/12/13 06:59 / kbh
TDS Balance (0.80 - 1.20)	1.03					A1030 E	04/12/13 06:59 / kbh

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
H - Analysis performed past recommended holding time.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility
Lab ID: C13040264-038
Client Sample ID 6354

Revised Date: 05/17/13
Report Date: 04/19/13
Collection Date: 04/04/13 10:15
DateReceived: 04/05/13
Matrix: Groundwater

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Carbonate as CO3	ND	mg/L		5		A2320 B	04/08/13 21:37 / jba
Bicarbonate as HCO3	207	mg/L		5		A2320 B	04/08/13 21:37 / jba
Calcium	63	mg/L		1		E200.7	04/10/13 18:43 / sf
Chloride	9	mg/L		1		E300.0	04/09/13 19:36 / wc
Magnesium	16	mg/L		1		E200.7	04/10/13 18:43 / sf
Potassium	3	mg/L		1		E200.7	04/10/13 18:43 / sf
Sodium	31	mg/L		1		E200.7	04/10/13 18:43 / sf
Sulfate	110	mg/L	D	2		E300.0	04/09/13 19:36 / wc
PHYSICAL PROPERTIES							
Conductivity @ 25 C	589	umhos/cm		1		A2510 B	04/08/13 13:24 / ab
pH	7.56	s.u.	H	0.01		A4500-H B	04/08/13 13:24 / ab
Solids, Total Dissolved TDS @ 180 C	363	mg/L		10		A2540 C	04/09/13 12:34 / jz
METALS - DISSOLVED							
Arsenic	ND	mg/L		0.001		E200.8	04/11/13 17:48 / clm
Iron	ND	mg/L		0.03		E200.7	04/10/13 18:43 / sf
Molybdenum	ND	mg/L		0.01		E200.7	04/10/13 18:43 / sf
Selenium	0.003	mg/L		0.001		E200.8	04/11/13 17:48 / clm
Uranium	0.0018	mg/L		0.0003		E200.8	04/11/13 17:48 / clm
DATA QUALITY							
A/C Balance (± 5)	-0.576	%				A1030 E	04/12/13 06:59 / kbh
Anions	5.97	meq/L				A1030 E	04/12/13 06:59 / kbh
Cations	5.90	meq/L				A1030 E	04/12/13 06:59 / kbh
Solids, Total Dissolved Calculated	350	mg/L				A1030 E	04/12/13 06:59 / kbh
TDS Balance (0.80 - 1.20)	1.03					A1030 E	04/12/13 06:59 / kbh

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
H - Analysis performed past recommended holding time.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility
Lab ID: C13040264-039
Client Sample ID 6355

Revised Date: 05/17/13
Report Date: 04/19/13
Collection Date: 04/04/13 11:00
DateReceived: 04/05/13
Matrix: Groundwater

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Carbonate as CO3	ND	mg/L		5		A2320 B	04/08/13 21:45 / jba
Bicarbonate as HCO3	231	mg/L		5		A2320 B	04/08/13 21:45 / jba
Calcium	64	mg/L		1		E200.7	04/10/13 19:02 / sf
Chloride	15	mg/L		1		E300.0	04/09/13 19:53 / wc
Magnesium	16	mg/L		1		E200.7	04/10/13 19:02 / sf
Potassium	3	mg/L		1		E200.7	04/11/13 19:48 / sf
Sodium	36	mg/L		1		E200.7	04/10/13 19:02 / sf
Sulfate	99	mg/L	D	2		E300.0	04/09/13 19:53 / wc
PHYSICAL PROPERTIES							
Conductivity @ 25 C	620	umhos/cm		1		A2510 B	04/08/13 13:26 / ab
pH	7.70	s.u.	H	0.01		A4500-H B	04/08/13 13:26 / ab
Solids, Total Dissolved TDS @ 180 C	380	mg/L		10		A2540 C	04/09/13 12:34 / jz
METALS - DISSOLVED							
Arsenic	ND	mg/L		0.001		E200.8	04/11/13 17:51 / clm
Iron	ND	mg/L		0.03		E200.7	04/10/13 19:02 / sf
Molybdenum	ND	mg/L		0.01		E200.7	04/10/13 19:02 / sf
Selenium	0.003	mg/L		0.001		E200.8	04/11/13 17:51 / clm
Uranium	0.0021	mg/L		0.0003		E200.8	04/11/13 17:51 / clm
DATA QUALITY							
A/C Balance (± 5)	-1.65	%				A1030 E	04/16/13 08:01 / kbh
Anions	6.29	meq/L				A1030 E	04/16/13 08:01 / kbh
Cations	6.09	meq/L				A1030 E	04/16/13 08:01 / kbh
Solids, Total Dissolved Calculated	360	mg/L				A1030 E	04/16/13 08:01 / kbh
TDS Balance (0.80 - 1.20)	1.05					A1030 E	04/16/13 08:01 / kbh

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
H - Analysis performed past recommended holding time.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility
Lab ID: C13040264-040
Client Sample ID 6356

Revised Date: 05/17/13
Report Date: 04/19/13
Collection Date: 04/04/13 11:25
DateReceived: 04/05/13
Matrix: Groundwater

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Carbonate as CO3	ND	mg/L		5		A2320 B	04/08/13 22:13 / jba
Bicarbonate as HCO3	240	mg/L		5		A2320 B	04/08/13 22:13 / jba
Calcium	63	mg/L		1		E200.7	04/10/13 19:05 / sf
Chloride	15	mg/L		1		E300.0	04/09/13 20:11 / wc
Magnesium	16	mg/L		1		E200.7	04/10/13 19:05 / sf
Potassium	3	mg/L		1		E200.7	04/11/13 19:52 / sf
Sodium	42	mg/L		1		E200.7	04/10/13 19:05 / sf
Sulfate	106	mg/L	D	2		E300.0	04/09/13 20:11 / wc
PHYSICAL PROPERTIES							
Conductivity @ 25 C	647	umhos/cm		1		A2510 B	04/08/13 13:29 / ab
pH	7.68	s.u.	H	0.01		A4500-H B	04/08/13 13:29 / ab
Solids, Total Dissolved TDS @ 180 C	386	mg/L		10		A2540 C	04/10/13 15:33 / jz
METALS - DISSOLVED							
Arsenic	ND	mg/L		0.001		E200.8	04/11/13 17:54 / clm
Iron	ND	mg/L		0.03		E200.7	04/10/13 19:05 / sf
Molybdenum	ND	mg/L		0.01		E200.7	04/10/13 19:05 / sf
Selenium	0.003	mg/L		0.001		E200.8	04/11/13 17:54 / clm
Uranium	0.0022	mg/L		0.0003		E200.8	04/11/13 17:54 / clm
DATA QUALITY							
A/C Balance (± 5)	-1.72	%				A1030 E	04/16/13 08:02 / kbh
Anions	6.61	meq/L				A1030 E	04/16/13 08:02 / kbh
Cations	6.38	meq/L				A1030 E	04/16/13 08:02 / kbh
Solids, Total Dissolved Calculated	380	mg/L				A1030 E	04/16/13 08:02 / kbh
TDS Balance (0.80 - 1.20)	1.01					A1030 E	04/16/13 08:02 / kbh

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
H - Analysis performed past recommended holding time.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility
Lab ID: C13040264-041
Client Sample ID 6357

Revised Date: 05/17/13
Report Date: 04/19/13
Collection Date: 04/04/13 11:30
DateReceived: 04/05/13
Matrix: Groundwater

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Carbonate as CO3	ND	mg/L		5		A2320 B	04/08/13 22:30 / jba
Bicarbonate as HCO3	240	mg/L		5		A2320 B	04/08/13 22:30 / jba
Calcium	63	mg/L		1		E200.7	04/10/13 19:09 / sf
Chloride	15	mg/L		1		E300.0	04/09/13 20:28 / wc
Magnesium	17	mg/L		1		E200.7	04/10/13 19:09 / sf
Potassium	3	mg/L		1		E200.7	04/11/13 19:59 / sf
Sodium	43	mg/L		1		E200.7	04/10/13 19:09 / sf
Sulfate	105	mg/L	D	2		E300.0	04/09/13 20:28 / wc
PHYSICAL PROPERTIES							
Conductivity @ 25 C	644	umhos/cm		1		A2510 B	04/08/13 13:32 / ab
pH	7.71	s.u.	H	0.01		A4500-H B	04/08/13 13:32 / ab
Solids, Total Dissolved TDS @ 180 C	387	mg/L		10		A2540 C	04/10/13 15:33 / jz
METALS - DISSOLVED							
Arsenic	ND	mg/L		0.001		E200.8	04/11/13 18:10 / clm
Iron	ND	mg/L		0.03		E200.7	04/10/13 19:09 / sf
Molybdenum	ND	mg/L		0.01		E200.7	04/10/13 19:09 / sf
Selenium	0.003	mg/L		0.001		E200.8	04/11/13 18:10 / clm
Uranium	0.0022	mg/L		0.0003		E200.8	04/11/13 18:10 / clm
DATA QUALITY							
A/C Balance (± 5)	-0.813	%				A1030 E	04/16/13 08:02 / kbh
Anions	6.58	meq/L				A1030 E	04/16/13 08:02 / kbh
Cations	6.48	meq/L				A1030 E	04/16/13 08:02 / kbh
Solids, Total Dissolved Calculated	380	mg/L				A1030 E	04/16/13 08:02 / kbh
TDS Balance (0.80 - 1.20)	1.01					A1030 E	04/16/13 08:02 / kbh

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
H - Analysis performed past recommended holding time.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility
Lab ID: C13040264-042
Client Sample ID 6358

Revised Date: 05/17/13
Report Date: 04/19/13
Collection Date: 04/04/13 12:15
DateReceived: 04/05/13
Matrix: Groundwater

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Carbonate as CO3	ND	mg/L		5		A2320 B	04/08/13 22:46 / jba
Bicarbonate as HCO3	239	mg/L		5		A2320 B	04/08/13 22:46 / jba
Calcium	68	mg/L		1		E200.7	04/10/13 19:16 / sf
Chloride	15	mg/L		1		E300.0	04/09/13 20:45 / wc
Magnesium	17	mg/L		1		E200.7	04/10/13 19:16 / sf
Potassium	3	mg/L		1		E200.7	04/11/13 20:03 / sf
Sodium	44	mg/L		1		E200.7	04/10/13 19:16 / sf
Sulfate	102	mg/L	D	2		E300.0	04/09/13 20:45 / wc
PHYSICAL PROPERTIES							
Conductivity @ 25 C	636	umhos/cm		1		A2510 B	04/08/13 13:34 / ab
pH	7.69	s.u.	H	0.01		A4500-H B	04/08/13 13:34 / ab
Solids, Total Dissolved TDS @ 180 C	387	mg/L		10		A2540 C	04/10/13 15:33 / jz
METALS - DISSOLVED							
Arsenic	ND	mg/L		0.001		E200.8	04/11/13 18:14 / clm
Iron	ND	mg/L		0.03		E200.7	04/10/13 19:16 / sf
Molybdenum	ND	mg/L		0.01		E200.7	04/10/13 19:16 / sf
Selenium	0.003	mg/L		0.001		E200.8	04/11/13 18:14 / clm
Uranium	0.0022	mg/L		0.0003		E200.8	04/11/13 18:14 / clm
DATA QUALITY							
A/C Balance (± 5)	2.17	%				A1030 E	04/16/13 08:02 / kbh
Anions	6.48	meq/L				A1030 E	04/16/13 08:02 / kbh
Cations	6.77	meq/L				A1030 E	04/16/13 08:02 / kbh
Solids, Total Dissolved Calculated	380	mg/L				A1030 E	04/16/13 08:02 / kbh
TDS Balance (0.80 - 1.20)	1.01					A1030 E	04/16/13 08:02 / kbh

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
H - Analysis performed past recommended holding time.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility
Lab ID: C13040264-043
Client Sample ID 6359

Revised Date: 05/17/13
Report Date: 04/19/13
Collection Date: 04/04/13 12:40
DateReceived: 04/05/13
Matrix: Groundwater

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Carbonate as CO3	ND	mg/L		5		A2320 B	04/08/13 22:54 / jba
Bicarbonate as HCO3	320	mg/L		5		A2320 B	04/08/13 22:54 / jba
Calcium	295	mg/L		1		E200.7	04/10/13 19:31 / sf
Chloride	12	mg/L		1		E300.0	04/09/13 21:38 / wc
Magnesium	88	mg/L		1		E200.7	04/10/13 19:31 / sf
Potassium	5	mg/L		1		E200.7	04/11/13 20:06 / sf
Sodium	20	mg/L		1		E200.7	04/10/13 19:31 / sf
Sulfate	795	mg/L	D	4		E300.0	04/09/13 21:38 / wc
PHYSICAL PROPERTIES							
Conductivity @ 25 C	1780	umhos/cm		1		A2510 B	04/08/13 13:37 / ab
pH	7.19	s.u.	H	0.01		A4500-H B	04/08/13 13:37 / ab
Solids, Total Dissolved TDS @ 180 C	1470	mg/L		10		A2540 C	04/10/13 15:34 / jz
METALS - DISSOLVED							
Arsenic	ND	mg/L		0.001		E200.8	04/11/13 18:17 / clm
Iron	0.47	mg/L		0.03		E200.7	04/10/13 19:31 / sf
Molybdenum	ND	mg/L		0.01		E200.7	04/10/13 19:31 / sf
Selenium	0.056	mg/L		0.001		E200.8	04/11/13 18:17 / clm
Uranium	0.0074	mg/L		0.0003		E200.8	04/11/13 18:17 / clm
DATA QUALITY							
A/C Balance (± 5)	1.82	%				A1030 E	04/16/13 08:02 / kbh
Anions	22.1	meq/L				A1030 E	04/16/13 08:02 / kbh
Cations	23.0	meq/L				A1030 E	04/16/13 08:02 / kbh
Solids, Total Dissolved Calculated	1400	mg/L				A1030 E	04/16/13 08:02 / kbh
TDS Balance (0.80 - 1.20)	1.06					A1030 E	04/16/13 08:02 / kbh

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
H - Analysis performed past recommended holding time.

QA/QC Summary Report

Prepared by Casper, WY Branch

Revised Date: 05/17/13
Report Date: 04/19/13
Work Order: C13040264

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: A2320 B										Batch: R172254
Sample ID: MBLK	3	Method Blank				Run: MANTECH_130408C				04/08/13 13:49
Alkalinity, Total as CaCO3		1	mg/L	1						
Carbonate as CO3		ND	mg/L	1						
Bicarbonate as HCO3		1	mg/L	1						
Sample ID: LCS_130315		Laboratory Control Sample				Run: MANTECH_130408C				04/08/13 14:02
Alkalinity, Total as CaCO3		157	mg/L	5.0	104	90	110			
Sample ID: C13040270-001AMS		Sample Matrix Spike				Run: MANTECH_130408C				04/08/13 14:27
Alkalinity, Total as CaCO3		321	mg/L	5.0	100	80	120			
Sample ID: C13040264-010ADUP	3	Sample Duplicate				Run: MANTECH_130408C				04/08/13 16:44
Alkalinity, Total as CaCO3		271	mg/L	5.0				0.2	10	
Carbonate as CO3		ND	mg/L	5.0					10	
Bicarbonate as HCO3		330	mg/L	5.0				0.2	10	
Method: A2320 B										Batch: 130411_1_ALK-W
Sample ID: MBLK1_130411_	3	Method Blank				Run: TTR-ALK_130411A				04/11/13 08:05
Alkalinity, Total as CaCO3		1	mg/L	1						
Carbonate as CO3		ND	mg/L	1						
Bicarbonate as HCO3		2	mg/L	1						
Sample ID: LCS_130315_130411_		Laboratory Control Sample				Run: TTR-ALK_130411A				04/11/13 08:18
Alkalinity, Total as CaCO3		1000	mg/L	5.0	100	90	110			
Sample ID: C13040264-001ADUP	2	Sample Duplicate				Run: TTR-ALK_130411A				04/11/13 08:28
Alkalinity, Total as CaCO3		4000	mg/L	5.0				0.0	10	
Bicarbonate as HCO3		4570	mg/L	5.0				1.3	10	

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

QA/QC Summary Report

Prepared by Casper, WY Branch

Revised Date: 05/17/13
Report Date: 04/19/13
Work Order: C13040264

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: A2510 B									Analytical Run: PHSC_101-C_130408A	
Sample ID: SC 100		Continuing Calibration Verification Standard							04/08/13 08:40	
Conductivity @ 25 C		103	umhos/cm	1.0	103	90	110			
Method: A2510 B									Batch: R172197	
Sample ID: SC 2ND 1413		Laboratory Control Sample				Run: PHSC_101-C_130408A			04/08/13 08:51	
Conductivity @ 25 C		1480	umhos/cm	1.0	105	90	110			
Sample ID: MBLK		Method Blank				Run: PHSC_101-C_130408A			04/08/13 09:32	
Conductivity @ 25 C		2	umhos/cm	0.2						
Sample ID: C13040264-006ADUP		Sample Duplicate				Run: PHSC_101-C_130408A			04/08/13 11:07	
Conductivity @ 25 C		1040	umhos/cm	1.0				0.2	10	

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

QA/QC Summary Report

Prepared by Casper, WY Branch

Revised Date: 05/17/13
Report Date: 04/19/13
Work Order: C13040264

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: A2540 C										Batch: TDS130409A
Sample ID: MB-1_130409A		Method Blank				Run: BAL-19_130409B				04/09/13 12:27
Solids, Total Dissolved TDS @ 180 C		ND	mg/L	10						
Sample ID: LCS-2_130409A		Laboratory Control Sample				Run: BAL-19_130409B				04/09/13 12:27
Solids, Total Dissolved TDS @ 180 C		1980	mg/L	20	99	90	110			
Sample ID: C13040264-001A DUP		Sample Duplicate				Run: BAL-19_130409B				04/09/13 12:33
Solids, Total Dissolved TDS @ 180 C		14800	mg/L	200				2.0	5	
Sample ID: C13040264-002A MS		Sample Matrix Spike				Run: BAL-19_130409B				04/09/13 12:33
Solids, Total Dissolved TDS @ 180 C		34400	mg/L	200	98	90	110			
Method: A2540 C										Batch: TDS130410A
Sample ID: MB-1_130410A		Method Blank				Run: BAL-19_130410A				04/10/13 15:32
Solids, Total Dissolved TDS @ 180 C		ND	mg/L	10						
Sample ID: LCS-2_130410A		Laboratory Control Sample				Run: BAL-19_130410A				04/10/13 15:32
Solids, Total Dissolved TDS @ 180 C		1950	mg/L	20	97	90	110			
Sample ID: C13040272-001A DUP		Sample Duplicate				Run: BAL-19_130410A				04/10/13 15:34
Solids, Total Dissolved TDS @ 180 C		1100	mg/L	10				0.3	5	
Sample ID: C13040272-002A MS		Sample Matrix Spike				Run: BAL-19_130410A				04/10/13 15:35
Solids, Total Dissolved TDS @ 180 C		2100	mg/L	11	100	90	110			

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

QA/QC Summary Report

Prepared by Casper, WY Branch

Revised Date: 05/17/13
Report Date: 04/19/13
Work Order: C13040264

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: **A4500-H B**									Analytical Run: PHSC_101-C_130408A	
Sample ID: **pH 6.86**	Initial Calibration Verification Standard								04/08/13 08:37	
pH		6.84	s.u.	0.010	100	98	102			
Method: **A4500-H B**									Batch: R172197	
Sample ID: **C13040264-006ADUP**	Sample Duplicate					Run: PHSC_101-C_130408A			04/08/13 11:07	
pH		8.20	s.u.	0.010				0.0	3	

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

QA/QC Summary Report

Prepared by Casper, WY Branch

Revised Date: 05/17/13
Report Date: 04/19/13
Work Order: C13040264

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: **E200.7**									Analytical Run: ICP2-C_130411A	
Sample ID: **ICV**		Initial Calibration Verification Standard							04/11/13 12:41	
Iron		5.18	mg/L	0.030	104	95	105			
Sample ID: **ICSA**		Interference Check Sample A							04/11/13 13:09	
Iron		188	mg/L	0.030	94	80	120			
Sample ID: **ICSAB**		Interference Check Sample AB							04/11/13 13:13	
Iron		192	mg/L	0.030	96	80	120			
Method: **E200.7**									Batch: R172386	
Sample ID: **MB-1304011A**		Method Blank				Run: ICP2-C_130411A			04/11/13 13:37	
Iron		0.002	mg/L	0.001						
Sample ID: **LFB-1304011A**		Laboratory Fortified Blank				Run: ICP2-C_130411A			04/11/13 13:41	
Iron		1.00	mg/L	0.030	100	85	115			
Sample ID: **C13040281-001CMS2**		Sample Matrix Spike				Run: ICP2-C_130411A			04/11/13 20:04	
Iron		2.08	mg/L	0.030	98	70	130			
Sample ID: **C13040281-001CMSD2**		Sample Matrix Spike Duplicate				Run: ICP2-C_130411A			04/11/13 20:08	
Iron		2.07	mg/L	0.030	97	70	130	0.5	20	

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

QA/QC Summary Report

Prepared by Casper, WY Branch

Revised Date: 05/17/13
Report Date: 04/19/13
Work Order: C13040264

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E200.7									Analytical Run: ICP4-C_130410A	
Sample ID: ICV	5	Initial Calibration Verification Standard							04/10/13 11:57	
Calcium		50.5	mg/L	0.50	101	95	105			
Iron		5.04	mg/L	0.030	101	95	105			
Magnesium		49.4	mg/L	0.50	99	95	105			
Potassium		49.3	mg/L	0.50	99	95	105			
Sodium		50.7	mg/L	0.50	101	95	105			
Sample ID: ICSA	5	Interference Check Sample A							04/10/13 12:11	
Calcium		443	mg/L	0.50	89	80	120			
Iron		172	mg/L	0.030	86	80	120			
Magnesium		485	mg/L	0.50	97	80	120			
Potassium		0.0149	mg/L	0.50						
Sodium		0.372	mg/L	0.50						
Sample ID: ICSAB	5	Interference Check Sample AB							04/10/13 12:16	
Calcium		450	mg/L	0.50	90	80	120			
Iron		175	mg/L	0.030	88	80	120			
Magnesium		489	mg/L	0.50	98	80	120			
Potassium		0.00999	mg/L	0.50						
Sodium		0.266	mg/L	0.50						
Method: E200.7									Batch: R172340	
Sample ID: MB-1304010A	5	Method Blank				Run: ICP4-C_130410A			04/10/13 12:34	
Calcium		ND	mg/L	0.02						
Iron		ND	mg/L	0.002						
Magnesium		0.04	mg/L	0.01						
Potassium		ND	mg/L	0.04						
Sodium		ND	mg/L	0.2						
Sample ID: LFB-1304010A	5	Laboratory Fortified Blank				Run: ICP4-C_130410A			04/10/13 12:38	
Calcium		48.6	mg/L	0.50	97	85	115			
Iron		0.974	mg/L	0.030	97	85	115			
Magnesium		47.5	mg/L	0.50	95	85	115			
Potassium		47.8	mg/L	0.50	96	85	115			
Sodium		48.1	mg/L	0.50	96	85	115			
Sample ID: C13040322-001BMS2	5	Sample Matrix Spike				Run: ICP4-C_130410A			04/10/13 12:52	
Calcium		751	mg/L	1.0	92	70	130			
Iron		189	mg/L	0.030		70	130			A
Magnesium		532	mg/L	1.0	93	70	130			
Potassium		483	mg/L	1.0	94	70	130			
Sodium		521	mg/L	2.1	93	70	130			
Sample ID: C13040322-001BMSD2	5	Sample Matrix Spike Duplicate				Run: ICP4-C_130410A			04/10/13 12:56	
Calcium		744	mg/L	1.0	90	70	130	0.9	20	
Iron		187	mg/L	0.030		70	130	0.7	20	A
Magnesium		530	mg/L	1.0	93	70	130	0.3	20	

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

A - The analyte level was greater than four times the spike level. In accordance with the method % recovery is not calculated.

QA/QC Summary Report

Prepared by Casper, WY Branch

Revised Date: 05/17/13
Report Date: 04/19/13
Work Order: C13040264

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E200.7										Batch: R172340
Sample ID: C13040322-001BMSD2	5	Sample Matrix Spike Duplicate				Run: ICP4-C_130410A				04/10/13 12:56
Potassium		479	mg/L	1.0	93	70	130	0.9	20	
Sodium		519	mg/L	2.1	93	70	130	0.5	20	
Method: E200.7										Analytical Run: ICP4-C_130411A
Sample ID: ICV		Initial Calibration Verification Standard								04/11/13 13:19
Potassium		50.6	mg/L	0.50	101	95	105			
Sample ID: ICSA		Interference Check Sample A								04/11/13 13:33
Potassium		0.0333	mg/L	0.50						
Sample ID: ICSAB		Interference Check Sample AB								04/11/13 13:37
Potassium		0.0191	mg/L	0.50						
Method: E200.7										Batch: R172393
Sample ID: MB-1304011A		Method Blank				Run: ICP4-C_130411A				04/11/13 13:56
Potassium		ND	mg/L	0.04						
Sample ID: LFB-1304011A		Laboratory Fortified Blank				Run: ICP4-C_130411A				04/11/13 14:00
Potassium		49.5	mg/L	0.50	99	85	115			
Sample ID: C13040164-005BMS2		Sample Matrix Spike				Run: ICP4-C_130411A				04/11/13 18:52
Potassium		109	mg/L	1.0	95	70	130			
Sample ID: C13040164-005BMSD2		Sample Matrix Spike Duplicate				Run: ICP4-C_130411A				04/11/13 19:37
Potassium		113	mg/L	1.0	99	70	130	3.7	20	

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

QA/QC Summary Report

Prepared by Casper, WY Branch

Revised Date: 05/17/13
Report Date: 04/19/13
Work Order: C13040264

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E200.7									Analytical Run: ICP4-C_130415A	
Sample ID: ICV	3	Initial Calibration Verification Standard							04/15/13 11:08	
Calcium		49.6	mg/L	0.50	99	95	105			
Magnesium		49.7	mg/L	0.50	99	95	105			
Sodium		51.2	mg/L	0.50	102	95	105			
Sample ID: ICSA	3	Interference Check Sample A							04/15/13 11:23	
Calcium		441	mg/L	0.50	88	80	120			
Magnesium		488	mg/L	0.50	98	80	120			
Sodium		0.433	mg/L	0.50						
Sample ID: ICSAB	3	Interference Check Sample AB							04/15/13 11:27	
Calcium		441	mg/L	0.50	88	80	120			
Magnesium		487	mg/L	0.50	97	80	120			
Sodium		0.368	mg/L	0.50						
Method: E200.7									Batch: R172485	
Sample ID: MB-1304015A	3	Method Blank				Run: ICP4-C_130415A			04/15/13 11:46	
Calcium		ND	mg/L	0.02						
Magnesium		0.05	mg/L	0.01						
Sodium		ND	mg/L	0.2						
Sample ID: LFB-1304015A	3	Laboratory Fortified Blank				Run: ICP4-C_130415A			04/15/13 11:49	
Calcium		47.9	mg/L	0.50	96	85	115			
Magnesium		48.0	mg/L	0.50	96	85	115			
Sodium		48.3	mg/L	0.50	97	85	115			
Sample ID: C13040264-027BMS2	3	Sample Matrix Spike				Run: ICP4-C_130415A			04/15/13 18:19	
Calcium		216	mg/L	1.0	99	70	130			
Magnesium		133	mg/L	1.0	101	70	130			
Sodium		178	mg/L	1.0	104	70	130			
Sample ID: C13040264-027BMSD2	3	Sample Matrix Spike Duplicate				Run: ICP4-C_130415A			04/15/13 18:23	
Calcium		216	mg/L	1.0	99	70	130	0.1	20	
Magnesium		133	mg/L	1.0	101	70	130	0.1	20	
Sodium		177	mg/L	1.0	103	70	130	0.2	20	

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

QA/QC Summary Report

Prepared by Casper, WY Branch

Revised Date: 05/17/13
Report Date: 04/19/13
Work Order: C13040264

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: **E200.7**									Analytical Run: ICP4-C_130416A	
Sample ID: **ICV**		Initial Calibration Verification Standard							04/16/13 11:57	
Potassium		50.2	mg/L	0.50	100	95	105			
Sample ID: **ICSA**		Interference Check Sample A							04/16/13 12:12	
Potassium		0.00806	mg/L	0.50						
Sample ID: **ICSAB**		Interference Check Sample AB							04/16/13 12:16	
Potassium		0.0176	mg/L	0.50						
Method: **E200.7**									Batch: R172526	
Sample ID: **MB-1304016A**		Method Blank				Run: ICP4-C_130416A			04/16/13 12:34	
Potassium		ND	mg/L	0.04						
Sample ID: **LFB-1304016A**		Laboratory Fortified Blank				Run: ICP4-C_130416A			04/16/13 12:38	
Potassium		50.6	mg/L	0.50	101	85	115			
Sample ID: **C13040272-001BMS2**		Sample Matrix Spike				Run: ICP4-C_130416A			04/16/13 14:36	
Potassium		111	mg/L	1.0	102	70	130			
Sample ID: **C13040272-001BMSD2**		Sample Matrix Spike Duplicate				Run: ICP4-C_130416A			04/16/13 14:40	
Potassium		113	mg/L	1.0	105	70	130	2.2	20	

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

QA/QC Summary Report

Prepared by Casper, WY Branch

Revised Date: 05/17/13
Report Date: 04/19/13
Work Order: C13040264

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E200.8									Analytical Run: ICPMS2-C_130408A	
Sample ID: ICV	4	Initial Calibration Verification Standard							04/08/13 14:17	
Arsenic		0.0490	mg/L	0.0010	98	90	110			
Molybdenum		0.0496	mg/L	0.0010	99	90	110			
Selenium		0.0484	mg/L	0.0010	97	90	110			
Uranium		0.0503	mg/L	0.00030	101	90	110			
Method: E200.8									Batch: R172251	
Sample ID: LRB	4	Method Blank				Run: ICPMS2-C_130408A			04/08/13 14:43	
Arsenic		ND	mg/L	0.00010						
Molybdenum		ND	mg/L	4E-05						
Selenium		ND	mg/L	0.0002						
Uranium		ND	mg/L	1E-05						
Sample ID: LFB	4	Laboratory Fortified Blank				Run: ICPMS2-C_130408A			04/08/13 14:46	
Arsenic		0.0519	mg/L	0.0010	104	85	115			
Molybdenum		0.0514	mg/L	0.0010	103	85	115			
Selenium		0.0511	mg/L	0.0010	102	85	115			
Uranium		0.0522	mg/L	0.00030	104	85	115			
Sample ID: C13040264-004BMS4	4	Sample Matrix Spike				Run: ICPMS2-C_130408A			04/08/13 22:45	
Arsenic		0.644	mg/L	0.0012	100	70	130			
Molybdenum		25.8	mg/L	0.0010		70	130			A
Selenium		0.569	mg/L	0.0026	90	70	130			
Uranium		146	mg/L	0.0010		70	130			A
Sample ID: C13040264-004BMSD4	4	Sample Matrix Spike Duplicate				Run: ICPMS2-C_130408A			04/08/13 23:01	
Arsenic		0.646	mg/L	0.0012	100	70	130	0.2	20	
Molybdenum		25.8	mg/L	0.0010		70	130	0.1	20	A
Selenium		0.572	mg/L	0.0026	91	70	130	0.4	20	
Uranium		148	mg/L	0.0010		70	130	0.9	20	A

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

A - The analyte level was greater than four times the spike level. In accordance with the method % recovery is not calculated.

QA/QC Summary Report

Prepared by Casper, WY Branch

Revised Date: 05/17/13
Report Date: 04/19/13
Work Order: C13040264

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E200.8									Analytical Run: ICPMS2-C_130409A	
Sample ID: ICV	4	Initial Calibration Verification Standard							04/09/13 16:29	
Arsenic		0.0473	mg/L	0.0010	95	90	110			
Molybdenum		0.0492	mg/L	0.0010	98	90	110			
Selenium		0.0455	mg/L	0.0010	91	90	110			
Uranium		0.0488	mg/L	0.00030	98	90	110			
Method: E200.8									Batch: R172319	
Sample ID: LRB	4	Method Blank				Run: ICPMS2-C_130409A			04/09/13 16:55	
Arsenic		ND	mg/L	0.00010						
Molybdenum		ND	mg/L	4E-05						
Selenium		ND	mg/L	0.0002						
Uranium		ND	mg/L	1E-05						
Sample ID: LFB	4	Laboratory Fortified Blank				Run: ICPMS2-C_130409A			04/09/13 16:58	
Arsenic		0.0484	mg/L	0.0010	97	85	115			
Molybdenum		0.0494	mg/L	0.0010	99	85	115			
Selenium		0.0472	mg/L	0.0010	94	85	115			
Uranium		0.0498	mg/L	0.00030	100	85	115			
Sample ID: C13040264-011BMS4	4	Sample Matrix Spike				Run: ICPMS2-C_130409A			04/09/13 21:48	
Arsenic		0.0540	mg/L	0.0010	104	70	130			
Molybdenum		0.0666	mg/L	0.0010	106	70	130			
Selenium		0.0536	mg/L	0.0010	100	70	130			
Uranium		0.0722	mg/L	0.00030	113	70	130			
Sample ID: C13040264-011BMSD4	4	Sample Matrix Spike Duplicate				Run: ICPMS2-C_130409A			04/09/13 21:51	
Arsenic		0.0529	mg/L	0.0010	102	70	130	2.1	20	
Molybdenum		0.0662	mg/L	0.0010	105	70	130	0.6	20	
Selenium		0.0524	mg/L	0.0010	97	70	130	2.3	20	
Uranium		0.0708	mg/L	0.00030	110	70	130	2.0	20	

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

QA/QC Summary Report

Prepared by Casper, WY Branch

Revised Date: 05/17/13
Report Date: 04/19/13
Work Order: C13040264

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E200.8									Analytical Run: ICPMS2-C_130411A	
Sample ID: ICV	3	Initial Calibration Verification Standard							04/11/13 10:36	
Arsenic		0.0493	mg/L	0.0010	99	90	110			
Selenium		0.0487	mg/L	0.0010	97	90	110			
Uranium		0.0500	mg/L	0.00030	100	90	110			
Method: E200.8									Batch: R172395	
Sample ID: LRB	3	Method Blank				Run: ICPMS2-C_130411A			04/11/13 11:02	
Arsenic		ND	mg/L	0.00010						
Selenium		ND	mg/L	0.0002						
Uranium		0.0001	mg/L	1E-05						
Sample ID: LFB	3	Laboratory Fortified Blank				Run: ICPMS2-C_130411A			04/11/13 11:05	
Arsenic		0.0499	mg/L	0.0010	100	85	115			
Selenium		0.0499	mg/L	0.0010	100	85	115			
Uranium		0.0502	mg/L	0.00030	100	85	115			
Sample ID: C13040264-021BMS4	3	Sample Matrix Spike				Run: ICPMS2-C_130411A			04/11/13 16:53	
Arsenic		0.0552	mg/L	0.0010	107	70	130			
Selenium		0.0633	mg/L	0.0010	106	70	130			
Uranium		0.0797	mg/L	0.00030	108	70	130			
Sample ID: C13040264-021BMSD4	3	Sample Matrix Spike Duplicate				Run: ICPMS2-C_130411A			04/11/13 16:56	
Arsenic		0.0555	mg/L	0.0010	107	70	130	0.5	20	
Selenium		0.0633	mg/L	0.0010	106	70	130	0.0	20	
Uranium		0.0800	mg/L	0.00030	109	70	130	0.4	20	
Sample ID: C13040264-043BMS4	3	Sample Matrix Spike				Run: ICPMS2-C_130411A			04/11/13 18:20	
Arsenic		0.0509	mg/L	0.0010	102	70	130			
Selenium		0.106	mg/L	0.0010	100	70	130			
Uranium		0.0624	mg/L	0.00030	110	70	130			
Sample ID: C13040264-043BMSD4	3	Sample Matrix Spike Duplicate				Run: ICPMS2-C_130411A			04/11/13 18:23	
Arsenic		0.0510	mg/L	0.0010	102	70	130	0.2	20	
Selenium		0.106	mg/L	0.0010	101	70	130	0.2	20	
Uranium		0.0620	mg/L	0.00030	109	70	130	0.6	20	

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

QA/QC Summary Report

Prepared by Casper, WY Branch

Revised Date: 05/17/13
Report Date: 04/19/13
Work Order: C13040264

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E200.8									Analytical Run: ICPMS4-C_130418A	
Sample ID: ICV		Initial Calibration Verification Standard							04/18/13 11:57	
Selenium		0.0502	mg/L	0.0010	100	90	110			
Method: E200.8									Batch: R172642	
Sample ID: LRB		Method Blank				Run: ICPMS4-C_130418A			04/18/13 12:32	
Selenium		ND	mg/L	7E-05						
Sample ID: LFB		Laboratory Fortified Blank				Run: ICPMS4-C_130418A			04/18/13 12:36	
Selenium		0.0532	mg/L	0.0010	106	85	115			
Sample ID: C13040564-001FMS4		Sample Matrix Spike				Run: ICPMS4-C_130418A			04/19/13 03:35	
Selenium		0.0550	mg/L	0.0010	109	70	130			
Sample ID: C13040564-001FMSD4		Sample Matrix Spike Duplicate				Run: ICPMS4-C_130418A			04/19/13 03:39	
Selenium		0.0552	mg/L	0.0010	110	70	130	0.4	20	
Sample ID: C13040564-001CMS4		Sample Matrix Spike				Run: ICPMS4-C_130418A			04/19/13 03:57	
Selenium		0.0558	mg/L	0.0010	111	70	130			
Sample ID: C13040564-001CMSD4		Sample Matrix Spike Duplicate				Run: ICPMS4-C_130418A			04/19/13 04:19	
Selenium		0.0539	mg/L	0.0010	107	70	130	3.6	20	

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

QA/QC Summary Report

Prepared by Casper, WY Branch

Revised Date: 05/17/13
Report Date: 04/19/13
Work Order: C13040264

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E300.0									Analytical Run: IC1-C_130408A	
Sample ID: ICV-040813	2	Initial Calibration Verification Standard							04/08/13 15:27	
Chloride		9.95	mg/L	1.0	99	90	110			
Sulfate		40.2	mg/L	1.0	100	90	110			
Method: E300.0									Batch: R172290	
Sample ID: ICB-040813	2	Method Blank				Run: IC1-C_130408A			04/08/13 15:44	
Chloride		ND	mg/L	0.07						
Sulfate		0.1	mg/L	0.08						
Sample ID: LFB-040813-01	2	Laboratory Fortified Blank				Run: IC1-C_130408A			04/08/13 16:02	
Chloride		10.3	mg/L	1.0	103	90	110			
Sulfate		41.4	mg/L	1.0	103	90	110			
Sample ID: C13040264-003AMS	2	Sample Matrix Spike				Run: IC1-C_130408A			04/09/13 05:23	
Chloride		3380	mg/L	42	107	90	110			
Sulfate		14600	mg/L	170	108	90	110			
Sample ID: C13040264-003AMSD	2	Sample Matrix Spike Duplicate				Run: IC1-C_130408A			04/09/13 05:40	
Chloride		3350	mg/L	42	106	90	110	0.9	20	
Sulfate		14500	mg/L	170	107	90	110	0.5	20	
Sample ID: C13040264-023AMS	2	Sample Matrix Spike				Run: IC1-C_130408A			04/09/13 13:30	
Chloride		59.9	mg/L	1.0	106	90	110			
Sulfate		247	mg/L	1.7	104	90	110			
Sample ID: C13040264-023AMSD	2	Sample Matrix Spike Duplicate				Run: IC1-C_130408A			04/09/13 13:48	
Chloride		59.6	mg/L	1.0	105	90	110	0.5	20	
Sulfate		246	mg/L	1.7	103	90	110	0.5	20	

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

QA/QC Summary Report

Prepared by Casper, WY Branch

Revised Date: 05/17/13
Report Date: 04/19/13
Work Order: C13040264

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E300.0									Analytical Run: IC2-C_130415A	
Sample ID: ICV-041513	2	Initial Calibration Verification Standard							04/15/13 13:22	
Chloride		9.85	mg/L	1.0	99	90	110			
Sulfate		38.9	mg/L	1.0	97	90	110			
Method: E300.0									Batch: R172589	
Sample ID: ICB-041513	2	Method Blank				Run: IC2-C_130415A			04/15/13 13:37	
Chloride		0.03	mg/L	0.03						
Sulfate		0.2	mg/L	0.07						
Sample ID: LFB-041513-01	2	Laboratory Fortified Blank				Run: IC2-C_130415A			04/15/13 14:08	
Chloride		9.61	mg/L	1.0	96	90	110			
Sulfate		38.2	mg/L	1.0	95	90	110			
Sample ID: LFBD-041513-01	2	Laboratory Fortified Blank Duplicate				Run: IC2-C_130415A			04/15/13 14:23	
Chloride		9.71	mg/L	1.0	97	90	110	1.1	20	
Sulfate		38.5	mg/L	1.0	96	90	110	1.0	20	
Sample ID: C13040457-001AMS	2	Sample Matrix Spike				Run: IC2-C_130415A			04/15/13 15:10	
Chloride		44.3	mg/L	1.0	103	90	110			
Sulfate		306	mg/L	1.7	101	90	110			
Sample ID: C13040457-001AMSD	2	Sample Matrix Spike Duplicate				Run: IC2-C_130415A			04/15/13 15:40	
Chloride		44.2	mg/L	1.0	103	90	110	0.2	20	
Sulfate		305	mg/L	1.7	99	90	110	0.4	20	

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

Standard Reporting Procedures

Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH, Dissolved Oxygen and Residual Chlorine, are qualified as being analyzed outside of recommended holding time.

Solid/soil samples are reported on a wet weight basis (as received) unless specifically indicated. If moisture corrected, data units are typically noted as –dry. For agricultural and mining soil parameters/characteristics, all samples are dried and ground prior to sample analysis.

Workorder Receipt Checklist

Rio Algom Mining Corporation LLC C13040264

Login completed by: Corinne Wagner
Date Received: 4/5/2013
Reviewed by: BL2000\kmiller
Received by: dw
Reviewed Date: 4/8/2013
Carrier name: FedEx

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on shipping container(s)/cooler(s)?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on all sample bottles?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time? (Exclude analyses that are considered field parameters such as pH, DO, Res Cl, Sulfite, Ferrous Iron, etc.)	Yes ☐	No ☑	
Temp Blank received in all shipping container(s)/cooler(s)?	Yes ☑	No ☐	Not Applicable ☐
Container/Temp Blank temperature:	1.4°C On Ice		
Water - VOA vials have zero headspace?	Yes ☐	No ☐	No VOA vials submitted ☑
Water - pH acceptable upon receipt?	Yes ☑	No ☐	Not Applicable ☐

Contact and Corrective Action Comments:

Samples 6320, 6371, 6372, and 6373 were received at a pH of 7. 1mL of HNO3 was added to each sample for a final pH of 2.

Chain of Custody and Analytical Request Record

Page 1 of 5

PLEASE PRINT- Provide as much information as possible.

Company Name: Rio Algom Mining Corp	Project Name, PWS, Permit, Etc.: Lisbon, UT Facility	Sample Origin State: UT	EPA/State Compliance: Yes ☐ No ☐
Report Mail Address: Montgomery and Associates Results retrieved from Energy Source	Contact Name: John Laney Phone/Fax: (520) 425-2219 Email: jlaney@clmontgomery.com		Sampler: (Please Print) JKerns
Invoice Address: Email invoice to Gail PO Box 218 Grants, NM 87020	Invoice Contact & Phone: Gail Alexander (505) 287-8851	Purchase Order:	Quote/Bottle Order: C3636

Special Report/Formats – ELI must be notified prior to sample submittal for the following:

☐ DW ☐ GSA ☐ POTW/WWTP ☐ State: _____ ☐ Other: _____
☐ A2LA ☐ EDD/EDT (Electronic Data) Format: _____ ☐ LEVEL IV ☐ NELAC

Number of Containers
Sample Type: A Air W Water S Soils/Solids V Vegetation B Bioassay O Other

ANALYSIS REQUESTED

RUSH

Contact ELI prior to **RUSH** sample submittal for charges and scheduling – See Instruction Page

Comments:

Shipped by: Fed Ex
Cooler ID(s): Various
Receipt Temp: 1.4 °C
On Ice: (Yes) No
Custody Seal Intact: (Y) N
Signature Match: (Y) N

	SAMPLE IDENTIFICATION (Name, Location, Interval, etc.)	Collection Date	Collection Time	MATRIX	C3636	SEE ATTACHED	Normal Turnaround (TAT)
1	6320	03APR2013	0810	W	X		
2	6371	"	0925	"	X		
3	6372	"	0930	"	X		
4	6373	"	1025	"	X		
5	6374	"	1030	"	X		
6	6377	"	1205	"	X		
7	6378	"	1250	"	X		
8	6379	"	1420	"	X		
9	6380	04APR2013	0650	"	X		
10	6391	"	0740	"	X		

LABORATORY USE ONLY C1304026

Custody Record MUST be Signed

	Relinquished by (print)	Date/Time	Signature	Received by (print)	Date/Time	Signature
	J. Kerns	04APR2013 1515				
				Received by Laboratory:	Date/Time: 4-5-13	Signature: 915

Sample Disposal: Return to Client: _____ Lab Disposal: _____

In certain circumstances, samples submitted to Energy Laboratories, Inc. may be subcontracted to other certified laboratories in order to complete the analysis requested.
This serves as notice of this possibility. All sub-contract data will be clearly notated on your analytical report.
Visit our web site at www.energylab.com for additional information, downloadable fee schedule, forms, and links.

Chain of Custody and Analytical Request Record

PLEASE PRINT- Provide as much information as possible.

Company Name: Rio Algom Mining Corp	Project Name, PWS, Permit, Etc.: Lisbon, UT Facility	Sample Origin State: UT	EPA/State Compliance: Yes ☐ No ☐
Report Mail Address: Montgomery and Associates Results retrieved from Energy Source	Contact Name: John Laney Phone/Fax: (520) 425-2219 Email: jlaney@clmontgomery.com		Sampler: (Please Print) J.Kerns
Invoice Address: Email invoice to Gail PO Box 218 Grants, NM 87020	Invoice Contact & Phone: Gail Alexander (505) 287-8851	Purchase Order:	Quote/Bottle Order: C3636

Special Report/Formats – ELI must be notified prior to sample submittal for the following:

☐ DW ☐ A2LA
☐ GSA ☐ EDD/EDT (Electronic Data)
☐ POTW/WWTP Format: _____
☐ State: _____ ☐ LEVEL IV
☐ Other: _____ ☐ NELAC

Number of Containers
Sample Type: A W S V B O
Air Water Soils/Solids Vegetation Bioassay Other

ANALYSIS REQUESTED

SEE ATTACHED

Normal Turnaround (TAT)

RUSH

Contact ELI prior to **RUSH** sample submittal for charges and scheduling – See Instruction Page

Comments:

Shipped by: Fed Ex

Cooler ID(s): Ovnis

Receipt Temp: 1.4 °C

On Ice: (Yes) No

Custody Seal (Y) N
Intact (Y) N
Signature Match (Y) N

	SAMPLE IDENTIFICATION (Name, Location, Interval, etc.)	Collection Date	Collection Time	MATRIX	C3636
1	6392	04APR2013	0805	W	X
2	6393		0845		X
3	6394		0925		X
4	6395		1025		X
5	6396		1030		X
6	6397		1100		X
7	6399		1210		X
8	6401		1250		X
9	6403		1300		X
10					

LABORATORY USE ONLY

1304026 4

Custody Record MUST be Signed

	Relinquished by (print):	Date/Time:	Signature:	Received by (print):	Date/Time:	Signature:
	J.Kerns	04APR2013 1515				
	Relinquished by (print):	Date/Time:	Signature:	Received by (print):	Date/Time:	Signature:
				Received by Laboratory:	Date/Time:	Signature:
					4-5-13	915

Sample Disposal: Return to Client: _____ Lab Disposal: _____

In certain circumstances, samples submitted to Energy Laboratories, Inc. may be subcontracted to other certified laboratories in order to complete the analysis requested.
This serves as notice of this possibility. All sub-contract data will be clearly notated on your analytical report.
Visit our web site at www.energylab.com for additional information, downloadable fee schedule, forms, and links.

Chain of Custody and Analytical Request Record

PLEASE PRINT- Provide as much information as possible.

Company Name: Rio Algom Mining Corp	Project Name, PWS, Permit, Etc.: Lisbon, UT Facility	Sample Origin State: UT	EPA/State Compliance: Yes ☐ No ☐
Report Mail Address: Montgomery and Associates; Results retrieved from Energy Source	Contact Name: John Laney; Phone/Fax: (520) 425-2219; Email: jlaney@clmontgomery.com		Sampler: (Please Print) Brandon Myers
Invoice Address: Email invoice to Gail, PO Box 218, Grants, NM 87020	Invoice Contact & Phone: Gail Alexander (505) 287-8851	Purchase Order:	Quote/Bottle Order: C3636

Special Report/Formats – ELI must be notified prior to sample submittal for the following:

☐ DW ☐ GSA ☐ POTW/WWTP ☐ State: _____ ☐ Other: _____
☐ A2LA ☐ EDD/EDT (Electronic Data) Format: _____ ☐ LEVEL IV ☐ NELAC

Number of Containers; Sample Type: A W S V B O; Air Water Soils/Solids Vegetation Bioassay Other

ANALYSIS REQUESTED: C3636

SEE ATTACHED; Normal Turnaround (TAT); RUSH

Contact ELI prior to RUSH sample submittal for charges and scheduling – See Instruction Page

Comments:

Shipped by: Fed-Ex
Cooler ID(s): Coolers
Receipt Temp: 1.4 °C
On Ice: (Yes) No
Custody Seal: (N) Intact: (Y) N Signature Match: (Y) N

	SAMPLE IDENTIFICATION (Name, Location, Interval, etc.)	Collection Date	Collection Time	MATRIX	C3636	SEE ATTACHED	Normal TAT	RUSH
1	6336	03/27/2013	810	W	X	X	X	
2	6337		840		X	X	X	
3	6338		925		X	X	X	
4	6339		950		X	X	X	
5	~~6340~~ 6340		1035		X	X	X	
6	~~6341~~ 6341		1040		X	X	X	
7	~~6342~~ 6342		1135		X	X	X	
8	6343		1200		X	X	X	
9	6344		1235		X	X	X	
10	6345		1320		X	X	X	

LABORATORY USE ONLY: C13040264

Custody Record MUST be Signed

Relinquished by (print): Brandon Myers	Date/Time: 4/4/13 1500	Signature:	Received by (print):	Date/Time:	Signature:
Relinquished by (print):	Date/Time:	Signature:	Received by (print):	Date/Time:	Signature:
			Received by Laboratory: O.W. Ellis	Date/Time: 4-5-13	Signature: 915

Sample Disposal: Return to Client: _____ Lab Disposal: _____

In certain circumstances, samples submitted to Energy Laboratories, Inc. may be subcontracted to other certified laboratories in order to complete the analysis requested.
This serves as notice of this possibility. All sub-contract data will be clearly notated on your analytical report.
Visit our web site at www.energylab.com for additional information, downloadable fee schedule, forms, and links.

Chain of Custody and Analytical Request Record

ENERGY LABORATORIES

PLEASE PRINT- Provide as much information as possible.

Company Name: Rio Algom Mining Corp	Project Name, PWS, Permit, Etc.: Lisbon, UT Facility	Sample Origin State: UT	EPA/State Compliance: Yes ☐ No ☐
Report Mail Address: Montgomery and Associates Results retrieved from Energy Source	Contact Name: John Laney Phone/Fax: (520) 425-2219 Email: jlaney@clmontgomery.com, Brandon Myers		Sampler: (Please Print)
Invoice Address: Email invoice to Gail PO Box 218 Grants, NM 87020	Invoice Contact & Phone: Gail Alexander (505) 287-8851	Purchase Order:	Quote/Bottle Order: C3636

Special Report/Formats – ELI must be notified prior to sample submittal for the following:

☐ DW ☐ GSA ☐ POTW/WWTP ☐ State: _____ ☐ Other: _____
☐ A2LA ☐ EDD/EDT (Electronic Data) Format: _____ ☐ LEVEL IV ☐ NELAC

Number of Containers
Sample Type: A Air W Water S Soils/Solids V Vegetation B Bioassay O Other

ANALYSIS REQUESTED

	SAMPLE IDENTIFICATION (Name, Location, Interval, etc.)	Collection Date	Collection Time	MATRIX	C3636	SEE ATTACHED	Normal Turnaround (TAT)
1	6346	03APR2013	1425	W	X	X	X
2	6347	1	1505	W	X	X	X
3	6348	04APR2013	650	W	X	X	X
4	6349		700	W	X	X	X
5	6352		730	W	X	X	X
6	6351		810	W	X	X	X
7	6352		840	W	X	X	X
8	6353		915	W	X	X	X
9	6354		1015	W	X	X	X
10	6355		1100	W	X	X	X

RUSH

Contact ELI prior to **RUSH** sample submittal for charges and scheduling – See Instruction Page

Comments:

Shipped by: Fed-Ex

Cooler ID(s): Ovens

Receipt Temp 1.4 °C

On Ice: (Yes) No

Custody Seal Intact Signature Match: (Y) N

LABORATORY USE ONLY C1304026 4

Custody Record MUST be Signed

Relinquished by (print): Brandon Myers	Date/Time: 4/4/13 1500	Signature:	Received by (print):	Date/Time: Signature:
Relinquished by (print):	Date/Time:	Signature:	Received by (print):	Date/Time: Signature:
			Received by Laboratory:	Date/Time: 4-5-13 915 Signature:

Sample Disposal: Return to Client: _____ Lab Disposal: _____

In certain circumstances, samples submitted to Energy Laboratories, Inc. may be subcontracted to other certified laboratories in order to complete the analysis requested.
This serves as notice of this possibility. All sub-contract data will be clearly notated on your analytical report.
Visit our web site at www.energylab.com for additional information, downloadable fee schedule, forms, and links.

Chain of Custody and Analytical Request Record

PLEASE PRINT- Provide as much information as possible.

Company Name: Rio Algom Mining Corp	Project Name, PWS, Permit, Etc.: Lisbon, UT Facility	Sample Origin State: UT	EPA/State Compliance: Yes ☐ No ☐
Report Mail Address: Montgomery and Associates Results retrieved from Energy Source	Contact Name: John Laney Phone/Fax: (520) 425-2219 Email: jlaney@clmontgomery.com, Brandon Myers		Sampler: (Please Print)
Invoice Address: Email invoice to Gail PO Box 218 Grants, NM 87020	Invoice Contact & Phone: Gail Alexander (505) 287-8851	Purchase Order:	Quote/Bottle Order: C3636

Special Report/Formats – ELI must be notified prior to sample submittal for the following:

☐ DW ☐ GSA ☐ POTW/WWTP ☐ State: _____ ☐ Other: _____
☐ A2LA ☐ EDD/EDT (Electronic Data) Format: _____ ☐ LEVEL IV ☐ NELAC

Number of Containers
Sample Type: A Air W Water S Soils/Solids V Vegetation B Bioassay O Other

SAMPLE IDENTIFICATION (Name, Location, Interval, etc.)	Collection Date	Collection Time	MATRIX	C3636	SEE ATTACHED	Normal Turnaround (TAT)
1 6356	04APR2013	1125	W	X	X	X
2 6357	"	1130	W	X	X	X
3 6358	"	1215	W	X	X	X
4 6359	04APR2013	1240	W	V		
5						
6						
7						
8						
9						
10						

RUSH

Contact ELI prior to **RUSH** sample submittal for charges and scheduling – See Instruction Page

Comments:

Shipped by: Fed-Ex
Cooler ID(s): Davis
Receipt Temp 1.4 °C
On Ice: (Yes) No
Custody Seal (Y) N
Intact (Y) N
Signature Match (Y) N

LABORATORY USE ONLY
CB3040264

Custody Record MUST be Signed

Relinquished by (print): BRANDON MYERS	Date/Time: 4/4/13 1500	Signature:	
Relinquished by (print):	Date/Time:	Signature:	
Received by (print):	Date/Time:	Signature:	
Received by (print):	Date/Time:	Signature:	
Received by Laboratory:	Date/Time: 4-5-13	Signature: 915	

Sample Disposal: Return to Client: _____ Lab Disposal: _____

In certain circumstances, samples submitted to Energy Laboratories, Inc. may be subcontracted to other certified laboratories in order to complete the analysis requested.
This serves as notice of this possibility. All sub-contract data will be clearly notated on your analytical report.
Visit our web site at www.energylab.com for additional information, downloadable fee schedule, forms, and links.

ANALYTICAL SUMMARY REPORT

April 26, 2013

Rio Algom Mining Corporation LLC
Hwy 605 and 509
Grants, NM 87020

Workorder No.: C13040389 Quote ID: C3636 - Groundwater

Project Name: Lisbon, UT Facility

Energy Laboratories, Inc. Casper WY received the following 10 samples for Rio Algom Mining Corporation LLC on 4/10/2013 for analysis.

Sample ID	Client Sample ID	Collect Date	Receive Date	Matrix	Test
C13040389-001	6360	04/05/13 8:30	04/10/13	Aqueous	Metals by ICP/ICPMS, Dissolved Alkalinity QA Calculations Conductivity E300.0 Anions pH Solids, Total Dissolved Solids, Total Dissolved - Calculated
C13040389-002	6361	04/05/13 9:20	04/10/13	Aqueous	Same As Above
C13040389-003	6362	04/05/13 11:50	04/10/13	Aqueous	Same As Above
C13040389-004	6363	04/05/13 11:55	04/10/13	Aqueous	Same As Above
C13040389-005	6364	04/05/13 13:05	04/10/13	Aqueous	Same As Above
C13040389-006	6365	04/05/13 13:30	04/10/13	Aqueous	Same As Above
C13040389-007	6375	04/05/13 8:35	04/10/13	Aqueous	Same As Above
C13040389-008	6376	04/05/13 8:40	04/10/13	Aqueous	Same As Above
C13040389-009	6404	04/05/13 9:15	04/10/13	Aqueous	Same As Above
C13040389-010	6405	04/05/13 11:50	04/10/13	Aqueous	Same As Above

The results as reported relate only to the item(s) submitted for testing. The analyses presented in this report were performed at Energy Laboratories, Inc., 2393 Salt Creek Hwy., Casper, WY 82601, unless otherwise noted. Radiochemistry analyses were performed at Energy Laboratories, Inc., 2325 Kerzell Lane, Casper, WY 82601, unless otherwise noted. Any exceptions or problems with the analyses are noted in the Laboratory Analytical Report, the QA/QC Summary Report, or the Case Narrative.

If you have any questions regarding these test results, please call.

Report Approved By:

CLIENT: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility
Sample Delivery Group: C13040389

Revised Date: 04/26/13
Report Date: 04/19/13

CASE NARRATIVE

REVISED/SUPPLEMENTAL REPORT
The attached analytical report has been revised from a previously submitted report due to the request by Leilani Bew to move samples 6366 and 6367 to a new workorder. The report has been revised and replaces any previously issued report in its entirety.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility
Lab ID: C13040389-001
Client Sample ID 6360

Revised Date: 04/26/13
Report Date: 04/19/13
Collection Date: 04/05/13 08:30
DateReceived: 04/10/13
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Carbonate as CO3	ND	mg/L		5		A2320 B	04/11/13 18:34 / jba
Bicarbonate as HCO3	1150	mg/L		5		A2320 B	04/11/13 18:34 / jba
Calcium	205	mg/L		1		E200.7	04/12/13 21:06 / sf
Chloride	660	mg/L	D	4		E300.0	04/12/13 00:37 / wc
Magnesium	108	mg/L		1		E200.7	04/12/13 21:06 / sf
Potassium	11	mg/L		1		E200.7	04/12/13 21:06 / sf
Sodium	1460	mg/L		1		E200.7	04/12/13 21:06 / sf
Sulfate	1940	mg/L	D	20		E300.0	04/12/13 00:37 / wc
PHYSICAL PROPERTIES							
Conductivity @ 25 C	6660	umhos/cm		1		A2510 B	04/11/13 14:55 / ab
pH	7.47	s.u.	H	0.01		A4500-H B	04/11/13 14:55 / ab
Solids, Total Dissolved TDS @ 180 C	4790	mg/L		10		A2540 C	04/11/13 16:20 / jz
METALS - DISSOLVED							
Arsenic	0.175	mg/L		0.001		E200.8	04/12/13 16:19 / clm
Iron	ND	mg/L		0.03		E200.7	04/12/13 21:06 / sf
Molybdenum	2.25	mg/L		0.01		E200.7	04/12/13 21:06 / sf
Selenium	0.032	mg/L		0.001		E200.8	04/12/13 16:19 / clm
Uranium	20	mg/L	D	2		E200.7	04/12/13 21:06 / sf
DATA QUALITY							
A/C Balance (± 5)	3.01	%				A1030 E	04/16/13 08:03 / kbh
Anions	78.1	meq/L				A1030 E	04/16/13 08:03 / kbh
Cations	83.0	meq/L				A1030 E	04/16/13 08:03 / kbh
Solids, Total Dissolved Calculated	5000	mg/L				A1030 E	04/16/13 08:03 / kbh
TDS Balance (0.80 - 1.20)	0.960					A1030 E	04/16/13 08:03 / kbh

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
H - Analysis performed past recommended holding time.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility
Lab ID: C13040389-002
Client Sample ID 6361

Revised Date: 04/26/13
Report Date: 04/19/13
Collection Date: 04/05/13 09:20
DateReceived: 04/10/13
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Carbonate as CO3	ND	mg/L		5		A2320 B	04/11/13 18:43 / jba
Bicarbonate as HCO3	1150	mg/L		5		A2320 B	04/11/13 18:43 / jba
Calcium	316	mg/L		1		E200.7	04/12/13 21:13 / sf
Chloride	825	mg/L	D	10		E300.0	04/12/13 00:54 / wc
Magnesium	156	mg/L		1		E200.7	04/12/13 21:13 / sf
Potassium	15	mg/L		1		E200.7	04/12/13 21:13 / sf
Sodium	1570	mg/L	D	2		E200.7	04/12/13 21:13 / sf
Sulfate	2510	mg/L	D	40		E300.0	04/12/13 00:54 / wc
PHYSICAL PROPERTIES							
Conductivity @ 25 C	7820	umhos/cm		1		A2510 B	04/11/13 14:58 / ab
pH	7.13	s.u.	H	0.01		A4500-H B	04/11/13 14:58 / ab
Solids, Total Dissolved TDS @ 180 C	5700	mg/L		10		A2540 C	04/11/13 16:20 / jz
METALS - DISSOLVED							
Arsenic	0.079	mg/L		0.001		E200.8	04/12/13 16:22 / clm
Iron	0.05	mg/L		0.03		E200.7	04/12/13 21:13 / sf
Molybdenum	1.61	mg/L		0.01		E200.8	04/12/13 16:22 / clm
Selenium	0.033	mg/L		0.001		E200.8	04/12/13 16:22 / clm
Uranium	24	mg/L	D	3		E200.7	04/12/13 21:13 / sf
DATA QUALITY							
A/C Balance (± 5)	1.50	%				A1030 E	04/16/13 08:03 / kbh
Anions	94.4	meq/L				A1030 E	04/16/13 08:03 / kbh
Cations	97.3	meq/L				A1030 E	04/16/13 08:03 / kbh
Solids, Total Dissolved Calculated	6000	mg/L				A1030 E	04/16/13 08:03 / kbh
TDS Balance (0.80 - 1.20)	0.960					A1030 E	04/16/13 08:03 / kbh

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
H - Analysis performed past recommended holding time.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility
Lab ID: C13040389-003
Client Sample ID 6362

Revised Date: 04/26/13
Report Date: 04/19/13
Collection Date: 04/05/13 11:50
DateReceived: 04/10/13
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Carbonate as CO3	ND	mg/L		5		A2320 B	04/11/13 18:53 / jba
Bicarbonate as HCO3	1340	mg/L		5		A2320 B	04/11/13 18:53 / jba
Calcium	199	mg/L		1		E200.7	04/12/13 21:17 / sf
Chloride	729	mg/L	D	10		E300.0	04/12/13 01:12 / wc
Magnesium	105	mg/L		1		E200.7	04/12/13 21:17 / sf
Potassium	11	mg/L		1		E200.7	04/12/13 21:17 / sf
Sodium	1650	mg/L	D	2		E200.7	04/12/13 21:17 / sf
Sulfate	2170	mg/L	D	40		E300.0	04/12/13 01:12 / wc
PHYSICAL PROPERTIES							
Conductivity @ 25 C	7500	umhos/cm		1		A2510 B	04/11/13 15:03 / ab
pH	7.42	s.u.	H	0.01		A4500-H B	04/11/13 15:03 / ab
Solids, Total Dissolved TDS @ 180 C	5270	mg/L		10		A2540 C	04/11/13 16:21 / jz
METALS - DISSOLVED							
Arsenic	0.206	mg/L		0.001		E200.8	04/12/13 16:25 / clm
Iron	0.03	mg/L		0.03		E200.7	04/12/13 21:17 / sf
Molybdenum	2.81	mg/L	D	0.03		E200.7	04/12/13 21:17 / sf
Selenium	0.037	mg/L		0.001		E200.8	04/12/13 16:25 / clm
Uranium	22	mg/L	D	3		E200.7	04/12/13 21:17 / sf
DATA QUALITY							
A/C Balance (± 5)	1.72	%				A1030 E	04/16/13 08:03 / kbh
Anions	87.6	meq/L				A1030 E	04/16/13 08:03 / kbh
Cations	90.7	meq/L				A1030 E	04/16/13 08:03 / kbh
Solids, Total Dissolved Calculated	5500	mg/L				A1030 E	04/16/13 08:03 / kbh
TDS Balance (0.80 - 1.20)	0.950					A1030 E	04/16/13 08:03 / kbh

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
H - Analysis performed past recommended holding time.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility
Lab ID: C13040389-004
Client Sample ID 6363

Revised Date: 04/26/13
Report Date: 04/19/13
Collection Date: 04/05/13 11:55
DateReceived: 04/10/13
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Carbonate as CO3	ND	mg/L		5		A2320 B	04/11/13 19:03 / jba
Bicarbonate as HCO3	1350	mg/L		5		A2320 B	04/11/13 19:03 / jba
Calcium	203	mg/L		1		E200.7	04/12/13 21:21 / sf
Chloride	729	mg/L	D	10		E300.0	04/12/13 01:29 / wc
Magnesium	108	mg/L		1		E200.7	04/12/13 21:21 / sf
Potassium	11	mg/L		1		E200.7	04/12/13 21:21 / sf
Sodium	1660	mg/L	D	2		E200.7	04/12/13 21:21 / sf
Sulfate	2170	mg/L	D	40		E300.0	04/12/13 01:29 / wc
PHYSICAL PROPERTIES							
Conductivity @ 25 C	7510	umhos/cm		1		A2510 B	04/11/13 15:06 / ab
pH	7.40	s.u.	H	0.01		A4500-H B	04/11/13 15:06 / ab
Solids, Total Dissolved TDS @ 180 C	5350	mg/L		10		A2540 C	04/11/13 16:21 / jz
METALS - DISSOLVED							
Arsenic	0.194	mg/L		0.001		E200.8	04/12/13 16:28 / clm
Iron	0.04	mg/L		0.03		E200.7	04/12/13 21:21 / sf
Molybdenum	2.81	mg/L		0.01		E200.8	04/12/13 16:28 / clm
Selenium	0.036	mg/L		0.001		E200.8	04/12/13 16:28 / clm
Uranium	23	mg/L	D	3		E200.7	04/12/13 21:21 / sf
DATA QUALITY							
A/C Balance (± 5)	1.74	%				A1030 E	04/16/13 08:03 / kbh
Anions	88.2	meq/L				A1030 E	04/16/13 08:03 / kbh
Cations	91.4	meq/L				A1030 E	04/16/13 08:03 / kbh
Solids, Total Dissolved Calculated	5600	mg/L				A1030 E	04/16/13 08:03 / kbh
TDS Balance (0.80 - 1.20)	0.960					A1030 E	04/16/13 08:03 / kbh

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
H - Analysis performed past recommended holding time.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility
Lab ID: C13040389-005
Client Sample ID 6364

Revised Date: 04/26/13
Report Date: 04/19/13
Collection Date: 04/05/13 13:05
DateReceived: 04/10/13
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Carbonate as CO3	ND	mg/L		5		A2320 B	04/11/13 19:22 / jba
Bicarbonate as HCO3	459	mg/L		5		A2320 B	04/11/13 19:22 / jba
Calcium	103	mg/L		1		E200.7	04/12/13 22:17 / sf
Chloride	95	mg/L		1		E300.0	04/12/13 01:46 / wc
Magnesium	23	mg/L		1		E200.7	04/12/13 22:17 / sf
Potassium	4	mg/L		1		E200.7	04/12/13 22:17 / sf
Sodium	173	mg/L		1		E200.7	04/12/13 22:17 / sf
Sulfate	171	mg/L	D	4		E300.0	04/12/13 01:46 / wc
PHYSICAL PROPERTIES							
Conductivity @ 25 C	1340	umhos/cm		1		A2510 B	04/11/13 15:08 / ab
pH	7.68	s.u.	H	0.01		A4500-H B	04/11/13 15:08 / ab
Solids, Total Dissolved TDS @ 180 C	852	mg/L		10		A2540 C	04/11/13 16:21 / jz
METALS - DISSOLVED							
Arsenic	0.005	mg/L		0.001		E200.8	04/12/13 16:44 / clm
Iron	ND	mg/L		0.03		E200.7	04/12/13 22:17 / sf
Molybdenum	0.11	mg/L		0.01		E200.7	04/12/13 22:17 / sf
Selenium	0.004	mg/L		0.001		E200.8	04/12/13 16:44 / clm
Uranium	0.157	mg/L		0.0003		E200.8	04/12/13 16:44 / clm
DATA QUALITY							
A/C Balance (± 5)	2.60	%				A1030 E	04/16/13 08:03 / kbh
Anions	13.9	meq/L				A1030 E	04/16/13 08:03 / kbh
Cations	14.6	meq/L				A1030 E	04/16/13 08:03 / kbh
Solids, Total Dissolved Calculated	820	mg/L				A1030 E	04/16/13 08:03 / kbh
TDS Balance (0.80 - 1.20)	1.04					A1030 E	04/16/13 08:03 / kbh

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
H - Analysis performed past recommended holding time.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility
Lab ID: C13040389-006
Client Sample ID 6365

Revised Date: 04/26/13
Report Date: 04/19/13
Collection Date: 04/05/13 13:30
DateReceived: 04/10/13
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Carbonate as CO3	ND	mg/L		5		A2320 B	04/11/13 19:30 / jba
Bicarbonate as HCO3	248	mg/L		5		A2320 B	04/11/13 19:30 / jba
Calcium	127	mg/L		1		E200.7	04/12/13 22:21 / sf
Chloride	75	mg/L	D	2		E300.0	04/12/13 02:04 / wc
Magnesium	62	mg/L		1		E200.7	04/12/13 22:21 / sf
Potassium	16	mg/L		1		E200.7	04/12/13 22:21 / sf
Sodium	456	mg/L		1		E200.7	04/12/13 22:21 / sf
Sulfate	1290	mg/L	D	8		E300.0	04/12/13 02:04 / wc
PHYSICAL PROPERTIES							
Conductivity @ 25 C	2910	umhos/cm		1		A2510 B	04/11/13 15:11 / ab
pH	7.77	s.u.	H	0.01		A4500-H B	04/11/13 15:11 / ab
Solids, Total Dissolved TDS @ 180 C	2180	mg/L		10		A2540 C	04/11/13 16:21 / jz
METALS - DISSOLVED							
Arsenic	0.001	mg/L		0.001		E200.8	04/12/13 16:47 / clm
Iron	ND	mg/L		0.03		E200.7	04/12/13 22:21 / sf
Molybdenum	0.03	mg/L		0.01		E200.7	04/12/13 22:21 / sf
Selenium	ND	mg/L		0.001		E200.8	04/12/13 16:47 / clm
Uranium	0.0043	mg/L		0.0003		E200.8	04/12/13 16:47 / clm
DATA QUALITY							
A/C Balance (± 5)	-2.11	%				A1030 E	04/16/13 08:03 / kbh
Anions	33.1	meq/L				A1030 E	04/16/13 08:03 / kbh
Cations	31.7	meq/L				A1030 E	04/16/13 08:03 / kbh
Solids, Total Dissolved Calculated	2200	mg/L				A1030 E	04/16/13 08:03 / kbh
TDS Balance (0.80 - 1.20)	1.01					A1030 E	04/16/13 08:03 / kbh

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
H - Analysis performed past recommended holding time.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility
Lab ID: C13040389-007
Client Sample ID 6375

Revised Date: 04/26/13
Report Date: 04/19/13
Collection Date: 04/05/13 08:35
DateReceived: 04/10/13
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Carbonate as CO3	ND	mg/L		5		A2320 B	04/11/13 19:38 / jba
Bicarbonate as HCO3	456	mg/L		5		A2320 B	04/11/13 19:38 / jba
Calcium	510	mg/L		1		E200.7	04/12/13 22:25 / sf
Chloride	1100	mg/L	D	4		E300.0	04/12/13 02:21 / wc
Magnesium	168	mg/L		1		E200.7	04/12/13 22:25 / sf
Potassium	17	mg/L		1		E200.7	04/12/13 22:25 / sf
Sodium	614	mg/L		1		E200.7	04/12/13 22:25 / sf
Sulfate	1350	mg/L	D	20		E300.0	04/12/13 02:21 / wc
PHYSICAL PROPERTIES							
Conductivity @ 25 C	5880	umhos/cm		1		A2510 B	04/11/13 15:14 / ab
pH	7.22	s.u.	H	0.01		A4500-H B	04/11/13 15:14 / ab
Solids, Total Dissolved TDS @ 180 C	4200	mg/L		10		A2540 C	04/11/13 16:22 / jz
METALS - DISSOLVED							
Arsenic	ND	mg/L		0.001		E200.8	04/12/13 16:51 / clm
Iron	ND	mg/L		0.03		E200.7	04/12/13 22:25 / sf
Molybdenum	ND	mg/L		0.01		E200.8	04/12/13 16:51 / clm
Selenium	0.008	mg/L		0.001		E200.8	04/12/13 16:51 / clm
Uranium	7.57	mg/L	D	0.0005		E200.8	04/12/13 16:51 / clm
DATA QUALITY							
A/C Balance (± 5)	-0.145	%				A1030 E	04/16/13 08:03 / kbh
Anions	66.6	meq/L				A1030 E	04/16/13 08:03 / kbh
Cations	66.4	meq/L				A1030 E	04/16/13 08:03 / kbh
Solids, Total Dissolved Calculated	4000	mg/L				A1030 E	04/16/13 08:03 / kbh
TDS Balance (0.80 - 1.20)	1.05					A1030 E	04/16/13 08:03 / kbh

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
H - Analysis performed past recommended holding time.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility
Lab ID: C13040389-008
Client Sample ID 6376

Revised Date: 04/26/13
Report Date: 04/19/13
Collection Date: 04/05/13 08:40
DateReceived: 04/10/13
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Carbonate as CO3	ND	mg/L		5		A2320 B	04/11/13 19:45 / jba
Bicarbonate as HCO3	432	mg/L		5		A2320 B	04/11/13 19:45 / jba
Calcium	517	mg/L		1		E200.7	04/12/13 22:29 / sf
Chloride	1010	mg/L	D	10		E300.0	04/17/13 17:17 / wc
Magnesium	170	mg/L		1		E200.7	04/12/13 22:29 / sf
Potassium	17	mg/L		1		E200.7	04/12/13 22:29 / sf
Sodium	629	mg/L		1		E200.7	04/12/13 22:29 / sf
Sulfate	1200	mg/L	D	20		E300.0	04/12/13 02:39 / wc
PHYSICAL PROPERTIES							
Conductivity @ 25 C	5280	umhos/cm		1		A2510 B	04/11/13 15:16 / ab
pH	7.22	s.u.	H	0.01		A4500-H B	04/11/13 15:16 / ab
Solids, Total Dissolved TDS @ 180 C	3950	mg/L		10		A2540 C	04/11/13 16:22 / jz
METALS - DISSOLVED							
Arsenic	0.001	mg/L		0.001		E200.8	04/12/13 16:54 / clm
Iron	ND	mg/L		0.03		E200.7	04/12/13 22:29 / sf
Molybdenum	ND	mg/L		0.01		E200.8	04/12/13 16:54 / clm
Selenium	0.014	mg/L		0.001		E200.8	04/16/13 16:31 / clm
Uranium	7.55	mg/L	D	0.0005		E200.8	04/12/13 16:54 / clm
DATA QUALITY							
A/C Balance (± 5)	5.40	%				A1030 E	04/18/13 14:51 / kbh
Anions	60.6	meq/L				A1030 E	04/18/13 14:51 / kbh
Cations	67.6	meq/L				A1030 E	04/18/13 14:51 / kbh
Solids, Total Dissolved Calculated	3800	mg/L				A1030 E	04/18/13 14:51 / kbh
TDS Balance (0.80 - 1.20)	1.04					A1030 E	04/18/13 14:51 / kbh

- The Anion / Cation balance was confirmed by re-analysis.

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
H - Analysis performed past recommended holding time.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility
Lab ID: C13040389-009
Client Sample ID 6404

Revised Date: 04/26/13
Report Date: 04/19/13
Collection Date: 04/05/13 09:15
DateReceived: 04/10/13
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Carbonate as CO3	ND	mg/L		5		A2320 B	04/11/13 19:54 / jba
Bicarbonate as HCO3	491	mg/L		5		A2320 B	04/11/13 19:54 / jba
Calcium	519	mg/L		1		E200.7	04/12/13 22:33 / sf
Chloride	1160	mg/L	D	4		E300.0	04/12/13 02:56 / wc
Magnesium	174	mg/L		1		E200.7	04/12/13 22:33 / sf
Potassium	18	mg/L		1		E200.7	04/12/13 22:33 / sf
Sodium	660	mg/L		1		E200.7	04/12/13 22:33 / sf
Sulfate	1430	mg/L	D	20		E300.0	04/12/13 02:56 / wc
PHYSICAL PROPERTIES							
Conductivity @ 25 C	6190	umhos/cm		1		A2510 B	04/11/13 15:19 / ab
pH	7.26	s.u.	H	0.01		A4500-H B	04/11/13 15:19 / ab
Solids, Total Dissolved TDS @ 180 C	4430	mg/L		10		A2540 C	04/11/13 16:22 / jz
METALS - DISSOLVED							
Arsenic	0.002	mg/L		0.001		E200.8	04/12/13 16:57 / clm
Iron	0.11	mg/L		0.03		E200.7	04/12/13 22:33 / sf
Molybdenum	0.03	mg/L		0.01		E200.8	04/12/13 16:57 / clm
Selenium	0.010	mg/L		0.001		E200.8	04/12/13 16:57 / clm
Uranium	8.40	mg/L	D	0.0005		E200.8	04/12/13 16:57 / clm
DATA QUALITY							
A/C Balance (± 5)	-0.723	%				A1030 E	04/16/13 08:03 / kbh
Anions	70.3	meq/L				A1030 E	04/16/13 08:03 / kbh
Cations	69.3	meq/L				A1030 E	04/16/13 08:03 / kbh
Solids, Total Dissolved Calculated	4200	mg/L				A1030 E	04/16/13 08:03 / kbh
TDS Balance (0.80 - 1.20)	1.05					A1030 E	04/16/13 08:03 / kbh

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
H - Analysis performed past recommended holding time.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility
Lab ID: C13040389-010
Client Sample ID 6405

Revised Date: 04/26/13
Report Date: 04/19/13
Collection Date: 04/05/13 11:50
DateReceived: 04/10/13
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Carbonate as CO3	ND	mg/L		5		A2320 B	04/11/13 20:02 / jba
Bicarbonate as HCO3	501	mg/L		5		A2320 B	04/11/13 20:02 / jba
Calcium	685	mg/L		1		E200.7	04/12/13 22:36 / sf
Chloride	1270	mg/L	D	4		E300.0	04/12/13 04:06 / wc
Magnesium	224	mg/L		1		E200.7	04/12/13 22:36 / sf
Potassium	18	mg/L		1		E200.7	04/12/13 22:36 / sf
Sodium	557	mg/L	D	2		E200.7	04/12/13 22:36 / sf
Sulfate	1550	mg/L	D	20		E300.0	04/12/13 04:06 / wc
PHYSICAL PROPERTIES							
Conductivity @ 25 C	6570	umhos/cm		1		A2510 B	04/11/13 15:22 / ab
pH	7.23	s.u.	H	0.01		A4500-H B	04/11/13 15:22 / ab
Solids, Total Dissolved TDS @ 180 C	4680	mg/L		10		A2540 C	04/11/13 16:23 / jz
METALS - DISSOLVED							
Arsenic	0.002	mg/L		0.001		E200.8	04/12/13 17:00 / clm
Iron	0.14	mg/L		0.03		E200.7	04/12/13 22:36 / sf
Molybdenum	0.13	mg/L	D	0.03		E200.7	04/12/13 22:36 / sf
Selenium	0.030	mg/L		0.001		E200.8	04/12/13 17:00 / clm
Uranium	9.61	mg/L	D	0.0005		E200.8	04/12/13 17:00 / clm
DATA QUALITY							
A/C Balance (± 5)	0.446	%				A1030 E	04/16/13 08:04 / kbh
Anions	76.7	meq/L				A1030 E	04/16/13 08:04 / kbh
Cations	77.3	meq/L				A1030 E	04/16/13 08:04 / kbh
Solids, Total Dissolved Calculated	4600	mg/L				A1030 E	04/16/13 08:04 / kbh
TDS Balance (0.80 - 1.20)	1.02					A1030 E	04/16/13 08:04 / kbh

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
H - Analysis performed past recommended holding time.

QA/QC Summary Report

Prepared by Casper, WY Branch

Revised Date: 04/26/13
Report Date: 04/19/13
Work Order: C13040389

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: A2320 B										Batch: R172380
Sample ID: MBLK	3	Method Blank				Run: MANTECH_130411A				04/11/13 13:24
Alkalinity, Total as CaCO3		ND	mg/L	1						
Carbonate as CO3		ND	mg/L	1						
Bicarbonate as HCO3		1	mg/L	1						
Sample ID: LCS_130315		Laboratory Control Sample				Run: MANTECH_130411A				04/11/13 13:37
Alkalinity, Total as CaCO3		153	mg/L	5.0	102	90	110			
Sample ID: C13040302-001ADUP	3	Sample Duplicate				Run: MANTECH_130411A				04/11/13 13:53
Alkalinity, Total as CaCO3		170	mg/L	5.0				0.5	10	
Carbonate as CO3		ND	mg/L	5.0					10	
Bicarbonate as HCO3		207	mg/L	5.0				0.5	10	
Sample ID: C13040335-001AMS		Sample Matrix Spike				Run: MANTECH_130411A				04/11/13 14:09
Alkalinity, Total as CaCO3		319	mg/L	5.0	100	80	120			
Sample ID: C13040381-006AMS		Sample Matrix Spike				Run: MANTECH_130411A				04/11/13 17:43
Alkalinity, Total as CaCO3		361	mg/L	5.0	102	80	120			
Sample ID: C13040389-004ADUP	3	Sample Duplicate				Run: MANTECH_130411A				04/11/13 19:13
Alkalinity, Total as CaCO3		1110	mg/L	5.0				0.2	10	
Carbonate as CO3		ND	mg/L	5.0					10	
Bicarbonate as HCO3		1350	mg/L	5.0				0.2	10	

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

QA/QC Summary Report

Prepared by Casper, WY Branch

Revised Date: 04/26/13
Report Date: 04/19/13
Work Order: C13040389

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: A2510 B										Batch: R172341
Sample ID: SC 2ND 1413		Laboratory Control Sample				Run: PHSC_101-C_130411A				04/11/13 09:06
Conductivity @ 25 C		1440	umhos/cm	1.0	102	90	110			
Sample ID: MBLK		Method Blank				Run: PHSC_101-C_130411A				04/11/13 09:32
Conductivity @ 25 C		2	umhos/cm	0.2						
Sample ID: C13040389-002ADUP		Sample Duplicate				Run: PHSC_101-C_130411A				04/11/13 15:00
Conductivity @ 25 C		7830	umhos/cm	1.0				0.1	10	
Sample ID: C13040726-002ADUP		Sample Duplicate				Run: PHSC_101-C_130411A				04/11/13 15:30
Conductivity @ 25 C		10300	umhos/cm	1.0				0.5	10	

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

QA/QC Summary Report

Prepared by Casper, WY Branch

Revised Date: 04/26/13
Report Date: 04/19/13
Work Order: C13040389

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: A2540 C									Batch: TDS130411A	
Sample ID: MB-1_130411A		Method Blank				Run: BAL-19_130411B			04/11/13 16:10	
Solids, Total Dissolved TDS @ 180 C		ND	mg/L	10						
Sample ID: LCS-2_130411A		Laboratory Control Sample				Run: BAL-19_130411B			04/11/13 16:10	
Solids, Total Dissolved TDS @ 180 C		1990	mg/L	100	100	90	110			
Sample ID: C13040369-011A MS		Sample Matrix Spike				Run: BAL-19_130411B			04/11/13 16:18	
Solids, Total Dissolved TDS @ 180 C		24400	mg/L	100	99	90	110			
Sample ID: C13040389-001A DUP		Sample Duplicate				Run: BAL-19_130411B			04/11/13 16:20	
Solids, Total Dissolved TDS @ 180 C		4760	mg/L	10				0.6	5	
Sample ID: C13040726-001A DUP		Sample Duplicate				Run: BAL-19_130411B			04/11/13 16:24	
Solids, Total Dissolved TDS @ 180 C		1400	mg/L	10				0.1	5	
Sample ID: C13040726-002A MS		Sample Matrix Spike				Run: BAL-19_130411B			04/11/13 16:25	
Solids, Total Dissolved TDS @ 180 C		18400	mg/L	100	98	90	110			

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

QA/QC Summary Report

Prepared by Casper, WY Branch

Revised Date: 04/26/13
Report Date: 04/19/13
Work Order: C13040389

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: A4500-H B									Analytical Run: PHSC_101-C_130411A	
Sample ID: pH 6.86	Initial Calibration Verification Standard								04/11/13 08:53	
pH		6.87	s.u.	0.010	100	98	102			
Method: A4500-H B									Batch: R172341	
Sample ID: C13040389-002ADUP	Sample Duplicate					Run: PHSC_101-C_130411A			04/11/13 15:00	
pH		7.13	s.u.	0.010				0.0	3	
Sample ID: C13040726-002ADUP	Sample Duplicate					Run: PHSC_101-C_130411A			04/11/13 15:30	
pH		7.38	s.u.	0.010				0.0	3	

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

QA/QC Summary Report

Prepared by Casper, WY Branch

Revised Date: 04/26/13
Report Date: 04/19/13
Work Order: C13040389

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E200.7									Analytical Run: ICP4-C_130412A	
Sample ID: ICV	7	Initial Calibration Verification Standard							04/12/13 12:55	
Calcium		51.2	mg/L	0.50	102	95	105			
Iron		5.15	mg/L	0.030	103	95	105			
Magnesium		50.2	mg/L	0.50	100	95	105			
Molybdenum		1.00	mg/L	0.10	100	95	105			
Potassium		51.1	mg/L	0.50	102	95	105			
Sodium		51.8	mg/L	0.50	104	95	105			
Uranium		4.90	mg/L	1.0	98	95	105			
Sample ID: ICSA	7	Interference Check Sample A							04/12/13 13:09	
Calcium		459	mg/L	0.50	92	80	120			
Iron		179	mg/L	0.030	90	80	120			
Magnesium		497	mg/L	0.50	99	80	120			
Molybdenum		0.00291	mg/L	0.10						
Potassium		-0.0311	mg/L	0.50						
Sodium		0.418	mg/L	0.50						
Uranium		0.687	mg/L	1.0						
Sample ID: ICSAB	7	Interference Check Sample AB							04/12/13 13:13	
Calcium		449	mg/L	0.50	90	80	120			
Iron		176	mg/L	0.030	88	80	120			
Magnesium		494	mg/L	0.50	99	80	120			
Molybdenum		-0.00307	mg/L	0.10						
Potassium		-0.0245	mg/L	0.50						
Sodium		0.339	mg/L	0.50						
Uranium		0.686	mg/L	1.0						
Method: E200.7										Batch: R172439
Sample ID: MB-1304012A	7	Method Blank				Run: ICP4-C_130412A			04/12/13 13:32	
Calcium		ND	mg/L	1.0						
Iron		ND	mg/L	0.030						
Magnesium		0.0496	mg/L	1.0						
Molybdenum		ND	mg/L	0.010						
Potassium		ND	mg/L	1.0						
Sodium		ND	mg/L	1.0						
Uranium		ND	mg/L	0.00030						
Sample ID: LFB-1304012A	7	Laboratory Fortified Blank				Run: ICP4-C_130412A			04/12/13 13:36	
Calcium		47.4	mg/L	0.50	95	85	115			
Iron		0.962	mg/L	0.030	96	85	115			
Magnesium		46.3	mg/L	0.50	93	85	115			
Molybdenum		0.943	mg/L	0.10	94	85	115			
Potassium		47.2	mg/L	0.50	94	85	115			
Sodium		47.1	mg/L	0.50	94	85	115			
Uranium		4.51	mg/L	1.0	90	85	115			

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

QA/QC Summary Report

Prepared by Casper, WY Branch

Revised Date: 04/26/13
Report Date: 04/19/13
Work Order: C13040389

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E200.7										Batch: R172439
Sample ID: C13040217-003BMS2	7	Sample Matrix Spike				Run: ICP4-C_130412A				04/12/13 20:21
Calcium		760	mg/L	1.0	85	70	130			
Iron		7.31	mg/L	0.030	94	70	130			
Magnesium		322	mg/L	1.0	93	70	130			
Molybdenum		5.07	mg/L	0.015	99	70	130			
Potassium		297	mg/L	1.0	94	70	130			
Sodium		519	mg/L	1.0	91	70	130			
Uranium		25.1	mg/L	1.5	99	70	130			
Sample ID: C13040217-003BMSD	7	Sample Matrix Spike Duplicate				Run: ICP4-C_130412A				04/12/13 20:25
Calcium		767	mg/L	1.0	88	70	130	0.9	20	
Iron		7.38	mg/L	0.030	95	70	130	1.0	20	
Magnesium		325	mg/L	1.0	94	70	130	1.0	20	
Molybdenum		5.12	mg/L	0.015	100	70	130	1.1	20	
Potassium		301	mg/L	1.0	96	70	130	1.3	20	
Sodium		526	mg/L	1.0	93	70	130	1.2	20	
Uranium		25.7	mg/L	1.5	101	70	130	2.4	20	
Sample ID: C13040389-004BMS2	7	Sample Matrix Spike				Run: ICP4-C_130412A				04/12/13 22:06
Calcium		676	mg/L	1.0	93	70	130			
Iron		9.85	mg/L	0.030	96	70	130			
Magnesium		581	mg/L	1.0	93	70	130			
Molybdenum		12.3	mg/L	0.030	92	70	130			
Potassium		478	mg/L	1.0	92	70	130			
Sodium		2030	mg/L	2.1	73	70	130			
Uranium		71.5	mg/L	3.1	95	70	130			
Sample ID: C13040389-004BMSD	7	Sample Matrix Spike Duplicate				Run: ICP4-C_130412A				04/12/13 22:10
Calcium		677	mg/L	1.0	93	70	130	0.0	20	
Iron		9.79	mg/L	0.030	96	70	130	0.6	20	
Magnesium		581	mg/L	1.0	93	70	130	0.0	20	
Molybdenum		12.2	mg/L	0.030	92	70	130	0.3	20	
Potassium		478	mg/L	1.0	92	70	130	0.0	20	
Sodium		2030	mg/L	2.1	74	70	130	0.1	20	
Uranium		71.3	mg/L	3.1	95	70	130	0.2	20	

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

QA/QC Summary Report

Prepared by Casper, WY Branch

Revised Date: 04/26/13
Report Date: 04/19/13
Work Order: C13040389

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E200.8									Analytical Run: ICPMS2-C_130412A	
Sample ID: ICV	4	Initial Calibration Verification Standard							04/12/13 14:32	
Arsenic		0.0489	mg/L	0.0010	98	90	110			
Molybdenum		0.0500	mg/L	0.0010	100	90	110			
Selenium		0.0490	mg/L	0.0010	98	90	110			
Uranium		0.0494	mg/L	0.00030	99	90	110			
Method: E200.8									Batch: R172440	
Sample ID: LRB	4	Method Blank				Run: ICPMS2-C_130412A			04/12/13 14:58	
Arsenic		0.0003	mg/L	0.00010						
Molybdenum		ND	mg/L	4E-05						
Selenium		0.0007	mg/L	0.0002						
Uranium		ND	mg/L	1E-05						
Sample ID: LFB	4	Laboratory Fortified Blank				Run: ICPMS2-C_130412A			04/12/13 15:01	
Arsenic		0.0521	mg/L	0.0010	104	85	115			
Molybdenum		0.0526	mg/L	0.0010	105	85	115			
Selenium		0.0519	mg/L	0.0010	102	85	115			
Uranium		0.0527	mg/L	0.00030	105	85	115			
Sample ID: C13040243-001CMS4	4	Sample Matrix Spike				Run: ICPMS2-C_130412A			04/12/13 16:09	
Arsenic		0.272	mg/L	0.0010	104	70	130			
Molybdenum		0.275	mg/L	0.0010	106	70	130			
Selenium		0.256	mg/L	0.0013	99	70	130			
Uranium		0.280	mg/L	0.00050	110	70	130			
Sample ID: C13040243-001CMSD	4	Sample Matrix Spike Duplicate				Run: ICPMS2-C_130412A			04/12/13 16:12	
Arsenic		0.267	mg/L	0.0010	102	70	130	1.8	20	
Molybdenum		0.276	mg/L	0.0010	106	70	130	0.4	20	
Selenium		0.256	mg/L	0.0013	99	70	130	0.2	20	
Uranium		0.277	mg/L	0.00050	108	70	130	1.3	20	
Sample ID: C13040389-010BMS4	4	Sample Matrix Spike				Run: ICPMS2-C_130412A			04/12/13 17:03	
Arsenic		0.264	mg/L	0.0010	105	70	130			
Molybdenum		0.368	mg/L	0.0010	110	70	130			
Selenium		0.279	mg/L	0.0013	99	70	130			
Uranium		9.85	mg/L	0.00050		70	130			A
Sample ID: C13040389-010BMSD	4	Sample Matrix Spike Duplicate				Run: ICPMS2-C_130412A			04/12/13 17:07	
Arsenic		0.266	mg/L	0.0010	106	70	130	0.6	20	
Molybdenum		0.363	mg/L	0.0010	108	70	130	1.3	20	
Selenium		0.278	mg/L	0.0013	99	70	130	0.2	20	
Uranium		9.81	mg/L	0.00050		70	130	0.4	20	A

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

A - The analyte level was greater than four times the spike level. In accordance with the method % recovery is not calculated.

QA/QC Summary Report

Prepared by Casper, WY Branch

Revised Date: 04/26/13
Report Date: 04/19/13
Work Order: C13040389

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E200.8									Analytical Run: ICPMS2-C_130416A	
Sample ID: ICV		Initial Calibration Verification Standard							04/16/13 13:25	
Selenium		0.0489	mg/L	0.0010	98	90	110			
Method: E200.8									Batch: R172523	
Sample ID: LRB		Method Blank				Run: ICPMS2-C_130416A			04/16/13 13:50	
Selenium		ND	mg/L	0.0002						
Sample ID: LFB		Laboratory Fortified Blank				Run: ICPMS2-C_130416A			04/16/13 13:54	
Selenium		0.0502	mg/L	0.0010	100	85	115			
Sample ID: C13040361-003BMS4		Sample Matrix Spike				Run: ICPMS2-C_130416A			04/16/13 15:49	
Selenium		0.0616	mg/L	0.0010	95	70	130			
Sample ID: C13040361-003BMSD		Sample Matrix Spike Duplicate				Run: ICPMS2-C_130416A			04/16/13 15:52	
Selenium		0.0613	mg/L	0.0010	95	70	130	0.5	20	

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

QA/QC Summary Report

Prepared by Casper, WY Branch

Revised Date: 04/26/13
Report Date: 04/19/13
Work Order: C13040389

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E300.0									Analytical Run: IC1-C_130411A	
Sample ID: ICV	2	Initial Calibration Verification Standard							04/11/13 14:10	
Chloride		10.0	mg/L	1.0	100	90	110			
Sulfate		40.0	mg/L	1.0	100	90	110			
Method: E300.0									Batch: R172428	
Sample ID: ICB	2	Method Blank				Run: IC1-C_130411A			04/11/13 14:28	
Chloride		ND	mg/L	0.07						
Sulfate		0.10	mg/L	0.08						
Sample ID: LFB-041113-1	2	Laboratory Fortified Blank				Run: IC1-C_130411A			04/11/13 15:02	
Chloride		9.48	mg/L	1.0	95	90	110			
Sulfate		38.2	mg/L	1.0	95	90	110			
Sample ID: LFBD-041113-1	2	Laboratory Fortified Blank Duplicate				Run: IC1-C_130411A			04/11/13 15:20	
Chloride		9.59	mg/L	1.0	96	90	110	1.2	20	
Sulfate		38.7	mg/L	1.0	96	90	110	1.2	20	
Sample ID: C13040361-008AMS	2	Sample Matrix Spike				Run: IC1-C_130411A			04/12/13 00:02	
Chloride		1220	mg/L	10	100	90	110			
Sulfate		3010	mg/L	42	100	90	110			
Sample ID: C13040361-008AMSD	2	Sample Matrix Spike Duplicate				Run: IC1-C_130411A			04/12/13 00:19	
Chloride		1230	mg/L	10	101	90	110	0.5	20	
Sulfate		3030	mg/L	42	101	90	110	0.5	20	
Sample ID: C13040389-010AMS	2	Sample Matrix Spike				Run: IC1-C_130411A			04/12/13 04:23	
Chloride		1460	mg/L	4.2		90	110			A
Sulfate		2350	mg/L	17	99	90	110			
Sample ID: C13040389-010AMSD	2	Sample Matrix Spike Duplicate				Run: IC1-C_130411A			04/12/13 04:41	
Chloride		1480	mg/L	4.2		90	110	0.9	20	A
Sulfate		2360	mg/L	17	101	90	110	0.5	20	
Method: E300.0									Batch: R172589	
Sample ID: ICB-041513		Method Blank				Run: IC2-C_130415A			04/15/13 13:37	
Chloride		0.03	mg/L	0.03						
Sample ID: LFB-041513-01		Laboratory Fortified Blank				Run: IC2-C_130415A			04/15/13 14:08	
Chloride		9.61	mg/L	1.0	96	90	110			
Sample ID: LFBD-041513-01		Laboratory Fortified Blank Duplicate				Run: IC2-C_130415A			04/15/13 14:23	
Chloride		9.71	mg/L	1.0	97	90	110	1.1	20	
Sample ID: C13040389-008AMS		Sample Matrix Spike				Run: IC2-C_130415A			04/17/13 17:32	
Chloride		1520	mg/L	10	102	90	110			
Sample ID: C13040389-008AMSD		Sample Matrix Spike Duplicate				Run: IC2-C_130415A			04/17/13 17:48	
Chloride		1530	mg/L	10	104	90	110	0.7	20	

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

A - The analyte level was greater than four times the spike level. In accordance with the method % recovery is not calculated.

Standard Reporting Procedures

Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH, Dissolved Oxygen and Residual Chlorine, are qualified as being analyzed outside of recommended holding time.

Solid/soil samples are reported on a wet weight basis (as received) unless specifically indicated. If moisture corrected, data units are typically noted as –dry. For agricultural and mining soil parameters/characteristics, all samples are dried and ground prior to sample analysis.

Workorder Receipt Checklist

Rio Algom Mining Corporation LLC C13040389

Login completed by: Timothy I. Houghteling
Date Received: 4/10/2013
Reviewed by: BL2000\kmiller
Received by: th
Reviewed Date: 4/12/2013
Carrier name: FedEx

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on shipping container/cooler?	Yes ☐	No ☐	Not Present ☑
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time? (Exclude analyses that are considered field parameters such as pH, DO, Res Cl, Sulfite, Ferrous Iron, etc.)	Yes ☑	No ☐	
Temp Blank received?	Yes ☑	No ☐	Not Applicable ☐
Container/Temp Blank temperature:	0.4°C On Ice		
Water - VOA vials have zero headspace?	Yes ☐	No ☐	No VOA vials submitted ☑
Water - pH acceptable upon receipt?	Yes ☑	No ☐	Not Applicable ☐

Contact and Corrective Action Comments:

None

Chain of Custody and Analytical Request Record

Page 1 of 1

PLEASE PRINT- Provide as much information as possible.

Company Name: Rio Algom Mining Corp	Project Name, PWS, Permit, Etc.: Lisbon, UT Facility	Sample Origin State: UT	EPA/State Compliance: Yes ☐ No ☐
Report Mail Address: Montgomery and Associates. Results retrieved from Energy Source	Contact Name: John Laney; Phone/Fax: (520) 425-2219; Email: jlaney@clmontgomery.com		Sampler: (Please Print) Brandon Alyers
Invoice Address: Email invoice to Gail, PO Box 218, Grants, NM 87020	Invoice Contact & Phone: Gail Alexander (505) 287-8851	Purchase Order:	Quote/Bottle Order: C3636

Special Report/Formats – ELI must be notified prior to sample submittal for the following:

☐ DW ☐ GSA ☐ POTW/WWTP ☐ State: _____ ☐ Other: _____
☐ A2LA ☐ EDD/EDT (Electronic Data) Format: _____ ☐ LEVEL IV ☐ NELAC

Number of Containers; Sample Type: A Air, W Water, S Soils/Solids, V Vegetation, B Bioassay, O Other

	SAMPLE IDENTIFICATION (Name, Location, Interval, etc.)	Collection Date	Collection Time	MATRIX	ANALYSIS REQUESTED: C3636	SEE ATTACHED	Normal Turnaround (TAT)	RUSH
1	63601	03APR2013	830	W	X	X	X	
2	63611		920		X	X	X	
3	63621		1150		X	X	X	
4	63631		1155		X	X	X	
5	63641		1305		X	X	X	
6	63651		1330		X	X	X	
7	63751		835		X	X	X	
8	63761		840		X	X	X	
9	64041		915		X	X	X	
10	64051		1150		X	X	X	

Contact ELI prior to RUSH sample submittal for charges and scheduling – See Instruction Page

Comments:

Shipped by: Fed-Ex
Cooler ID(s): 3872
Receipt Temp: 0.4 °C
On Ice: (Yes) No
Custody Seal Y (N)
Intact Y N
Signature Match Y N

LABORATORY USE ONLY: C1304039

Custody Record MUST be Signed

Relinquished by (print): Brandon Alyers	Date/Time: 4/8/13 1510	Signature:	Received by (print):	Date/Time:	Signature:
Relinquished by (print):	Date/Time:	Signature:	Received by (print):	Date/Time:	Signature:

Sample Disposal: Return to Client: _____ Lab Disposal: _____

Received by Laboratory: Date/Time: 4-10-13/950 Signature:

In certain circumstances, samples submitted to Energy Laboratories, Inc. may be subcontracted to other certified laboratories in order to complete the analysis requested. This serves as notice of this possibility. All sub-contract data will be clearly notated on your analytical report.
Visit our web site at www.energylab.com for additional information, downloadable fee schedule, forms, and links.

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Analytical Report

April 22, 2013

Report to:
John Laney
Montgomery and Associates
P.O. Box 218
Grants, NM 87020

Bill to:
Accounts Payable
Montgomery and Associates
1550 E. Prince Rd.
Tucson, AZ 85719

Project ID: 1350.15
ACZ Project ID: L11467

John Laney:

Enclosed are the analytical results for sample(s) submitted to ACZ Laboratories, Inc. (ACZ) on April 05, 2013. This project has been assigned to ACZ's project number, L11467. Please reference this number in all future inquiries.

All analyses were performed according to ACZ's Quality Assurance Plan. The enclosed results relate only to the samples received under L11467. Each section of this report has been reviewed and approved by the appropriate Laboratory Supervisor, or a qualified substitute.

Except as noted, the test results for the methods and parameters listed on ACZ's current NELAC certificate letter (#ACZ) meet all requirements of NELAC.

This report shall be used or copied only in its entirety. ACZ is not responsible for the consequences arising from the use of a partial report.

All samples and sub-samples associated with this project will be disposed of after October 19, 2013. If the samples are determined to be hazardous, additional charges apply for disposal (typically $11/sample). If you would like the samples to be held longer than ACZ's stated policy or to be returned, please contact your Project Manager or Customer Service Representative for further details and associated costs. ACZ retains analytical raw data reports for ten years.

If you have any questions or other needs, please contact your Project Manager.

Sue Webber has reviewed and approved this report.

Montgomery and Associates
Project ID: 1350.15
Sample ID: 6398

ACZ Sample ID: ***L11467-01***
Date Sampled: *04/04/13 11:05*
Date Received: *04/05/13*
Sample Matrix: *Ground Water*

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Arsenic, dissolved	M200.8 ICP-MS	0.004	B		mg/L	0.001	0.005	04/09/13 23:31	msh
Calcium, dissolved	M200.7 ICP	406			mg/L	1	5	04/09/13 18:08	aeb
Iron, dissolved	M200.7 ICP		U	*	mg/L	0.1	0.3	04/09/13 18:08	aeb
Magnesium, dissolved	M200.7 ICP	148			mg/L	1	5	04/09/13 18:08	aeb
Molybdenum, dissolved	M200.8 ICP-MS	23.5		*	mg/L	0.3	1	04/11/13 16:02	msh
Potassium, dissolved	M200.7 ICP	12			mg/L	2	8	04/09/13 18:08	aeb
Selenium, dissolved	M200.8 ICP-MS	0.0690			mg/L	0.0005	0.001	04/09/13 23:31	msh
Sodium, dissolved	M200.7 ICP	4150			mg/L	2	8	04/09/13 18:08	aeb
Uranium, dissolved	M200.8 ICP-MS	60.80			mg/L	0.05	0.3	04/11/13 16:02	msh

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Alkalinity as CaCO3	SM2320B - Titration								
Bicarbonate as CaCO3		2260			mg/L	2	20	04/10/13 0:00	ljr
Carbonate as CaCO3			U		mg/L	2	20	04/10/13 0:00	ljr
Hydroxide as CaCO3			U		mg/L	2	20	04/10/13 0:00	ljr
Total Alkalinity		2260			mg/L	2	20	04/10/13 0:00	ljr
Cation-Anion Balance	Calculation								
Cation-Anion Balance		-1.1			%			04/22/13 0:00	calc
Sum of Anions		220			meq/L	0.1	0.5	04/22/13 0:00	calc
Sum of Cations		215			meq/L	0.1	0.5	04/22/13 0:00	calc
Chloride	SM4500Cl-E	1140			mg/L	20	100	04/11/13 11:30	lhb
Conductivity @25C	SM2510B	16000			umhos/cm	1	10	04/10/13 23:24	ljr
pH (lab)	SM4500H+ B								
pH		8.1	H		units	0.1	0.1	04/10/13 0:00	ljr
pH measured at		21.0			C	0.1	0.1	04/10/13 0:00	ljr
Residue, Filterable (TDS) @180C	SM2540C	14200		*	mg/L	10	20	04/05/13 17:55	ljr
Sulfate	D516-02 - Turbidimetric	6800		*	mg/L	300	2000	04/11/13 14:25	lhb
TDS (calculated)	Calculation	14000			mg/L	10	50	04/22/13 0:00	calc
TDS (ratio - measured/calculated)	Calculation	1.01						04/22/13 0:00	calc

Montgomery and Associates
Project ID: 1350.15
Sample ID: 6400

ACZ Sample ID: ***L11467-02***
Date Sampled: *04/04/13 12:15*
Date Received: *04/05/13*
Sample Matrix: *Ground Water*

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Arsenic, dissolved	M200.8 ICP-MS	0.004	B		mg/L	0.001	0.005	04/09/13 23:34	msh
Calcium, dissolved	M200.7 ICP	403			mg/L	1	5	04/09/13 18:11	aeb
Iron, dissolved	M200.7 ICP	0.1	B	*	mg/L	0.1	0.3	04/09/13 18:11	aeb
Magnesium, dissolved	M200.7 ICP	148			mg/L	1	5	04/09/13 18:11	aeb
Molybdenum, dissolved	M200.8 ICP-MS	24.6		*	mg/L	0.3	1	04/11/13 16:05	msh
Potassium, dissolved	M200.7 ICP	12			mg/L	2	8	04/09/13 18:11	aeb
Selenium, dissolved	M200.8 ICP-MS	0.0774			mg/L	0.0005	0.001	04/09/13 23:34	msh
Sodium, dissolved	M200.7 ICP	4110			mg/L	2	8	04/09/13 18:11	aeb
Uranium, dissolved	M200.8 ICP-MS	63.60			mg/L	0.05	0.3	04/11/13 16:05	msh

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Alkalinity as CaCO3	SM2320B - Titration								
Bicarbonate as CaCO3		2230			mg/L	2	20	04/10/13 0:00	ljr
Carbonate as CaCO3			U		mg/L	2	20	04/10/13 0:00	ljr
Hydroxide as CaCO3			U		mg/L	2	20	04/10/13 0:00	ljr
Total Alkalinity		2230		*	mg/L	2	20	04/10/13 0:00	ljr
Cation-Anion Balance	Calculation								
Cation-Anion Balance		-1.8			%			04/22/13 0:00	calc
Sum of Anions		221			meq/L	0.1	0.5	04/22/13 0:00	calc
Sum of Cations		213			meq/L	0.1	0.5	04/22/13 0:00	calc
Chloride	SM4500Cl-E	1140			mg/L	20	100	04/11/13 11:30	lhb
Conductivity @25C	SM2510B	16100		*	umhos/cm	1	10	04/10/13 23:48	ljr
pH (lab)	SM4500H+ B								
pH		8.0	H	*	units	0.1	0.1	04/10/13 0:00	ljr
pH measured at		21.0			C	0.1	0.1	04/10/13 0:00	ljr
Residue, Filterable (TDS) @180C	SM2540C	14200		*	mg/L	10	20	04/05/13 17:56	ljr
Sulfate	D516-02 - Turbidimetric	6900		*	mg/L	300	2000	04/11/13 14:25	lhb
TDS (calculated)	Calculation	14100			mg/L	10	50	04/22/13 0:00	calc
TDS (ratio - measured/calculated)	Calculation	1.01						04/22/13 0:00	calc

Montgomery and Associates
Project ID: 1350.15
Sample ID: 6402

ACZ Sample ID: ***L11467-03***
Date Sampled: *04/04/13 12:55*
Date Received: *04/05/13*
Sample Matrix: *Ground Water*

Metals Analysis

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Arsenic, dissolved	M200.8 ICP-MS	0.004	B		mg/L	0.001	0.005	04/09/13 23:37	msh
Calcium, dissolved	M200.7 ICP	400			mg/L	1	5	04/09/13 18:14	aeb
Iron, dissolved	M200.7 ICP		U	*	mg/L	0.1	0.3	04/09/13 18:14	aeb
Magnesium, dissolved	M200.7 ICP	149			mg/L	1	5	04/09/13 18:14	aeb
Molybdenum, dissolved	M200.8 ICP-MS	24.4		*	mg/L	0.3	1	04/11/13 16:08	msh
Potassium, dissolved	M200.7 ICP	12			mg/L	2	8	04/09/13 18:14	aeb
Selenium, dissolved	M200.8 ICP-MS	0.0756			mg/L	0.0005	0.001	04/09/13 23:37	msh
Sodium, dissolved	M200.7 ICP	4100			mg/L	2	8	04/09/13 18:14	aeb
Uranium, dissolved	M200.8 ICP-MS	62.70			mg/L	0.05	0.3	04/11/13 16:08	msh

Wet Chemistry

Parameter	EPA Method	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Alkalinity as CaCO3	SM2320B - Titration								
Bicarbonate as CaCO3		2240	H		mg/L	2	20	04/19/13 0:00	ljr
Carbonate as CaCO3			UH		mg/L	2	20	04/19/13 0:00	ljr
Hydroxide as CaCO3			UH		mg/L	2	20	04/19/13 0:00	ljr
Total Alkalinity		2240	H	*	mg/L	2	20	04/19/13 0:00	ljr
Cation-Anion Balance	Calculation								
Cation-Anion Balance		-0.9			%			04/22/13 0:00	calc
Sum of Anions		217			meq/L	0.1	0.5	04/22/13 0:00	calc
Sum of Cations		213			meq/L	0.1	0.5	04/22/13 0:00	calc
Chloride	SM4500Cl-E	1140			mg/L	20	100	04/11/13 11:30	lhb
Conductivity @25C	SM2510B	16300			umhos/cm	1	10	04/12/13 17:28	las
pH (lab)	SM4500H+ B								
pH		8.0	H		units	0.1	0.1	04/12/13 0:00	las
pH measured at		21.0			C	0.1	0.1	04/12/13 0:00	las
Residue, Filterable (TDS) @180C	SM2540C	14200		*	mg/L	10	20	04/05/13 17:56	ljr
Sulfate	D516-02 - Turbidimetric	6700		*	mg/L	300	2000	04/11/13 14:26	lhb
TDS (calculated)	Calculation	13800			mg/L	10	50	04/22/13 0:00	calc
TDS (ratio - measured/calculated)	Calculation	1.03						04/22/13 0:00	calc

Report Header Explanations

Batch	A distinct set of samples analyzed at a specific time
Found	Value of the QC Type of interest
Limit	Upper limit for RPD, in %.
Lower	Lower Recovery Limit, in % (except for LCSS, mg/Kg)
MDL	Method Detection Limit. Same as Minimum Reporting Limit. Allows for instrument and annual fluctuations.
PCN/SCN	A number assigned to reagents/standards to trace to the manufacturer's certificate of analysis
PQL	Practical Quantitation Limit, typically 5 times the MDL.
QC	True Value of the Control Sample or the amount added to the Spike
Rec	Recovered amount of the true value or spike added, in % (except for LCSS, mg/Kg)
RPD	Relative Percent Difference, calculation used for Duplicate QC Types
Upper	Upper Recovery Limit, in % (except for LCSS, mg/Kg)
Sample	Value of the Sample of interest

QC Sample Types

AS	Analytical Spike (Post Digestion)	*LCSWD*	Laboratory Control Sample - Water Duplicate
ASD	Analytical Spike (Post Digestion) Duplicate	*LFB*	Laboratory Fortified Blank
CCB	Continuing Calibration Blank	*LFM*	Laboratory Fortified Matrix
CCV	Continuing Calibration Verification standard	*LFMD*	Laboratory Fortified Matrix Duplicate
DUP	Sample Duplicate	*LRB*	Laboratory Reagent Blank
ICB	Initial Calibration Blank	*MS*	Matrix Spike
ICV	Initial Calibration Verification standard	*MSD*	Matrix Spike Duplicate
ICSAB	Inter-element Correction Standard - A plus B solutions	*PBS*	Prep Blank - Soil
LCSS	Laboratory Control Sample - Soil	*PBW*	Prep Blank - Water
LCSSD	Laboratory Control Sample - Soil Duplicate	*PQV*	Practical Quantitation Verification standard
LCSW	Laboratory Control Sample - Water	*SDL*	Serial Dilution

QC Sample Type Explanations

Blanks	Verifies that there is no or minimal contamination in the prep method or calibration procedure.
Control Samples	Verifies the accuracy of the method, including the prep procedure.
Duplicates	Verifies the precision of the instrument and/or method.
Spikes/Fortified Matrix	Determines sample matrix interferences, if any.
Standard	Verifies the validity of the calibration.

ACZ Qualifiers (Qual)

B	Analyte concentration detected at a value between MDL and PQL. The associated value is an estimated quantity.
H	Analysis exceeded method hold time. pH is a field test with an immediate hold time.
L	Target analyte response was below the laboratory defined negative threshold.
U	The material was analyzed for, but was not detected above the level of the associated value. The associated value is either the sample quantitation limit or the sample detection limit.

Method References

(1) EPA 600/4-83-020. Methods for Chemical Analysis of Water and Wastes, March 1983.

(2) EPA 600/R-93-100. Methods for the Determination of Inorganic Substances in Environmental Samples, August 1993.

(3) EPA 600/R-94-111. Methods for the Determination of Metals in Environmental Samples - Supplement I, May 1994.

(4) EPA SW-846. Test Methods for Evaluating Solid Waste.

(5) Standard Methods for the Examination of Water and Wastewater.

Comments

(1) QC results calculated from raw data. Results may vary slightly if the rounded values are used in the calculations.

(2) Soil, Sludge, and Plant matrices for Inorganic analyses are reported on a dry weight basis.

(3) Animal matrices for Inorganic analyses are reported on an "as received" basis.

(4) An asterisk in the "XQ" column indicates there is an extended qualifier and/or certification qualifier associated with the result.

(5) If the MDL equals the PQL or the MDL column is omitted, the PQL is the reporting limit.

For a complete list of ACZ's Extended Qualifiers, please click: http://www.acz.com/public/extquallist.pdf

Montgomery and Associates

ACZ Project ID: ***L11467***

Alkalinity as CaCO3 SM2320B - Titration

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG341864													
WG341864PBW1	PBW	04/10/13 17:53				U	mg/L		-20	20			
WG341864LCSW2	LCSW	04/10/13 18:07	WC130328-1	820		750.7	mg/L	91.5	90	110			
WG341864LCSW5	LCSW	04/10/13 21:28	WC130328-1	820		767.2	mg/L	93.6	90	110			
WG341864PBW2	PBW	04/10/13 21:36				U	mg/L		-20	20			
L11478-08DUP	DUP	04/11/13 0:13			265	248.4	mg/L				6.5	20	
WG341864LCSW8	LCSW	04/11/13 0:26	WC130328-1	820		770.4	mg/L	94	90	110			
WG341864PBW3	PBW	04/11/13 0:35				2.1	mg/L		-20	20			
WG341864LCSW11	LCSW	04/11/13 3:56	WC130328-1	820		785.3	mg/L	95.8	90	110			
WG341864PBW4	PBW	04/11/13 4:05				U	mg/L		-20	20			
WG341864LCSW14	LCSW	04/11/13 7:25	WC130328-1	820		797.5	mg/L	97.3	90	110			
WG342354													
WG342354PBW	PBW	04/19/13 18:38				2.1	mg/L		-20	20			
WG342354LCSW2	LCSW	04/19/13 18:52	WC130415-9	820.0001		754.1	mg/L	92	90	110			
L11604-02DUP	DUP	04/19/13 20:11			360	366.8	mg/L				1.9	20	
WG342354LCSW4	LCSW	04/19/13 22:04	WC130415-9	820.0001		766.9	mg/L	93.5	90	110			

Arsenic, dissolved M200.8 ICP-MS

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG341789													
WG341789ICV	ICV	04/09/13 22:06	MS130402-2	.05		.05319	mg/L	106.4	90	110			
WG341789ICB	ICB	04/09/13 22:10				U	mg/L		-0.0006	0.0006			
WG341789LFB	LFB	04/09/13 22:13	MS130329-1	.05005		.04639	mg/L	92.7	85	115			
L11461-03AS	AS	04/09/13 23:15	MS130329-1	.05005	.0016	.05119	mg/L	99.1	70	130			
L11461-03ASD	ASD	04/09/13 23:18	MS130329-1	.05005	.0016	.05227	mg/L	101.2	70	130	2.09	20	

Calcium, dissolved M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG341758													
WG341758ICV	ICV	04/09/13 16:35	II130114-3	100		97.96	mg/L	98	95	105			
WG341758ICB	ICB	04/09/13 16:41				U	mg/L		-0.6	0.6			
WG341758LFB	LFB	04/09/13 16:54	II130326-2	67.95918		71.05	mg/L	104.5	85	115			
L11460-07AS	AS	04/09/13 17:43	II130326-2	67.95918	43.3	112.4	mg/L	101.7	85	115			
L11460-07ASD	ASD	04/09/13 17:46	II130326-2	67.95918	43.3	112.2	mg/L	101.4	85	115	0.18	20	

Chloride SM4500Cl-E

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG341899													
WG341899ICB	ICB	04/11/13 10:50				U	mg/L		-3	3			
WG341899ICV	ICV	04/11/13 10:50	WI130131-1	54.945		58.3	mg/L	106.1	90	110			
WG341899LFB1	LFB	04/11/13 11:20	WI130201-8	30		31.8	mg/L	106	90	110			
WG341899LFB2	LFB	04/11/13 11:24	WI130201-8	30		32.1	mg/L	107	90	110			
L11461-04AS	AS	04/11/13 11:43	10XCL	30	140	167	mg/L	90	90	110			
L11462-03DUP	DUP	04/11/13 11:43			140	135	mg/L				3.6	20	

Montgomery and Associates

ACZ Project ID: ***L11467***

Conductivity @25C SM2510B

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG341864													
WG341864LCSW1	LCSW	04/10/13 17:56	PCN41036	1408.8		1421.1	umhos/cm	100.9	90	110			
WG341864LCSW4	LCSW	04/10/13 21:17	PCN41036	1408.8		1413	umhos/cm	100.3	90	110			
L11478-08DUP	DUP	04/11/13 0:13			3930	3930	umhos/cm				0	20	
WG341864LCSW7	LCSW	04/11/13 0:15	PCN41036	1408.8		1402.8	umhos/cm	99.6	90	110			
WG341864LCSW10	LCSW	04/11/13 3:44	PCN41036	1408.8		1394.7	umhos/cm	99	90	110			
WG341864LCSW13	LCSW	04/11/13 7:13	PCN41036	1408.8		1386.6	umhos/cm	98.4	90	110			
WG341990													
WG341990LCSW1	LCSW	04/12/13 16:37	PCN41036	1408.8		1436.3	umhos/cm	102	90	110			
L11485-02DUP	DUP	04/12/13 18:32			35	37.3	umhos/cm				6.4	20	
WG341990LCSW4	LCSW	04/12/13 19:53	PCN41036	1408.8		1406.9	umhos/cm	99.9	90	110			
WG341990LCSW7	LCSW	04/12/13 23:35	PCN41036	1408.8		1393.8	umhos/cm	98.9	90	110			
WG341990LCSW10	LCSW	04/13/13 2:47	PCN41036	1408.8		1383.6	umhos/cm	98.2	90	110			
WG341990LCSW13	LCSW	04/13/13 5:41	PCN41036	1408.8		1361.3	umhos/cm	96.6	90	110			

Iron, dissolved M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG341758													
WG341758ICV	ICV	04/09/13 16:35	II130114-3	2		2	mg/L	100	95	105			
WG341758ICB	ICB	04/09/13 16:41				U	mg/L		-0.06	0.06			
WG341758LFB	LFB	04/09/13 16:54	II130326-2	1		1.036	mg/L	103.6	85	115			
L11460-07AS	AS	04/09/13 17:43	II130326-2	1	U	1.033	mg/L	103.3	85	115			
L11460-07ASD	ASD	04/09/13 17:46	II130326-2	1	U	1.036	mg/L	103.6	85	115	0.29	20	

Magnesium, dissolved M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG341758													
WG341758ICV	ICV	04/09/13 16:35	II130114-3	100		101.03	mg/L	101	95	105			
WG341758ICB	ICB	04/09/13 16:41				U	mg/L		-0.6	0.6			
WG341758LFB	LFB	04/09/13 16:54	II130326-2	49.99941		51.94	mg/L	103.9	85	115			
L11460-07AS	AS	04/09/13 17:43	II130326-2	49.99941	5.3	57.37	mg/L	104.1	85	115			
L11460-07ASD	ASD	04/09/13 17:46	II130326-2	49.99941	5.3	57.01	mg/L	103.4	85	115	0.63	20	

Molybdenum, dissolved M200.8 ICP-MS

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG341855													
WG341855ICV1	ICV	04/11/13 14:36	MS130402-2	.02004		.02	mg/L	99.8	90	110			
WG341855ICB1	ICB	04/11/13 14:39				U	mg/L		-0.0015	0.0015			
WG341855LFB	LFB	04/11/13 14:42	MS130329-1	.05		.04418	mg/L	88.4	85	115			
L11460-05AS	AS	04/11/13 15:39	MS130329-1	.05	1.12	1.172	mg/L	104	70	130			
L11460-05ASD	ASD	04/11/13 15:42	MS130329-1	.05	1.12	1.145	mg/L	50	70	130	2.33	20	M3

Montgomery and Associates

ACZ Project ID: ***L11467***

pH (lab) SM4500H+ B

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG341864													
WG341864LCSW3	LCSW	04/10/13 18:11	PCN40853	6		6.01	units	100.2	98	102			
WG341864LCSW6	LCSW	04/10/13 21:31	PCN40853	6		6.02	units	100.3	98	102			
L11478-08DUP	DUP	04/11/13 0:13			8.3	8.34	units				0.5	20	
WG341864LCSW9	LCSW	04/11/13 0:29	PCN40853	6		6.01	units	100.2	98	102			
WG341864LCSW12	LCSW	04/11/13 4:00	PCN40853	6		6.01	units	100.2	98	102			
WG341864LCSW15	LCSW	04/11/13 7:28	PCN40853	6		6.02	units	100.3	98	102			
WG341990													
WG341990LCSW3	LCSW	04/12/13 16:53	PCN40853	6		6	units	100	98	102			
L11485-02DUP	DUP	04/12/13 18:32			7.7	7.69	units				0.1	20	
WG341990LCSW6	LCSW	04/12/13 20:09	PCN40853	6		6.01	units	100.2	98	102			
WG341990LCSW9	LCSW	04/12/13 23:50	PCN40853	6		6	units	100	98	102			
WG341990LCSW12	LCSW	04/13/13 3:03	PCN40853	6		5.99	units	99.8	98	102			
WG341990LCSW15	LCSW	04/13/13 5:57	PCN40853	6		5.99	units	99.8	98	102			

Potassium, dissolved M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG341758													
WG341758ICV	ICV	04/09/13 16:35	II130114-3	20		19.85	mg/L	99.3	95	105			
WG341758ICB	ICB	04/09/13 16:41				U	mg/L		-0.9	0.9			
WG341758LFB	LFB	04/09/13 16:54	II130326-2	99.97161		102.7	mg/L	102.7	85	115			
L11460-07AS	AS	04/09/13 17:43	II130326-2	99.97161	3.2	108	mg/L	104.8	85	115			
L11460-07ASD	ASD	04/09/13 17:46	II130326-2	99.97161	3.2	107.9	mg/L	104.7	85	115	0.09	20	

Residue, Filterable (TDS) @180C SM2540C

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG341649													
WG341649PBW	PBW	04/05/13 17:43				U	mg/L		-20	20			
WG341649LCSW	LCSW	04/05/13 17:43	PCN40254	260		252	mg/L	96.9	80	120			
L11475-01DUP	DUP	04/05/13 18:02			720	710	mg/L				1.4	20	

Selenium, dissolved M200.8 ICP-MS

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG341789													
WG341789ICV	ICV	04/09/13 22:06	MS130402-2	.05		.0524	mg/L	104.8	90	110			
WG341789ICB	ICB	04/09/13 22:10				U	mg/L		-0.0003	0.0003			
WG341789LFB	LFB	04/09/13 22:13	MS130329-1	.05005		.04631	mg/L	92.5	85	115			
L11461-03AS	AS	04/09/13 23:15	MS130329-1	.05005	.0002	.05562	mg/L	110.7	70	130			
L11461-03ASD	ASD	04/09/13 23:18	MS130329-1	.05005	.0002	.05479	mg/L	109.1	70	130	1.5	20	

Montgomery and Associates

ACZ Project ID: ***L11467***

Sodium, dissolved M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG341758													
WG341758ICV	ICV	04/09/13 16:35	II130114-3	100		99.71	mg/L	99.7	95	105			
WG341758ICB	ICB	04/09/13 16:41				U	mg/L		-0.9	0.9			
WG341758LFB	LFB	04/09/13 16:54	II130326-2	100.0416		101.9	mg/L	101.9	85	115			
L11460-07AS	AS	04/09/13 17:43	II130326-2	100.0416	6.8	110.2	mg/L	103.4	85	115			
L11460-07ASD	ASD	04/09/13 17:46	II130326-2	100.0416	6.8	110.2	mg/L	103.4	85	115	0	20	

Sulfate D516-02 - Turbidimetric

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG341913													
WG341913ICB	ICB	04/11/13 13:33				U	mg/L		-3	3			
WG341913ICV	ICV	04/11/13 13:33	WI130401-1	20		20	mg/L	100	90	110			
WG341913LFB	LFB	04/11/13 14:02	WI121025-3	10		9.2	mg/L	92	90	110			
L11428-03DUP	DUP	04/11/13 14:05			2	U	mg/L				200	20	RA
L11433-01AS	AS	04/11/13 14:23	SO4TURB20	10	390	393	mg/L	30	90	110			M3

Uranium, dissolved M200.8 ICP-MS

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG341855													
WG341855ICV1	ICV	04/11/13 14:36	MS130402-2	.05		.05339	mg/L	106.8	90	110			
WG341855ICB1	ICB	04/11/13 14:39				U	mg/L		-0.0003	0.0003			
WG341855LFB	LFB	04/11/13 14:42	MS130329-1	.05		.0472	mg/L	94.4	85	115			
L11460-05AS	AS	04/11/13 15:39	MS130329-1	.05	.0089	.0607	mg/L	103.6	70	130			
L11460-05ASD	ASD	04/11/13 15:42	MS130329-1	.05	.0089	.06078	mg/L	103.8	70	130	0.13	20	

Montgomery and Associates

ACZ Project ID: ***L11467***

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L11467-01	WG341758	Iron, dissolved	M200.7 ICP	DA	Sample required dilution due to reactivity.
	WG341855	Molybdenum, dissolved	M200.8 ICP-MS	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG341649	Residue, Filterable (TDS) @180C	SM2540C	ZO	Concentration is based on a final residue greater than 200 mg.
	WG341913	Sulfate	D516-02 - Turbidimetric	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
			D516-02 - Turbidimetric	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
L11467-02	WG341758	Iron, dissolved	M200.7 ICP	DA	Sample required dilution due to reactivity.
	WG341855	Molybdenum, dissolved	M200.8 ICP-MS	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG341864	Conductivity @25C	SM2510B	ZW	Method deviation. The sample was centrifuged prior to analysis due to high solid content.
		pH	SM4500H+ B	ZW	Method deviation. The sample was centrifuged prior to analysis due to high solid content.
	WG341649	Residue, Filterable (TDS) @180C	SM2540C	ZO	Concentration is based on a final residue greater than 200 mg.
	WG341913	Sulfate	D516-02 - Turbidimetric	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
			D516-02 - Turbidimetric	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG341864	Total Alkalinity	SM2320B - Titration	ZW	Method deviation. The sample was centrifuged prior to analysis due to high solid content.
L11467-03	WG341758	Iron, dissolved	M200.7 ICP	DA	Sample required dilution due to reactivity.
	WG341855	Molybdenum, dissolved	M200.8 ICP-MS	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG341649	Residue, Filterable (TDS) @180C	SM2540C	ZO	Concentration is based on a final residue greater than 200 mg.
	WG341913	Sulfate	D516-02 - Turbidimetric	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
			D516-02 - Turbidimetric	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG342354	Total Alkalinity	SM2320B - Titration	C4	Confirmatory analysis was past holding time.

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Certification Qualifiers

Montgomery and Associates

ACZ Project ID: ***L11467***

No certification qualifiers associated with this analysis

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Sample Receipt

Montgomery and Associates
1350.15

ACZ Project ID: L11467
Date Received: 04/05/2013 09:53
Received By: ksj
Date Printed: 4/5/2013

Receipt Verification

	YES	NO	NA
1) Is a foreign soil permit included for applicable samples?			X
2) Is the Chain of Custody or other directive shipping papers present?	X		
3) Does this project require special handling procedures such as CLP protocol?			X
4) Are any samples NRC licensable material?			X
5) If samples are received past hold time, proceed with requested short hold time analyses?	X		
6) Is the Chain of Custody complete and accurate?	X		
7) Were any changes made to the Chain of Custody prior to ACZ receiving the samples?		X	

Samples/Containers

	YES	NO	NA
8) Are all containers intact and with no leaks?	X		
9) Are all labels on containers and are they intact and legible?	X		
10) Do the sample labels and Chain of Custody match for Sample ID, Date, and Time?	X		
11) For preserved bottle types, was the pH checked and within limits?	X		
12) Is there sufficient sample volume to perform all requested work?	X		
13) Is the custody seal intact on all containers?			X
14) Are samples that require zero headspace acceptable?			X
15) Are all sample containers appropriate for analytical requirements?	X		
16) Is there an Hg-1631 trip blank present?			X
17) Is there a VOA trip blank present?			X
18) Were all samples received within hold time?	X		

Chain of Custody Related Remarks

Client Contact Remarks

Shipping Containers

Cooler Id	Temp (°C)	Rad (µR/Hr)	Custody Seal Intact?
NA17368	4	11	Yes

Client must contact an ACZ Project Manager if analysis should not proceed for samples received outside of their thermal preservation acceptance criteria.

ACZ Laboratories, Inc. L11467

2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

CHAIN OF CUSTODY

Name: John Laney	Address: P.O. Box 218
Company: Montgomery & Assoc.	Grants NM 87020
E-mail: Jlaney@elmontgomery.com	Telephone: 520-425-2219

Name:	E-mail:
Company:	Telephone:

Name: John Laney	Address: P.O. Box 218
Company: Montgomery & Assoc.	Grants NM 87020
E-mail: Jlaney@montgomery.com	Telephone: 520-425-2219

If sample(s) received past holding time (HT), or if insufficient HT remains to complete analysis before expiration, shall ACZ proceed with requested short HT analyses? YES [X] NO [ ]

If "NO" then ACZ will contact client for further instruction. If neither "YES" nor "NO" is indicated, ACZ will proceed with the requested analyses, even if HT is expired, and data will be qualified

Are samples for SDWA Compliance Monitoring? Yes [ ] No [X]

If yes, please include state forms. Results will be reported to PQL for Colorado.

Sampler's Name: J. Kerns Sampler's site Information State UT Zip code Time Zone M

Quote #: Lisbon - GW

Project/PO #: 1350.15

Reporting state for compliance testing: Utah

Check box if samples include NRC licensed material? [ ]

ACZ Sample ID	Date/Time Collected	Matrix	# of Containers	Lisbon - GW							
6398	04APR2013/1105	W	3	X							
6400	04APR2013/1215	W	3	X							
6402	04APR2013/1255	W	3	✓							

Matrix: SW (Surface Water) · GW (Ground Water) · WW (Waste Water) · DW (Drinking Water) · SL (Sludge) · SO (Soil) · OL (Oil) · Other (Specify)

Please refer to ACZ's terms & conditions located on the reverse side of this COC.

	4-4-13/1515		459.50

L11467 Chain of Custody

Purging And Sampling Data Sheet

Job#: 1350.15	**Sampler:** J Kerns (B Myers)	**Client:** Montgomery & Associates
Well ID: RL-1	**Date** (DDOct2012): 05APR2013	**Site:** Rio Algom Mining, Lisbon, UT
Weather Conditions: Cool	**Sampler Signature:**	
Well diam: 1/4" 1" 2" 3" 4" 6" Other: (S)	**DTW:** 115.73 **Total Depth:** 124.00	
Purge equip: ES - diam: (Bladder) Peri Waterra Positive Air Displacement Ext. System		
disp bailer teflon bailer other:	**Tubing:** OD: New (Dedicated) NA	
Purge method: 3-5 Case Volume (Micro/Low-Flow) Extraction Other:		
Pump depth/ intake:	**Multipliers:** 1"= 0.04 2"= 0.16 3"= 0.37 4"= 0.65 5"=1.02 6"= 1.47 Radius² X 0.163	
(TD - DTW X Multiplier = 1 Volume	80% Recovery (TD - DTW X 0.20 + DTW)	

1 Volume = _____ X _____ = _____ (Total Purge) 80%=_____

Time	Temp (°C) °F)	pH	SP Cond (mS (µS))	Turbidity (NTU)	Purge Rate (gal or mL/ min)	Volume Removed (gal (L))	DO (mg/l)	ORP (mv)	DTW	Notes
1445	12.8	6.7	8840	3	200	1	9.0	91	115.85	
1448	13.5	6.7	8245	3		1.6	8.8	90	115.85	
1451	13.3	6.7	8218	2		2.4	8.7	89	115.85	
1454	13.4	6.7	8170	2		3	8.4	88	115.85	
1457	13.6	6.7	8148	2		3.6	8.5	89	115.85	
1500	13.6	6.7	8142	2		4.2	8.4	90	115.85	

Did well dewater? YES (NO) Total volume removed: 4.2 (gal (L))

Sample method: Disp Bailer Hydrasleeve New Tubing Ext. Port Other: (ded. pump)

Sample date: 05APR2013	Sample time: 1500	DTW at sample: 115.85
Sample ID: 0406	Lab: Energy Labs	Number of bottles: 2
Analysis: 500 ml NP poly - Alkalinity, Cl, SO4, TDS, EC, pH	250 ml HNO3 poly *field filtered - Dissolved Metals	
Equipment blank ID @	Field blank ID @	
Duplicate ID:	Pre-purge DO:	Post purge DO:
$Fe2^+$:	Pre-purge ORP:	Post purge ORP:
NAPL depth:	Volume of NAPL:	Volume removed: ml

Purging And Sampling Data Sheet

Job#: 1350.15	**Sampler:** J Kerns (B Myers)	**Client:** Montgomery & Associates
Well ID: EF-8	**Date** (DDOct2012): 05APR2013	**Site:** Rio Algom Mining, Lisbon, UT
Weather Conditions: Cool	**Sampler Signature:**	
Well diam: 1/4" 1" 2" 3" (4") 6" Other:	**DTW:** 74.25 **Total Depth:** 244.60	
Purge equip: ES - diam: (Bladder) Peri Waterra Positive Air Displacement Ext. System disp bailer teflon bailer other:	**Tubing:** OD: New (Dedicated) NA	
Purge method: 3-5 Case Volume (Micro/Low-Flow) Extraction Other:		
Pump depth/ intake:	**Multipliers:** 1"= 0.04 2"= 0.16 3"= 0.37 4"= 0.65 5"=1.02 6"= 1.47 Radius² X 0.163	
(TD - DTW X Multiplier = 1 Volume	80% Recovery (TD - DTW X 0.20 + DTW)	

1 Volume = _____ X _____ = _____ (Total Purge) 80%= _____

Time	Temp (°C / °F)	pH	SP Cond (mS / µS)	Turbidity (NTU)	Purge Rate (gal or mL/ min)	Volume Removed (gal / L)	DO (mg/l)	ORP (mv)	DTW	Notes
1357	12.1	7.4	1544	3	300	1	10.2	59	74.43	
1400	12.1	7.4	1550	3	|	1.9	10.2	59	74.46	
1403	12.1	7.3	1508	3	|	2.7	14.3	59	74.46	
1406	12.0	7.3	1535	3	|	3.6	10.9	58	74.46	
1409	12.0	7.2	1550	2	|	4.5	10.2	58	74.46	
1412	12.1	7.2	1564	2	|	5.4	10.1	59	74.46	
1415	12.0	7.2	1567	2	↓	6.3	10.1	59	74.46	

Did well dewater? YES (NO)	Total volume removed: 6.3 (gal / L)	
Sample method: Disp Bailer Hydrasleeve New Tubing Ext. Port Other: (Sled. pump)		
Sample date: 05APR2013	Sample time: 1415	DTW at sample: 74.46
Sample ID: (2360	Lab: Energy Labs	Number of bottles: (2)
Analysis: 500 ml NP poly - Alkalinity, Cl, SO4, TDS, EC, pH 250 ml HNO3 poly *field filtered - Dissolved Metals		
Equipment blank ID @	Field blank ID @	
Duplicate ID:	Pre-purge DO:	Post purge DO:
$Fe2^{+}$:	Pre-purge ORP:	Post purge ORP:
NAPL depth:	Volume of NAPL:	Volume removed: ml

ANALYTICAL SUMMARY REPORT

May 06, 2013

Rio Algom Mining Corporation LLC
Hwy 605 and 509
Grants, NM 87020

Workorder No.: C13040726 Quote ID: C3636 - Groundwater

Project Name: Lisbon, UT Facility

Energy Laboratories, Inc. Casper WY received the following 2 samples for Rio Algom Mining Corporation LLC on 4/11/2013 for analysis.

Sample ID	Client Sample ID	Collect Date	Receive Date	Matrix	Test
C13040726-001	6366	04/05/13 14:15	04/11/13	Aqueous	Metals by ICP/ICPMS, Dissolved Alkalinity QA Calculations Conductivity E300.0 Anions pH Solids, Total Dissolved Solids, Total Dissolved - Calculated
C13040726-002	6367	04/05/13 15:00	04/11/13	Aqueous	Same As Above

The results as reported relate only to the item(s) submitted for testing. The analyses presented in this report were performed at Energy Laboratories, Inc., 2393 Salt Creek Hwy., Casper, WY 82601, unless otherwise noted. Radiochemistry analyses were performed at Energy Laboratories, Inc., 2325 Kerzell Lane, Casper, WY 82601, unless otherwise noted. Any exceptions or problems with the analyses are noted in the Laboratory Analytical Report, the QA/QC Summary Report, or the Case Narrative.

If you have any questions regarding these test results, please call.

Report Approved By:

CLIENT: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility
Sample Delivery Group: C13040726

Revised Date: 05/06/13
Report Date: 04/26/13

CASE NARRATIVE

REVISED/SUPPLEMENTAL REPORT
The attached analytical report has been revised from a previously submitted report due to the request by Leilani Bew on May 6, 2013 for the correction of the sample time on sample -001. This report has been revised and replaces any previously issued report in its entirety.

COMMENTS
Samples 6366 and 6367 were originally reported on workorder C13040389 and moved to a new workorder per client request.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility
Lab ID: C13040726-001
Client Sample ID 6366

Revised Date: 05/06/13
Report Date: 04/26/13
Collection Date: 04/05/13 14:15
DateReceived: 04/11/13
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Carbonate as CO3	ND	mg/L		5		A2320 B	04/11/13 20:10 / jba
Bicarbonate as HCO3	396	mg/L		5		A2320 B	04/11/13 20:10 / jba
Calcium	209	mg/L		1		E200.7	04/12/13 22:55 / sf
Chloride	211	mg/L		1		E300.0	04/12/13 04:58 / wc
Magnesium	55	mg/L		1		E200.7	04/12/13 22:55 / sf
Potassium	5	mg/L		1		E200.7	04/12/13 22:55 / sf
Sodium	155	mg/L		1		E200.7	04/12/13 22:55 / sf
Sulfate	479	mg/L	D	4		E300.0	04/12/13 04:58 / wc
PHYSICAL PROPERTIES							
Conductivity @ 25 C	2010	umhos/cm		1		A2510 B	04/11/13 15:24 / ab
pH	7.61	s.u.	H	0.01		A4500-H B	04/11/13 15:24 / ab
Solids, Total Dissolved TDS @ 180 C	1400	mg/L		10		A2540 C	04/11/13 16:24 / jz
METALS - DISSOLVED							
Arsenic	0.040	mg/L		0.001		E200.8	04/12/13 17:26 / clm
Iron	ND	mg/L		0.03		E200.7	04/12/13 22:55 / sf
Molybdenum	0.01	mg/L		0.01		E200.7	04/12/13 22:55 / sf
Selenium	0.013	mg/L		0.001		E200.8	04/12/13 17:26 / clm
Uranium	0.645	mg/L		0.0003		E200.8	04/12/13 17:26 / clm
DATA QUALITY							
A/C Balance (± 5)	-2.44	%				A1030 E	04/16/13 08:04 / kbh
Anions	22.9	meq/L				A1030 E	04/16/13 08:04 / kbh
Cations	21.8	meq/L				A1030 E	04/16/13 08:04 / kbh
Solids, Total Dissolved Calculated	1400	mg/L				A1030 E	04/16/13 08:04 / kbh
TDS Balance (0.80 - 1.20)	1.04					A1030 E	04/16/13 08:04 / kbh

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
H - Analysis performed past recommended holding time.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility
Lab ID: C13040726-002
Client Sample ID 6367

Revised Date: 05/06/13
Report Date: 04/26/13
Collection Date: 04/05/13 15:00
DateReceived: 04/11/13
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Carbonate as CO3	ND	mg/L		5		A2320 B	04/11/13 20:20 / jba
Bicarbonate as HCO3	1280	mg/L		5		A2320 B	04/11/13 20:20 / jba
Calcium	551	mg/L		1		E200.7	04/12/13 22:58 / sf
Chloride	705	mg/L	D	10		E300.0	04/12/13 05:15 / wc
Magnesium	179	mg/L		1		E200.7	04/12/13 22:58 / sf
Potassium	17	mg/L		1		E200.7	04/12/13 22:58 / sf
Sodium	2040	mg/L	D	2		E200.7	04/12/13 22:58 / sf
Sulfate	4790	mg/L	D	40		E300.0	04/12/13 05:15 / wc
PHYSICAL PROPERTIES							
Conductivity @ 25 C	10400	umhos/cm		1		A2510 B	04/11/13 15:27 / ab
pH	7.38	s.u.	H	0.01		A4500-H B	04/11/13 15:27 / ab
Solids, Total Dissolved TDS @ 180 C	8620	mg/L		10		A2540 C	04/11/13 16:24 / jz
METALS - DISSOLVED							
Arsenic	0.003	mg/L		0.001		E200.8	04/12/13 17:29 / clm
Iron	0.03	mg/L		0.03		E200.7	04/12/13 22:58 / sf
Molybdenum	11.0	mg/L	D	0.03		E200.7	04/12/13 22:58 / sf
Selenium	0.075	mg/L	D	0.003		E200.8	04/12/13 17:29 / clm
Uranium	45.5	mg/L	D	0.001		E200.8	04/12/13 17:29 / clm
DATA QUALITY							
A/C Balance (± 5)	-3.93	%				A1030 E	04/16/13 08:04 / kbh
Anions	142	meq/L				A1030 E	04/16/13 08:04 / kbh
Cations	131	meq/L				A1030 E	04/16/13 08:04 / kbh
Solids, Total Dissolved Calculated	9000	mg/L				A1030 E	04/16/13 08:04 / kbh
TDS Balance (0.80 - 1.20)	0.960					A1030 E	04/16/13 08:04 / kbh

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
H - Analysis performed past recommended holding time.

QA/QC Summary Report

Prepared by Casper, WY Branch

Revised Date: 05/06/13
Report Date: 04/26/13
Work Order: C13040726

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: A2320 B										Batch: R172380
Sample ID: MBLK	3	Method Blank				Run: MANTECH_130411A				04/11/13 13:24
Alkalinity, Total as CaCO3		ND	mg/L	1						
Carbonate as CO3		ND	mg/L	1						
Bicarbonate as HCO3		1	mg/L	1						
Sample ID: LCS_130315		Laboratory Control Sample				Run: MANTECH_130411A				04/11/13 13:37
Alkalinity, Total as CaCO3		153	mg/L	5.0	102	90	110			
Sample ID: C13040394-002ADUP	3	Sample Duplicate				Run: MANTECH_130411A				04/11/13 21:09
Alkalinity, Total as CaCO3		275	mg/L	5.0				3.1	10	
Carbonate as CO3		ND	mg/L	5.0					10	
Bicarbonate as HCO3		336	mg/L	5.0				3.1	10	
Sample ID: C13040394-003AMS		Sample Matrix Spike				Run: MANTECH_130411A				04/11/13 21:25
Alkalinity, Total as CaCO3		431	mg/L	5.0	101	80	120			

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

QA/QC Summary Report

Prepared by Casper, WY Branch

Revised Date: 05/06/13
Report Date: 04/26/13
Work Order: C13040726

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: A2510 B										Batch: R172341
Sample ID: SC 2ND 1413		Laboratory Control Sample				Run: PHSC_101-C_130411A				04/11/13 09:06
Conductivity @ 25 C		1440	umhos/cm	1.0	102	90	110			
Sample ID: MBLK		Method Blank				Run: PHSC_101-C_130411A				04/11/13 09:32
Conductivity @ 25 C		2	umhos/cm	0.2						
Sample ID: C13040726-002ADUP		Sample Duplicate				Run: PHSC_101-C_130411A				04/11/13 15:30
Conductivity @ 25 C		10300	umhos/cm	1.0				0.5	10	

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

QA/QC Summary Report

Prepared by Casper, WY Branch

Revised Date: 05/06/13
Report Date: 04/26/13
Work Order: C13040726

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: A2540 C										Batch: TDS130411A
Sample ID: MB-1_130411A		Method Blank				Run: BAL-19_130411B				04/11/13 16:10
Solids, Total Dissolved TDS @ 180 C		ND	mg/L	10						
Sample ID: LCS-2_130411A		Laboratory Control Sample				Run: BAL-19_130411B				04/11/13 16:10
Solids, Total Dissolved TDS @ 180 C		1990	mg/L	100	100	90	110			
Sample ID: C13040726-001A DUP		Sample Duplicate				Run: BAL-19_130411B				04/11/13 16:24
Solids, Total Dissolved TDS @ 180 C		1400	mg/L	10				0.1	5	
Sample ID: C13040726-002A MS		Sample Matrix Spike				Run: BAL-19_130411B				04/11/13 16:25
Solids, Total Dissolved TDS @ 180 C		18400	mg/L	100	98	90	110			

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

QA/QC Summary Report

Prepared by Casper, WY Branch

Revised Date: 05/06/13
Report Date: 04/26/13
Work Order: C13040726

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: A4500-H B									Analytical Run: PHSC_101-C_130411A	
Sample ID: pH 6.86	Initial Calibration Verification Standard								04/11/13 08:53	
pH		6.87	s.u.	0.010	100	98	102			
Method: A4500-H B									Batch: R172341	
Sample ID: C13040726-002ADUP	Sample Duplicate					Run: PHSC_101-C_130411A			04/11/13 15:30	
pH		7.38	s.u.	0.010				0.0	3	

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

QA/QC Summary Report

Prepared by Casper, WY Branch

Revised Date: 05/06/13
Report Date: 04/26/13
Work Order: C13040726

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E200.7									Analytical Run: ICP4-C_130412A	
Sample ID: ICV	6	Initial Calibration Verification Standard							04/12/13 12:55	
Calcium		51.2	mg/L	0.50	102	95	105			
Iron		5.15	mg/L	0.030	103	95	105			
Magnesium		50.2	mg/L	0.50	100	95	105			
Molybdenum		1.00	mg/L	0.10	100	95	105			
Potassium		51.1	mg/L	0.50	102	95	105			
Sodium		51.8	mg/L	0.50	104	95	105			
Sample ID: ICSA	6	Interference Check Sample A							04/12/13 13:09	
Calcium		459	mg/L	0.50	92	80	120			
Iron		179	mg/L	0.030	90	80	120			
Magnesium		497	mg/L	0.50	99	80	120			
Molybdenum		0.00291	mg/L	0.10						
Potassium		-0.0311	mg/L	0.50						
Sodium		0.418	mg/L	0.50						
Sample ID: ICSAB	6	Interference Check Sample AB							04/12/13 13:13	
Calcium		449	mg/L	0.50	90	80	120			
Iron		176	mg/L	0.030	88	80	120			
Magnesium		494	mg/L	0.50	99	80	120			
Molybdenum		-0.00307	mg/L	0.10						
Potassium		-0.0245	mg/L	0.50						
Sodium		0.339	mg/L	0.50						
Method: E200.7										Batch: R172439
Sample ID: MB-1304012A	6	Method Blank				Run: ICP4-C_130412A			04/12/13 13:32	
Calcium		ND	mg/L	0.02						
Iron		ND	mg/L	0.002						
Magnesium		0.05	mg/L	0.01						
Molybdenum		ND	mg/L	0.003						
Potassium		ND	mg/L	0.04						
Sodium		ND	mg/L	0.2						
Sample ID: LFB-1304012A	6	Laboratory Fortified Blank				Run: ICP4-C_130412A			04/12/13 13:36	
Calcium		47.4	mg/L	0.50	95	85	115			
Iron		0.962	mg/L	0.030	96	85	115			
Magnesium		46.3	mg/L	0.50	93	85	115			
Molybdenum		0.943	mg/L	0.10	94	85	115			
Potassium		47.2	mg/L	0.50	94	85	115			
Sodium		47.1	mg/L	0.50	94	85	115			
Sample ID: C13040389-004BMS2	6	Sample Matrix Spike				Run: ICP4-C_130412A			04/12/13 22:06	
Calcium		676	mg/L	1.0	93	70	130			
Iron		9.85	mg/L	0.030	96	70	130			
Magnesium		581	mg/L	1.0	93	70	130			
Molybdenum		12.3	mg/L	0.030	92	70	130			
Potassium		478	mg/L	1.0	92	70	130			

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

QA/QC Summary Report

Prepared by Casper, WY Branch

Revised Date: 05/06/13
Report Date: 04/26/13
Work Order: C13040726

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E200.7										Batch: R172439
Sample ID: C13040389-004BMS2	6	Sample Matrix Spike				Run: ICP4-C_130412A				04/12/13 22:06
Sodium		2030	mg/L	2.1	73	70	130			
Sample ID: C13040389-004BMSD	6	Sample Matrix Spike Duplicate				Run: ICP4-C_130412A				04/12/13 22:10
Calcium		677	mg/L	1.0	93	70	130	0.0	20	
Iron		9.79	mg/L	0.030	96	70	130	0.6	20	
Magnesium		581	mg/L	1.0	93	70	130	0.0	20	
Molybdenum		12.2	mg/L	0.030	92	70	130	0.3	20	
Potassium		478	mg/L	1.0	92	70	130	0.0	20	
Sodium		2030	mg/L	2.1	74	70	130	0.1	20	

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

QA/QC Summary Report

Prepared by Casper, WY Branch

Revised Date: 05/06/13
Report Date: 04/26/13
Work Order: C13040726

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E200.8									Analytical Run: ICPMS2-C_130412A	
Sample ID: ICV	3	Initial Calibration Verification Standard							04/12/13 14:32	
Arsenic		0.0489	mg/L	0.0010	98	90	110			
Selenium		0.0490	mg/L	0.0010	98	90	110			
Uranium		0.0494	mg/L	0.00030	99	90	110			
Method: E200.8									Batch: R172440	
Sample ID: LRB	3	Method Blank				Run: ICPMS2-C_130412A			04/12/13 14:58	
Arsenic		0.0003	mg/L	0.00010						
Selenium		0.0007	mg/L	0.0002						
Uranium		ND	mg/L	1E-05						
Sample ID: LFB	3	Laboratory Fortified Blank				Run: ICPMS2-C_130412A			04/12/13 15:01	
Arsenic		0.0521	mg/L	0.0010	104	85	115			
Selenium		0.0519	mg/L	0.0010	102	85	115			
Uranium		0.0527	mg/L	0.00030	105	85	115			
Sample ID: C13040389-010BMS4	3	Sample Matrix Spike				Run: ICPMS2-C_130412A			04/12/13 17:03	
Arsenic		0.264	mg/L	0.0010	105	70	130			
Selenium		0.279	mg/L	0.0013	99	70	130			
Uranium		9.85	mg/L	0.00050		70	130			A
Sample ID: C13040389-010BMSD	3	Sample Matrix Spike Duplicate				Run: ICPMS2-C_130412A			04/12/13 17:07	
Arsenic		0.266	mg/L	0.0010	106	70	130	0.6	20	
Selenium		0.278	mg/L	0.0013	99	70	130	0.2	20	
Uranium		9.81	mg/L	0.00050		70	130	0.4	20	A

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

A - The analyte level was greater than four times the spike level. In accordance with the method % recovery is not calculated.

QA/QC Summary Report

Prepared by Casper, WY Branch

Revised Date: 05/06/13
Report Date: 04/26/13
Work Order: C13040726

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E300.0										Batch: R172428
Sample ID: ICB	2	Method Blank				Run: IC1-C_130411A			04/11/13 14:28	
Chloride		ND	mg/L	0.07						
Sulfate		0.10	mg/L	0.08						
Sample ID: LFB-041113-1	2	Laboratory Fortified Blank				Run: IC1-C_130411A			04/11/13 15:02	
Chloride		9.48	mg/L	1.0	95	90	110			
Sulfate		38.2	mg/L	1.0	95	90	110			
Sample ID: LFBD-041113-1	2	Laboratory Fortified Blank Duplicate				Run: IC1-C_130411A			04/11/13 15:20	
Chloride		9.59	mg/L	1.0	96	90	110	1.2	20	
Sulfate		38.7	mg/L	1.0	96	90	110	1.2	20	
Sample ID: C13040389-010AMS	2	Sample Matrix Spike				Run: IC1-C_130411A			04/12/13 04:23	
Chloride		1460	mg/L	4.2		90	110			A
Sulfate		2350	mg/L	17	99	90	110			
Sample ID: C13040389-010AMSD	2	Sample Matrix Spike Duplicate				Run: IC1-C_130411A			04/12/13 04:41	
Chloride		1480	mg/L	4.2		90	110	0.9	20	A
Sulfate		2360	mg/L	17	101	90	110	0.5	20	

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

A - The analyte level was greater than four times the spike level. In accordance with the method % recovery is not calculated.

Standard Reporting Procedures

Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH, Dissolved Oxygen and Residual Chlorine, are qualified as being analyzed outside of recommended holding time.

Solid/soil samples are reported on a wet weight basis (as received) unless specifically indicated. If moisture corrected, data units are typically noted as –dry. For agricultural and mining soil parameters/characteristics, all samples are dried and ground prior to sample analysis.

Workorder Receipt Checklist

Rio Algom Mining Corporation LLC C13040726

Login completed by: Kerri Schroeder
Date Received: 4/11/2013
Reviewed by: BL2000\kschroeder
Received by: th
Reviewed Date: 4/23/2013
Carrier name: FedEx

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on shipping container/cooler?	Yes ☐	No ☐	Not Present ☑
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time? (Exclude analyses that are considered field parameters such as pH, DO, Res Cl, Sulfite, Ferrous Iron, etc.)	Yes ☑	No ☐	
Temp Blank received?	Yes ☑	No ☐	Not Applicable ☐
Container/Temp Blank temperature:	0.4°C On Ice		
Water - VOA vials have zero headspace?	Yes ☐	No ☐	No VOA vials submitted ☑
Water - pH acceptable upon receipt?	Yes ☑	No ☐	Not Applicable ☐

Contact and Corrective Action Comments:

None

Chain of Custody and Analytical Request Record

Page 1 of 1

PLEASE PRINT- Provide as much information as possible.

Company Name: Rio Algom Mining Corp	Project Name, PWS, Permit, Etc.: Lisbon, UT Facility	Sample Origin State: UT	EPA/State Compliance: Yes ☐ No ☐
Report Mail Address: Montgomery and Associates Results retrieved from Energy Source	Contact Name: John Laney Phone/Fax: (520) 425-2219 Email: jlaney@clmontgomery.com cc: Brandon Myers		Sampler: (Please Print)
Invoice Address: Email invoice to Gail PO Box 218 Grants, NM 87020	Invoice Contact & Phone: Gail Alexander (505) 287-8851	Purchase Order:	Quote/Bottle Order: C3636

Special Report/Formats – ELI must be notified prior to sample submittal for the following:

☐ DW ☐ A2LA
☐ GSA ☐ EDD/EDT (Electronic Data) Format: _____
☐ POTW/WWTP ☐ LEVEL IV
☐ State: _____ ☐ NELAC
☐ Other: _____

Number of Containers
Sample Type: A Air W Water S Soils/Solids V Vegetation B Bioassay O Other

ANALYSIS REQUESTED

	SAMPLE IDENTIFICATION (Name, Location, Interval, etc.)	Collection Date	Collection Time	MATRIX	C3636	SEE ATTACHED	Normal Turnaround (TAT)	RUSH	Contact ELI prior to RUSH sample submittal for charges and scheduling – See Instruction Page
1	63666	4/3/2013	1415	W	X	X	X		
2	63667	1	1520	W	X	X	X		
3									
4									
5									
6									
7									
8									
9									
10									C13040726

Comments:

Shipped by: Fed-Ex
Cooler ID(s): Client
Receipt Temp: 0.4 °C
On Ice: (Yes) No
Custody Seal Y (N) Intact Y N Signature Match Y N

LABORATORY USE ONLY

~~C13040287~~ KLG

Custody Record MUST be Signed	Relinquished by (print)	Date/Time	Signature	Received by (print)	Date/Time	Signature
		4/6/13 1800				
	Relinquished by (print)	Date/Time	Signature	Received by (print)	Date/Time	Signature
				Received by Laboratory	Date/Time	Signature
					4-11-13 / 945	

Sample Disposal: Return to Client: _____ Lab Disposal: _____

In certain circumstances, samples submitted to Energy Laboratories, Inc. may be subcontracted to other certified laboratories in order to complete the analysis requested.
This serves as notice of this possibility. All sub-contract data will be clearly notated on your analytical report.
Visit our web site at www.energylab.com for additional information, downloadable fee schedule, forms, and links.

Confluence Environmental, Inc

Equipment Calibration Log

Equipment make/model	Equipment ID/ serial number	Date	Time	Calibration Standards	Equipment Reading	Equipment Calibrated	Temp (°C / °F)	Tech init.	Comments
YSI Pro Series	#3	5-13-15	0800	pH 4.0/7.0/10.0	4.0/7.0/10.0	✓		JK	
				Cond. 1413	1413	✓		JK	
				ORP 244	244	✓		JK	
				D.O. 100%	97%	✓	—	JK	

Notes/comments:

Well Maintenance Inspection Form

Client: Montgomery & Assoc Site: Rio Algom Date: 5-13-13

Job #: 1350.15 Technician: JK Page 1 of 1

Inspection Point	Well Inspected - No Corrective Action Required	Entry Indicates Deficiency: Cap non-functional	Lock non-functional	Lock missing	Bolts missing (# missing / # total tabs)	Tabs stripped (# stripped / # total tabs.)	Tabs broken (# broken / # of total tabs)	Annular seal incomplete	Apron damaged	Rim / Lid broken	Trip Hazard	Below Grade	Other (explain in notes)	Well Not Inspected (explain in notes)	Notes (Note any repairs made while on site)
EF-8	X														
RL-1	X														

Notes:

Repair codes: **rt**=retap/ bolts added or replaced **as**=annular seal repair,

Confluence Environmental, Inc 3308 El Camino Ave, Suite 300 #148, Sacramento CA, 95821, 916-760-7641

Water Level Measurements

Job Number: 1350.15 Date: 5-13-2013 Client: Montgomery & Assoc.

Site: Rio Algom Mine - Lisbon WTAH

Well I.D.	Time	Dia	Depth to NAPL	Thickness of NAPL	Depth to water (DTW)	Total Depth (measured)	Total Depth (historical)	Ref Point TOC/TOB		
EF-8	10:15	4 IN	—	—	74.40	—	244	TOC		
RL-1	1116	5 IN	—	—	115.92	—	124	TOC		

Purging And Sampling Data Sheet

Job#: 1350.15	**Sampler:** J Kerns	**Client:** Montgomery & Associates
Well ID: RL-1	**Date** (DDOct2012): 13 MAY 2013	**Site:** Rio Algom Mining, Lisbon, UT
Weather Conditions: PARTLY CLOUDY		**Sampler Signature:**
Well diam: 1/4" 1" 2" 3" 4" 6" Other: 5"		**DTW:** 115.92 **Total Depth:** 124
Purge equip: ES - diam: (Bladder) Peri Waterra Positive Air Displacement (Ext. System)		
disp bailer teflon bailer other:	**Tubing:** OD: New (Dedicated) NA	
Purge method: 3-5 Case Volume (Micro/Low-Flow) Extraction Other:		
Pump depth/ intake: 122	**Multipliers:** 1"= 0.04 2"= 0.16 3"= 0.37 4"= 0.65 5"=1.02 6"= 1.47 Radius² X 0.163	
(TD - DTW X Multiplier = 1 Volume	80% Recovery (TD - DTW X 0.20 + DTW)	

1 Volume = ____ X ____ = ____ (Total Purge) 80%= ____

Time	Temp (°C / °F)	pH	SP Cond (mS / µS)	Turbidity (NTU)	Purge Rate (gal or mL / min)	Volume Removed (gal / L)	DO (mg/l)	ORP (mv)	DTW	Notes
1021	13.3	6.93	9816	3	250	1.0	8.88	89.5	116.07	
1024	13.2	6.99	10161	3	250	1.75	7.08	90.9	116.12	
1027	15.0	6.92	10173	3	100	2.05	6.72	91.7	116.14	
1031	15.4	6.92	10297	3	100	2.35	6.52	90.7	116.12	
1034	15.3	6.92	10334	1	100	2.65	6.50	90.5	116.12	
1137	15.2	6.93	10355	1	100	2.95	6.61	90.2	116.12	
1140	15.1	6.94	10317	1	100	3.25	6.46	89.8	116.12	
1143	15.3	6.94	10354	1	100	3.55	6.61	89.7	116.12	

Did well dewater? YES (NO)	Total volume removed: 3.55 (gal / L)	
Sample method: Disp Bailer Hydrasleeve New Tubing Ext. Port Other: Dedicated tubing		
Sample date: 13 MAY 2013	Sample time: 1145	DTW at sample: 116.12
Sample ID: 10407	Lab: Energy Labs	Number of bottles: 2
Analysis: 500 ml NP poly - Alkalinity, Cl, SO4, TDS, EC, pH 250 ml HNO3 poly *field filtered - Dissolved Metals		
Equipment blank ID @	Field blank ID @	
Duplicate ID:	Pre-purge DO:	Post purge DO:
$Fe2^+$:	Pre-purge ORP:	Post purge ORP:
NAPL depth:	Volume of NAPL:	Volume removed: ml

Purging And Sampling Data Sheet

Job#: 1350.15	**Sampler:** J Kerns	**Client:** Montgomery & Associates
Well ID: EF-8	**Date** (DDOct2012): 13 MAY 2013	**Site:** Rio Algom Mining, Lisbon, UT
Weather Conditions: PARTLY CLOUDY		**Sampler Signature:**
Well diam: 1/4" 1" 2" 3" (4") 6" Other:		**DTW:** 74.40 **Total Depth:** 244
Purge equip: ES - diam: (Bladder) Peri Waterra Positive Air Displacement (Ext. System)		
disp bailer teflon bailer other:	**Tubing:** OD: New (Dedicated) NA	
Purge method: 3-5 Case Volume (Micro/Low-Flow) Extraction Other:		
Pump depth/ intake: 229	**Multipliers:** 1"= 0.04 2"= 0.16 3"= 0.37 4"= 0.65 5"=1.02 6"= 1.47 Radius² X 0.163	
(TD - DTW X Multiplier = 1 Volume	80% Recovery (TD - DTW X 0.20 + DTW)	

1 Volume = ____ X ____ = ____ (Total Purge) 80%=____

Time	Temp (°C / °F)	pH	SP Cond (mS / µS)	Turbidity (NTU)	Purge Rate (gal or mL/ min)	Volume Removed (gal / L)	DO (mg/l)	ORP (mv)	DTW	Notes
1023	16.1	6.07	1892	2	100	1.0	7.47	134.7	74.43	
1026	15.8	6.60	1918	2	100	1.3	7.00	123.4	74.43	
1029	16.1	6.77	1944	3	100	1.6	6.97	116.8	74.45	
1032	15.9	6.90	1959	3	100	1.9	6.64	113.6	74.45	
1035	15.9	7.00	1970	3	100	2.2	6.14	109.1	74.44	
1038	15.7	7.04	1970	3	100	2.5	6.11	106.9	74.44	
1041	15.7	7.08	1970	2	100	2.8	6.41	104.8	74.44	
1044	15.7	7.12	1988	2	100	3.1	6.84	102.0	74.44	
1047	15.6	7.13	1980	2	100	3.4	6.95	101.0	74.44	

Did well dewater? YES (NO) Total volume removed: 3.4 (gal / (L))

Sample method: Disp Bailer Hydrasleeve New Tubing Ext. Port Other: Dedicated tubing

Sample date: 13MAY2013	Sample time: 1050	DTW at sample: 74.44
Sample ID: 6406	Lab: Energy Labs	Number of bottles: 2
Analysis: 500 ml NP poly - Alkalinity, Cl, SO4, TDS, EC, pH	250 ml HNO3 poly *field filtered - Dissolved Metals	
Equipment blank ID @	Field blank ID @	
Duplicate ID:	Pre-purge DO:	Post purge DO:
$Fe2^{+}$:	Pre-purge ORP:	Post purge ORP:
NAPL depth:	Volume of NAPL:	Volume removed: ml

ANALYTICAL SUMMARY REPORT

May 23, 2013

Rio Algom Mining Corporation LLC
Hwy 605 and 509
Grants, NM 87020

Workorder No.: C13050496 Quote ID: C3636 - Groundwater

Project Name: Lisbon, UT Facility

Energy Laboratories, Inc. Casper WY received the following 2 samples for Rio Algom Mining Corporation LLC on 5/14/2013 for analysis.

Sample ID	Client Sample ID	Collect Date	Receive Date	Matrix	Test
C13050496-001	6406	05/13/13 10:50	05/14/13	Aqueous	Metals by ICP/ICPMS, Dissolved Alkalinity QA Calculations Conductivity E300.0 Anions pH Solids, Total Dissolved Solids, Total Dissolved - Calculated
C13050496-002	6407	05/13/13 11:45	05/14/13	Aqueous	Same As Above

The results as reported relate only to the item(s) submitted for testing. The analyses presented in this report were performed at Energy Laboratories, Inc., 2393 Salt Creek Hwy., Casper, WY 82601, unless otherwise noted. Radiochemistry analyses were performed at Energy Laboratories, Inc., 2325 Kerzell Lane, Casper, WY 82601, unless otherwise noted. Any exceptions or problems with the analyses are noted in the Laboratory Analytical Report, the QA/QC Summary Report, or the Case Narrative.

If you have any questions regarding these test results, please call.

Report Approved By:

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility
Lab ID: C13050496-001
Client Sample ID 6406

Report Date: 05/23/13
Collection Date: 05/13/13 10:50
DateReceived: 05/14/13
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Carbonate as CO3	ND	mg/L		5		A2320 B	05/14/13 15:56 / jba
Bicarbonate as HCO3	396	mg/L		5		A2320 B	05/14/13 15:56 / jba
Calcium	213	mg/L		1		E200.7	05/22/13 01:03 / sf
Chloride	202	mg/L		1		E300.0	05/15/13 19:10 / wc
Magnesium	56	mg/L		1		E200.7	05/22/13 01:03 / sf
Potassium	5	mg/L		1		E200.7	05/22/13 01:03 / sf
Sodium	162	mg/L		1		E200.7	05/22/13 01:03 / sf
Sulfate	444	mg/L	D	4		E300.0	05/15/13 19:10 / wc
PHYSICAL PROPERTIES							
Conductivity @ 25 C	2030	umhos/cm		1		A2510 B	05/14/13 16:54 / jz
pH	7.62	s.u.	H	0.01		A4500-H B	05/14/13 16:54 / jz
Solids, Total Dissolved TDS @ 180 C	1400	mg/L		20		A2540 C	05/14/13 16:53 / jz
METALS - DISSOLVED							
Arsenic	0.038	mg/L		0.001		E200.8	05/17/13 23:36 / clm
Iron	ND	mg/L		0.03		E200.7	05/22/13 01:03 / sf
Molybdenum	ND	mg/L		0.01		E200.8	05/17/13 23:36 / clm
Selenium	0.013	mg/L		0.001		E200.8	05/17/13 23:36 / clm
Uranium	0.660	mg/L		0.0003		E200.8	05/17/13 23:36 / clm
DATA QUALITY							
A/C Balance (± 5)	1.16	%				A1030 E	05/22/13 14:14 / kbh
Anions	21.9	meq/L				A1030 E	05/22/13 14:14 / kbh
Cations	22.4	meq/L				A1030 E	05/22/13 14:14 / kbh
Solids, Total Dissolved Calculated	1300	mg/L				A1030 E	05/22/13 14:14 / kbh
TDS Balance (0.80 - 1.20)	1.06					A1030 E	05/22/13 14:14 / kbh

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
H - Analysis performed past recommended holding time.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility
Lab ID: C13050496-002
Client Sample ID 6407

Report Date: 05/23/13
Collection Date: 05/13/13 11:45
DateReceived: 05/14/13
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Carbonate as CO3	ND	mg/L		5		A2320 B	05/14/13 16:06 / jba
Bicarbonate as HCO3	1290	mg/L		5		A2320 B	05/14/13 16:06 / jba
Calcium	590	mg/L		1		E200.7	05/22/13 01:20 / sf
Chloride	678	mg/L	D	10		E300.0	05/15/13 19:26 / wc
Magnesium	190	mg/L		1		E200.7	05/22/13 01:20 / sf
Potassium	20	mg/L		1		E200.7	05/22/13 01:20 / sf
Sodium	2160	mg/L	D	2		E200.7	05/22/13 01:20 / sf
Sulfate	4490	mg/L	D	40		E300.0	05/15/13 19:26 / wc
PHYSICAL PROPERTIES							
Conductivity @ 25 C	10500	umhos/cm		1		A2510 B	05/14/13 16:57 / jz
pH	7.35	s.u.	H	0.01		A4500-H B	05/14/13 16:57 / jz
Solids, Total Dissolved TDS @ 180 C	9120	mg/L		100		A2540 C	05/14/13 16:53 / jz
METALS - DISSOLVED							
Arsenic	0.009	mg/L		0.001		E200.8	05/17/13 23:49 / clm
Iron	ND	mg/L		0.03		E200.7	05/22/13 01:20 / sf
Molybdenum	12.1	mg/L		0.01		E200.8	05/17/13 23:49 / clm
Selenium	0.080	mg/L	D	0.003		E200.8	05/17/13 23:49 / clm
Uranium	49.1	mg/L	D	0.001		E200.8	05/17/13 23:49 / clm
DATA QUALITY							
A/C Balance (± 5)	1.43	%				A1030 E	05/22/13 14:14 / kbh
Anions	136	meq/L				A1030 E	05/22/13 14:14 / kbh
Cations	139	meq/L				A1030 E	05/22/13 14:14 / kbh
Solids, Total Dissolved Calculated	8900	mg/L				A1030 E	05/22/13 14:14 / kbh
TDS Balance (0.80 - 1.20)	1.03					A1030 E	05/22/13 14:14 / kbh

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
H - Analysis performed past recommended holding time.

QA/QC Summary Report

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Report Date: 05/23/13
Project: Lisbon, UT Facility
Work Order: C13050496

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: A2320 B										Batch: R173574
Sample ID: MBLK	3	Method Blank				Run: MANTECH_130514A				05/14/13 14:02
Alkalinity, Total as CaCO3		3	mg/L	2						
Carbonate as CO3		ND	mg/L	1						
Bicarbonate as HCO3		4	mg/L	1						
Sample ID: LCS_130315		Laboratory Control Sample				Run: MANTECH_130514A				05/14/13 14:17
Alkalinity, Total as CaCO3		258	mg/L	5.0	102	90	110			
Sample ID: C13050449-001ADUP	3	Sample Duplicate				Run: MANTECH_130514A				05/14/13 14:34
Alkalinity, Total as CaCO3		139	mg/L	5.0				1.2	10	
Carbonate as CO3		15.6	mg/L	5.0				7.8	10	
Bicarbonate as HCO3		138	mg/L	5.0				0.3	10	
Sample ID: C13050458-001AMS		Sample Matrix Spike				Run: MANTECH_130514A				05/14/13 14:49
Alkalinity, Total as CaCO3		423	mg/L	5.0	101	80	120			

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

QA/QC Summary Report

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC **Report Date:** 05/23/13

Project: Lisbon, UT Facility **Work Order:** C13050496

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: A2510 B										Batch: R173530
Sample ID: SC 2ND 1413		Laboratory Control Sample				Run: PHSC_101-C_130514A				05/14/13 09:16
Conductivity @ 25 C		1450	umhos/cm	1.0	103	90	110			
Sample ID: MBLK		Method Blank				Run: PHSC_101-C_130514A				05/14/13 09:19
Conductivity @ 25 C		3	umhos/cm	0.7						
Sample ID: C13050496-002ADUP		Sample Duplicate				Run: PHSC_101-C_130514A				05/14/13 17:00
Conductivity @ 25 C		10400	umhos/cm	1.0				0.5	10	

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

QA/QC Summary Report

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Report Date: 05/23/13
Project: Lisbon, UT Facility
Work Order: C13050496

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: A2540 C									Batch: TDS130514A	
Sample ID: MB-1_130514A		Method Blank				Run: BAL-19_130514A			05/14/13 16:48	
Solids, Total Dissolved TDS @ 180 C		ND	mg/L	10						
Sample ID: LCS-2_130514A		Laboratory Control Sample				Run: BAL-19_130514A			05/14/13 16:48	
Solids, Total Dissolved TDS @ 180 C		1980	mg/L	20	99	90	110			
Sample ID: C13050496-001A DUP		Sample Duplicate				Run: BAL-19_130514A			05/14/13 16:53	
Solids, Total Dissolved TDS @ 180 C		1400	mg/L	20				0.0	5	
Sample ID: C13050496-002A MS		Sample Matrix Spike				Run: BAL-19_130514A			05/14/13 16:54	
Solids, Total Dissolved TDS @ 180 C		18900	mg/L	100	98	90	110			

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

QA/QC Summary Report

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Report Date: 05/23/13
Project: Lisbon, UT Facility
Work Order: C13050496

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: A4500-H B									Analytical Run: PHSC_101-C_130514A	
Sample ID: pH 6.86	Initial Calibration Verification Standard								05/14/13 09:03	
pH		6.84	s.u.	0.010	100	98	102			
Method: A4500-H B									Batch: R173530	
Sample ID: C13050496-002ADUP	Sample Duplicate					Run: PHSC_101-C_130514A			05/14/13 17:00	
pH		7.34	s.u.	0.010				0.1	3	

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

QA/QC Summary Report

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC **Report Date:** 05/23/13

Project: Lisbon, UT Facility **Work Order:** C13050496

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E200.7									Analytical Run: ICP4-C_130521A	
Sample ID: ICV	5	Initial Calibration Verification Standard							05/21/13 14:47	
Calcium		50.6	mg/L	0.50	101	95	105			
Iron		5.07	mg/L	0.030	101	95	105			
Magnesium		50.4	mg/L	0.50	101	95	105			
Potassium		50.7	mg/L	0.50	101	95	105			
Sodium		51.1	mg/L	0.50	102	95	105			
Sample ID: ICSA	5	Interference Check Sample A							05/21/13 15:01	
Calcium		459	mg/L	0.50	92	80	120			
Iron		180	mg/L	0.030	90	80	120			
Magnesium		498	mg/L	0.50	100	80	120			
Potassium		0.0528	mg/L	0.50						
Sodium		0.431	mg/L	0.50						
Sample ID: ICSAB	5	Interference Check Sample AB							05/21/13 15:05	
Calcium		458	mg/L	0.50	92	80	120			
Iron		178	mg/L	0.030	89	80	120			
Magnesium		497	mg/L	0.50	99	80	120			
Potassium		0.0504	mg/L	0.50						
Sodium		0.165	mg/L	0.50						
Method: E200.7										Batch: R173873
Sample ID: MB-130521A	5	Method Blank				Run: ICP4-C_130521A			05/21/13 15:23	
Calcium		ND	mg/L	0.02						
Iron		ND	mg/L	0.002						
Magnesium		0.02	mg/L	0.01						
Potassium		0.06	mg/L	0.04						
Sodium		ND	mg/L	0.2						
Sample ID: LFB-130521A	5	Laboratory Fortified Blank				Run: ICP4-C_130521A			05/21/13 15:27	
Calcium		47.8	mg/L	0.50	96	85	115			
Iron		0.954	mg/L	0.030	95	85	115			
Magnesium		47.8	mg/L	0.50	95	85	115			
Potassium		48.7	mg/L	0.50	97	85	115			
Sodium		48.0	mg/L	0.50	96	85	115			
Sample ID: C13050248-003BMS2	5	Sample Matrix Spike				Run: ICP4-C_130521A			05/22/13 01:35	
Calcium		678	mg/L	1.0	84	70	130			
Iron		4.75	mg/L	0.030	93	70	130			
Magnesium		386	mg/L	1.0	92	70	130			
Potassium		252	mg/L	1.0	94	70	130			
Sodium		438	mg/L	1.0	90	70	130			
Sample ID: C13050248-003BMSD	5	Sample Matrix Spike Duplicate				Run: ICP4-C_130521A			05/22/13 01:39	
Calcium		698	mg/L	1.0	91	70	130	2.9	20	
Iron		4.89	mg/L	0.030	96	70	130	3.0	20	
Magnesium		397	mg/L	1.0	96	70	130	2.9	20	
Potassium		270	mg/L	1.0	101	70	130	6.9	20	
Sodium		461	mg/L	1.0	98	70	130	5.1	20	

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

QA/QC Summary Report

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC **Report Date:** 05/23/13

Project: Lisbon, UT Facility **Work Order:** C13050496

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E200.8									Analytical Run: ICPMS2-C_130517A	
Sample ID: ICV	4	Initial Calibration Verification Standard							05/17/13 23:14	
Arsenic		0.0532	mg/L	0.0010	106	90	110			
Molybdenum		0.0523	mg/L	0.0010	105	90	110			
Selenium		0.0516	mg/L	0.0010	103	90	110			
Uranium		0.0521	mg/L	0.00030	104	90	110			
Method: E200.8									Batch: R173752	
Sample ID: LRB	4	Method Blank				Run: ICPMS2-C_130517A			05/17/13 10:40	
Arsenic		ND	mg/L	0.00010						
Molybdenum		ND	mg/L	4E-05						
Selenium		ND	mg/L	0.0002						
Uranium		ND	mg/L	1E-05						
Sample ID: LFB	4	Laboratory Fortified Blank				Run: ICPMS2-C_130517A			05/17/13 10:43	
Arsenic		0.0520	mg/L	0.0010	104	85	115			
Molybdenum		0.0497	mg/L	0.0010	99	85	115			
Selenium		0.0513	mg/L	0.0010	103	85	115			
Uranium		0.0518	mg/L	0.00030	104	85	115			
Sample ID: C13050496-001BMS4	4	Sample Matrix Spike				Run: ICPMS2-C_130517A			05/17/13 23:40	
Arsenic		0.145	mg/L	0.0010	107	70	130			
Molybdenum		0.116	mg/L	0.0010	107	70	130			
Selenium		0.111	mg/L	0.0010	98	70	130			
Uranium		0.789	mg/L	0.00030		70	130			A
Sample ID: C13050496-001BMSD	4	Sample Matrix Spike Duplicate				Run: ICPMS2-C_130517A			05/17/13 23:42	
Arsenic		0.149	mg/L	0.0010	111	70	130	2.3	20	
Molybdenum		0.119	mg/L	0.0010	110	70	130	2.8	20	
Selenium		0.116	mg/L	0.0010	103	70	130	4.5	20	
Uranium		0.801	mg/L	0.00030		70	130	1.6	20	A

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

A - The analyte level was greater than four times the spike level. In accordance with the method % recovery is not calculated.

QA/QC Summary Report

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC **Report Date:** 05/23/13

Project: Lisbon, UT Facility **Work Order:** C13050496

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E300.0										Batch: R173683
Sample ID: ICB-051513	2	Method Blank				Run: IC2-C_130515A				05/15/13 13:47
Chloride		ND	mg/L	0.03						
Sulfate		0.08	mg/L	0.07						
Sample ID: LFB-051513	2	Laboratory Fortified Blank				Run: IC2-C_130515A				05/15/13 14:02
Chloride		10.2	mg/L	1.0	102	90	110			
Sulfate		40.5	mg/L	1.0	101	90	110			
Sample ID: C13050497-001BMS	2	Sample Matrix Spike				Run: IC2-C_130515A				05/15/13 20:28
Chloride		46.1	mg/L	1.0	96	90	110			
Sulfate		280	mg/L	1.7	94	90	110			
Sample ID: C13050497-001BMSD	2	Sample Matrix Spike Duplicate				Run: IC2-C_130515A				05/15/13 20:43
Chloride		46.3	mg/L	1.0	97	90	110	0.4	20	
Sulfate		281	mg/L	1.7	95	90	110	0.3	20	

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

Standard Reporting Procedures

Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH, Dissolved Oxygen and Residual Chlorine, are qualified as being analyzed outside of recommended holding time.

Solid/soil samples are reported on a wet weight basis (as received) unless specifically indicated. If moisture corrected, data units are typically noted as –dry. For agricultural and mining soil parameters/characteristics, all samples are dried and ground prior to sample analysis.

Workorder Receipt Checklist

Rio Algom Mining Corporation LLC C13050496

Login completed by: Kerri Schroeder
Date Received: 5/14/2013
Reviewed by: BL2000\kmiller
Received by: th
Reviewed Date: 5/15/2013
Carrier name: NDA

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on shipping container(s)/cooler(s)?	Yes ☐	No ☐	Not Present ☑
Custody seals intact on all sample bottles?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time? (Exclude analyses that are considered field parameters such as pH, DO, Res Cl, Sulfite, Ferrous Iron, etc.)	Yes ☑	No ☐	
Temp Blank received in all shipping container(s)/cooler(s)?	Yes ☐	No ☑	Not Applicable ☐
Container/Temp Blank temperature:	4.6°C On Ice		
Water - VOA vials have zero headspace?	Yes ☐	No ☐	No VOA vials submitted ☑
Water - pH acceptable upon receipt?	Yes ☑	No ☐	Not Applicable ☐

Contact and Corrective Action Comments:

None

Chain of Custody and Analytical Request Record

Page 1 of 1

PLEASE PRINT- Provide as much information as possible.

Company Name: Rio Algom Mining Corp	Project Name, PWS, Permit, Etc.: Lisbon, UT Facility	Sample Origin State: UT	EPA/State Compliance: Yes ☒ No ☐
Report Mail Address: Montgomery and Associates. Results retrieved from Energy Source	Contact Name: John Laney; Phone/Fax: (520) 425-2219; Email: jlaney@cmontgomery.com		Sampler: (Please Print) J.Kerns
Invoice Address: Email invoice to Gail, PO Box 218, Grants, NM 87020	Invoice Contact & Phone: Gail Alexander (505) 287-8851	Purchase Order:	Quote/Bottle Order: C3636

Special Report/Formats – ELI must be notified prior to sample submittal for the following:

- ☐ DW
- ☐ GSA
- ☐ POTW/WWTP
- ☐ State: _____
- ☐ Other: _____
- ☐ A2LA
- ☐ EDD/EDT (Electronic Data) Format: _____
- ☐ LEVEL IV
- ☐ NELAC

Number of Containers; Sample Type: A W S V B O; Air Water Soils/Solids Vegetation Bioassay Other

ANALYSIS REQUESTED

SEE ATTACHED

Normal Turnaround (TAT)

RUSH

Contact ELI prior to **RUSH** sample submittal for charges and scheduling – See Instruction Page

Comments: Metal Samples were field filtered & preserved w/ HNO_3 In Field

Shipped by: Jkerns/FedEx

Cooler ID(s): Client

Receipt Temp: 4.6 °C/TR-2

On Ice: (Yes) No melted

Custody Seal Y (N) Intact Y N Signature Match Y N

	SAMPLE IDENTIFICATION (Name, Location, Interval, etc.)	Collection Date	Collection Time	MATRIX	C3636
1	6406	13MAY2013	1050	WATER	X
2	6407	13MAY2013	1145	WATER	X
3					
4					
5					
6					
7					
8					
9					
10					

C1305049 6

LABORATORY USE ONLY

Custody Record MUST be Signed

	Relinquished by (print)	Date/Time	Signature	Received by (print)	Date/Time	Signature
	Josh Kerns	13MAY2013				

Sample Disposal: Return to Client: _____ Lab Disposal: _____

Received by Laboratory: Date/Time: 5-14-13/920 Signature:

In certain circumstances, samples submitted to Energy Laboratories, Inc. may be subcontracted to other certified laboratories in order to complete the analysis requested. This serves as notice of this possibility. All sub-contract data will be clearly notated on your analytical report.

Visit our web site at www.energylab.com for additional information, downloadable fee schedule, forms, and links.

Chain of Custody and Analytical Request Record

ENERGY LABORATORIES

Page 1 of 1

PLEASE PRINT- Provide as much information as possible.

Company Name: Rio Algom Mining Corp	Project Name, PWS, Permit, Etc.: Lisbon, UT Facility	Sample Origin State: UT	EPA/State Compliance: Yes ☐ No ☐
Report Mail Address: Montgomery and Associates. Results retrieved from Energy Source	Contact Name: John Laney; Phone/Fax: (520) 425-2219; Email: jlaney@clmontgomery.com		Sampler: (Please Print) Josh Kerns
Invoice Address: Email invoice to Gail, PO Box 218, Grants, NM 87020	Invoice Contact & Phone: Gail Alexander (505) 287-8851	Purchase Order:	Quote/Bottle Order: C3636

Special Report/Formats – ELI must be notified prior to sample submittal for the following:

- ☐ DW
- ☐ GSA
- ☐ POTW/WWTP
- ☐ State: _____
- ☐ Other: _____
- ☐ A2LA
- ☐ EDD/EDT (Electronic Data) Format: _____
- ☐ LEVEL IV
- ☐ NELAC

Number of Containers; Sample Type: A W S V B O; Air Water Soils/Solids Vegetation Bioassay Other

ANALYSIS REQUESTED

SAMPLE IDENTIFICATION (Name, Location, Interval, etc.)	Collection Date	Collection Time	MATRIX	C3636	SEE ATTACHED	Normal Turnaround (TAT)
1 6452	09JUN2013	1025	Water	X		
2 6451	09JUN2013	0920	Water	X		
3 6453	09JUN2013	1150	Water	X		
4						
5						
6						
7						
8						
9						
10						

RUSH

Contact ELI prior to RUSH sample submittal for charges and scheduling – See Instruction Page

Comments:

Metals samples were filtered in field.

Added extra HNO3 to samples. Reacted with w/ HNO3

Shipped by: Fed Ex

Cooler ID(s):

Receipt Temp: ____ °C

On Ice: Yes No

Custody Seal Intact Signature Match: Y N

LABORATORY USE ONLY

Custody Record MUST be Signed

Relinquished by (print)	Date/Time	Signature	Received by (print)	Date/Time	Signature
Josh Kerns	11JUN2013				
Relinquished by (print)	Date/Time	Signature	Received by (print)	Date/Time	Signature
			Received by Laboratory:	Date/Time	Signature

Sample Disposal: Return to Client: _____ Lab Disposal: _____

In certain circumstances, samples submitted to Energy Laboratories, Inc. may be subcontracted to other certified laboratories in order to complete the analysis requested. This serves as notice of this possibility. All sub-contract data will be clearly notated on your analytical report.

Visit our web site at www.energylab.com for additional information, downloadable fee schedule, forms, and links

Confluence Environmental, Inc

Equipment Calibration Log

Equipment make/model	Equipment ID/ serial number	Date	Time	Calibration Standards	Equipment Reading	Equipment Calibrated	Temp (°C / °F)	Tech init.	Comments
YSI - Pro Series	11B100249	09 June 2013	0830	pH cond. 4.0/7.0/10.0	4.0/7.0/10.0	✓✓✓	23.4	JK	
				cond. 1413	1413	✓	25.2	JK	
				ORP 231	231	✓	25.0	JK	
				D.O. 100%	78%	✓	—	JK	

Notes/comments:

Water Level Measurements

Job Number: 1350.15 Date: 09 JUNE 2013 Client: Montgomery & Associates

Site: Rio Algom Mining, Lisbon UT

Well I.D.	Time	Dia	Depth to NAPL	Thickness of NAPL	Depth to water (DTW)	Total Depth (measured)	Total Depth (historical)	Ref Point TOC/TOB		
RL-1	0840	5 IN			115.91		124.00	TOC		
EF-8	0950	4 IN			74.33		244.00	TOC		
OW-UT-9	1100	6 in			122.95		142.00	TOC		

Well Maintenance Inspection Form

Client: Montgomery & Asso Site: Rio Algom - Lisbon UT Date: 09JUN2015

Job #: 1350.15 Technician: Page 1 of 1

Inspection Point	Well Inspected - No Corrective Action Required	Entry Indicates Deficiency												Well Not Inspected (explain in notes)	Notes (Note any repairs made while on site)
		Cap non-functional	Lock non-functional	Lock missing	Bolts missing (# missing / # total bolts)	Tabs stripped (# stripped / # total tabs.)	Tabs broken (# broken / # of total tabs)	Annular seal incomplete	Apron damaged	Rim / Lid broken	Trip Hazard	Below Grade	Other (explain in notes)		
RL-1	X														
EF-8	X														
OW-MT-9	X														

Notes:

Repair codes: **rt**=retap/ bolts added or replaced **as**=annular seal repair.

Confluence Environmental, Inc 3308 El Camino Ave, Suite 300 #148, Sacramento CA, 95821, 916-760-7641

Purging And Sampling Data Sheet

Job#: 1350.15	**Sampler:** J Kerns	**Client:** Montgomery & Associates
Well ID: EF-8	**Date** (DDOct2012): 09 JUNE 2013	**Site:** Rio Algom Mining, Lisbon, UT
Weather Conditions: SUNNY / WARM / CLEAR	**Sampler Signature:**	
Well diam: 1/4" 1" 2" 3" (4") 6" Other:	**DTW:** 74.33 **Total Depth:** 244	
Purge equip: ES - diam: (Bladder) Peri Waterra Positive Air Displacement (Ext. System)		
disp bailer teflon bailer other:	**Tubing:** OD: New Dedicated NA	
Purge method: 3-5 Case Volume (Micro/Low-Flow) Extraction Other:		
Pump depth/ intake: 229	**Multipliers:** 1"= 0.04 2"= 0.16 3"= 0.37 4"= 0.65 5"=1.02 6"= 1.47 Radius² X 0.163	
(TD - DTW X Multiplier = 1 Volume	80% Recovery (TD - DTW X 0.20 + DTW)	

1 Volume = ____ X ____ = ____ (Total Purge) 80%= ____

Time	Temp (°C / °F)	pH	SP Cond (mS / µS)	Turbidity (NTU)	Purge Rate (gal or (mL) / min)	Volume Removed (gal / L)	DO (mg/l)	ORP (mv)	DTW	Notes
0955	15.4	8.47	1746	0.4	200	1.0	8.75	17.2	74.45	
0958	15.4	8.32	1771	0.5	200	1.6	7.92	24.8	74.46	
1001	15.2	8.25	1775	0.5	200	2.2	7.81	29.0	74.45	
1004	15.4	8.17	2149	0.6	200	2.8	6.93	35.9	74.45	
1007	15.5	8.11	2261	0.6	200	3.4	7.61	36.0	74.45	
1010	15.0	8.07	1920	0.2	200	4.0	8.36	39.1	74.45	
1013	15.3	8.02	2002	0.3	200	4.6	8.55	39.4	74.45	
1016	15.3	7.98	1795	0.7	200	5.2	8.52	38.6	74.45	
1019	14.8	7.96	2306	0.4	200	5.8	8.84	34.0	74.45	
1022	14.8	7.94	2325	0.3	200	6.4	8.87	30.8	74.45	
1025	14.7	7.93	2322	0.1	200	7.0	8.87	29.4	74.45	

Did well dewater? YES (NO)	Total volume removed: 7.0 (gal / (L))		
Sample method: Disp Bailer Hydrasleeve New Tubing Ext. Port Other: Dedicated Tubing			
Sample date: 09 JUN 2013	Sample time: 1025	DTW at sample: 74.45	
Sample ID: 6452	Lab: Energy Labs	Number of bottles: 2	
Analysis: 500 ml NP poly - Alkalinity, Cl, SO4, TDS, EC, pH 250 ml HNO3 poly *field filtered - Dissolved Metals			
Equipment blank ID @	Field blank ID @		
Duplicate ID:	Pre-purge DO:	Post purge DO:	
$Fe2^{+}$:	Pre-purge ORP:	Post purge ORP:	
NAPL depth:	Volume of NAPL:	Volume removed: ml	

Purging And Sampling Data Sheet

Job#: 1350.15	**Sampler:** J Kerns	**Client:** Montgomery & Associates
Well ID: RL-1	**Date** (DDOct2012): 09 JUNE 2013	**Site:** Rio Algom Mining, Lisbon, UT
Weather Conditions: Sunny/warm, clear	**Sampler Signature:**	
Well diam: 1/4" 1" 2" 3" 4" 6" Other: 5"	**DTW:** 115.91	**Total Depth:** 124
Purge equip: ES - diam: (Bladder) Peri Waterra Positive Air Displacement Ext. System		
disp bailer teflon bailer other:	**Tubing:** OD: New (Dedicated) NA	
Purge method: 3-5 Case Volume (Micro/Low-Flow) Extraction Other:		
Pump depth/ intake: ~~NA~~ 122	**Multipliers:** 1"= 0.04 2"= 0.16 3"= 0.37 4"= 0.65 5"=1.02 6"= 1.47 Radius² X 0.163	
(TD - DTW X Multiplier = 1 Volume	80% Recovery (TD - DTW X 0.20 + DTW)	

1 Volume = ___ X ___ = ___ (Total Purge) 80%= ___

Time	Temp (°C) °F)	pH	SP Cond (mS (µS)	Turbidity (NTU)	Purge Rate (gal or (mL) min)	Volume Removed (gal (L))	DO (mg/l)	ORP (mv)	DTW	Notes
855	13.6	8.56	9044	4.10	200	1.0	8.96	57.9	116.05	
858	13.3	8.24	9189	1.3	200	1.6	8.34	57.6	116.12	
901	13.4	8.07	9248	1.3	200	2.2	8.32	58.1	116.14	
904	13.3	7.87	9264	0.9	200	2.8	8.19	57.0	116.16	
907	13.6	7.76	9260	0.6	200	3.4	7.70	73.6	116.17	
910	14.4	7.68	9267	0.4	200	4.0	7.55	80.1	116.17	
913	14.4	7.60	9267	0.3	200	4.6	7.70	74.5	116.16	
916	14.1	7.56	9279	0.4	200	5.2	7.66	65.5	116.16	
919	14.2	7.51	9283	0.2	200	5.8	7.60	73.8	116.16	

Did well dewater? YES (NO)	Total volume removed: 5.8 (gal (L))		
Sample method: Disp Bailer Hydrasleeve New Tubing Ext. Port Other: Dedicated Tubing			
Sample date: 09 JUN 2013	Sample time: 0920	DTW at sample: 116.16	
Sample ID: 6451	Lab: Energy Labs	Number of bottles: 2	
Analysis: 500 ml NP poly - Alkalinity, Cl, SO4, TDS, EC, pH 250 ml HNO3 poly *field filtered - Dissolved Metals			
Equipment blank ID @	Field blank ID @		
Duplicate ID:	Pre-purge DO:	Post purge DO:	
$Fe2^{+}$:	Pre-purge ORP:	Post purge ORP:	
NAPL depth:	Volume of NAPL:	Volume removed: ml	

Purging And Sampling Data Sheet

Job#: 1350.15	**Sampler:** J Kerns	**Client:** Montgomery & Associates
Well ID: OW-UT-9	**Date** (DDOct2012): 09 JUN 2013	**Site:** Rio Algom Mining, Lisbon, UT
Weather Conditions: Warm Sunny		**Sampler Signature:**
Well diam: 1/4" 1" 2" 3" 4" (6") Other:		**DTW:** 122.95 **Total Depth:** 142.00
Purge equip: ES - diam: (Bladder) Peri Waterra Positive Air Displacement Ext. System		
disp bailer teflon bailer other:	**Tubing:** OD: (New) Dedicated NA	
Purge method: 3-5 Case Volume (Micro/Low-Flow) Extraction Other:		
Pump depth/ intake: 131	**Multipliers:** 1"= 0.04 2"= 0.16 3"= 0.37 4"= 0.65 5"=1.02 6"= 1.47 Radius² X 0.163	
(TD - DTW X Multiplier = 1 Volume	80% Recovery (TD - DTW X 0.20 + DTW)	

1 Volume = ____ X ____ = ____ (Total Purge) 80%= ____

Time	Temp (°C/°F)	pH	SP Cond (mS/(uS))	Turbidity (NTU)	Purge Rate (gal or (mL) min)	Volume Removed (gal (L))	DO (mg/l)	ORP (mv)	DTW	Notes
1110	17.3	9.55	26651	2.0	200	1.0	2.55	82.5	123.00	
1113	14.4	9.91	27689	1.6	200	1.6	1.17	56.0	123.05	
1116	14.3	9.99	27661	1.6	200	2.2	0.85	37.1	123.07	
1119	14.2	10.08	27805	1.9	200	2.8	0.80	21.2	123.08	
1122	14.1	10.15	27825	2.2	200	3.4	0.58	7.9	123.09	
1125	14.0	10.20	27879	1.6	200	4.0	0.56	-3.7	123.08	
1128	14.1	10.27	28000	1.8	200	4.6	0.47	-15.0	123.08	
1131	14.0	10.29	27943	1.7	200	5.2	0.49	-18.0	123.08	
1134	13.9	10.31	28039	1.8	200	5.8	0.42	-25.0	123.08	
1137	14.0	10.34	28075	1.6	200	6.4	0.38	-75.1	123.08	
1140	14.1	10.35	28063	1.7	200	7.0	0.39	-86.4	123.08	

Did well dewater? YES (NO)	Total volume removed: 8.2 (gal (L))	
Sample method: Disp Bailer Hydrasleeve (New Tubing) Ext. Port Other: ~~8.2~~ MCK		
Sample date: 09 JUN 2013	Sample time: ~~1140~~ MCK 1150	DTW at sample: 123.08
Sample ID: 6453	Lab: Energy Labs	Number of bottles: (2)
Analysis: 500 ml NP poly - Alkalinity, Cl, SO4, TDS, EC, pH 250 ml HNO3 poly *field filtered - Dissolved Metals		
Equipment blank ID @	Field blank ID @	
Duplicate ID:	Pre-purge DO:	Post purge DO:
$Fe2^{+}$:	Pre-purge ORP:	Post purge ORP:
NAPL depth:	Volume of NAPL:	Volume removed: ml

Purging And Sampling Data Sheet

Job#: 1350.15	**Sampler:** J Kerns	**Client:** Montgomery & Associates
Well ID: OW-UT-9	**Date** (DDOct2012): 09 JUN 2013	**Site:** Rio Algom Mining, Lisbon, UT
Weather Conditions: WARM SUNNY	**Sampler Signature:**	
Well diam: 1/4" 1" 2" 3" 4" 6" Other:	**DTW:** 122.95 **Total Depth:** 142.00	
Purge equip: ES - diam: (Bladder) Peri Waterra Positive Air Displacement Ext. System		
disp bailer teflon bailer other:	**Tubing:** OD: (New) Dedicated NA	
Purge method: 3-5 Case Volume (Micro/Low-Flow) Extraction Other:		
Pump depth/ intake: 131	**Multipliers:** 1"= 0.04 2"= 0.16 3"= 0.37 4"= 0.65 5"=1.02 6"= 1.47 Radius² X 0.163	
(TD - DTW X Multiplier = 1 Volume	80% Recovery (TD - DTW X 0.20 + DTW)	

1 Volume = _____ X _____ = _____ (Total Purge) 80%= _____

Time	Temp (°C / °F)	pH	SP Cond (mS / (S))	Turbidity (NTU)	Purge Rate (gal or (mL) min)	Volume Removed (gal (L))	DO (mg/l)	ORP (mv)	DTW	Notes
1143	14.0	10.37	25147	1.7	200	7.6	0.39	-80.8	123.08	
1146	14.0	10.37	25127	1.7	200	8.2	0.36	-90.2	123.08	
	ADDED	3 VIALS	OF	PRESERVATIVE					pH @ 6.3	

Did well dewater? YES (NO)	Total volume removed: 8.2 (gal (L))	
Sample method: Disp Bailer Hydrasleeve (New Tubing) Ext. Port Other:		
Sample date: 09 JUN 2013	Sample time: 1150	DTW at sample: 123.08
Sample ID: 6453	Lab: Energy Labs	Number of bottles: (2)
Analysis: 500 ml NP poly - Alkalinity, Cl, SO4, TDS, EC, pH 250 ml HNO3 poly *field filtered - Dissolved Metals		
Equipment blank ID @	Field blank ID @	
Duplicate ID:	Pre-purge DO:	Post purge DO:
$Fe2^+$:	Pre-purge ORP:	Post purge ORP:
NAPL depth:	Volume of NAPL:	Volume removed: ml

ANALYTICAL SUMMARY REPORT

June 25, 2013

Rio Algom Mining Corporation LLC
Hwy 605 and 509
Grants, NM 87020

Workorder No.: C13060435 Quote ID: C3636 - Groundwater

Project Name: Lisbon, UT Facility

Energy Laboratories, Inc. Casper WY received the following 3 samples for Rio Algom Mining Corporation LLC on 6/12/2013 for analysis.

Sample ID	Client Sample ID	Collect Date	Receive Date	Matrix	Test
C13060435-001	6452	06/09/13 10:25	06/12/13	Aqueous	Metals by ICP/ICPMS, Dissolved Alkalinity QA Calculations Conductivity E300.0 Anions pH Solids, Total Dissolved Solids, Total Dissolved - Calculated
C13060435-002	6451	06/09/13 9:20	06/12/13	Aqueous	Same As Above
C13060435-003	6453	06/09/13 11:50	06/12/13	Aqueous	Same As Above

The results as reported relate only to the item(s) submitted for testing. The analyses presented in this report were performed at Energy Laboratories, Inc., 2393 Salt Creek Hwy., Casper, WY 82601, unless otherwise noted. Radiochemistry analyses were performed at Energy Laboratories, Inc., 2325 Kerzell Lane, Casper, WY 82601, unless otherwise noted. Any exceptions or problems with the analyses are noted in the Laboratory Analytical Report, the QA/QC Summary Report, or the Case Narrative.

If you have any questions regarding these test results, please call.

Report Approved By:

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility
Lab ID: C13060435-001
Client Sample ID 6452

Report Date: 06/25/13
Collection Date: 06/09/13 10:25
DateReceived: 06/12/13
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Carbonate as CO3	ND	mg/L		5		A2320 B	06/13/13 16:40 / jba
Bicarbonate as HCO3	406	mg/L		5		A2320 B	06/13/13 16:40 / jba
Calcium	218	mg/L		1		E200.7	06/14/13 17:10 / sf
Chloride	213	mg/L		1		E300.0	06/13/13 23:13 / wc
Magnesium	57	mg/L		1		E200.7	06/14/13 17:10 / sf
Potassium	5	mg/L		1		E200.7	06/14/13 17:10 / sf
Sodium	167	mg/L		1		E200.7	06/14/13 17:10 / sf
Sulfate	473	mg/L	D	4		E300.0	06/13/13 23:13 / wc
PHYSICAL PROPERTIES							
Conductivity @ 25 C	1980	umhos/cm		1		A2510 B	06/13/13 12:06 / ab
pH	7.57	s.u.	H	0.01		A4500-H B	06/13/13 12:06 / ab
Solids, Total Dissolved TDS @ 180 C	1400	mg/L		20		A2540 C	06/13/13 14:30 / tmm
METALS - DISSOLVED							
Arsenic	0.040	mg/L		0.001		E200.8	06/17/13 15:47 / clm
Iron	ND	mg/L		0.03		E200.7	06/14/13 17:10 / sf
Molybdenum	ND	mg/L		0.01		E200.7	06/14/13 17:10 / sf
Selenium	0.014	mg/L		0.001		E200.8	06/17/13 15:47 / clm
Uranium	0.687	mg/L		0.0003		E200.8	06/17/13 15:47 / clm
DATA QUALITY							
A/C Balance (± 5)	-0.0582	%				A1030 E	06/19/13 07:09 / kbh
Anions	23.0	meq/L				A1030 E	06/19/13 07:09 / kbh
Cations	23.0	meq/L				A1030 E	06/19/13 07:09 / kbh
Solids, Total Dissolved Calculated	1400	mg/L				A1030 E	06/19/13 07:09 / kbh
TDS Balance (0.80 - 1.20)	1.01					A1030 E	06/19/13 07:09 / kbh

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
H - Analysis performed past recommended holding time.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility
Lab ID: C13060435-002
Client Sample ID 6451

Report Date: 06/25/13
Collection Date: 06/09/13 09:20
DateReceived: 06/12/13
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Carbonate as CO3	ND	mg/L		5		A2320 B	06/13/13 16:49 / jba
Bicarbonate as HCO3	1280	mg/L		5		A2320 B	06/13/13 16:49 / jba
Calcium	584	mg/L		1		E200.7	06/14/13 17:14 / sf
Chloride	689	mg/L	D	10		E300.0	06/13/13 23:30 / wc
Magnesium	197	mg/L		1		E200.7	06/14/13 17:14 / sf
Potassium	20	mg/L		1		E200.7	06/14/13 17:14 / sf
Sodium	2170	mg/L	D	2		E200.7	06/14/13 17:14 / sf
Sulfate	4740	mg/L	D	40		E300.0	06/13/13 23:30 / wc
PHYSICAL PROPERTIES							
Conductivity @ 25 C	10400	umhos/cm		1		A2510 B	06/13/13 12:08 / ab
pH	7.25	s.u.	H	0.01		A4500-H B	06/13/13 12:08 / ab
Solids, Total Dissolved TDS @ 180 C	8620	mg/L		100		A2540 C	06/13/13 14:31 / tmm
METALS - DISSOLVED							
Arsenic	0.005	mg/L	D	0.003		E200.8	06/18/13 16:27 / clm
Iron	0.04	mg/L		0.03		E200.7	06/14/13 17:14 / sf
Molybdenum	11.4	mg/L	D	0.03		E200.7	06/14/13 17:14 / sf
Selenium	0.070	mg/L	D	0.003		E200.8	06/17/13 16:00 / clm
Uranium	44	mg/L	D	3		E200.7	06/14/13 17:14 / sf
DATA QUALITY							
A/C Balance (± 5)	-0.154	%				A1030 E	06/19/13 07:10 / kbh
Anions	141	meq/L				A1030 E	06/19/13 07:10 / kbh
Cations	140	meq/L				A1030 E	06/19/13 07:10 / kbh
Solids, Total Dissolved Calculated	9100	mg/L				A1030 E	06/19/13 07:10 / kbh
TDS Balance (0.80 - 1.20)	0.940					A1030 E	06/19/13 07:10 / kbh

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
H - Analysis performed past recommended holding time.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility
Lab ID: C13060435-003
Client Sample ID 6453

Report Date: 06/25/13
Collection Date: 06/09/13 11:50
DateReceived: 06/12/13
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Carbonate as CO3	6000	mg/L		5		A2320 B	06/13/13 10:28 / jba
Bicarbonate as HCO3	8900	mg/L		5		A2320 B	06/13/13 10:28 / jba
Calcium	3	mg/L		1		E200.7	06/21/13 13:06 / sf
Chloride	1420	mg/L	D	40		E300.0	06/13/13 23:48 / wc
Magnesium	23	mg/L		1		E200.7	06/14/13 17:21 / sf
Potassium	16	mg/L	D	2		E200.7	06/14/13 17:21 / sf
Sodium	13600	mg/L	D	10		E200.7	06/14/13 17:21 / sf
Sulfate	10900	mg/L	D	200		E300.0	06/13/13 23:48 / wc
PHYSICAL PROPERTIES							
Conductivity @ 25 C	36900	umhos/cm		1		A2510 B	06/13/13 12:11 / ab
pH	9.59	s.u.	H	0.01		A4500-H B	06/13/13 12:11 / ab
Solids, Total Dissolved TDS @ 180 C	36000	mg/L		500		A2540 C	06/13/13 14:32 / tmm
METALS - DISSOLVED							
Arsenic	2.68	mg/L	D	0.003		E200.8	06/17/13 16:03 / clm
Iron	0.04	mg/L		0.03		E200.7	06/21/13 13:06 / sf
Molybdenum	47.6	mg/L	D	0.1		E200.7	06/14/13 17:21 / sf
Selenium	0.021	mg/L	D	0.007		E200.8	06/17/13 16:03 / clm
Uranium	83.3	mg/L	D	0.003		E200.8	06/17/13 16:03 / clm
DATA QUALITY							
A/C Balance (± 5)	-1.68	%				A1030 E	06/25/13 07:56 / kbh
Anions	614	meq/L				A1030 E	06/25/13 07:56 / kbh
Cations	594	meq/L				A1030 E	06/25/13 07:56 / kbh
Solids, Total Dissolved Calculated	36000	mg/L				A1030 E	06/25/13 07:56 / kbh
TDS Balance (0.80 - 1.20)	0.990					A1030 E	06/25/13 07:56 / kbh

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
H - Analysis performed past recommended holding time.

QA/QC Summary Report

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC **Report Date:** 06/25/13

Project: Lisbon, UT Facility **Work Order:** C13060435

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: A2320 B										Batch: R174754
Sample ID: MBLK	3	Method Blank				Run: MANTECH_130613A				06/13/13 13:35
Alkalinity, Total as CaCO3		ND	mg/L	2						
Carbonate as CO3		ND	mg/L	1						
Bicarbonate as HCO3		1	mg/L	1						
Sample ID: LCS_130315		Laboratory Control Sample				Run: MANTECH_130613A				06/13/13 13:50
Alkalinity, Total as CaCO3		257	mg/L	5.0	103	90	110			
Sample ID: C13060432-001ADUP	3	Sample Duplicate				Run: MANTECH_130613A				06/13/13 14:05
Alkalinity, Total as CaCO3		41.5	mg/L	5.0				1.4	10	
Carbonate as CO3		ND	mg/L	5.0					10	
Bicarbonate as HCO3		50.6	mg/L	5.0				1.4	10	
Sample ID: C13060434-001AMS		Sample Matrix Spike				Run: MANTECH_130613A				06/13/13 14:24
Alkalinity, Total as CaCO3		1100	mg/L	5.0	100	80	120			
Method: A2320 B										Batch: 130613_1_ALK-W
Sample ID: MBLK1_130613_	3	Method Blank				Run: TTR-ALK_130613A				06/13/13 10:00
Alkalinity, Total as CaCO3		2	mg/L	1						
Carbonate as CO3		ND	mg/L	1						
Bicarbonate as HCO3		3	mg/L	1						
Sample ID: LCS_130315_130613_		Laboratory Control Sample				Run: TTR-ALK_130613A				06/13/13 10:14
Alkalinity, Total as CaCO3		990	mg/L	5.0	99	90	110			
Sample ID: C13060435-003ADUP	3	Sample Duplicate				Run: TTR-ALK_130613A				06/13/13 10:40
Alkalinity, Total as CaCO3		17500	mg/L					0.0114943	10	
Carbonate as CO3		6120	mg/L	5.0				2.0	10	
Bicarbonate as HCO3		8900	mg/L	5.0				0.0	10	
Sample ID: C13060435-003AMS		Sample Matrix Spike				Run: TTR-ALK_130613A				06/13/13 10:49
Alkalinity, Total as CaCO3		20000	mg/L	5.0	106	80	120			

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

QA/QC Summary Report

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC **Report Date:** 06/25/13

Project: Lisbon, UT Facility **Work Order:** C13060435

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: A2510 B										Batch: R174718
Sample ID: MBLK	Method Blank					Run: PHSC_101-C_130613A				06/13/13 09:06
Conductivity @ 25 C		2	umhos/cm	0.7						
Sample ID: SC 2ND 1413	Laboratory Control Sample					Run: PHSC_101-C_130613A				06/13/13 12:00
Conductivity @ 25 C		1380	umhos/cm	1.0	98	90	110			
Sample ID: C13060461-002ADUP	Sample Duplicate					Run: PHSC_101-C_130613A				06/13/13 12:33
Conductivity @ 25 C		410	umhos/cm	1.0				0.0	10	

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

QA/QC Summary Report

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC **Report Date:** 06/25/13

Project: Lisbon, UT Facility **Work Order:** C13060435

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: A2540 C										Batch: TDS130613A
Sample ID: MB-1_130613A		Method Blank				Run: BAL-19_130613B				06/13/13 14:16
Solids, Total Dissolved TDS @ 180 C		ND	mg/L	10						
Sample ID: LCS-2_130613A		Laboratory Control Sample				Run: BAL-19_130613B				06/13/13 14:16
Solids, Total Dissolved TDS @ 180 C		1930	mg/L	20	97	90	110			
Sample ID: C13060435-002A DUP		Sample Duplicate				Run: BAL-19_130613B				06/13/13 14:32
Solids, Total Dissolved TDS @ 180 C		9030	mg/L	100				4.6	5	
Sample ID: C13060435-003A MS		Sample Matrix Spike				Run: BAL-19_130613B				06/13/13 14:32
Solids, Total Dissolved TDS @ 180 C		85300	mg/L	500	99	90	110			

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

QA/QC Summary Report

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC **Report Date:** 06/25/13

Project: Lisbon, UT Facility **Work Order:** C13060435

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: **A4500-H B**									Analytical Run: PHSC_101-C_130613A	
Sample ID: **pH 6.86**	Initial Calibration Verification Standard								06/13/13 08:35	
pH		6.93	s.u.	0.010	101	98	102			
Method: **A4500-H B**									Batch: R174718	
Sample ID: **C13060388-001ADUP**	Sample Duplicate					Run: PHSC_101-C_130613A			06/13/13 09:37	
pH		8.78	s.u.	0.010				0.0	3	

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

QA/QC Summary Report

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC **Report Date:** 06/25/13

Project: Lisbon, UT Facility **Work Order:** C13060435

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E200.7									Analytical Run: ICP2-C_130621B	
Sample ID: ICV	2	Initial Calibration Verification Standard							06/21/13 10:13	
Calcium		49.0	mg/L	0.50	98	95	105			
Iron		5.13	mg/L	0.030	103	95	105			
Sample ID: ICSA	2	Interference Check Sample A							06/21/13 10:41	
Calcium		521	mg/L	0.50	104	80	120			
Iron		192	mg/L	0.030	96	80	120			
Sample ID: ICSAB	2	Interference Check Sample AB							06/21/13 10:45	
Calcium		496	mg/L	0.50	99	80	120			
Iron		190	mg/L	0.030	95	80	120			
Method: E200.7									Batch: R175105	
Sample ID: MB-130621A	2	Method Blank				Run: ICP2-C_130621B			06/21/13 11:09	
Calcium		ND	mg/L	0.06						
Iron		ND	mg/L	0.001						
Sample ID: LFB-130621A	2	Laboratory Fortified Blank				Run: ICP2-C_130621B			06/21/13 11:13	
Calcium		52.6	mg/L	0.50	105	85	115			
Iron		1.01	mg/L	0.030	101	85	115			
Sample ID: C13060174-001CMS2	2	Sample Matrix Spike				Run: ICP2-C_130621B			06/21/13 14:51	
Calcium		129	mg/L	1.0	102	70	130			
Iron		2.03	mg/L	0.030	99	70	130			
Sample ID: C13060174-001CMSD2	2	Sample Matrix Spike Duplicate				Run: ICP2-C_130621B			06/21/13 15:11	
Calcium		126	mg/L	1.0	99	70	130	2.6	20	
Iron		2.01	mg/L	0.030	98	70	130	0.8	20	

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

QA/QC Summary Report

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC **Report Date:** 06/25/13

Project: Lisbon, UT Facility **Work Order:** C13060435

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E200.7								Analytical Run: ICP4-C_130614A		
Sample ID: ICV	7	Initial Calibration Verification Standard							06/14/13 12:52	
Calcium		49.5	mg/L	0.50	99	95	105			
Iron		4.91	mg/L	0.030	98	95	105			
Magnesium		49.7	mg/L	0.50	99	95	105			
Molybdenum		0.973	mg/L	0.10	97	95	105			
Potassium		47.4	mg/L	0.50	95	95	105			
Sodium		49.3	mg/L	0.50	99	95	105			
Uranium		4.92	mg/L	1.0	98	95	105			
Sample ID: ICSA	7	Interference Check Sample A							06/14/13 13:06	
Calcium		454	mg/L	0.50	91	80	120			
Iron		178	mg/L	0.030	89	80	120			
Magnesium		499	mg/L	0.50	100	80	120			
Molybdenum		0.0145	mg/L	0.10						
Potassium		0.0123	mg/L	0.50						
Sodium		-0.0599	mg/L	0.50						
Uranium		0.758	mg/L	1.0						
Sample ID: ICSAB	7	Interference Check Sample AB							06/14/13 13:10	
Calcium		454	mg/L	0.50	91	80	120			
Iron		177	mg/L	0.030	89	80	120			
Magnesium		496	mg/L	0.50	99	80	120			
Molybdenum		0.00434	mg/L	0.10						
Potassium		-0.00592	mg/L	0.50						
Sodium		-0.125	mg/L	0.50						
Uranium		0.733	mg/L	1.0						
Method: E200.7									Batch: R174829	
Sample ID: MB-130614A	7	Method Blank				Run: ICP4-C_130614A			06/14/13 13:28	
Calcium		ND	mg/L	0.02						
Iron		ND	mg/L	0.002						
Magnesium		0.03	mg/L	0.01						
Molybdenum		0.008	mg/L	0.003						
Potassium		ND	mg/L	0.04						
Sodium		ND	mg/L	0.2						
Uranium		ND	mg/L	0.3						
Sample ID: LFB-130614A	7	Laboratory Fortified Blank				Run: ICP4-C_130614A			06/14/13 13:32	
Calcium		47.6	mg/L	0.50	95	85	115			
Iron		0.951	mg/L	0.030	95	85	115			
Magnesium		47.6	mg/L	0.50	95	85	115			
Molybdenum		0.956	mg/L	0.10	95	85	115			
Potassium		45.9	mg/L	0.50	92	85	115			
Sodium		46.9	mg/L	0.50	94	85	115			
Uranium		5.06	mg/L	1.0	101	85	115			

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

QA/QC Summary Report

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC **Report Date:** 06/25/13

Project: Lisbon, UT Facility **Work Order:** C13060435

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E200.7										Batch: R174829
Sample ID: C13060436-001BMS2	7	Sample Matrix Spike				Run: ICP4-C_130614A				06/14/13 17:29
Calcium		117	mg/L	1.0	97	70	130			
Iron		2.08	mg/L	0.030	99	70	130			
Magnesium		99.9	mg/L	1.0	97	70	130			
Molybdenum		1.99	mg/L	0.0059	98	70	130			
Potassium		99.8	mg/L	1.0	97	70	130			
Sodium		468	mg/L	1.0	84	70	130			
Uranium		10.1	mg/L	0.61	99	70	130			
Sample ID: C13060436-001BMSD2	7	Sample Matrix Spike Duplicate				Run: ICP4-C_130614A				06/14/13 17:33
Calcium		117	mg/L	1.0	97	70	130	0.0	20	
Iron		2.08	mg/L	0.030	99	70	130	0.2	20	
Magnesium		99.7	mg/L	1.0	97	70	130	0.2	20	
Molybdenum		1.97	mg/L	0.0059	97	70	130	1.2	20	
Potassium		99.8	mg/L	1.0	97	70	130	0.0	20	
Sodium		468	mg/L	1.0	84	70	130	0.0	20	
Uranium		10.1	mg/L	0.61	99	70	130	0.4	20	

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

QA/QC Summary Report

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC **Report Date:** 06/25/13

Project: Lisbon, UT Facility **Work Order:** C13060435

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E200.8									Analytical Run: ICPMS2-C_130617A	
Sample ID: ICV	3	Initial Calibration Verification Standard							06/17/13 15:25	
Arsenic		0.0508	mg/L	0.0010	102	90	110			
Selenium		0.0506	mg/L	0.0010	101	90	110			
Uranium		0.0514	mg/L	0.00030	103	90	110			
Method: E200.8									Batch: R174884	
Sample ID: LRB	3	Method Blank				Run: ICPMS2-C_130617A			06/17/13 14:43	
Arsenic		ND	mg/L	0.00010						
Selenium		ND	mg/L	0.0002						
Uranium		ND	mg/L	1E-05						
Sample ID: LFB	3	Laboratory Fortified Blank				Run: ICPMS2-C_130617A			06/17/13 14:46	
Arsenic		0.0506	mg/L	0.0010	101	85	115			
Selenium		0.0499	mg/L	0.0010	100	85	115			
Uranium		0.0518	mg/L	0.00030	104	85	115			
Sample ID: C13060435-001BMS4	3	Sample Matrix Spike				Run: ICPMS2-C_130617A			06/17/13 15:50	
Arsenic		0.0935	mg/L	0.0010	107	70	130			
Selenium		0.0667	mg/L	0.0010	106	70	130			
Uranium		0.738	mg/L	0.00030		70	130			A
Sample ID: C13060435-001BMSD4	3	Sample Matrix Spike Duplicate				Run: ICPMS2-C_130617A			06/17/13 15:53	
Arsenic		0.0944	mg/L	0.0010	109	70	130	1.0	20	
Selenium		0.0679	mg/L	0.0010	109	70	130	1.7	20	
Uranium		0.753	mg/L	0.00030		70	130	2.0	20	A
Method: E200.8									Analytical Run: ICPMS2-C_130618B	
Sample ID: ICV		Initial Calibration Verification Standard							06/18/13 15:24	
Arsenic		0.0513	mg/L	0.0010	103	90	110			
Method: E200.8									Batch: R174953	
Sample ID: LRB		Method Blank				Run: ICPMS2-C_130618B			06/18/13 14:43	
Arsenic		ND	mg/L	0.00010						
Sample ID: LFB		Laboratory Fortified Blank				Run: ICPMS2-C_130618B			06/18/13 14:46	
Arsenic		0.0538	mg/L	0.0010	108	85	115			
Sample ID: C13051013-002BMS4		Sample Matrix Spike				Run: ICPMS2-C_130618B			06/18/13 16:33	
Arsenic		0.265	mg/L	0.0010	106	70	130			
Sample ID: C13051013-002BMSD4		Sample Matrix Spike Duplicate				Run: ICPMS2-C_130618B			06/18/13 16:36	
Arsenic		0.264	mg/L	0.0010	105	70	130	0.6	20	

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

A - The analyte level was greater than four times the spike level. In accordance with the method % recovery is not calculated.

QA/QC Summary Report

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC **Report Date:** 06/25/13

Project: Lisbon, UT Facility **Work Order:** C13060435

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E300.0									Analytical Run: IC1-C_130613A	
Sample ID: CCV-061313-03	2	Continuing Calibration Verification Standard							06/13/13 20:19	
Chloride		10.0	mg/L	1.0	100	90	110			
Sulfate		39.7	mg/L	1.0	99	90	110			
Method: E300.0									Batch: R174810	
Sample ID: ICB-061313	2	Method Blank				Run: IC1-C_130613A			06/13/13 11:54	
Chloride		ND	mg/L	0.07						
Sulfate		0.1	mg/L	0.08						
Sample ID: LFB-061313-01	2	Laboratory Fortified Blank				Run: IC1-C_130613A			06/13/13 12:11	
Chloride		9.95	mg/L	1.0	99	90	110			
Sulfate		40.3	mg/L	1.0	100	90	110			
Sample ID: C13060434-007AMS	2	Sample Matrix Spike				Run: IC1-C_130613A			06/13/13 21:11	
Chloride		53.6	mg/L	1.0	103	90	110			
Sulfate		173	mg/L	1.7	101	90	110			
Sample ID: C13060434-007AMSD	2	Sample Matrix Spike Duplicate				Run: IC1-C_130613A			06/13/13 21:29	
Chloride		53.6	mg/L	1.0	103	90	110	0.0	20	
Sulfate		173	mg/L	1.7	101	90	110	0.1	20	

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

Standard Reporting Procedures

Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH, Dissolved Oxygen and Residual Chlorine, are qualified as being analyzed outside of recommended holding time.

Solid/soil samples are reported on a wet weight basis (as received) unless specifically indicated. If moisture corrected, data units are typically noted as –dry. For agricultural and mining soil parameters/characteristics, all samples are dried and ground prior to sample analysis.

Workorder Receipt Checklist

Rio Algom Mining Corporation LLC C13060435

Login completed by: Corinne Wagner
Date Received: 6/12/2013
Reviewed by: BL2000\kmiller
Received by: dw
Reviewed Date: 6/13/2013
Carrier name: FedEx

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on shipping container(s)/cooler(s)?	Yes ☐	No ☐	Not Present ☑
Custody seals intact on all sample bottles?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time? (Exclude analyses that are considered field parameters such as pH, DO, Res Cl, Sulfite, Ferrous Iron, etc.)	Yes ☑	No ☐	
Temp Blank received in all shipping container(s)/cooler(s)?	Yes ☑	No ☐	Not Applicable ☐
Container/Temp Blank temperature:	2.8℃ On Ice		
Water - VOA vials have zero headspace?	Yes ☐	No ☑	No VOA vials submitted ☐
Water - pH acceptable upon receipt?	Yes ☑	No ☐	Not Applicable ☐

Contact and Corrective Action Comments:

None

Chain of Custody and Analytical Request Record

Page 1 of 1

PLEASE PRINT- Provide as much information as possible.

Company Name: Rio Algom Mining Corp	Project Name, PWS, Permit, Etc.: Lisbon, UT Facility	Sample Origin State: UT	EPA/State Compliance: Yes ☐ No ☐
Report Mail Address: Montgomery and Associates Results retrieved from Energy Source	Contact Name: John Laney Phone/Fax: (520) 425-2219 Email: jlaney@clmontgomery.com		Sampler: (Please Print) Josh Kerns
Invoice Address: Email invoice to Gail PO Box 218 Grants, NM 87020	Invoice Contact & Phone: Gail Alexander (505) 287-8851	Purchase Order:	Quote/Bottle Order: C3636

Special Report/Formats – ELI must be notified prior to sample submittal for the following:

☐ DW ☐ GSA ☐ POTW/WWTP ☐ State: _____ ☐ Other: _____
☐ A2LA ☐ EDD/EDT (Electronic Data) Format: _____ ☐ LEVEL IV ☐ NELAC

Number of Containers
Sample Type: A Air W Water S Soils/Solids V Vegetation B Bioassay O Other

ANALYSIS REQUESTED

	SAMPLE IDENTIFICATION (Name, Location, Interval, etc.)	Collection Date	Collection Time	MATRIX	C3636	SEE ATTACHED	Normal Turnaround (TAT)
1	6452	09JUN2013	1025	Water	X		
2	6451	09JUN2013	0920	Water	X		
3	6453	09JUN2013	1150	Water	X		
4							
5							
6							
7							
8							
9							
10							

RUSH

Contact ELI prior to **RUSH** sample submittal for charges and scheduling – See Instruction Page

Comments:
Metals samples were filtered in field.
Added extr HNO3 to samples. React the w/ HNO3

Shipped by: Fed Ex
Cooler ID(s): 4147
Receipt Temp: 2.8 °C
On Ice: (Yes) No
Custody Seal Intact Signature Match: Y (N)

ANIONS USE ONLY LABORATORY

Custody Record MUST be Signed	Relinquished by (print)	Date/Time	Signature	Received by (print)	Date/Time	Signature
	Josh Kerns	11JUN2013				
	Relinquished by (print)	Date/Time	Signature	Received by (print)	Date/Time	Signature
				Received by Laboratory	Date/Time: 6-12-13 1000	Signature

Sample Disposal: Return to Client: _____ Lab Disposal: _____

In certain circumstances, samples submitted to Energy Laboratories, Inc. may be subcontracted to other certified laboratories in order to complete the analysis requested.
This serves as notice of this possibility. All sub-contract data will be clearly notated on your analytical report.
Visit our web site at www.energylab.com for additional information, downloadable fee schedule, forms, and links.

Chain of Custody and Analytical Request Record

ENERGY LABORATORIES

PLEASE PRINT- Provide as much information as possible.

Company Name:	Project Name, PWS, Permit, Etc.	Sample Origin	EPA/State Compliance:
Rio Algom Mining Corp	Lisbon, UT Facility	State: UT	Yes ☐ No ☐
Report Mail Address: Montgomery and Associates Results retrieved from Energy Source	**Contact Name:** John Laney **Phone/Fax:** (520) 425-2219 **Email:** jlaney@clmontgomery.com		**Sampler: (Please Print)** Josh Kerns
Invoice Address: Email invoice to Gail PO Box 218 Grants, NM 87020	**Invoice Contact & Phone:** Gail Alexander (505) 287-8851	**Purchase Order:**	**Quote/Bottle Order:** C3636

Special Report/Formats – ELI must be notified prior to sample submittal for the following:

- ☐ DW
- ☐ GSA
- ☐ POTW/WWTP
- ☐ State: _____
- ☐ Other: _____
- ☐ A2LA
- ☐ EDD/EDT (Electronic Data) Format: _____
- ☐ LEVEL IV
- ☐ NELAC

Number of Containers
Sample Type: A W S V B O
Air Water Soils/Solids Vegetation Bioassay Other

ANALYSIS REQUESTED

C3636

SEE ATTACHED

Normal Turnaround (TAT)

RUSH

Contact ELI prior to **RUSH** sample submittal for charges and scheduling – See Instruction Page

Comments: Metal samples were preserved and filtered in the field

Shipped by: Fed Ex

Cooler ID(s):

Receipt Temp _____ °C

On Ice: Yes No

Custody Seal Intact Y N

Signature Match Y N

	SAMPLE IDENTIFICATION (Name, Location, Interval, etc.)	Collection Date	Collection Time	MATRIX	C3636
1	6455	20-July-2013	1300	water	X
2	6456	20-July-2013	1350	water	X
3					
4					
5					
6					
7					
8					
9					
10					

LABORATORY USE ONLY

Custody Record MUST be Signed

	Relinquished by (print):	Date/Time:	Signature:	Received by (print):	Date/Time:	Signature:
1	Josh Kerns	7-20-13				
2						
				Received by Laboratory:		

Sample Disposal: Return to Client: _____ Lab Disposal: _____

In certain circumstances, samples submitted to Energy Laboratories, Inc. may be subcontracted to other certified laboratories in order to complete the analysis requested.
This serves as notice of this possibility. All sub-contract data will be clearly notated on your analytical report.
Visit our web site at www.energylab.com for additional information, downloadable fee schedule, forms, and links.

Confluence Environmental, Inc

Equipment Calibration Log

Equipment make/model	Equipment ID/ serial number	Date	Time	Calibration Standards	Equipment Reading	Equipment Calibrated	Temp (°C / °F)	Tech init.	Comments
YSI - Pro Series	12A100565	20 JULY 2013	12:30 PM	pH 4.0/7.0/10.0	4.0/7.0/10.0	✓	25	JK	
				Cond 1413	1413	✓	25	JK	
				D.O 100%	79%	✓	—	JK	
				ORP 231	231	✓	25	JK	

Notes/comments:

Water Level Measurements

Job Number: 1350.15 Date: 7/20/2013 Client: Montgomery and Associates

Site: Rio Algom Mining, Lisbon UT

Well I.D.	Time	Dia	Depth to NAPL	Thickness of NAPL	Depth to water (DTW)	Total Depth (measured)	Total Depth (historical)	Ref Point TOC/TOB		
EF 8	1230	4 IN	—	—	74.31	—	244.00	TOC		
RL 1	1320	5 IN	—	—	115.89	—	124.00	TOC		

Well Maintenance Inspection Form

Client: Montgomery & Assoc Site: Rio Algom Mining, Lisbon UT Date: 20 July 2013

Job #: 1350.15 Technician: Josh Kerns Page 1 of 1

Inspection Point	Well Inspected - No Corrective Action Required	Entry Indicates Deficiency												Well Not Inspected (explain in notes)	Notes (Note any repairs made while on site)
		Cap non-functional	Lock non-functional	Lock missing	Bolts missing (# missing / # total tabs)	Tabs stripped (# stripped / # total tabs.)	Tabs broken (# broken / # of total tabs)	Annular seal incomplete	Apron damaged	Rim / Lid broken	Trip Hazard	Below Grade	Other (explain in notes)		
EF-8	X														
RL-1	X														

Notes:

Repair codes: **rt**=retap/ bolts added or replaced **as**=annular seal repair,

Confluence Environmental, Inc 3308 El Camino Ave, Suite 300 #148, Sacramento CA, 95821, 916-760-7641

Purging And Sampling Data Sheet

Job#: 1350.15	**Sampler:** J Kerns	**Client:** Montgomery & Associates
Well ID: EF 8	**Date** (DDOct2012): 20 JULY 2013	**Site:** Rio Algom Mining, Lisbon, UT
Weather Conditions: WARM/SUNNY	**Sampler Signature:**	
Well diam: 1/4" 1" 2" 3" (4") 6" Other:	**DTW:** 74.31 **Total Depth:** 244.00	
Purge equip: ES - diam: (Bladder) Peri Waterra Positive Air Displacement (Ext. System)		
disp bailer teflon bailer other: **Tubing:** OD: JPK (New) (Dedicated) NA		
Purge method: 3-5 Case Volume (Micro/Low-Flow) Extraction Other:		
Pump depth/ intake: 229.00	**Multipliers:** 1"= 0.04 2"= 0.16 3"= 0.37 4"= 0.65 5"=1.02 6"= 1.47 Radius^2 X 0.163	
(TD - DTW X Multiplier = 1 Volume —	80% Recovery (TD - DTW X 0.20 + DTW)	

1 Volume = ____ X ____ = ____ (Total Purge) 80%= ____

Time	Temp (°C / °F)	pH	SP Cond (mS / µS)	Turbidity (NTU)	Purge Rate (gal or mL/ min)	Volume Removed (gal / L)	DO (mg/l)	ORP (mv)	DTW	Notes
1235	15.7	6.16	1980	1.1	150	1.0	11.01	151.1	74.45	
1238	14.9	6.65	2002	0.9	150	1.45	8.03	126.2	74.47	
1241	15.5	6.84	1999	0.7	150	1.90	6.70	104.4	74.47	
1244	15.5	6.93	2021	0.6	150	2.35	7.12	91.1	74.48	
1247	15.4	7.03	2025	0.7	150	2.80	6.46	79.4	74.48	
1250	15.1	7.12	2031	0.6	150	3.25	6.41	65.1	74.48	
1253	15.1	7.18	2036	0.6	150	3.70	6.48	57.6	74.48	
1256	15.0	7.16	2036	0.7	150	4.15	6.32	55.3	74.48	

Did well dewater? YES (NO)	Total volume removed: 4.15 (gal / (L))	
Sample method: Disp Bailer Hydrasleeve New Tubing Ext. Port Other: Dedicated Tubing		
Sample date: 20 JULY 13	Sample time: 1300	DTW at sample: 74.48
Sample ID: 6455	Lab: Energy Labs	Number of bottles: 2
Analysis: 500 ml NP poly - Alkalinity, Cl, SO4, TDS, EC, pH 250 ml HNO3 poly *field filtered - Dissolved Metals		
Equipment blank ID @	Field blank ID @	
Duplicate ID:	Pre-purge DO:	Post purge DO:
$Fe2^+$:	Pre-purge ORP:	Post purge ORP:
NAPL depth:	Volume of NAPL:	Volume removed: ml

Purging And Sampling Data Sheet

Job#: 1350.15	**Sampler:** J Kerns	**Client:** Montgomery & Associates
Well ID: RL 1	**Date** (DDOct2012): 20 July 2013	**Site:** Rio Algom Mining, Lisbon, UT
Weather Conditions: WARM / SUNNY		**Sampler Signature:**
Well diam: 1/4" 1" 2" 3" 4" 6" Other: 5"		**DTW:** 115.89 **Total Depth:** 124.00
Purge equip: ES - diam: Bladder Peri Waterra Positive Air Displacement Ext. System		
disp bailer teflon bailer other:	**Tubing:** OD: New Dedicated NA	
Purge method: 3-5 Case Volume Micro/Low-Flow Extraction Other:		
Pump depth/ intake: 122.00	**Multipliers:** 1"= 0.04 2"= 0.16 3"= 0.37 4"= 0.65 5"=1.02 6"= 1.47 Radius^2 X 0.163	
(TD - DTW X Multiplier = 1 Volume	80% Recovery (TD - DTW X 0.20 + DTW)	

1 Volume = ____ X ____ = ____ (Total Purge) 80%= ____

Time	Temp (°C / °F)	pH	SP Cond (mS / µS)	Turbidity (NTU)	Purge Rate (gal or mL/ min)	Volume Removed (gal / L)	DO (mg/l)	ORP (mv)	DTW	Notes
1325	17.5	7.45	10230	2.1	100	1.0	7.15	42.3	116.02	
1328	16.8	7.47	10310	1.8	100	1.3	6.58	39.4	116.06	
1331	16.1	7.30	10416	1.5	100	1.6	5.99	43.0	116.08	
1334	15.9	7.24	10448	1.6	100	1.9	5.65	45.3	116.10	
1337	15.6	7.15	10457	1.4	100	2.2	5.92	48.5	116.09	
1340	15.5	7.11	10473	1.2	100	2.5	5.95	51.3	116.11	
1343	15.1	7.08	10523	1.1	100	2.8	5.95	54.0	116.11	
1346	14.9	7.07	10470	.8	100	3.1	5.88	55.2	116.11	

Did well dewater? YES NO	Total volume removed: 3.1 (gal / L)	
Sample method: Disp Bailer Hydrasleeve New Tubing Ext. Port Other: Dedicated Tubing		
Sample date: 20 July 13	Sample time: 1350	DTW at sample: 116.11
Sample ID: 6456	Lab: Energy Labs	Number of bottles: 2
Analysis: 500 ml NP poly - Alkalinity, Cl, SO4, TDS, EC, pH 250 ml HNO3 poly *field filtered - Dissolved Metals		
Equipment blank ID @	Field blank ID @	
Duplicate ID:	Pre-purge DO:	Post purge DO:
$Fe2^+$:	Pre-purge ORP:	Post purge ORP:
NAPL depth:	Volume of NAPL:	Volume removed: ml

ANALYTICAL SUMMARY REPORT

August 02, 2013

Rio Algom Mining Corporation LLC
Hwy 605 and 509
Grants, NM 87020

Workorder No.: C13070869 Quote ID: C3636 - Groundwater

Project Name: Lisbon, UT Facility

Energy Laboratories, Inc. Casper WY received the following 2 samples for Rio Algom Mining Corporation LLC on 7/23/2013 for analysis.

Sample ID	Client Sample ID	Collect Date	Receive Date	Matrix	Test
C13070869-001	6455	07/20/13 13:00	07/23/13	Aqueous	Metals by ICP/ICPMS, Dissolved Alkalinity QA Calculations Conductivity E300.0 Anions pH Solids, Total Dissolved Solids, Total Dissolved - Calculated
C13070869-002	6456	07/20/13 13:50	07/23/13	Aqueous	Same As Above

The results as reported relate only to the item(s) submitted for testing. The analyses presented in this report were performed at Energy Laboratories, Inc., 2393 Salt Creek Hwy., Casper, WY 82601, unless otherwise noted. Radiochemistry analyses were performed at Energy Laboratories, Inc., 2325 Kerzell Lane, Casper, WY 82601, unless otherwise noted. Any exceptions or problems with the analyses are noted in the Laboratory Analytical Report, the QA/QC Summary Report, or the Case Narrative.

If you have any questions regarding these test results, please call.

Report Approved By:

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility
Lab ID: C13070869-001
Client Sample ID 6455

Report Date: 08/02/13
Collection Date: 07/20/13 13:00
DateReceived: 07/23/13
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Carbonate as CO3	ND	mg/L		5		A2320 B	07/24/13 15:21 / jba
Bicarbonate as HCO3	402	mg/L		5		A2320 B	07/24/13 15:21 / jba
Calcium	222	mg/L		1		E200.7	07/24/13 21:40 / sf
Chloride	212	mg/L		1		E300.0	07/24/13 17:27 / wc
Magnesium	58	mg/L		1		E200.7	07/24/13 21:40 / sf
Potassium	5	mg/L		1		E200.7	07/24/13 21:40 / sf
Sodium	169	mg/L		1		E200.7	07/24/13 21:40 / sf
Sulfate	475	mg/L	D	4		E300.0	07/24/13 17:27 / wc
PHYSICAL PROPERTIES							
Conductivity @ 25 C	2060	umhos/cm		1		A2510 B	07/24/13 12:48 / alp
pH	7.65	s.u.	H	0.01		A4500-H B	07/24/13 12:48 / alp
Solids, Total Dissolved TDS @ 180 C	1480	mg/L		20		A2540 C	07/24/13 15:42 / tmm
METALS - DISSOLVED							
Arsenic	0.035	mg/L		0.001		E200.8	07/31/13 21:38 / cp
Iron	ND	mg/L		0.03		E200.7	07/24/13 21:40 / sf
Molybdenum	0.01	mg/L		0.01		E200.8	07/31/13 21:38 / cp
Selenium	0.011	mg/L		0.001		E200.8	07/31/13 21:38 / cp
Uranium	0.680	mg/L		0.0003		E200.8	07/31/13 21:38 / cp
DATA QUALITY							
A/C Balance (± 5)	0.990	%				A1030 E	07/31/13 07:18 / kbh
Anions	22.9	meq/L				A1030 E	07/31/13 07:18 / kbh
Cations	23.4	meq/L				A1030 E	07/31/13 07:18 / kbh
Solids, Total Dissolved Calculated	1400	mg/L				A1030 E	07/31/13 07:18 / kbh
TDS Balance (0.80 - 1.20)	1.07					A1030 E	07/31/13 07:18 / kbh

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
H - Analysis performed past recommended holding time.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility
Lab ID: C13070869-002
Client Sample ID 6456

Report Date: 08/02/13
Collection Date: 07/20/13 13:50
DateReceived: 07/23/13
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Carbonate as CO3	ND	mg/L		5		A2320 B	07/24/13 15:31 / jba
Bicarbonate as HCO3	1260	mg/L		5		A2320 B	07/24/13 15:31 / jba
Calcium	578	mg/L		1		E200.7	07/24/13 21:43 / sf
Chloride	699	mg/L	D	10		E300.0	07/24/13 17:42 / wc
Magnesium	196	mg/L		1		E200.7	07/24/13 21:43 / sf
Potassium	19	mg/L		1		E200.7	07/24/13 21:43 / sf
Sodium	2070	mg/L		1		E200.7	07/24/13 21:43 / sf
Sulfate	4790	mg/L	D	40		E300.0	07/24/13 17:42 / wc
PHYSICAL PROPERTIES							
Conductivity @ 25 C	10700	umhos/cm		1		A2510 B	07/24/13 12:51 / alp
pH	7.26	s.u.	H	0.01		A4500-H B	07/24/13 12:51 / alp
Solids, Total Dissolved TDS @ 180 C	9350	mg/L		100		A2540 C	07/24/13 15:42 / tmm
METALS - DISSOLVED							
Arsenic	0.004	mg/L		0.001		E200.8	07/31/13 21:43 / cp
Iron	ND	mg/L		0.03		E200.7	07/24/13 21:43 / sf
Molybdenum	10.9	mg/L		0.01		E200.7	07/24/13 21:43 / sf
Selenium	0.071	mg/L		0.001		E200.8	07/31/13 21:43 / cp
Uranium	44	mg/L	D	2		E200.7	07/24/13 21:43 / sf
DATA QUALITY							
A/C Balance (± 5)	-2.31	%				A1030 E	07/31/13 07:18 / kbh
Anions	142	meq/L				A1030 E	07/31/13 07:18 / kbh
Cations	135	meq/L				A1030 E	07/31/13 07:18 / kbh
Solids, Total Dissolved Calculated	9100	mg/L				A1030 E	07/31/13 07:18 / kbh
TDS Balance (0.80 - 1.20)	1.03					A1030 E	07/31/13 07:18 / kbh

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
H - Analysis performed past recommended holding time.

QA/QC Summary Report

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC **Report Date:** 08/02/13

Project: Lisbon, UT Facility **Work Order:** C13070869

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: A2320 B										Batch: R176301
Sample ID: MBLK	3	Method Blank				Run: MANTECH_130724A				07/24/13 14:28
Alkalinity, Total as CaCO3		ND	mg/L	2						
Carbonate as CO3		ND	mg/L	1						
Bicarbonate as HCO3		1	mg/L	1						
Sample ID: LCS_130618		Laboratory Control Sample				Run: MANTECH_130724A				07/24/13 14:43
Alkalinity, Total as CaCO3		257	mg/L	5.0	103	90	110			
Sample ID: C13070859-001BDUP	3	Sample Duplicate				Run: MANTECH_130724A				07/24/13 14:58
Alkalinity, Total as CaCO3		110	mg/L	5.0				0.1	10	
Carbonate as CO3		ND	mg/L	5.0					10	
Bicarbonate as HCO3		135	mg/L	5.0				0.1	10	
Sample ID: C13070868-001AMS		Sample Matrix Spike				Run: MANTECH_130724A				07/24/13 15:13
Alkalinity, Total as CaCO3		299	mg/L	5.0	101	80	120			

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

QA/QC Summary Report

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC **Report Date:** 08/02/13

Project: Lisbon, UT Facility **Work Order:** C13070869

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: A2510 B									Analytical Run: PHSC_101-C_130724A	
Sample ID: CCV - SC 1413		Continuing Calibration Verification Standard							07/24/13 12:33	
Conductivity @ 25 C		1430	umhos/cm	5.0	101	90	110			
Method: A2510 B									Batch: R176281	
Sample ID: SC 100		Initial Calibration Verification Standard				Run: PHSC_101-C_130724A			07/24/13 10:29	
Conductivity @ 25 C		97.7	umhos/cm	5.0	98	90	110			
Sample ID: SC 2ND 1413		Laboratory Control Sample				Run: PHSC_101-C_130724A			07/24/13 10:41	
Conductivity @ 25 C		1430	umhos/cm	5.0	101	90	110			
Sample ID: MBLK		Method Blank				Run: PHSC_101-C_130724A			07/24/13 11:08	
Conductivity @ 25 C		2	umhos/cm	0.7						
Sample ID: C13070836-002ADUP		Sample Duplicate				Run: PHSC_101-C_130724A			07/24/13 11:51	
Conductivity @ 25 C		456	umhos/cm	5.0				0.2	10	

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

QA/QC Summary Report

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC **Report Date:** 08/02/13

Project: Lisbon, UT Facility **Work Order:** C13070869

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: A2540 C										Batch: TDS130724A
Sample ID: MB-1_130724A		Method Blank				Run: BAL-19_130724B				07/24/13 15:28
Solids, Total Dissolved TDS @ 180 C		ND	mg/L	10						
Sample ID: LCS-2_130724A		Laboratory Control Sample				Run: BAL-19_130724B				07/24/13 15:28
Solids, Total Dissolved TDS @ 180 C		2080	mg/L	20	104	90	110			
Sample ID: C13070834-001A DUP		Sample Duplicate				Run: BAL-19_130724B				07/24/13 15:37
Solids, Total Dissolved TDS @ 180 C		201	mg/L	10				1.0	5	
Sample ID: C13070835-001A MS		Sample Matrix Spike				Run: BAL-19_130724B				07/24/13 15:37
Solids, Total Dissolved TDS @ 180 C		1330	mg/L	11	103	90	110			

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

QA/QC Summary Report

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC **Report Date:** 08/02/13

Project: Lisbon, UT Facility **Work Order:** C13070869

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: **A4500-H B**									Analytical Run: PHSC_101-C_130724A	
Sample ID: **pH 6.86**	Initial Calibration Verification Standard								07/24/13 10:23	
pH		6.86	s.u.	0.010	100	98	102			
Sample ID: **CCV - pH 7**	Continuing Calibration Verification Standard								07/24/13 12:30	
pH		7.02	s.u.	0.010	100	98	102			
Method: **A4500-H B**									Batch: R176281	
Sample ID: **C13070836-002ADUP**	Sample Duplicate					Run: PHSC_101-C_130724A			07/24/13 11:51	
pH		8.72	s.u.	0.010				0.1	3	

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

QA/QC Summary Report

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC **Report Date:** 08/02/13

Project: Lisbon, UT Facility **Work Order:** C13070869

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E200.7								Analytical Run: ICP4-C_130724A		
Sample ID: ICV	7	Initial Calibration Verification Standard							07/24/13 11:30	
Calcium		50.2	mg/L	0.50	100	95	105			
Iron		5.07	mg/L	0.030	101	95	105			
Magnesium		50.2	mg/L	0.50	100	95	105			
Molybdenum		0.975	mg/L	0.10	97	95	105			
Potassium		50.5	mg/L	0.50	101	95	105			
Sodium		51.4	mg/L	0.50	103	95	105			
Uranium		4.99	mg/L	1.0	100	95	105			
Sample ID: ICSA	7	Interference Check Sample A							07/24/13 11:45	
Calcium		462	mg/L	0.50	92	80	120			
Iron		176	mg/L	0.030	88	80	120			
Magnesium		498	mg/L	0.50	100	80	120			
Molybdenum		0.00345	mg/L	0.10						
Potassium		0.00126	mg/L	0.50						
Sodium		0.0205	mg/L	0.50						
Uranium		0.259	mg/L	1.0						
Sample ID: ICSAB	7	Interference Check Sample AB							07/24/13 11:49	
Calcium		468	mg/L	0.50	94	80	120			
Iron		178	mg/L	0.030	89	80	120			
Magnesium		503	mg/L	0.50	101	80	120			
Molybdenum		0.00269	mg/L	0.10						
Potassium		-0.00346	mg/L	0.50						
Sodium		-0.0441	mg/L	0.50						
Uranium		0.265	mg/L	1.0						
Method: E200.7									Batch: R176314	
Sample ID: MB-130724A	7	Method Blank				Run: ICP4-C_130724A			07/24/13 12:07	
Calcium		ND	mg/L	0.02						
Iron		0.002	mg/L	0.002						
Magnesium		0.04	mg/L	0.01						
Molybdenum		0.004	mg/L	0.003						
Potassium		ND	mg/L	0.04						
Sodium		ND	mg/L	0.2						
Uranium		ND	mg/L	0.2						
Sample ID: LFB-130724A	7	Laboratory Fortified Blank				Run: ICP4-C_130724A			07/24/13 12:11	
Calcium		48.4	mg/L	0.50	97	85	115			
Iron		0.976	mg/L	0.030	97	85	115			
Magnesium		48.3	mg/L	0.50	97	85	115			
Molybdenum		0.960	mg/L	0.10	96	85	115			
Potassium		48.5	mg/L	0.50	97	85	115			
Sodium		49.1	mg/L	0.50	98	85	115			
Uranium		4.76	mg/L	1.0	95	85	115			

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

QA/QC Summary Report

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC **Report Date:** 08/02/13

Project: Lisbon, UT Facility **Work Order:** C13070869

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E200.7									Batch: R176314	
Sample ID: C13070788-002BMS2	7	Sample Matrix Spike				Run: ICP4-C_130724A			07/24/13 19:53	
Calcium		249	mg/L	1.0	96	70	130			
Iron		5.63	mg/L	0.030	95	70	130			
Magnesium		250	mg/L	1.0	98	70	130			
Molybdenum		4.97	mg/L	0.015	97	70	130			
Potassium		283	mg/L	1.0	109	70	130			
Sodium		1400	mg/L	1.0		70	130			A
Uranium		25.1	mg/L	1.5	99	70	130			
Sample ID: C13070788-002BMSD2	7	Sample Matrix Spike Duplicate				Run: ICP4-C_130724A			07/24/13 19:57	
Calcium		249	mg/L	1.0	96	70	130	0.0	20	
Iron		5.64	mg/L	0.030	95	70	130	0.2	20	
Magnesium		251	mg/L	1.0	98	70	130	0.2	20	
Molybdenum		4.96	mg/L	0.015	97	70	130	0.2	20	
Potassium		285	mg/L	1.0	110	70	130	0.9	20	
Sodium		1410	mg/L	1.0		70	130	0.8	20	A
Uranium		25.2	mg/L	1.5	99	70	130	0.3	20	

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

A - The analyte level was greater than four times the spike level. In accordance with the method % recovery is not calculated.

QA/QC Summary Report

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC **Report Date:** 08/02/13

Project: Lisbon, UT Facility **Work Order:** C13070869

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E200.8									Analytical Run: ICPMS4-C_130731A	
Sample ID: ICV	4	Initial Calibration Verification Standard							07/31/13 19:11	
Arsenic		0.0510	mg/L	0.0010	102	90	110			
Molybdenum		0.0480	mg/L	0.0010	96	90	110			
Selenium		0.0511	mg/L	0.0010	102	90	110			
Uranium		0.0493	mg/L	0.00030	99	90	110			
Method: E200.8									Batch: R176629	
Sample ID: LRB	4	Method Blank				Run: ICPMS4-C_130731A			07/31/13 12:51	
Arsenic		ND	mg/L	5E-05						
Molybdenum		0.0002	mg/L	3E-05						
Selenium		ND	mg/L	7E-05						
Uranium		2E-05	mg/L	9E-06						
Sample ID: LFB	4	Laboratory Fortified Blank				Run: ICPMS4-C_130731A			07/31/13 12:55	
Arsenic		0.0490	mg/L	0.0010	98	85	115			
Molybdenum		0.0549	mg/L	0.0010	109	85	115			
Selenium		0.0463	mg/L	0.0010	93	85	115			
Uranium		0.0516	mg/L	0.00030	103	85	115			
Sample ID: C13070335-001BMS4	4	Sample Matrix Spike				Run: ICPMS4-C_130731A			07/31/13 21:56	
Arsenic		0.0523	mg/L	0.0010	101	70	130			
Molybdenum		0.0542	mg/L	0.0010	107	70	130			
Selenium		0.0526	mg/L	0.0010	100	70	130			
Uranium		0.0713	mg/L	0.00030	108	70	130			
Sample ID: C13070335-001BMSD4	4	Sample Matrix Spike Duplicate				Run: ICPMS4-C_130731A			07/31/13 22:00	
Arsenic		0.0528	mg/L	0.0010	102	70	130	0.9	20	
Molybdenum		0.0534	mg/L	0.0010	105	70	130	1.6	20	
Selenium		0.0537	mg/L	0.0010	102	70	130	2.1	20	
Uranium		0.0706	mg/L	0.00030	107	70	130	1.0	20	

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

QA/QC Summary Report

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC **Report Date:** 08/02/13

Project: Lisbon, UT Facility **Work Order:** C13070869

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E300.0									Analytical Run: IC2-C_130724A	
Sample ID: CCV-072413-01	2	Continuing Calibration Verification Standard							07/24/13 14:37	
Chloride		10.0	mg/L	1.0	100	90	110			
Sulfate		39.2	mg/L	1.0	98	90	110			
Method: E300.0									Batch: R176331	
Sample ID: ICB-072413	2	Method Blank				Run: IC2-C_130724A			07/24/13 13:35	
Chloride		ND	mg/L	0.03						
Sulfate		0.10	mg/L	0.07						
Sample ID: LFB-072413-01	2	Laboratory Fortified Blank				Run: IC2-C_130724A			07/24/13 14:06	
Chloride		10.2	mg/L	1.0	102	90	110			
Sulfate		40.5	mg/L	1.0	101	90	110			
Sample ID: LFBD-072413-01	2	Laboratory Fortified Blank Duplicate				Run: IC2-C_130724A			07/24/13 14:22	
Chloride		10.4	mg/L	1.0	104	90	110	1.9	20	
Sulfate		41.3	mg/L	1.0	103	90	110	1.8	20	
Sample ID: C13070881-001AMS	2	Sample Matrix Spike				Run: IC2-C_130724A			07/24/13 18:44	
Chloride		13.2	mg/L	1.0	98	90	110			
Sulfate		57.6	mg/L	1.0	104	90	110			
Sample ID: C13070881-001AMSD	2	Sample Matrix Spike Duplicate				Run: IC2-C_130724A			07/24/13 18:59	
Chloride		14.0	mg/L	1.0	105	90	110	5.6	20	
Sulfate		58.0	mg/L	1.0	105	90	110	0.6	20	

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

Standard Reporting Procedures

Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH, Dissolved Oxygen and Residual Chlorine, are qualified as being analyzed outside of recommended holding time.

Solid/soil samples are reported on a wet weight basis (as received) unless specifically indicated. If moisture corrected, data units are typically noted as –dry. For agricultural and mining soil parameters/characteristics, all samples are dried and ground prior to sample analysis.

Workorder Receipt Checklist

Rio Algom Mining Corporation LLC C13070869

Login completed by: Kerri Schroeder
Date Received: 7/23/2013
Reviewed by: BL2000\alynch
Received by: dw
Reviewed Date: 7/25/2013
Carrier name: NDA

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on all shipping container(s)/cooler(s)?	Yes ☐	No ☐	Not Present ☑
Custody seals intact on all sample bottles?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time? (Exclude analyses that are considered field parameters such as pH, DO, Res Cl, Sulfite, Ferrous Iron, etc.)	Yes ☑	No ☐	
Temp Blank received in all shipping container(s)/cooler(s)?	Yes ☐	No ☑	Not Applicable ☐
Container/Temp Blank temperature:	2.2℃ On Ice		
Water - VOA vials have zero headspace?	Yes ☐	No ☐	No VOA vials submitted ☑
Water - pH acceptable upon receipt?	Yes ☑	No ☐	Not Applicable ☐

Contact and Corrective Action Comments:

None

Chain of Custody and Analytical Request Record

ENERGY LABORATORIES

Page 1 of 1

PLEASE PRINT- Provide as much information as possible.

Company Name: Rio Algom Mining Corp	Project Name, PWS, Permit, Etc.: Lisbon, UT Facility	Sample Origin State: UT	EPA/State Compliance: Yes ☐ No ☐
Report Mail Address: Montgomery and Associates Results retrieved from Energy Source	Contact Name: John Laney Phone/Fax: (520) 425-2219 Email: jlaney@clmontgomery.com		Sampler: (Please Print) Josh Kerns
Invoice Address: Email invoice to Gail PO Box 218 Grants, NM 87020	Invoice Contact & Phone: Gail Alexander (505) 287-8851	Purchase Order:	Quote/Bottle Order: C3636

Special Report/Formats – ELI must be notified prior to sample submittal for the following:

☐ DW ☐ A2LA
☐ GSA ☐ EDD/EDT (Electronic Data)
☐ POTW/WWTP Format: _____
☐ State: _____ ☐ LEVEL IV
☐ Other: _____ ☐ NELAC

Number of Containers
Sample Type: A W S V B O
Air Water Soils/Solids Vegetation Bioassay Other

ANALYSIS REQUESTED

SEE ATTACHED

Normal Turnaround (TAT)

RUSH

Contact ELI prior to **RUSH** sample submittal for charges and scheduling – See Instruction Page

Comments: Metal samples were preserved and filtered in the field

Shipped by: Fed Ex E

Cooler ID(s): 3947

Receipt Temp 2.2 °C

On Ice: (Yes) No

Custody Seal Y (N)
Intact Y (N)
Signature Match Y N

	SAMPLE IDENTIFICATION (Name, Location, Interval, etc.)	Collection Date	Collection Time	MATRIX	C3636
1	6455	20 July 2010	1300	water	X
2	6456	20 July 2010	1350	water	X
3					
4					
5					
6					
7					
8					
9					
10					

C13070869

LABORATORY USE ONLY

Custody Record MUST be Signed

Relinquished by (print): Josh Kerns	Date/Time: 7-20-10	Signature:	Received by (print):	Date/Time:	Signature:
Relinquished by (print):	Date/Time:	Signature:	Received by (print):	Date/Time:	Signature:
			Received by Laboratory:	Date/Time: 7-23 B	Signature: 980

Sample Disposal: Return to Client: _____ Lab Disposal: _____

In certain circumstances, samples submitted to Energy Laboratories, Inc. may be subcontracted to other certified laboratories in order to complete the analysis requested. This serves as notice of this possibility. All sub-contract data will be clearly notated on your analytical report.
Visit our web site at www.energylab.com for additional information, downloadable fee schedule, forms, and links.

Water Level Measurements

Job Number: 1350.15 Date: 8-15-13 Client: Montgomery & Assoc.

Site: Rio Algom Mine - Lisbon, NM

Well I.D.	Time	Dia	Depth to NAPL	Thickness of NAPL	Depth to water (DTW)	Total Depth (measured)	Total Depth (historical)	Ref Point TOC/TOB		
EF-8	0955	4	—	—	74.40	—	244.00	TOC		
RL-1	1045	5	—	—	115.95	—	124.00	TOC		

Well Maintenance Inspection Form

Client: Montgomery Site: Rio Algom Mine - Lisbon, NT Date: 8-15-13

Job #: 1350.15 Technician: JIC Page 1 of 1

Inspection Point	Well Inspected - No Corrective Action Required	Entry Indicates Deficiency												Well Not Inspected (explain in notes)	Notes (Note any repairs made while on site)
		Cap non-functional	Lock non-functional	Lock missing	Bolts missing (# missing / # total tabs)	Tabs stripped (# stripped / # total tabs.)	Tabs broken (# broken / # of total tabs)	Annular seal incomplete	Apron damaged	Rim / Lid broken	Trip Hazard	Below Grade	Other (explain in notes)		
RL-1	X														
EF-8	X														

Notes: _____

Repair codes: **rt**=retap/ bolts added or replaced **as**=annular seal repair,

Confluence Environmental, Inc 3308 El Camino Ave, Suite 300 #148, Sacramento CA, 95821, 916-760-7641

Purging And Sampling Data Sheet

Job#: 1350.15	**Sampler:** J Kerns	**Client:** Montgomery & Associates
Well ID: EF-8	**Date** (DDOct2012): 8-15-13	**Site:** Rio Algom Mining, Lisbon, UT
Weather Conditions: Blue SKy	**Sampler Signature:**	
Well diam: 1/4" 1" 2" 3" (4") 6" Other:	**DTW:** 74.40	**Total Depth:** 244.00
Purge equip: ES - diam: Bladder Peri Waterra Positive Air Displacement (Ext. System)		
disp bailer teflon bailer other:	**Tubing:** OD: New (Dedicated) NA	
Purge method: 3-5 Case Volume (Micro/Low-Flow) Extraction Other:		
Pump depth/ intake: 229	**Multipliers:** 1"= 0.04 2"= 0.16 3"= 0.37 4"= 0.65 5"=1.02 6"= 1.47 Radius^2 X 0.163	
(TD - DTW X Multiplier = 1 Volume —	80% Recovery (TD - DTW X 0.20 + DTW)	

1 Volume = ___ X ___ = ___ (Total Purge) 80%= ___

Time	Temp (°C / °F)	pH	SP Cond (mS / µS)	Turbidity (NTU)	Purge Rate (gal or mL / min)	Volume Removed (gal / L)	DO (mg/l)	ORP (mv)	DTW	Notes
10:00	17.5	6.46	1914	1.3	150	1.0	7.82	136.5	74.49	
10:03	16.2	7.02	1828	1.0	150	1.45	7.69	128.6	74.49	
10:06	15.6	7.24	1825	0.9	150	1.90	7.45	126.8	74.50	
10:09	15.8	7.30	1822	0.9	150	2.35	7.36	126.6	74.50	
10:12	15.6	7.36	1835	0.8	150	2.80	6.80	128.3	74.49	
10:15	16.3	7.34	1828	0.8	150	3.25	6.78	128.6	74.49	
10:18	16.3	7.36	1845	0.7	150	3.70	7.01	130.3	74.49	
10:21	16.2	7.37	1845	0.7	150	4.15	7.06	131.4	74.49	

Did well dewater? YES (NO)	Total volume removed: 4.15 (gal / L)	
Sample method: Disp Bailer Hydrasleeve New Tubing Ext. Port Other: (Dedicated Tubing)		
Sample date: 15Aug2013	Sample time: 10:25	DTW at sample: 74.49
Sample ID: 0457	Lab: Energy Labs	Number of bottles: (2)
Analysis: 500 ml NP poly - Alkalinity, Cl, SO4, TDS, EC, pH 250 ml HNO3 poly *field filtered - Dissolved Metals		
Equipment blank ID @	Field blank ID @	
Duplicate ID:	Pre-purge DO:	Post purge DO:
$Fe2^+$:	Pre-purge ORP:	Post purge ORP:
NAPL depth:	Volume of NAPL:	Volume removed: ml

Purging And Sampling Data Sheet

Job#: 1350.15	**Sampler:** J Kerns	**Client:** Montgomery & Associates
Well ID: RL-1	**Date** (DDOct2012): 15 Aug 2013	**Site:** Rio Algom Mining, Lisbon, UT
Weather Conditions: Blue Sky	**Sampler Signature:**	
Well diam: 1/4" 1" 2" 3" 4" 6" Other: 5"	**DTW:** 115.95 / 74.40	**Total Depth:** 124.00
Purge equip: ES - diam: Bladder Peri Waterra Positive Air Displacement (Ext. System) disp bailer teflon bailer other:	**Tubing:** OD: New (Dedicated) NA	
Purge method: 3-5 Case Volume (Micro/Low-Flow) Extraction Other:		
Pump depth/ intake: 122.00	**Multipliers:** 1"= 0.04 2"= 0.16 3"= 0.37 4"= 0.65 5"=1.02 6"= 1.47 Radius^2 X 0.163	
(TD - DTW X Multiplier = 1 Volume ___	80% Recovery (TD - DTW X 0.20 + DTW)	

1 Volume = ___ X ___ = ___ (Total Purge) 80%= ___

Time	Temp (°C) °F)	pH	SP Cond (mS / µS)	Turbidity (NTU)	Purge Rate (gal or mL / min)	Volume Removed (gal / L)	DO (mg/l)	ORP (mv)	DTW	Notes
10:50	15.7	7.48	9329	1.0	200	1.0	8.06	149.1	116.14	
10:53	15.2	7.24	9315	1.1	200	1.4	6.61	138.4	116.16	
10:56	14.9	7.00	9387	1.0	200	1.8	5.93	129.4	116.15	
10:59	14.9	6.97	9396	0.9	200	2.2	5.60	125.2	116.19	
11:02	15.1	6.89	9419	1.0	200	2.6	5.40	121.0	116.21	
11:05	15.0	6.94	9388	0.9	200	3.0	5.43	120.0	116.22	
11:08	15.1	6.93	9360	0.9	200	3.4	5.30	118.0	116.21	
11:11	15.3	6.95	9380	0.9	200	3.8	5.13	118.4	116.20	

Did well dewater? YES (NO)	Total volume removed: 3.8 (gal / L)	
Sample method: Disp Bailer Hydrasleeve New Tubing Ext. Port Other: (Dedicated Tubing)		
Sample date: 15 Aug 2013	Sample time: 11:15	DTW at sample: 116.20
Sample ID: 6458	Lab: Energy Labs	Number of bottles: (2)
Analysis: 500 ml NP poly - Alkalinity, Cl, SO4, TDS, EC, pH 250 ml HNO3 poly *field filtered - Dissolved Metals		
Equipment blank ID @	Field blank ID @	
Duplicate ID:	Pre-purge DO:	Post purge DO:
$Fe2^+$:	Pre-purge ORP:	Post purge ORP:
NAPL depth:	Volume of NAPL:	Volume removed: ml

Confluence Environmental, Inc

Equipment Calibration Log

Equipment make/model	Equipment ID/ serial number	Date	Time	Calibration Standards	Equipment Reading	Equipment Calibrated	Temp (°C) °F)	Tech init.	Comments
YSI Pro Series	Flow Cell #3	8-15-13	0800	pH 4.0/7.0/10.0	4.0/7.0/10.0	✓	25°	JK	
				Cond 1413	1413	✓	26°		
				ORP	231	✓	25°		
				D.O. 100%	98%	✓	—		

Notes/comments:

ANALYTICAL SUMMARY REPORT

August 22, 2013

Rio Algom Mining Corporation LLC
Hwy 605 and 509
Grants, NM 87020

Workorder No.: C13080635 Quote ID: C3636 - Groundwater

Project Name: Lisbon, UT Facility C3636

Energy Laboratories, Inc. Casper WY received the following 2 samples for Rio Algom Mining Corporation LLC on 8/16/2013 for analysis.

Sample ID	Client Sample ID	Collect Date	Receive Date	Matrix	Test
C13080635-001	6457	08/15/13 10:25	08/16/13	Aqueous	Metals by ICP/ICPMS, Dissolved Alkalinity QA Calculations Conductivity E300.0 Anions pH Solids, Total Dissolved Solids, Total Dissolved - Calculated
C13080635-002	6458	08/15/13 11:15	08/16/13	Aqueous	Same As Above

The results as reported relate only to the item(s) submitted for testing. The analyses presented in this report were performed at Energy Laboratories, Inc., 2393 Salt Creek Hwy., Casper, WY 82601, unless otherwise noted. Radiochemistry analyses were performed at Energy Laboratories, Inc., 2325 Kerzell Lane, Casper, WY 82601, unless otherwise noted. Any exceptions or problems with the analyses are noted in the Laboratory Analytical Report, the QA/QC Summary Report, or the Case Narrative.

If you have any questions regarding these test results, please call.

Report Approved By:

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility C3636
Lab ID: C13080635-001
Client Sample ID 6457

Report Date: 08/22/13
Collection Date: 08/15/13 10:25
DateReceived: 08/16/13
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Carbonate as CO3	ND	mg/L		5		A2320 B	08/16/13 18:26 / jba
Bicarbonate as HCO3	413	mg/L		5		A2320 B	08/16/13 18:26 / jba
Calcium	215	mg/L		1		E200.7	08/19/13 15:07 / sf
Chloride	218	mg/L		1		E300.0	08/20/13 02:30 / wc
Magnesium	57	mg/L		1		E200.7	08/19/13 15:07 / sf
Potassium	5	mg/L		1		E200.7	08/19/13 15:07 / sf
Sodium	163	mg/L		1		E200.7	08/19/13 15:07 / sf
Sulfate	483	mg/L	D	4		E300.0	08/20/13 02:30 / wc
PHYSICAL PROPERTIES							
Conductivity @ 25 C	2040	umhos/cm		1		A2510 B	08/16/13 16:51 / tmm
pH	7.64	s.u.	H	0.01		A4500-H B	08/16/13 16:51 / tmm
Solids, Total Dissolved TDS @ 180 C	1450	mg/L		20		A2540 C	08/19/13 16:13 / alp
METALS - DISSOLVED							
Arsenic	0.036	mg/L		0.001		E200.8	08/19/13 18:14 / clm
Iron	ND	mg/L		0.03		E200.7	08/19/13 15:07 / sf
Molybdenum	ND	mg/L		0.01		E200.8	08/19/13 18:14 / clm
Selenium	0.013	mg/L		0.001		E200.8	08/19/13 18:14 / clm
Uranium	0.686	mg/L		0.0003		E200.8	08/19/13 18:14 / clm
DATA QUALITY							
A/C Balance (± 5)	-1.71	%				A1030 E	08/22/13 08:05 / kbh
Anions	23.4	meq/L				A1030 E	08/22/13 08:05 / kbh
Cations	22.6	meq/L				A1030 E	08/22/13 08:05 / kbh
Solids, Total Dissolved Calculated	1400	mg/L				A1030 E	08/22/13 08:05 / kbh
TDS Balance (0.80 - 1.20)	1.04					A1030 E	08/22/13 08:05 / kbh

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
H - Analysis performed past recommended holding time.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility C3636
Lab ID: C13080635-002
Client Sample ID 6458

Report Date: 08/22/13
Collection Date: 08/15/13 11:15
DateReceived: 08/16/13
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Carbonate as CO3	ND	mg/L		5		A2320 B	08/16/13 18:36 / jba
Bicarbonate as HCO3	1280	mg/L		5		A2320 B	08/16/13 18:36 / jba
Calcium	575	mg/L		1		E200.7	08/19/13 17:12 / sf
Chloride	700	mg/L	D	10		E300.0	08/20/13 02:45 / wc
Magnesium	198	mg/L		1		E200.7	08/19/13 17:12 / sf
Potassium	19	mg/L		1		E200.7	08/19/13 17:12 / sf
Sodium	2100	mg/L	D	2		E200.7	08/19/13 17:12 / sf
Sulfate	4780	mg/L	D	40		E300.0	08/20/13 02:45 / wc
PHYSICAL PROPERTIES							
Conductivity @ 25 C	10300	umhos/cm		1		A2510 B	08/16/13 16:54 / tmm
pH	7.27	s.u.	H	0.01		A4500-H B	08/16/13 16:54 / tmm
Solids, Total Dissolved TDS @ 180 C	9300	mg/L		100		A2540 C	08/19/13 16:13 / alp
METALS - DISSOLVED							
Arsenic	0.003	mg/L		0.001		E200.8	08/19/13 18:17 / clm
Iron	ND	mg/L		0.03		E200.7	08/19/13 17:12 / sf
Molybdenum	11.4	mg/L		0.01		E200.8	08/19/13 18:17 / clm
Selenium	0.072	mg/L	D	0.003		E200.8	08/19/13 18:17 / clm
Uranium	47.1	mg/L	D	0.001		E200.8	08/19/13 18:17 / clm
DATA QUALITY							
A/C Balance (± 5)	-1.81	%				A1030 E	08/22/13 08:05 / kbh
Anions	142	meq/L				A1030 E	08/22/13 08:05 / kbh
Cations	137	meq/L				A1030 E	08/22/13 08:05 / kbh
Solids, Total Dissolved Calculated	9100	mg/L				A1030 E	08/22/13 08:05 / kbh
TDS Balance (0.80 - 1.20)	1.02					A1030 E	08/22/13 08:05 / kbh

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
H - Analysis performed past recommended holding time.

QA/QC Summary Report

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC **Report Date:** 08/22/13

Project: Lisbon, UT Facility C3636 **Work Order:** C13080635

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: A2320 B										Batch: R177220
Sample ID: MBLK	3	Method Blank				Run: MANTECH_130816B				08/16/13 13:44
Alkalinity, Total as CaCO3		ND	mg/L	2						
Carbonate as CO3		ND	mg/L	1						
Bicarbonate as HCO3		ND	mg/L	1						
Sample ID: LCS_130618		Laboratory Control Sample				Run: MANTECH_130816B				08/16/13 13:59
Alkalinity, Total as CaCO3		262	mg/L	5.0	105	90	110			
Sample ID: C13080614-002ADUP	3	Sample Duplicate				Run: MANTECH_130816B				08/16/13 14:15
Alkalinity, Total as CaCO3		352	mg/L	5.0				0.6	10	
Carbonate as CO3		ND	mg/L	5.0					10	
Bicarbonate as HCO3		430	mg/L	5.0				0.6	10	
Sample ID: C13080614-003AMS		Sample Matrix Spike				Run: MANTECH_130816B				08/16/13 14:30
Alkalinity, Total as CaCO3		295	mg/L	5.0	98	80	120			

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

QA/QC Summary Report

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC **Report Date:** 08/22/13

Project: Lisbon, UT Facility C3636 **Work Order:** C13080635

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: A2510 B									Analytical Run: PHSC_101-C_130816A	
Sample ID: CCV - SC 1413		Continuing Calibration Verification Standard							08/16/13 10:34	
Conductivity @ 25 C		1390	umhos/cm	5.0	99	90	110			
Method: A2510 B									Batch: R177170	
Sample ID: SC 100		Initial Calibration Verification Standard				Run: PHSC_101-C_130816A			08/16/13 08:27	
Conductivity @ 25 C		98.3	umhos/cm	5.0	98	90	110			
Sample ID: SC 2ND 1413		Laboratory Control Sample				Run: PHSC_101-C_130816A			08/16/13 08:39	
Conductivity @ 25 C		1410	umhos/cm	5.0	100	90	110			
Sample ID: MBLK		Method Blank				Run: PHSC_101-C_130816A			08/16/13 09:20	
Conductivity @ 25 C		2	umhos/cm	0.7						

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

QA/QC Summary Report

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC **Report Date:** 08/22/13

Project: Lisbon, UT Facility C3636 **Work Order:** C13080635

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: A2540 C										Batch: TDS130819A
Sample ID: MB-1_130819A		Method Blank				Run: BAL-19_130819A				08/19/13 16:09
Solids, Total Dissolved TDS @ 180 C		ND	mg/L	10						
Sample ID: LCS-2_130819A		Laboratory Control Sample				Run: BAL-19_130819A				08/19/13 16:10
Solids, Total Dissolved TDS @ 180 C		1970	mg/L	20	99	90	110			
Sample ID: C13080593-001A DUP		Sample Duplicate				Run: BAL-19_130819A				08/19/13 16:10
Solids, Total Dissolved TDS @ 180 C		3500	mg/L	20				0.3	5	
Sample ID: C13080631-001A MS		Sample Matrix Spike				Run: BAL-19_130819A				08/19/13 16:11
Solids, Total Dissolved TDS @ 180 C		1240	mg/L	11	99	90	110			

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

QA/QC Summary Report

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC **Report Date:** 08/22/13

Project: Lisbon, UT Facility C3636 **Work Order:** C13080635

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: A4500-H B									Analytical Run: PHSC_101-C_130816A	
Sample ID: pH 6.86		Initial Calibration Verification Standard							08/16/13 08:24	
pH		6.84	s.u.	0.010	100	98	102			
Sample ID: CCV - pH 7		Continuing Calibration Verification Standard							08/16/13 10:31	
pH		7.00	s.u.	0.010	100	98	102			
Method: A4500-H B									Batch: R177170	
Sample ID: C13080593-003ADUP		Sample Duplicate				Run: PHSC_101-C_130816A			08/16/13 10:28	
pH		6.79	s.u.	0.010				0.1	3	

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

QA/QC Summary Report

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC **Report Date:** 08/22/13

Project: Lisbon, UT Facility C3636 **Work Order:** C13080635

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E200.7									Analytical Run: ICP4-C_130819A	
Sample ID: ICV	5	Initial Calibration Verification Standard							08/19/13 12:43	
Calcium		50.2	mg/L	0.50	100	95	105			
Iron		4.96	mg/L	0.030	99	95	105			
Magnesium		50.1	mg/L	0.50	100	95	105			
Potassium		49.8	mg/L	0.50	100	95	105			
Sodium		50.0	mg/L	0.50	100	95	105			
Sample ID: ICSA	5	Interference Check Sample A							08/19/13 12:57	
Calcium		461	mg/L	0.50	92	80	120			
Iron		174	mg/L	0.030	87	80	120			
Magnesium		497	mg/L	0.50	99	80	120			
Potassium		-0.0221	mg/L	0.50						
Sodium		0.0483	mg/L	0.50						
Sample ID: ICSAB	5	Interference Check Sample AB							08/19/13 13:01	
Calcium		466	mg/L	0.50	93	80	120			
Iron		176	mg/L	0.030	88	80	120			
Magnesium		505	mg/L	0.50	101	80	120			
Potassium		-0.0119	mg/L	0.50						
Sodium		-0.0891	mg/L	0.50						
Method: E200.7									Batch: R177291	
Sample ID: MB-130819A	5	Method Blank				Run: ICP4-C_130819A			08/19/13 13:19	
Calcium		ND	mg/L	0.02						
Iron		ND	mg/L	0.002						
Magnesium		ND	mg/L	0.01						
Potassium		ND	mg/L	0.04						
Sodium		ND	mg/L	0.2						
Sample ID: LFB-130819A	5	Laboratory Fortified Blank				Run: ICP4-C_130819A			08/19/13 13:23	
Calcium		48.3	mg/L	0.50	97	85	115			
Iron		0.956	mg/L	0.030	96	85	115			
Magnesium		48.4	mg/L	0.50	97	85	115			
Potassium		47.8	mg/L	0.50	96	85	115			
Sodium		47.8	mg/L	0.50	96	85	115			
Sample ID: C13080635-002BMS2	5	Sample Matrix Spike				Run: ICP4-C_130819A			08/19/13 17:15	
Calcium		1050	mg/L	1.0	93	70	130			
Iron		9.67	mg/L	0.030	95	70	130			
Magnesium		686	mg/L	1.0	96	70	130			
Potassium		493	mg/L	1.0	93	70	130			
Sodium		2510	mg/L	2.1		70	130			A
Sample ID: C13080635-002BMSD	5	Sample Matrix Spike Duplicate				Run: ICP4-C_130819A			08/19/13 17:19	
Calcium		1050	mg/L	1.0	93	70	130	0.2	20	
Iron		9.64	mg/L	0.030	94	70	130	0.3	20	
Magnesium		687	mg/L	1.0	96	70	130	0.2	20	
Potassium		494	mg/L	1.0	93	70	130	0.2	20	
Sodium		2520	mg/L	2.1		70	130	0.2	20	A

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

A - The analyte level was greater than four times the spike level. In accordance with the method % recovery is not calculated.

QA/QC Summary Report

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC **Report Date:** 08/22/13

Project: Lisbon, UT Facility C3636 **Work Order:** C13080635

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E200.8									Analytical Run: ICPMS2-C_130819A	
Sample ID: ICV	4	Initial Calibration Verification Standard							08/19/13 16:31	
Arsenic		0.0496	mg/L	0.0010	99	90	110			
Molybdenum		0.0496	mg/L	0.0010	99	90	110			
Selenium		0.0491	mg/L	0.0010	98	90	110			
Uranium		0.0498	mg/L	0.00030	100	90	110			
Method: E200.8									Batch: R177290	
Sample ID: LRB	4	Method Blank				Run: ICPMS2-C_130819A			08/19/13 17:19	
Arsenic		ND	mg/L	0.00010						
Molybdenum		6E-05	mg/L	4E-05						
Selenium		ND	mg/L	0.0002						
Uranium		ND	mg/L	1E-05						
Sample ID: LFB	4	Laboratory Fortified Blank				Run: ICPMS2-C_130819A			08/19/13 17:23	
Arsenic		0.0504	mg/L	0.0010	101	85	115			
Molybdenum		0.0522	mg/L	0.0010	104	85	115			
Selenium		0.0473	mg/L	0.0010	95	85	115			
Uranium		0.0524	mg/L	0.00030	105	85	115			
Sample ID: C13080600-001BMS4	4	Sample Matrix Spike				Run: ICPMS2-C_130819A			08/19/13 17:45	
Arsenic		0.0554	mg/L	0.0010	102	70	130			
Molybdenum		0.0561	mg/L	0.0010	101	70	130			
Selenium		0.0507	mg/L	0.0010	99	70	130			
Uranium		0.0539	mg/L	0.00030	105	70	130			
Sample ID: C13080600-001BMSD	4	Sample Matrix Spike Duplicate				Run: ICPMS2-C_130819A			08/19/13 18:01	
Arsenic		0.0555	mg/L	0.0010	102	70	130	0.2	20	
Molybdenum		0.0546	mg/L	0.0010	98	70	130	2.8	20	
Selenium		0.0514	mg/L	0.0010	100	70	130	1.2	20	
Uranium		0.0523	mg/L	0.00030	102	70	130	3.0	20	

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

QA/QC Summary Report

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Report Date: 08/22/13
Project: Lisbon, UT Facility C3636
Work Order: C13080635

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E300.0									Analytical Run: IC2-C_130819A	
Sample ID: CCV-081913-03	2	Continuing Calibration Verification Standard							08/19/13 23:40	
Chloride		9.89	mg/L	1.0	99	90	110			
Sulfate		39.4	mg/L	1.0	99	90	110			
Method: E300.0									Batch: R177288	
Sample ID: ICB-081913	2	Method Blank				Run: IC2-C_130819A			08/19/13 16:13	
Chloride		ND	mg/L	0.03						
Sulfate		0.1	mg/L	0.07						
Sample ID: LFB-081913-01	2	Laboratory Fortified Blank				Run: IC2-C_130819A			08/19/13 16:29	
Chloride		10.2	mg/L	1.0	102	90	110			
Sulfate		40.6	mg/L	1.0	101	90	110			
Sample ID: C13080649-002AMS	2	Sample Matrix Spike				Run: IC2-C_130819A			08/20/13 04:18	
Chloride		1270	mg/L	10	104	90	110			
Sulfate		3370	mg/L	42	104	90	110			
Sample ID: C13080649-002AMSD	2	Sample Matrix Spike Duplicate				Run: IC2-C_130819A			08/20/13 04:33	
Chloride		1290	mg/L	10	109	90	110	1.9	20	
Sulfate		3440	mg/L	42	107	90	110	1.9	20	

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

Standard Reporting Procedures

Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH, Dissolved Oxygen and Residual Chlorine, are qualified as being analyzed outside of recommended holding time.

Solid/soil samples are reported on a wet weight basis (as received) unless specifically indicated. If moisture corrected, data units are typically noted as –dry. For agricultural and mining soil parameters/characteristics, all samples are dried and ground prior to sample analysis.

Workorder Receipt Checklist

Rio Algom Mining Corporation LLC C13080635

Login completed by: Cori A. Velasquez
Date Received: 8/16/2013
Reviewed by: BL2000\kmiller
Received by: cav
Reviewed Date: 8/19/2013
Carrier name: FedEx

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on all shipping container(s)/cooler(s)?	Yes ☐	No ☐	Not Present ☑
Custody seals intact on all sample bottles?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time? (Exclude analyses that are considered field parameters such as pH, DO, Res Cl, Sulfite, Ferrous Iron, etc.)	Yes ☑	No ☐	
Temp Blank received in all shipping container(s)/cooler(s)?	Yes ☐	No ☑	Not Applicable ☐
Container/Temp Blank temperature:	8.6°C On Ice		
Water - VOA vials have zero headspace?	Yes ☐	No ☐	No VOA vials submitted ☑
Water - pH acceptable upon receipt?	Yes ☑	No ☐	Not Applicable ☐

Contact and Corrective Action Comments:

None

Chain of Custody and Analytical Request Record

Page 1 of 1

PLEASE PRINT- Provide as much information as possible.

Company Name: Rio Algom Mining Corp	Project Name, PWS, Permit, Etc.: Lisbon, UT Facility	Sample Origin State: UT	EPA/State Compliance: Yes ☐ No ☐
Report Mail Address: Montgomery and Associates Results retrieved from Energy Source	Contact Name: John Laney Phone/Fax: (520) 425-2219 Email: jlaney@clmontgomery.com cc JKerns		Sampler: (Please Print)
Invoice Address: Email invoice to Gail PO Box 218 Grants, NM 87020	Invoice Contact & Phone: Gail Alexander (505) 287-8851	Purchase Order:	Quote/Bottle Order: C3636

Special Report/Formats – ELI must be notified prior to sample submittal for the following:

☐ DW ☐ A2LA
☐ GSA ☐ EDD/EDT (Electronic Data)
☐ POTW/WWTP Format: _____
☐ State: _____ ☐ LEVEL IV
☐ Other: _____ ☐ NELAC

Number of Containers
Sample Type: A W S V B O
Air Water Soils/Solids Vegetation Bioassay Other

ANALYSIS REQUESTED

SEE ATTACHED

Normal Turnaround (TAT)

RUSH

Contact ELI prior to RUSH sample submittal for charges and scheduling – See Instruction Page

Comments: Metal samples were preserved and filtered in the field

Shipped by: FedEx

Cooler ID(s): Client

Receipt Temp: 8.6 °C

On Ice: (Yes) No

Custody Seal Y (N)
Intact (Y) N
Signature Match (Y) N

	SAMPLE IDENTIFICATION (Name, Location, Interval, etc.)	Collection Date	Collection Time	MATRIX	C3636
1	6457	15Aug2013	1025	water	X
2	6458	15Aug2013	1115	water	X
3					
4					
5					
6					
7					
8					
9					
10					

C1308635

LABORATORY USE ONLY

Custody Record MUST be Signed

Relinquished by (print): Josh Kerns	Date/Time: 15Aug2013/1300	Signature:	Received by (print):	Date/Time:	Signature:
Relinquished by (print):	Date/Time:	Signature:	Received by (print):	Date/Time:	Signature:
			Received by Laboratory:	Date/Time: 8-16-13	Signature: 10:00

Sample Disposal: Return to Client: _____ Lab Disposal: _____

In certain circumstances, samples submitted to Energy Laboratories, Inc. may be subcontracted to other certified laboratories in order to complete the analysis requested.
This serves as notice of this possibility. All sub-contract data will be clearly notated on your analytical report.
Visit our web site at www.energylab.com for additional information, downloadable fee schedule, forms, and links.

Confluence Environmental, Inc

Equipment Calibration Log

Equipment make/ model	Equipment ID/ serial number	Date	Time	Calibration Standards	Equipment Reading	Equipment Calibrated	Temp (°C / °F)	Tech init.	Comments
Pro Series	#4	9/30/13	715	4, 7, 10 1413	4.0, 7.0, 10.0 1413	✓	20	BM	
"	"	"	"	10% 2375	10% 237.5	✓	20	BM	

Notes/comments:

Water Level Measurements

Job Number: B1-130930 | Date: 30-Sept | Client: Montgomery

Site: Rio Algom Mining

Well I.D.	Time	Dia	Depth to NAPL	Thickness of NAPL	Depth to water (DTW)	Total Depth (measured)	Total Depth (historical)	Ref Point TOC/TOB		
EF-8	800	4			73.95		244.00	TOC		
RL-1	720	5			116.05		124.00	TOC		

Confluence Environmental, Inc.
3308 El Camino Ave, Suite 300 #148, Sacramento CA, 95821, 916-760-7641

Well Maintenance Inspection Form

Client: Montgomery & Assoc Site: Rio Algom Mining Date: 9/30/13

Job #: B1-130930 Technician: BM / JK Page of

		Entry Indicates Deficiency													
Inspection Point	Well Inspected - No Corrective Action Required	Cap non-functional	Lock non-functional	Lock missing	Bolts missing (# missing / # total tabs)	Tabs stripped (# stripped / # total tabs.)	Tabs broken (# broken / # of total tabs)	Annular seal incomplete	Apron damaged	Rim / Lid broken	Trip Hazard	Below Grade	Other (explain in notes)	Well Not Inspected (explain in notes)	Notes (Note any repairs made while on site)
EF-8															
RL-1	X														

Notes:

Repair codes: **rt**=retap/ bolts added or replaced **as**=annular seal repair,

Confluence Environmental, Inc 3308 El Camino Ave, Suite 300 #148, Sacramento CA, 95821, 916-760-7641

Purging And Sampling Data Sheet

Job#: B1-130930	**Sampler:** BM / JK	**Client:** Montgomery & Assoc
Well ID: EF-8	**Date:** 30-Sep-2013	**Site:** Rio Algom Mining
Well diam: 1/4" 1" 2" 3" (4") 6" Other:		**DTW:** 73.95 **Total Depth:** 244.00

Purge equip: ES - diam: (Bladder) Peri Waterra Positive Air Displacement Ext. System

disp bailer teflon bailer other: **Tubing:** OD: New (Dedicated) NA

Purge method: 3-5 Case Volume (Micro/Low-Flow) Extraction Other:

Pump depth/ intake: **Multipliers:** 1"= 0.04 2"= 0.16 3"= 0.37 4"= 0.65 5"=1.02 6"= 1.47 Radius² X 0.163

(TD - DTW X Multiplier = 1 Volume	80% Recovery (TD - DTW X 0.20 + DTW)

Weather - Cool

1 Volume = _____ X _____ = _____ (Total Purge) 80%= _____

Time	Temp (°C / °F)	pH	Specific Cond (mS / (uS))	Turbidity (NTU)	Purge Rate (gal or mL/ min)	Volume Removed (gal / (L))	DO (mg/l)	ORP (mv)	DTW	Notes
813	11.8	7.7	2262	6	200	1	7.2	180	74.00	
816	11.8	7.6	2290	5		1.6	6.8	179	74.03	
819	11.8	7.6	2292	5		2.2	6.2	176	74.02	
822	11.9	7.5	2327	5		2.8	5.9	173	74.02	
825	11.9	7.5	2337	4		3.4	5.9	172	74.02	
828	12.0	7.5	2343	4		4	6.0	170	74.02	

Did well dewater? YES (NO) Total volume removed: 4 (gal / (L))

Sample method: Disp Bailer (Ded. Tubing) New Tubing Ext. Port Other:

Sample date: 30 Sept 2013	Sample time: 830	DTW at sample: 74.02
Sample ID: 64160	Lab: ~~Accutest~~ Energy	Number of bottles 2
Analysis: 500ml NP poly - Alkalinity, Cl, SO4, TDS, EC, pH	250ml HNO3 poly Field Filtered - Dissolved Metals	

Equipment blank ID @		Field blank ID @	
Duplicate ID:		Pre-purge DO:	Post purge DO:
Fe^{2+}:		Pre-purge ORP:	Post purge ORP:
NAPL depth:	Volume of NAPL:	Volume removed:	ml

Confluence Environmental, Inc
3308 El Camino Ave, Suite 300 #148, Sacramento, CA 95821, 916-760-7641

Purging And Sampling Data Sheet

Job#: B1-130930	**Sampler:** BM / JK		**Client:** Montgomery & Assoc		
Well ID: RL-1	**Date:** 30-Sep-2013	**Site:** Rio Algom Mining			
Well diam: 1/4" 1" 2" 3" 4" 6" Other: (5)		**DTW:** 116.00	**Total Depth:** 124.00		
Purge equip: ES - diam: (Bladder) Peri Waterra Positive Air Displacement Ext. System					
disp bailer teflon bailer other:	**Tubing:** OD: New (Dedicated) NA				
Purge method: 3-5 Case Volume (Micro/Low-Flow) Extraction Other:					
Pump depth/ intake:	**Multipliers:** 1"= 0.04 2"= 0.16 3"= 0.37 4"= 0.65 5"=1.02 6"= 1.47 Radius² X 0.163				
(TD - DTW X Multiplier = 1 Volume	80% Recovery (TD - DTW X 0.20 + DTW)				

weather— cool

1 Volume = _____ X _____ = _____ (Total Purge) 80%= _____

Time	Temp (°C / °F)	pH	Specific Cond (mS / µS)	Turbidity (NTU)	Purge Rate (gal or mL/ min)	Volume Removed (gal / L)	DO (mg/l)	ORP (mv)	DTW	Notes
728	11.6	7.0	11524	14	200	1	7.2	281	116.12	
731	10.8	7.1	11553	10		1.6	7.1	274	116.12	
734	10.9	7.3	11587	8		2.2	6.6	270	116.12	
737	11.1	7.2	11640	7		2.8	6.1	268	116.12	
740	11.2	7.2	11660	6		3.4	5.7	264	116.12	
743	11.4	7.1	11699	6		4	5.4	260	116.12	
746	11.5	7.1	11709	5		4.6	5.2	257	116.12	
749	11.7	7.1	11703	5		5.2	5.0	253	116.12	

Did well dewater? YES (NO)		Total volume removed: 5.2 (gal / (L))	
Sample method: Disp Bailer (Ded. Tubing) New Tubing Ext. Port Other:			
Sample date: 30Sept2013	Sample time: 750	DTW at sample: 116.12	
Sample ID: 0459	Lab: ~~Accutest~~ Energy	Number of bottles	2
Analysis: 500ml NP poly - Alkalinity, Cl, SO4, TDS, EC, pH 250ml HNO3 poly Field Filtered - Dissolved Metals			
Equipment blank ID @	Field blank ID @		
Duplicate ID:	Pre-purge DO:	Post purge DO:	
Fe^{2+}:	Pre-purge ORP:	Post purge ORP:	
NAPL depth:	Volume of NAPL:	Volume removed:	ml

Confluence Environmental, Inc
3308 El Camino Ave, Suite 300 #148, Sacramento, CA 95821, 916-760-7641

ANALYTICAL SUMMARY REPORT

October 08, 2013

Rio Algom Mining Corporation LLC
Hwy 605 and 509
Grants, NM 87020

Workorder No.: C13100034 Quote ID: C3636 - Groundwater

Project Name: Lisbon, UT Facility

Energy Laboratories, Inc. Casper WY received the following 2 samples for Rio Algom Mining Corporation LLC on 10/1/2013 for analysis.

Sample ID	Client Sample ID	Collect Date	Receive Date	Matrix	Test
C13100034-001	6459	09/30/13 7:50	10/01/13	Aqueous	Metals by ICP/ICPMS, Dissolved Alkalinity QA Calculations Conductivity E300.0 Anions pH Solids, Total Dissolved Solids, Total Dissolved - Calculated
C13100034-002	6460	09/30/13 8:30	10/01/13	Aqueous	Same As Above

The results as reported relate only to the item(s) submitted for testing. The analyses presented in this report were performed at Energy Laboratories, Inc., 2393 Salt Creek Hwy., Casper, WY 82601, unless otherwise noted. Radiochemistry analyses were performed at Energy Laboratories, Inc., 2325 Kerzell Lane, Casper, WY 82601, unless otherwise noted. Any exceptions or problems with the analyses are noted in the Laboratory Analytical Report, the QA/QC Summary Report, or the Case Narrative.

If you have any questions regarding these test results, please call.

Report Approved By:

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility
Lab ID: C13100034-001
Client Sample ID 6459

Report Date: 10/08/13
Collection Date: 09/30/13 07:50
DateReceived: 10/01/13
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Carbonate as CO3	ND	mg/L		5		A2320 B	10/01/13 19:18 / jba
Bicarbonate as HCO3	1260	mg/L		5		A2320 B	10/01/13 19:18 / jba
Calcium	575	mg/L		1		E200.7	10/02/13 18:21 / sf
Chloride	691	mg/L	D	10		E300.0	10/02/13 20:04 / wc
Magnesium	197	mg/L		1		E200.7	10/02/13 18:21 / sf
Potassium	20	mg/L		1		E200.7	10/02/13 18:21 / sf
Sodium	2120	mg/L	D	2		E200.7	10/02/13 18:21 / sf
Sulfate	4750	mg/L	D	40		E300.0	10/02/13 20:04 / wc
PHYSICAL PROPERTIES							
Conductivity @ 25 C	10500	umhos/cm		5		A2510 B	10/02/13 09:25 / tmm
pH	7.21	s.u.	H	0.01		A4500-H B	10/01/13 16:02 / alp
Solids, Total Dissolved TDS @ 180 C	9050	mg/L		100		A2540 C	10/02/13 14:57 / tmm
METALS - DISSOLVED							
Arsenic	0.005	mg/L		0.001		E200.8	10/04/13 00:12 / cp
Iron	ND	mg/L		0.03		E200.7	10/02/13 18:21 / sf
Molybdenum	11.2	mg/L	D	0.03		E200.7	10/02/13 18:21 / sf
Selenium	0.074	mg/L		0.001		E200.8	10/04/13 00:12 / cp
Uranium	48.4	mg/L		0.0003		E200.8	10/04/13 00:12 / cp
DATA QUALITY							
A/C Balance (± 5)	-0.585	%				A1030 E	10/08/13 09:40 / kbh
Anions	139	meq/L				A1030 E	10/08/13 09:40 / kbh
Cations	137	meq/L				A1030 E	10/08/13 09:40 / kbh
Solids, Total Dissolved Calculated	9000	mg/L				A1030 E	10/08/13 09:40 / kbh
TDS Balance (0.80 - 1.20)	1.01					A1030 E	10/08/13 09:40 / kbh

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
H - Analysis performed past recommended holding time.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility
Lab ID: C13100034-002
Client Sample ID 6460

Report Date: 10/08/13
Collection Date: 09/30/13 08:30
DateReceived: 10/01/13
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Carbonate as CO3	ND	mg/L		5		A2320 B	10/01/13 19:36 / jba
Bicarbonate as HCO3	418	mg/L		5		A2320 B	10/01/13 19:36 / jba
Calcium	225	mg/L		1		E200.7	10/02/13 18:25 / sf
Chloride	222	mg/L		1		E300.0	10/02/13 20:23 / wc
Magnesium	59	mg/L		1		E200.7	10/02/13 18:25 / sf
Potassium	5	mg/L		1		E200.7	10/02/13 18:25 / sf
Sodium	174	mg/L		1		E200.7	10/02/13 18:25 / sf
Sulfate	500	mg/L	D	4		E300.0	10/02/13 20:23 / wc
PHYSICAL PROPERTIES							
Conductivity @ 25 C	2100	umhos/cm		5		A2510 B	10/02/13 09:28 / tmm
pH	7.62	s.u.	H	0.01		A4500-H B	10/01/13 16:05 / alp
Solids, Total Dissolved TDS @ 180 C	1460	mg/L		20		A2540 C	10/02/13 14:57 / tmm
METALS - DISSOLVED							
Arsenic	0.038	mg/L		0.001		E200.8	10/04/13 00:29 / cp
Iron	ND	mg/L		0.03		E200.7	10/02/13 18:25 / sf
Molybdenum	ND	mg/L		0.01		E200.7	10/02/13 18:25 / sf
Selenium	0.012	mg/L		0.001		E200.8	10/04/13 00:29 / cp
Uranium	0.756	mg/L		0.0003		E200.8	10/04/13 00:29 / cp
DATA QUALITY							
A/C Balance (± 5)	0.507	%				A1030 E	10/08/13 09:40 / kbh
Anions	23.5	meq/L				A1030 E	10/08/13 09:40 / kbh
Cations	23.8	meq/L				A1030 E	10/08/13 09:40 / kbh
Solids, Total Dissolved Calculated	1400	mg/L				A1030 E	10/08/13 09:40 / kbh
TDS Balance (0.80 - 1.20)	1.04					A1030 E	10/08/13 09:40 / kbh

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
H - Analysis performed past recommended holding time.

QA/QC Summary Report

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC **Report Date:** 10/08/13

Project: Lisbon, UT Facility **Work Order:** C13100034

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: A2320 B										Batch: R179006
Sample ID: MBLK	3	Method Blank				Run: MANTECH_131001A				10/01/13 14:57
Alkalinity, Total as CaCO3		ND	mg/L	2						
Carbonate as CO3		ND	mg/L	1						
Bicarbonate as HCO3		ND	mg/L	1						
Sample ID: LCS_130917		Laboratory Control Sample				Run: MANTECH_131001A				10/01/13 15:12
Alkalinity, Total as CaCO3		260	mg/L	5.0	104	90	110			
Sample ID: C13091098-001ADUP	3	Sample Duplicate				Run: MANTECH_131001A				10/01/13 15:28
Alkalinity, Total as CaCO3		453	mg/L	5.0				0.6	10	
Carbonate as CO3		ND	mg/L	5.0					10	
Bicarbonate as HCO3		553	mg/L	5.0				0.6	10	
Sample ID: C13091098-002AMS		Sample Matrix Spike				Run: MANTECH_131001A				10/01/13 15:46
Alkalinity, Total as CaCO3		681	mg/L	5.0	90	80	120			

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

QA/QC Summary Report

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC **Report Date:** 10/08/13

Project: Lisbon, UT Facility **Work Order:** C13100034

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: A2510 B										Batch: R179017
Sample ID: SC 2ND 1413		Laboratory Control Sample				Run: PHSC_101-C_131002A				10/02/13 08:45
Conductivity @ 25 C		1410	umhos/cm	5.0	100	90	110			
Sample ID: MBLK		Method Blank				Run: PHSC_101-C_131002A				10/02/13 09:22
Conductivity @ 25 C		2	umhos/cm	0.7						
Sample ID: C13100041-001ADUP		Sample Duplicate				Run: PHSC_101-C_131002A				10/02/13 09:41
Conductivity @ 25 C		1010	umhos/cm	5.0				0.2	10	

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

QA/QC Summary Report

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC **Report Date:** 10/08/13

Project: Lisbon, UT Facility **Work Order:** C13100034

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: A2540 C										Batch: TDS131002A
Sample ID: MB-1_131002A	Method Blank					Run: BAL-19_131002B				10/02/13 14:43
Solids, Total Dissolved TDS @ 180 C		ND	mg/L	10						
Sample ID: LCS-2_131002A	Laboratory Control Sample					Run: BAL-19_131002B				10/02/13 14:44
Solids, Total Dissolved TDS @ 180 C		2020	mg/L	20	101	90	110			
Sample ID: C13091042-001B DUP	Sample Duplicate					Run: BAL-19_131002B				10/02/13 14:45
Solids, Total Dissolved TDS @ 180 C		632	mg/L	40				1.9	5	
Sample ID: C13100031-008A MS	Sample Matrix Spike					Run: BAL-19_131002B				10/02/13 14:56
Solids, Total Dissolved TDS @ 180 C		14200	mg/L	100	103	90	110			

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

QA/QC Summary Report

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC **Report Date:** 10/08/13

Project: Lisbon, UT Facility **Work Order:** C13100034

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: A4500-H B									Analytical Run: PHSC_101-C_131001A	
Sample ID: pH 6.86	Initial Calibration Verification Standard								10/01/13 08:31	
pH		6.85	s.u.	0.010	100	98	102			
Method: A4500-H B									Batch: R178944	
Sample ID: C13091004-002ADUP	Sample Duplicate					Run: PHSC_101-C_131001A			10/01/13 10:44	
pH		12.3	s.u.	0.010				0.0	3	

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

QA/QC Summary Report

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC **Report Date:** 10/08/13

Project: Lisbon, UT Facility **Work Order:** C13100034

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E200.7								Analytical Run: ICP4-C_131002A		
Sample ID: ICV	6	Initial Calibration Verification Standard							10/02/13 14:03	
Calcium		50.1	mg/L	0.50	100	95	105			
Iron		4.94	mg/L	0.030	99	95	105			
Magnesium		49.9	mg/L	0.50	100	95	105			
Molybdenum		0.972	mg/L	0.10	97	95	105			
Potassium		49.7	mg/L	0.50	99	95	105			
Sodium		49.9	mg/L	0.50	100	95	105			
Sample ID: ICSA	6	Interference Check Sample A							10/02/13 14:17	
Calcium		456	mg/L	0.50	91	80	120			
Iron		173	mg/L	0.030	86	80	120			
Magnesium		498	mg/L	0.50	100	80	120			
Molybdenum		-0.00125	mg/L	0.10						
Potassium		-0.0149	mg/L	0.50						
Sodium		-0.0407	mg/L	0.50						
Sample ID: ICSAB	6	Interference Check Sample AB							10/02/13 14:21	
Calcium		462	mg/L	0.50	92	80	120			
Iron		176	mg/L	0.030	88	80	120			
Magnesium		505	mg/L	0.50	101	80	120			
Molybdenum		-0.000890	mg/L	0.10						
Potassium		-0.00884	mg/L	0.50						
Sodium		-0.139	mg/L	0.50						
Method: E200.7									Batch: R179083	
Sample ID: MB-131002A	6	Method Blank				Run: ICP4-C_131002A			10/02/13 14:40	
Calcium		ND	mg/L	0.02						
Iron		ND	mg/L	0.002						
Magnesium		0.06	mg/L	0.01						
Molybdenum		ND	mg/L	0.003						
Potassium		ND	mg/L	0.04						
Sodium		ND	mg/L	0.2						
Sample ID: LFB-131002A	6	Laboratory Fortified Blank				Run: ICP4-C_131002A			10/02/13 14:44	
Calcium		47.8	mg/L	0.50	96	85	115			
Iron		0.947	mg/L	0.030	95	85	115			
Magnesium		47.6	mg/L	0.50	95	85	115			
Molybdenum		0.941	mg/L	0.10	94	85	115			
Potassium		48.3	mg/L	0.50	97	85	115			
Sodium		47.9	mg/L	0.50	96	85	115			
Sample ID: C13090842-001BMS2	6	Sample Matrix Spike				Run: ICP4-C_131002A			10/02/13 18:40	
Calcium		153	mg/L	1.0	96	70	130			
Iron		1.90	mg/L	0.030	93	70	130			
Magnesium		110	mg/L	1.0	95	70	130			
Molybdenum		1.93	mg/L	0.0059	95	70	130			
Potassium		98.9	mg/L	1.0	92	70	130			
Sodium		286	mg/L	1.0	93	70	130			

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

QA/QC Summary Report

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Report Date: 10/08/13
Project: Lisbon, UT Facility
Work Order: C13100034

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: **E200.7**										Batch: R179083
Sample ID: **C13090842-001BMSD2**	6	Sample Matrix Spike Duplicate				Run: ICP4-C_131002A				10/02/13 18:44
Calcium		151	mg/L	1.0	94	70	130	1.2	20	
Iron		1.88	mg/L	0.030	92	70	130	1.2	20	
Magnesium		108	mg/L	1.0	93	70	130	1.3	20	
Molybdenum		1.92	mg/L	0.0059	94	70	130	0.3	20	
Potassium		96.1	mg/L	1.0	89	70	130	2.9	20	
Sodium		282	mg/L	1.0	88	70	130	1.6	20	

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

QA/QC Summary Report

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC **Report Date:** 10/08/13

Project: Lisbon, UT Facility **Work Order:** C13100034

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E200.8									Analytical Run: ICPMS4-C_131003A	
Sample ID: ICV	3	Initial Calibration Verification Standard							10/03/13 21:20	
Arsenic		0.0504	mg/L	0.0010	101	90	110			
Selenium		0.0508	mg/L	0.0010	101	90	110			
Uranium		0.0500	mg/L	0.00030	100	90	110			
Method: E200.8									Batch: R179153	
Sample ID: LRB	3	Method Blank				Run: ICPMS4-C_131003A			10/03/13 12:51	
Arsenic		ND	mg/L	5E-05						
Selenium		ND	mg/L	7E-05						
Uranium		ND	mg/L	9E-06						
Sample ID: LFB	3	Laboratory Fortified Blank				Run: ICPMS4-C_131003A			10/03/13 12:55	
Arsenic		0.0504	mg/L	0.0010	101	85	115			
Selenium		0.0542	mg/L	0.0010	108	85	115			
Uranium		0.0530	mg/L	0.00030	106	85	115			
Sample ID: C13090808-007BMS4	3	Sample Matrix Spike				Run: ICPMS4-C_131003A			10/03/13 20:25	
Arsenic		0.0553	mg/L	0.0010	108	70	130			
Selenium		0.0516	mg/L	0.0010	103	70	130			
Uranium		0.0613	mg/L	0.00030	118	70	130			
Sample ID: C13090808-007BMSD4	3	Sample Matrix Spike Duplicate				Run: ICPMS4-C_131003A			10/03/13 20:29	
Arsenic		0.0549	mg/L	0.0010	107	70	130	0.6	20	
Selenium		0.0524	mg/L	0.0010	104	70	130	1.4	20	
Uranium		0.0600	mg/L	0.00030	115	70	130	2.2	20	

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

QA/QC Summary Report

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC **Report Date:** 10/08/13

Project: Lisbon, UT Facility **Work Order:** C13100034

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E300.0									Analytical Run: IC2-C_131002E	
Sample ID: CCV-100213-02	2	Continuing Calibration Verification Standard							10/02/13 16:23	
Chloride		10.1	mg/L	1.0	101	90	110			
Sulfate		40.0	mg/L	1.0	100	90	110			
Method: E300.0									Batch: R179085	
Sample ID: ICB-100213	2	Method Blank				Run: IC2-C_131002B			10/02/13 11:10	
Chloride		ND	mg/L	0.03						
Sulfate		0.1	mg/L	0.07						
Sample ID: LFB-100213-01	2	Laboratory Fortified Blank				Run: IC2-C_131002B			10/02/13 11:47	
Chloride		9.68	mg/L	1.0	97	90	110			
Sulfate		38.6	mg/L	1.0	96	90	110			
Sample ID: LFBD-100213-01	2	Laboratory Fortified Blank Duplicate				Run: IC2-C_131002B			10/02/13 12:05	
Chloride		9.72	mg/L	1.0	97	90	110	0.3	20	
Sulfate		38.7	mg/L	1.0	97	90	110	0.5	20	
Sample ID: C13100041-001AMS	2	Sample Matrix Spike				Run: IC2-C_131002B			10/02/13 21:36	
Chloride		102	mg/L	1.0	105	90	110			
Sulfate		196	mg/L	4.2	97	90	110			
Sample ID: C13100041-001AMSD	2	Sample Matrix Spike Duplicate				Run: IC2-C_131002B			10/02/13 21:55	
Chloride		103	mg/L	1.0	107	90	110	1.3	20	
Sulfate		198	mg/L	4.2	98	90	110	1.0	20	

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

Standard Reporting Procedures

Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH, Dissolved Oxygen and Residual Chlorine, are qualified as being analyzed outside of recommended holding time.

Solid/soil samples are reported on a wet weight basis (as received) unless specifically indicated. If moisture corrected, data units are typically noted as –dry. For agricultural and mining soil parameters/characteristics, all samples are dried and ground prior to sample analysis.

Workorder Receipt Checklist

Rio Algom Mining Corporation LLC C13100034

Login completed by: Kerri Schroeder
Date Received: 10/1/2013
Reviewed by: BL2000\khelm
Received by: cav
Reviewed Date: 10/1/2013
Carrier name: NDA

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on all shipping container(s)/cooler(s)?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on all sample bottles?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time? (Exclude analyses that are considered field parameters such as pH, DO, Res Cl, Sulfite, Ferrous Iron, etc.)	Yes ☑	No ☐	
Temp Blank received in all shipping container(s)/cooler(s)?	Yes ☑	No ☐	Not Applicable ☐
Container/Temp Blank temperature:	2.6°C On Ice		
Water - VOA vials have zero headspace?	Yes ☐	No ☐	No VOA vials submitted ☑
Water - pH acceptable upon receipt?	Yes ☑	No ☐	Not Applicable ☐

Contact and Corrective Action Comments:

None

Chain of Custody and Analytical Request Record

Page 1 of 1

PLEASE PRINT- Provide as much information as possible.

Company Name: Rio Algom Mining Corp	Project Name, PWS, Permit, Etc.: Lisbon, UT Facility	Sample Origin State: UT	EPA/State Compliance: Yes ☐ No ☐
Report Mail Address: Montgomery and Associates; Results retrieved from Energy Source	Contact Name: John Laney; Phone/Fax: (520) 425-2219; Email: jlaney@clmontgomery.com		Sampler: (Please Print) Brandon Myers
Invoice Address: Email invoice to Gail, PO Box 218, Grants, NM 87020	Invoice Contact & Phone: Gail Alexander (505) 287-8851	Purchase Order:	Quote/Bottle Order: C3636

Special Report/Formats – ELI must be notified prior to sample submittal for the following:

☐ DW ☐ GSA ☐ POTW/WWTP ☐ State: _____ ☐ Other: _____
☐ A2LA ☐ EDD/EDT (Electronic Data) Format: _____ ☐ LEVEL IV ☐ NELAC

Number of Containers; Sample Type: A W S V B O; Air Water Soils/Solids Vegetation Bioassay Other

ANALYSIS REQUESTED

SAMPLE IDENTIFICATION (Name, Location, Interval, etc.)	Collection Date	Collection Time	MATRIX	C3636	SEE ATTACHED	Normal Turnaround (TAT)
1 0459	30Sept2013	0750	water	X		
2 0460	30Sept2013	0830	water	X		
3						
4						
5						
6						
7						
8						
9						
10						

RUSH

Contact ELI prior to RUSH sample submittal for charges and scheduling – See Instruction Page

Comments: Metal samples were preserved + filtered in the field

Shipped by: Fed-Ex

Cooler ID(s): C3997

Receipt Temp: 2.6 °C

On Ice: (Yes) No

Custody Seal (Y) N

Intact (Y) N

Signature Match (Y) N

LABORATORY USE ONLY

C1310034

Custody Record MUST be Signed

Relinquished by (print): Brandon Myers	Date/Time: 30Sept2013 0900	Signature:	Received by (print):	Date/Time:	Signature:
Relinquished by (print):	Date/Time:	Signature:	Received by (print):	Date/Time:	Signature:
			Received by Laboratory:	Date/Time: 10-1-13	Signature: 10:00

Sample Disposal: Return to Client: _____ Lab Disposal: _____

In certain circumstances, samples submitted to Energy Laboratories, Inc. may be subcontracted to other certified laboratories in order to complete the analysis requested. This serves as notice of this possibility. All sub-contract data will be clearly notated on your analytical report.
Visit our web site at www.energylab.com for additional information, downloadable fee schedule, forms, and links.

Water Level Measurements

Job Number: KI-131007 Date: 10-7-13 Client: Montgomery & Assoc

Site: Rio Algom Mining - Lisbon UT

Well I.D.	Time	Dia	Depth to NAPL	Thickness of NAPL	Depth to water (DTW)	Total Depth (measured)	Total Depth (historical)	Ref Point (TOC/ TOB)	Screen	Depth top of HS set
EF-3A	1323	6			81.80	—	215	TOC	151-214 ~~173-203~~	185 -
EF-6	1430	4			71.51	—	137	TOC	107-137 ~~105-135~~	122 -
EF-8	—				74.03	—	244	TOC	213-243 ~~212-242~~	230 -
H-63	1121	5			135.90	—	172	TOC	141-170 ~~140-170~~	158 -
LW-1	1303	4			146.54	—	234 ~~233~~	TOC	204-234 ~~203-233~~	221 -
UW-1	1053	5			105.40	—	140	TOC	103-140 ✓	123.5
ML-1	1412	4			43.46	—	157	TOC	137-157	149 -
MW-13	1105	4			93.92	—	206	TOC	129-206 ~~80-125~~	169.5 ~~104.5~~
MW-5	1241	6			154.03	—	197	TOC	167-197 ~~165-195~~	184. -
OW-UT-9	1155	6			123.35	—	142	TOC	120-140 ~~118-138~~	132.75 ~~140~~
RL-1	1546	5			115.80	—	125 ~~124~~	TOC	105-125 ~~104-124~~	120.5 ~~137~~
RL-3	1552	5			170.07	—	185 ~~183~~	TOC	165-185 ~~163-183~~	180 —
RL-4	1522	5			156.34	—	178	TOC	138-178 ~~137-177~~	169.25
RL-5	1530	5			151.78	—	186	TOC	150-186	170 -
RL-6	1450	#5			15.70	—	20	TOC	7.7-18	18.5
MW-100	1305	4			147.35	—	204 ~~203~~	TOC	139-204 ~~138-203~~	177.5 ~~174~~
MW-101	1252	4			150.90	—	161 ~~159~~	TOC	141-161 ~~139-159~~	153
MW-102	1217	4			125.25	—	136	TOC	116-136	132.5
MW-102DB	1215	4			120.07	—	175	TOC	145-175	164 -
MW-103	1143	4			83.12	—	111.5	TOC	81.5-111.5	99.25

Water Level Measurements

Job Number: KI-131007 Date: 10-7-13 Client: Montgomery & Assoc

Site: Rio Algom Mining, Lisbon UT

Well I.D.	Time	Dia	Depth to NAPL	Thickness of NAPL	Depth to water (DTW)	Total Depth (measured)	Total Depth (historical)	Ref Point (TOC/ TOB)	Screen	Depth top of HS set
MW-104	1006	4			94.29	—	108	TOC	68-98	—
MW-105	1132	4			73.48	—	135	TOC	65-135	106.5 ~~103~~
MW-106	0954	4 X			227.00	—	264.5	TOC	237-267 ~~234.5-264.5~~	254
MW-107S	1500	4			50.95	62.51	61.8	TOC	31.8-61.8	59
MW-107D	1503	4			51.05	81.41	81.7	TOC	61.7-81.7	74
MW-108	1513	4			27.11	170.46	169.6	TOC	89.6-169.6	132 —
MW-109	1542	4			136.20	156.60	155.7	TOC	125.7-155.7	148 —
MW-110	1545	4			141.02	142.40	142	TOC	102-142	—
MW-111	1230	4			Dry	126.05	125.85	TOC	75.85-125.85	
MW-112	1418	4			45.63	142.70	141.8	TOC	36.8-141.8	96 —
MW-113	1428	4			68.43	105.00	104.45	TOC	59.45-104.45	88.50
MW-114	1402	4			58.03	199.53	199	TOC	49-199	122.5 ~~124~~
MW-115S	* —	4			75.73	125.80	126.9	TOC	61.9-126.9	103
MW-115M	0950	4			75.70	242.15	—	TOC	—	174 —
MW-116	1350	4			85.35	124.82	124	TOC	104-124	116
MW-117S	1325	4			82.82	127.03	126.7	TOC	71.7-126.7	106.9
MW-117M	1327	4			83.30	151.10	151.4	TOC	126.4-151.4	141. —
MW-118	1448	4			15.73	66.90	66.4	TOC	11.4-66.4	43.5
MW-119 (#1)	195	4			70.24	90.02	74.5	TOC	54.5-74.5	— BOS: 75 IS' Sump
MW-120 (#5)	1034	4			126.32	247.70	246.9	TOC	116.9-246.9	184'

Water Level Measurements

Job Number: KI-131007 Date: 10-7-13 Client: Montgomery & Assoc.

Site: Rio Algom Mining, Lisbon UT

Well I.D.	Time	Dia	Depth to NAPL	Thickness of NAPL	Depth to water (DTW)	Total Depth (measured)	Total Depth (historical)	Ref Point (TOC/ TOB)	Screen	Depth top of HS set
MW-121 (#3)	1345	4			Dry	202.91	201.85	TOC	171.85-201.85	—
MW-122 (#6)	0936	4			Dry	197.76	196.75	TOC	156.75-196.75	—
~~B-2 (#2)~~	—	—	—	—	—	—	—	TOC	—	—

Water Level Measurements

Job Number: K1-131007 Date: 10-7-13 Client: Montgomery & Assoc

Site: Rio Algom Mining - Lisbon UT

Well I.D.	Time	Dia	Depth to NAPL	Thickness of NAPL	Depth to water (DTW)	Total Depth (measured)	Total Depth (historical)	Ref Point (TOC/ TOB)	Screen	Depth top of HS set
EF-3A	1323	6			81.80	—	215	TOC	151-214 ~~173-203~~	185 -
EF-6	1430	4			71.51	—	137	TOC	107-137 ~~105-135~~	122 -
EF-8	—				74.03	—	244	TOC	213-243 ~~212-242~~	230 -
H-63	1121	5			135.90	—	172	TOC	141-170 ~~140-170~~	158 -
LW-1	1303	4			146.54	—	234 ~~233~~	TOC	204-234 ~~203-233~~	221 -
UW-1	1053	5			105.40	—	140	TOC	103-140	123.5
ML-1	1412	4			43.46	—	157	TOC	137-157	149 -
MW-13	1105	4			93.92	—	206	TOC	129-206 ~~80-125~~	169.5 ~~104.5~~
MW-5	1241	6			154.03	—	197	TOC	167-197 ~~165-195~~	184. -
OW-UT-9	1155	6			123.35	—	142	TOC	120-140 ~~118-138~~	132.75 ~~130~~
RL-1	1546	5			115.80	—	125 ~~124~~	TOC	105-125 ~~104-124~~	120.5 ~~137~~
RL-3	1552	5			170.07	—	185 ~~183~~	TOC	165-185 ~~163-183~~	180 —
RL-4	1522	5			156.34	—	178	TOC	138-178 ~~137-177~~	169.25
RL-5	1530	5			151.78	—	186	TOC	150-186	170 -
RL-6	1450	#5			15.70	—	20	TOC	7.7-18	18.5
MW-100	1305	4			147.35	—	204 ~~203~~	TOC	139-204 ~~138-203~~	177.5 ~~174~~
MW-101	1252	4			150.90	—	161 ~~159~~	TOC	141-161 ~~139-159~~	153
MW-102	1217	4			125.25	—	136	TOC	116-136	132.5
MW-102DB	1215	4			120.07	—	175	TOC	145-175	164 -
MW-103	1143	4			83.12	—	111.5	TOC	81.5-111.5	99.25

Water Level Measurements

Job Number: K1-131007 Date: 10-7-13 Client: Montgomery & Assoc

Site: Rio Algom Mining, Lisbon UT

Well I.D.	Time	Dia	Depth to NAPL	Thickness of NAPL	Depth to water (DTW)	Total Depth (measured)	Total Depth (historical)	Ref Point (TOC/ TOB)	Screen	Depth top of HS set
MW-104	1000	4			94.29	—	108	TOC	68-98	—
MW-105	1132	4			73.48	—	135	TOC	65-135	106.5 ~~103~~
MW-106	0954	4 X			227.00	—	264.5	TOC	237-267 ~~234.5-264.5~~	254
MW-107S	1500	4			50.95	62.51	61.8	TOC	31.8-61.8	59
MW-107D	1503	4			51.05	81.41	81.7	TOC	61.7-81.7	74
MW-108	1513	4			27.11	170.46	169.6	TOC	89.6-169.6	132 —
MW-109	1542	4			136.20	156.60	155.7	TOC	125.7-155.7	148 —
MW-110	1545	4			141.02	142.40	142	TOC	102-142	—
MW-111	1230	4			Dry	126.05	125.85	TOC	75.85-125.85	
MW-112	1418	4			45.63	142.70	141.8	TOC	36.8-141.8	96 —
MW-113	1428	4			68.43	105.00	104.45	TOC	59.45-104.45	88.50
MW-114	1402	4			58.03	199.53	199	TOC	49-199	122.5 ~~124~~
MW-115S	—	4			75.73	125.80	126.9	TOC	61.9-126.9	103
MW-115M	0950	4			75.70	242.15	—	TOC	—	174 —
MW-116	1350	4			85.35	124.82	124	TOC	104-124	116
MW-117S	1325	4			82.82	127.03	126.7	TOC	71.7-126.7	106.9
MW-117M	1327	4			83.30	151.10	151.4	TOC	126.4-151.4	141. —
MW-118	1448	4			15.73	66.90	66.4	TOC	11.4-66.4	43.5
MW-119 (#1)	195	4			70.24	90.02	74.5	TOC	54.5-74.5	—
MW-120 (#5)	1034	4			126.32	247.70	246.9	TOC	116.9-246.9	184'

BOS: 75 15' Sump

Water Level Measurements

Job Number: IC1-131007 Date: 10-7-13 Client: Montgomery & Assoc

Site: Rio Algom Mining, Lisbon UT

Well I.D.	Time	Dia	Depth to NAPL	Thickness of NAPL	Depth to water (DTW)	Total Depth (measured)	Total Depth (historical)	Ref Point (TOC/ TOB)	Screen	Depth top of HS set
MW-121 (#3)	1345	4			Dry	202.91	201.85	TOC	171.85-201.85	—
MW-122 (#6)	0936	4			Dry	197.76	196.75	TOC	156.75-196.75	—
~~B-2 (#2)~~	—	—	—	—	—	—	—	TOC	—	—

Well Maintenance Inspection Form

Client: Montgomery & Assoc Site: Rio Algom Mining / Lisbon Date: 10-7-13

Job #: K1-131007 Technician: JK / BM Page 1 of 3

Inspection Point	Well Inspected - No Corrective Action Required	Entry Indicates Deficiency: Cap non-functional	Lock non-functional	Lock missing	Bolts missing (# missing / # total tabs)	Tabs stripped (# stripped / # total tabs.)	Tabs broken (# broken / # of total tabs)	Annular seal incomplete	Apron damaged	Rim / Lid broken	Trip Hazard	Below Grade	Other (explain in notes)	Well Not Inspected (explain in notes)	Notes (Note any repairs made while on site)
EF-3A	X														
EF-6	X														
EF-8	X														
H-63	X														
LW-1	X														
UW-1	X														
ML-1	X														
MW-13	X														
MW-5	X														
OW-UT-9	X														
RL-1									X						
RL-3									X						
RL-4	X														
RL-5	X														
RL-6	X														
MW-100	X														
MW-101	X														
MW-102	X														
MW-102DB	X														
MW-103	X														

Notes:

Repair codes: **rt**=retap/ bolts added or replaced **as**=annular seal repair,

Confluence Environmental, Inc 3308 El Camino Ave, Suite 300 #148, Sacramento CA, 95821, 916-760-7641

Well Maintenance Inspection Form

Client: Montgomery & Assoc Site: Rio Algom Mining / Lisbon Date: 10-7-13

Job #: KL-131007 Technician: JK / BM Page 2 of 3

Inspection Point	Well Inspected - No Corrective Action Required	Entry Indicates Deficiency: Cap non-functional	Lock non-functional	Lock missing	Bolts missing (# missing / # total tabs)	Tabs stripped (# stripped / # total tabs.)	Tabs broken (# broken / # of total tabs)	Annular seal incomplete	Apron damaged	Rim / Lid broken	Trip Hazard	Below Grade	Other (explain in notes)	Well Not Inspected (explain in notes)	Notes (Note any repairs made while on site)
MW-104	X														
MW-105	X														
MW-106	X														
MW-107S	X														
MW-107D	X														
MW-108	X														
MW-109	X														
MW-110	X														
MW-111	X														
MW-112	X														
MW-113	X														
MW-114	X														
MW-115S	X														
MW-115M	X														
MW-116	X														
MW-117S	X														
MW-117M	X														
MW-118	X														
MW-119 (#1)	X														
MW-120 (#5)	X														

Notes:

Repair codes: **rt**=retap/ bolts added or replaced **as**=annular seal repair,

Well Maintenance Inspection Form

Client: Montgomery & Assoc Site: Rio Algom Mining, Lisbon Date: 10-7-13

Job #: 1C1-131007 Technician: JK/BM Page 3 of 3

Inspection Point	Well Inspected - No Corrective Action Required	Entry Indicates Deficiency: Cap non-functional	Lock non-functional	Lock missing	Bolts missing (# missing / # total tabs)	Tabs stripped (# stripped / # total tabs.)	Tabs broken (# broken / # of total tabs)	Annular seal incomplete	Apron damaged	Rim / Lid broken	Trip Hazard	Below Grade	Other (explain in notes)	Well Not Inspected (explain in notes)	Notes (Note any repairs made while on site)
MW-121 (#3)	X														
MW-122 (#6)	X														
~~B-2 (#2)~~ JK															

Notes:

Repair codes: **rt**=retap/ bolts added or replaced **as**=annular seal repair,

Purging And Sampling Data Sheet

Job#: 1350.15	**Sampler:** J Kerns B Myers	**Client:** Montgomery & Associates
Well ID: EF-3A	**Date** (DDOct2012): 13OCT2013	**Site:** Rio Algom Mining, Lisbon, UT
Weather Conditions: Partly Cloudy - Cool	**Sampler Signature:**	
Well diam: 1/4" 1" 2" 3" 4" (6") Other:	**DTW:** 81.80	**Total Depth:** 215
Purge equip: ES - diam: Bladder Peri Waterra Positive Air Displacement Ext. System disp bailer teflon bailer other:	**Tubing:** OD: New Dedicated NA	
Purge method: 3-5 Case Volume Micro/Low-Flow Extraction Other:		
Pump depth/ intake: —	**Multipliers:** 1"= 0.04 2"= 0.16 3"= 0.37 4"= 0.65 5"=1.02 6"= 1.47 Radius² X 0.163	

(TD - DTW X Multiplier = 1 Volume	80% Recovery (TD - DTW X 0.20 + DTW)

1 Volume = — X — = — (Total Purge) 80%= —

Time	Temp (°C / °F)	pH	SP Cond (mS / µS)	Turbidity (NTU)	Purge Rate (gal or mL/ min)	Volume Removed (gal / L)	DO (mg/l)	ORP (mv)	DTW	Notes
—	Hydrasleeve set @				-	185	—	—	—	—
0910	12.8	7.3	6870	42	—	—	1.19	258.3	—	

Did well dewater? YES (NO) Total volume removed: — (gal / L)

Sample method: Disp Bailer (Hydrasleeve) New Tubing Ext. Port Other:

Sample date: 13OCT2013	Sample time: 0910	DTW at sample: 81.80
Sample ID: 6960	Lab: Energy Labs	Number of bottles: (2)
Analysis: 500 ml NP poly - Alkalinity, Cl, SO4, TDS, EC, pH	250 ml HNO3 poly *field filtered - Dissolved Metals	

Equipment blank ID @	Field blank ID @	
Duplicate ID:	Pre-purge DO:	Post purge DO:
Fe^{2+}:	Pre-purge ORP:	Post purge ORP:
NAPL depth:	Volume of NAPL:	Volume removed: ml

Confluence Environmental, Inc
3308 El Camino Ave, Suite 300 #148, Sacramento, CA 95821, 916-760-7641

Purging And Sampling Data Sheet

Job#: 1350.15	**Sampler:** J Kerns B Myers	**Client:** Montgomery & Associates
Well ID: EF-3A	**Date** (DDOct2012): 13OCT2013	**Site:** Rio Algom Mining, Lisbon, UT
Weather Conditions: Windy - Cool	**Sampler Signature:**	
Well diam: 1/4" 1" 2" 3" 4" (6") Other:	**DTW:** 81.80	**Total Depth:** 215 —
Purge equip: (ES - diam) Bladder Peri Waterra Positive Air Displacement Ext. System		
disp bailer teflon bailer other:	**Tubing:** OD: New (Dedicated) NA	
Purge method: 3-5 Case Volume (Micro/Low-Flow) Extraction Other:		
Pump depth/ intake: 183 —	**Multipliers:** 1"= 0.04 2"= 0.16 3"= 0.37 4"= 0.65 5"=1.02 6"= 1.47 Radius² X 0.163	

(TD - DTW X Multiplier = 1 Volume	80% Recovery (TD - DTW X 0.20 + DTW)

1 Volume = — X — = — (Total Purge) 80%= —

Time	Temp (°C / °F)	pH	SP Cond (mS / µS)	Turbidity (NTU)	Purge Rate (gal or mL/min)	Volume Removed (gal / L)	DO (mg/l)	ORP (mv)	DTW	Notes
0937	11.5	7.3	6344	5	500	1.0	0.64	223.1	81.80	
0940	11.8	7.2	7055	3	500	2.5	0.81	218.5	81.80	
0943	11.9	7.0	8057	4	500	4.0	0.61	216.8	81.80	
0946	12.0	7.0	8252	3	500	5.5	0.51	208.4	81.80	
0949	12.0	7.0	8425	3	500	7.0	0.58	187.9	81.80	
0951	12.0	7.0	8523	2	500	8.5	0.68	167.2	81.80	
0954	12.1	7.0	8497	1	500	10.0	0.77	149.7	81.80	
0957	12.2	7.0	8494	1	500	11.5	0.79	144.0	81.80	
1000	12.2	7.0	8495	2	500	13.0	0.84	142.9	81.80	

Did well dewater? YES (NO)	Total volume removed: 13.0 (gal / L)
Sample method: Disp Bailer Hydrasleeve New Tubing Ext. Port Other: Dedicated Tubing	

Sample date: 13OCT2013	Sample time: 1005	DTW at sample:
Sample ID: 6967	Lab: Energy Labs	Number of bottles: 2
Analysis: 500 ml NP poly - Alkalinity, Cl, SO4, TDS, EC, pH 250 ml HNO3 poly *field filtered - Dissolved Metals		

Equipment blank ID @	Field blank ID @	
Duplicate ID:	Pre-purge DO:	Post purge DO:
Fe^{2+}:	Pre-purge ORP:	Post purge ORP:
NAPL depth:	Volume of NAPL:	Volume removed: ml

Confluence Environmental, Inc
3308 El Camino Ave, Suite 300 #148, Sacramento, CA 95821, 916-760-7641

Purging And Sampling Data Sheet

Job#: 1350.15	**Sampler:** J Kerns B Myers	**Client:** Montgomery & Associates
Well ID: EF-6	**Date** (DDOct2012): 11OCT2012	**Site:** Rio Algom Mining, Lisbon, UT
Weather Conditions: Windy	**Sampler Signature:**	
Well diam: 1/4" 1" 2" 3" (4") 6" Other:	**DTW:** 71.51 **Total Depth:** 137	
Purge equip: ES diam: Bladder Peri Waterra Positive Air Displacement Ext. System disp bailer teflon bailer other:	**Tubing:** OD: New Dedicated NA	
Purge method: 3-5 Case Volume Micro/Low-Flow Extraction Other:		
Pump depth/ intake: —	**Multipliers:** 1"= 0.04 2"= 0.16 3"= 0.37 4"= 0.65 5"=1.02 6"= 1.47 Radius² X 0.163	
(TD - DTW X Multiplier = 1 Volume —	80% Recovery (TD - DTW X 0.20 + DTW)	

1 Volume = — X — = — (Total Purge) 80%= —

Time	Temp (°C / °F)	pH	SP Cond (mS / µS)	Turbidity (NTU)	Purge Rate (gal or mL/ min)	Volume Removed (gal / L)	DO (mg/l)	ORP (mv)	DTW	Notes
—	Hydrasleeve		Set @	122'	—	—	—	—	—	—
1430	13.2	7.1	3470	31	—	—	8.66	150.9	—	

Did well dewater? YES (NO)	Total volume removed: — (gal / L)	
Sample method: Disp Bailer (Hydrasleeve) New Tubing Ext. Port Other:		
Sample date: 11OCT2012	Sample time: 1430	DTW at sample:
Sample ID: 6951	Lab: Energy Labs	Number of bottles: (2) 1 (2)
Analysis: 500 ml NP poly - Alkalinity, Cl, SO4, TDS, EC, pH 250 ml HNO3 poly *field filtered - Dissolved Metals		
Equipment blank ID @	Field blank ID @	
Duplicate ID: 6952 @ 1435	Pre-purge DO:	Post purge DO:
Fe2+:	Pre-purge ORP:	Post purge ORP:
NAPL depth:	Volume of NAPL:	Volume removed: ml

Confluence Environmental, Inc
3308 El Camino Ave, Suite 300 #148, Sacramento, CA 95821, 916-760-7641

Purging And Sampling Data Sheet

Job#: 1350.15	**Sampler:** J Kerns B Myers	**Client:** Montgomery & Associates
Well ID: EF-6	**Date** (DDOct2012): 11OCT2013	**Site:** Rio Algom Mining, Lisbon, UT
Weather Conditions: Windy	**Sampler Signature:**	
Well diam: 1/4" 1" 2" 3" (4") 6" Other:	**DTW:** 71.51 **Total Depth:** 137 —	

Purge equip: (ES - diam:) Bladder Peri Waterra Positive Air Displacement Ext. System
disp bailer teflon bailer other: **Tubing:** OD: New (Dedicated) NA

Purge method: 3-5 Case Volume (Micro/Low-Flow) Extraction Other:

Pump depth/ intake: 120 — **Multipliers:** 1"= 0.04 2"= 0.16 3"= 0.37 4"= 0.65 5"=1.02 6"= 1.47 Radius² X 0.163

(TD - DTW X Multiplier = 1 Volume — | 80% Recovery (TD - DTW X 0.20 + DTW)

1 Volume = — X — = — (Total Purge) 80%= —

Time	Temp (°C / °F)	pH	SP Cond (mS / µS)	Turbidity (NTU)	Purge Rate (gal or mL/min)	Volume Removed (gal / L)	DO (mg/l)	ORP (mv)	DTW	Notes
1458	11.4	7.0	3386	39	300	1.0	8.96	83.0	71.99	
1501	11.6	7.0	3415	41	300	1.9	8.99	101.1	72.05	
1504	11.9	7.1	3436	29	300	2.8	9.46	117.5	72.05	
1507	12.1	7.1	3447	32	300	3.7	9.36	122.5	72.05	
1510	12.0	7.1	3447	29	300	4.6	9.73	127.1	72.05	
1513	12.0	7.1	3447	27	300	5.5	9.43	128.3	72.05	
1516	12.0	7.1	3444	27	300	6.4	9.88	129.2	72.05	

Did well dewater? YES (NO) | Total volume removed: 6.4 (gal / L)

Sample method: Disp Bailer Hydrasleeve New Tubing Ext. Port Other: Dedicated Tubing

Sample date: 11OCT2013	Sample time: 1520	DTW at sample: 72.05
Sample ID: 6953	Lab: Energy Labs	Number of bottles: (2)
Analysis: 500 ml NP poly - Alkalinity, Cl, SO4, TDS, EC, pH 250 ml HNO3 poly *field filtered - Dissolved Metals		

Equipment blank ID @	Field blank ID @	
Duplicate ID:	Pre-purge DO:	Post purge DO:
$Fe2^{+}$:	Pre-purge ORP:	Post purge ORP:
NAPL depth:	Volume of NAPL:	Volume removed: ml

Confluence Environmental, Inc
3308 El Camino Ave, Suite 300 #148, Sacramento, CA 95821, 916-760-7641

Purging And Sampling Data Sheet

Job#: 1350.15	**Sampler:** J Kerns B Myers	**Client:** Montgomery & Associates
Well ID: EF-8	**Date** (DDOct2012): 14Oct2013	**Site:** Rio Algom Mining, Lisbon, UT
Weather Conditions: windy - cold	**Sampler Signature:**	
Well diam: 1/4" 1" 2" 3" (4") 6" Other:	**DTW:** 74.03	**Total Depth:** 244
Purge equip: ES - diam: Bladder Peri Waterra Positive Air Displacement Ext. System disp bailer teflon bailer other:	**Tubing:** OD: New Dedicated NA	
Purge method: 3-5 Case Volume Micro/Low-Flow Extraction Other:		
Pump depth/ intake: ———	**Multipliers:** 1"= 0.04 2"= 0.16 3"= 0.37 4"= 0.65 5"=1.02 6"= 1.47 Radius² X 0.163	

(TD - DTW X Multiplier = 1 Volume	80% Recovery (TD - DTW X 0.20 + DTW)

1 Volume = ——— X ——— = ——— (Total Purge) 80%= ———

Time	Temp (°C / °F)	pH	SP Cond (mS / µS)	Turbidity (NTU)	Purge Rate (gal or mL/ min)	Volume Removed (gal / L)	DO (mg/l)	ORP (mv)	DTW	Notes
—	Hydra Sleeve		set	@	230	—	—	—	—	
0940	9.9	7.5	2578	123	—	—	7.72	113.7	—	

Did well dewater? YES (NO) Total volume removed: ——— (gal / L)

Sample method: Disp Bailer (Hydrasleeve) New Tubing Ext. Port Other:

Sample date: 14Oct2013	Sample time: 0940	DTW at sample: 74.03
Sample ID: 6978	Lab: Energy Labs	Number of bottles: (2)

Analysis: 500 ml NP poly - Alkalinity, Cl, SO4, TDS, EC, pH 250 ml HNO3 poly *field filtered - Dissolved Metals

Equipment blank ID @	Field blank ID @	
Duplicate ID:	Pre-purge DO:	Post purge DO:
Fe^{2+}:	Pre-purge ORP:	Post purge ORP:
NAPL depth:	Volume of NAPL:	Volume removed: ml

Confluence Environmental, Inc
3308 El Camino Ave, Suite 300 #148, Sacramento, CA 95821, 916-760-7641

Purging And Sampling Data Sheet

Job#: 1350.15	**Sampler:** J Kerns B Myers	**Client:** Montgomery & Associates
Well ID: EE-8	**Date** (DDOct2012): 14OCT2013	**Site:** Rio Algom Mining, Lisbon, UT
Weather Conditions: windy -cold	**Sampler Signature:**	
Well diam: 1/4" 1" 2" 3" (4") 6" Other:	**DTW:** 74.03	**Total Depth:** 244
Purge equip: ES - diam: (Bladder) Peri Waterra Positive Air Displacement Ext. System		
disp bailer teflon bailer other:	**Tubing:** OD: New (Dedicated) NA	
Purge method: 3-5 Case Volume (Micro/Low-Flow) Extraction Other:		
Pump depth/ intake: 228 —	**Multipliers:** 1"= 0.04 2"= 0.16 3"= 0.37 4"= 0.65 5"=1.02 6"= 1.47 Radius² X 0.163	
(TD - DTW X Multiplier = 1 Volume	80% Recovery (TD - DTW X 0.20 + DTW)	

1 Volume = — X — = — (Total Purge) 80%= —

Time	Temp (°C) °F	pH	SP Cond (mS / µS)	Turbidity (NTU)	Purge Rate (gal or mL/min)	Volume Removed (gal / L)	DO (mg/l)	ORP (mv)	DTW	Notes
1059	8.7	7.6	2175	4	200	1.0	23.63	134.8	74.31	
1102	10.4	7.5	2155	13	200	1.6	14.54	138.4	74.31	
1105	10.3	7.5	2207	11	200	3.2	13.87	136.8	74.31	
1108	10.5	7.5	1866	9	200	3.8	17.77	136.7	74.31	
1111	10.4	7.5	2111	13	200	4.4	12.29	140.8	74.31	
1114	10.7	7.5	2222	8	200	5.0	10.14	141.7	74.31	
1117	10.6	7.4	2278	5	200	5.6	9.32	142.3	74.31	
1120	10.5	7.4	2293	7	200	6.2	9.30	142.5	74.31	
1123	10.6	7.4	2293	6	200	6.8	9.04	142.7	74.31	

Did well dewater? YES (NO)	Total volume removed: 6.8 (gal / (L))
Sample method: Disp Bailer Hydrasleeve New Tubing Ext. Port Other: Dedicated Tubing	
Sample date: 14OCT2013 Sample time: 1130	DTW at sample: 74.31
Sample ID: 6979 Lab: Energy Labs	Number of bottles: 2 +2
Analysis: 500 ml NP poly - Alkalinity, Cl, SO4, TDS, EC, pH 250 ml HNO3 poly *field filtered - Dissolved Metals	
Equipment blank ID 6980@ 1135	Field blank ID @
Duplicate ID:	Pre-purge DO: Post purge DO:
Fe^{2+}:	Pre-purge ORP: Post purge ORP:
NAPL depth: Volume of NAPL:	Volume removed: ml

Confluence Environmental, Inc
3308 El Camino Ave, Suite 300 #148, Sacramento, CA 95821, 916-760-7641

Purging And Sampling Data Sheet

Job#: 1350.15	**Sampler:** J Kerns B Myers	**Client:** Montgomery & Associates
Well ID: H-63	**Date** (DDOct2012): 12OCT2013	**Site:** Rio Algom Mining, Lisbon, UT
Weather Conditions: Cold - Cloudy	**Sampler Signature:**	
Well diam: 1/4" 1" 2" 3" 4" 6" Other: (5)	**DTW:** 135.90 **Total Depth:** 172 —	
Purge equip: ES diam: Bladder Peri Waterra Positive Air Displacement Ext. System disp bailer teflon bailer other:	**Tubing:** OD: New Dedicated NA	
Purge method: 3-5 Case Volume Micro/Low-Flow Extraction Other:		
Pump depth/ intake: —	**Multipliers:** 1"= 0.04 2"= 0.16 3"= 0.37 4"= 0.65 5"=1.02 6"= 1.47 Radius² X 0.163	

(TD - DTW X Multiplier = 1 Volume	80% Recovery (TD - DTW X 0.20 + DTW)

1 Volume = — X — = — (Total Purge) 80%= —

Time	Temp (°C / °F)	pH	SP Cond (mS / µS)	Turbidity (NTU)	Purge Rate (gal or mL/ min)	Volume Removed (gal / L)	DO (mg/l)	ORP (mv)	DTW	Notes
—	Hydra Sleeve	Set	@	—	158 —	—	—	—	—	
0810	9.7	8.0	1002	11	—	—	4.37	236.6	—	

Did well dewater? YES (NO)	Total volume removed: — (gal / L)	
Sample method: Disp Bailer (Hydrasleeve) New Tubing Ext. Port Other:		
Sample date: 12OCT2013	Sample time: 0810	DTW at sample: 135.90
Sample ID: 6954	Lab: Energy Labs	Number of bottles: (2)
Analysis: 500 ml NP poly - Alkalinity, Cl, SO4, TDS, EC, pH 250 ml HNO3 poly *field filtered - Dissolved Metals		

Equipment blank ID @	Field blank ID @	
Duplicate ID:	Pre-purge DO:	Post purge DO:
$Fe2^{+}$:	Pre-purge ORP:	Post purge ORP:
NAPL depth:	Volume of NAPL:	Volume removed: ml

Confluence Environmental, Inc
3308 El Camino Ave, Suite 300 #148, Sacramento, CA 95821, 916-760-7641

Purging And Sampling Data Sheet

Job#: 1350.15	**Sampler:** J Kerns/B Myers	**Client:** Montgomery & Associates
Well ID: 14-63	**Date** (DDOct2012): 12OCT2013	**Site:** Rio Algom Mining, Lisbon, UT
Weather Conditions: Cold - Cloudy	**Sampler Signature:**	
Well diam: 1/4" 1" 2" 3" 4" 6" Other: (5)	**DTW:** 135.90 **Total Depth:** 172	

Purge equip: ES - diam: Bladder Peri Waterra Positive Air Displacement Ext. System
disp bailer teflon bailer other: **Tubing:** OD: New (Dedicated) NA

Purge method: 3-5 Case Volume (Micro/Low-Flow) Extraction Other:

Pump depth/ intake: 156 — **Multipliers:** 1"= 0.04 2"= 0.16 3"= 0.37 4"= 0.65 5"=1.02 6"= 1.47 Radius² X 0.163

(TD - DTW X Multiplier = 1 Volume — | 80% Recovery (TD - DTW X 0.20 + DTW)

1 Volume = — X — = — (Total Purge) 80%= —

Time	Temp (°C) °F	pH	SP Cond (mS / µS)	Turbidity (NTU)	Purge Rate (gal or mL/min)	Volume Removed (gal / L)	DO (mg/l)	ORP (mv)	DTW	Notes
0845	10.1	8.1	1031	23	400	1.0	4.68	205.6	136.20	
0848	10.3	8.0	1032	19	400	2.2	4.49	204.1	136.19	
0851	10.6	8.0	1082	25	400	3.4	4.38	199.1	136.05	
0854	10.8	8.0	1050	17	400	4.6	4.30	60.5	136.05	
0857	11.3	8.0	1072	13	400	5.8	4.32	184.7	~~184.6~~ 136.05 SH	
0900	11.9	8.0	1075	11	400	7.0	4.27	178.9	136.05	
0903	12.0	8.0	1066	10	400	8.2	4.30	175.6	136.05	
0906	12.4	8.0	1056	13	400	9.4	4.27	172.5	136.05	
0909	12.5	8.0	1052	12	400	10.6	4.29	169.0	136.05	
0917	12.5	8.0	1052	11	400	11.8	4.29	165.6	136.05	

Did well dewater? YES (NO) Total volume removed: 11.8 (gal / L)

Sample method: Disp Bailer Hydrasleeve New Tubing Ext. Port Other: Dedicated Tubing

Sample date: 12OCT2013	Sample time: 0915	DTW at sample: 136.05
Sample ID: 6955	Lab: Energy Labs	Number of bottles: 2 +2

Analysis: 500 ml NP poly - Alkalinity, Cl, SO4, TDS, EC, pH 250 ml HNO3 poly *field filtered - Dissolved Metals

Equipment blank ID @	Field blank ID @	
Duplicate ID: 6956 @ 0920	Pre-purge DO:	Post purge DO:
Fe2+:	Pre-purge ORP:	Post purge ORP:
NAPL depth:	Volume of NAPL:	Volume removed: ml

Confluence Environmental, Inc
3308 El Camino Ave, Suite 300 #148, Sacramento, CA 95821, 916-760-7641

Purging And Sampling Data Sheet

Job#: 1350.15	**Sampler:** J Kerns B Myers	**Client:** Montgomery & Associates
Well ID: LW-1	**Date** (DDOct2012): 09Oct2013	**Site:** Rio Algom Mining, Lisbon, UT
Weather Conditions: cool	**Sampler Signature:**	
Well diam: 1/4" 1" 2" 3" (4") 6" Other:	**DTW:** 146.54 **Total Depth:** 234.00	
Purge equip: (ES) diam: Bladder Peri Waterra Positive Air Displacement Ext. System		
disp bailer teflon bailer other: **Tubing:** OD: New Dedicated NA		
Purge method: 3-5 Case Volume Micro/Low-Flow Extraction Other: HS		
Pump depth/ intake: 221	**Multipliers:** 1"= 0.04 2"= 0.16 3"= 0.37 4"= 0.65 5"=1.02 6"= 1.47 Radius² X 0.163	

(TD - DTW X Multiplier = 1 Volume	80% Recovery (TD - DTW X 0.20 + DTW)

1 Volume = — X — = — (Total Purge) 80%= —

Time	Temp (°C / °F)	pH	SP Cond (mS / µS)	Turbidity (NTU)	Purge Rate (gal or mL/ min)	Volume Removed (gal / L)	DO (mg/l)	ORP (mv)	DTW	Notes
820	11.5	7.7	402	13	—	—	3.5	178	—	

Did well dewater? YES (NO)	Total volume removed: — (gal / L)	
Sample method: Disp Bailer (Hydrasleeve) New Tubing Ext. Port Other:		
Sample date: 09Oct2013	Sample time: 0820	DTW at sample: —
Sample ID: LW-1	Lab: Energy Labs	Number of bottles: 2
Analysis: 500 ml NP poly - Alkalinity, Cl, SO4, TDS, EC, pH 250 ml HNO3 poly *field filtered - Dissolved Metals		

Equipment blank ID @	Field blank ID @	
Duplicate ID:	Pre-purge DO:	Post purge DO:
$Fe2^{+}$:	Pre-purge ORP:	Post purge ORP:
NAPL depth:	Volume of NAPL:	Volume removed: ml

Confluence Environmental, Inc
3308 El Camino Ave, Suite 300 #148, Sacramento, CA 95821, 916-760-7641

Purging And Sampling Data Sheet

Job#: 1350.15	**Sampler:** J Kerns B Myers	**Client:** Montgomery & Associates
Well ID: GW-1	**Date** (DDOct2012): 09Oct2013	**Site:** Rio Algom Mining, Lisbon, UT
Weather Conditions: Cool	**Sampler Signature:**	
Well diam: 1/4" 1" 2" 3" (4") 6" Other:	**DTW:** 146.54 **Total Depth:** 234.00	
Purge equip: (ES - diam:) Bladder Peri Waterra Positive Air Displacement Ext. System		
disp bailer teflon bailer other:	**Tubing:** OD: New Dedicated NA	
Purge method: 3-5 Case Volume (Micro/Low-Flow) Extraction Other:		
Pump depth/ intake: 221	**Multipliers:** 1"= 0.04 2"= 0.16 3"= 0.37 4"= 0.65 5"=1.02 6"= 1.47 Radius² X 0.163	

(TD - DTW X Multiplier = 1 Volume	80% Recovery (TD - DTW X 0.20 + DTW)

1 Volume = — X — = — (Total Purge) 80%= —

Time	Temp (°C / °F)	pH	SP Cond (mS / µS)	Turbidity (NTU)	Purge Rate (gal or mL/ min)	Volume Removed (gal / L)	DO (mg/l)	ORP (mv)	DTW	Notes
856	11.5	7.6	0.11	70	500	1.5	3.3	155	146.45	
859	11.9	7.60	0.110	47		3	3.1	151	146.45	
902	12.1	7.60	0.115	32		4.5	3.2	147	146.45	
905	12.1	7.60	0.110	27		6	3.3	142	146.45	
908	12.3	7.60	0.110	25		7.5	3.3	136	146.45	
911	12.7	7.5	0.114	21		9	3.4	127	146.45	
914	13.2	7.5	0.117	20		10.5	3.6	120	146.45	
917	13.5	7.5	0.115	20		12	3.7	116	146.45	
920	13.5	7.5	0.120	19		13.5	3.6	114	146.45	

Did well dewater? YES (NO)	Total volume removed:	(gal / (L))
Sample method: Disp Bailer Hydrasleeve New Tubing Ext. Port Other:		
Sample date: 09Oct2013	Sample time: 920	DTW at sample: 146.45
Sample ID: GW89	Lab: Energy Labs	Number of bottles: 2
Analysis: 500 ml NP poly - Alkalinity, Cl, SO4, TDS, EC, pH 250 ml HNO3 poly *field filtered - Dissolved Metals		
Equipment blank ID @	Field blank ID @	
Duplicate ID:	Pre-purge DO:	Post purge DO:
$Fe2^{+}$:	Pre-purge ORP:	Post purge ORP:
NAPL depth:	Volume of NAPL:	Volume removed: ml

Confluence Environmental, Inc
3308 El Camino Ave, Suite 300 #148, Sacramento, CA 95821, 916-760-7641

Purging And Sampling Data Sheet

Job#: 1350.15	**Sampler:** J Kerns B Myers	**Client:** Montgomery & Associates
Well ID: UW-1	**Date** (DDOct2012): 12OCT2013	**Site:** Rio Algom Mining, Lisbon, UT
Weather Conditions: Windy	**Sampler Signature:**	
Well diam: 1/4" 1" 2" 3" 4" 6" Other: 5	**DTW:** 105.40 **Total Depth:** 140	
Purge equip: ES - diam: Bladder Peri Waterra Positive Air Displacement Ext. System disp bailer teflon bailer other:	**Tubing:** OD: New Dedicated NA	
Purge method: 3-5 Case Volume Micro/Low-Flow Extraction Other:		
Pump depth/ intake: —	**Multipliers:** 1"= 0.04 2"= 0.16 3"= 0.37 4"= 0.65 5"=1.02 6"= 1.47 Radius² X 0.163	
(TD - DTW X Multiplier = 1 Volume —	80% Recovery (TD - DTW X 0.20 + DTW) —	

1 Volume = — X — = — (Total Purge) 80%= —

Time	Temp (°C) °F	pH	SP Cond (mS / µS)	Turbidity (NTU)	Purge Rate (gal or mL/ min)	Volume Removed (gal / L)	DO (mg/l)	ORP (mv)	DTW	Notes
—	Hydrasleeve	set	@	—	123.5	—	—	—		
1505	12.2	7.1	1095	17	—	—	2.67	136.3	—	

Did well dewater? YES (NO) Total volume removed: — (gal / L)

Sample method: Disp Bailer (Hydrasleeve) New Tubing Ext. Port Other:

Sample date: 12OCT2013	Sample time: 1505	DTW at sample: 105.40
Sample ID: 6967	Lab: Energy Labs	Number of bottles: (2)
Analysis: 500 ml NP poly - Alkalinity, Cl, SO4, TDS, EC, pH 250 ml HNO3 poly *field filtered - Dissolved Metals		
Equipment blank ID @	Field blank ID @	
Duplicate ID:	Pre-purge DO:	Post purge DO:
Fe^{2+}:	Pre-purge ORP:	Post purge ORP:
NAPL depth:	Volume of NAPL:	Volume removed: ml

Confluence Environmental, Inc
3308 El Camino Ave, Suite 300 #148, Sacramento, CA 95821, 916-760-7641

Purging And Sampling Data Sheet

Job#: 1350.15	**Sampler:** J Kerns B Myers	**Client:** Montgomery & Associates
Well ID: MW-1	**Date** (DDOct2012): 12OCT2017	**Site:** Rio Algom Mining, Lisbon, UT
Weather Conditions: Windy	**Sampler Signature:**	
Well diam: 1/4" 1" 2" 3" (4") 6" Other: (5)	**DTW:** 105.40	**Total Depth:** ~140~
Purge equip: (ES - diam:) Bladder Peri Waterra Positive Air Displacement Ext. System		
disp bailer teflon bailer other:	**Tubing:** OD: New (Dedicated) NA	
Purge method: 3-5 Case Volume (Micro/Low-Flow) Extraction Other:		
Pump depth/ intake: 121	**Multipliers:** 1"= 0.04 2"= 0.16 3"= 0.37 4"= 0.65 5"=1.02 6"= 1.47 Radius² X 0.163	
(TD - DTW X Multiplier = 1 Volume	80% Recovery (TD - DTW X 0.20 + DTW)	

1 Volume = ____ X ____ = ____ (Total Purge) 80%= ____

Time	Temp (°C) °F	pH	SP Cond (mS / µS)	Turbidity (NTU)	Purge Rate (gal or mL / min)	Volume Removed (gal / L)	DO (mg/l)	ORP (mv)	DTW	Notes
1527	12.2	7.1	1084	19	500	1.0	3.07	138.0	105.75	
1530	11.9	7.1	1087	15	500	2.5	2.65	126.9	105.75	
1533	11.9	7.1	1086	11	500	4.0	2.64	120.1	105.75	
1536	12.2	7.1	1086	7	500	5.5	2.60	107.3	105.75	
1539	13.5	7.1	1085	3	500	7.0	2.51	87.8	105.75	
1542	14.4	7.1	1088	5	500	8.5	2.48	81.3	105.75	
1545	14.4	7.1	1088	5	500	10.0	2.46	79.7	105.75	
1548	14.5	7.1	1089	4	500	11.5	2.49	79.1	105.75	

Did well dewater? YES (NO)	Total volume removed: 11.5 (gal (L))	
Sample method: Disp Bailer Hydrasleeve New Tubing Ext. Port Other: Dedicated Tubing		
Sample date: 12OCT2017	Sample time: 1550	DTW at sample: 105.75
Sample ID: 6963	Lab: Energy Labs	Number of bottles: (2)
Analysis: 500 ml NP poly - Alkalinity, Cl, SO4, TDS, EC, pH 250 ml HNO3 poly *field filtered - Dissolved Metals		
Equipment blank ID @	Field blank ID @	
Duplicate ID:	Pre-purge DO:	Post purge DO:
Fe^{2+}:	Pre-purge ORP:	Post purge ORP:
NAPL depth:	Volume of NAPL:	Volume removed: ml

Confluence Environmental, Inc
3308 El Camino Ave, Suite 300 #148, Sacramento, CA 95821, 916-760-7641

Purging And Sampling Data Sheet

Job#: 1350.15	**Sampler:** J Kerns B Myers	**Client:** Montgomery & Associates
Well ID: ML-1	**Date** (DDOct2012): 11OCT2012	**Site:** Rio Algom Mining, Lisbon, UT
Weather Conditions: Cool - Cloudy	**Sampler Signature:**	
Well diam: 1/4" 1" 2" 3" 4" 6" Other:	**DTW:** 43.46 **Total Depth:** 157	
Purge equip: ES - diam: Bladder Peri Waterra Positive Air Displacement Ext. System disp bailer teflon bailer other:	**Tubing:** OD: New Dedicated NA	
Purge method: 3-5 Case Volume Micro/Low-Flow Extraction Other:		
Pump depth/ intake: —	**Multipliers:** 1"= 0.04 2"= 0.16 3"= 0.37 4"= 0.65 5"=1.02 6"= 1.47 Radius² X 0.163	
(TD - DTW X Multiplier = 1 Volume —	80% Recovery (TD - DTW X 0.20 + DTW)	

1 Volume = — X — = — (Total Purge) 80%= —

Time	Temp (°C / °F)	pH	SP Cond (mS / µS)	Turbidity (NTU)	Purge Rate (gal or mL/ min)	Volume Removed (gal / L)	DO (mg/l)	ORP (mv)	DTW	Notes
—	Hydrasleeve	set	@ 149'		—	—	—	—	—	—
1230	10.8	7.3	1332	29	—	—	3.79	160.4	—	

Did well dewater? YES (NO) Total volume removed: — (gal / L)

Sample method: Disp Bailer (Hydrasleeve) New Tubing Ext. Port Other:

Sample date: 11OCT2012	Sample time: 1230	DTW at sample: 43.46
Sample ID: 7029	Lab: Energy Labs	Number of bottles: (2)
Analysis: 500 ml NP poly - Alkalinity, Cl, SO4, TDS, EC, pH 250 ml HNO3 poly *field filtered - Dissolved Metals		

Equipment blank ID @	Field blank ID @	
Duplicate ID:	Pre-purge DO:	Post purge DO:
Fe^{2+}:	Pre-purge ORP:	Post purge ORP:
NAPL depth:	Volume of NAPL:	Volume removed: ml

Confluence Environmental, Inc
3308 El Camino Ave, Suite 300 #148, Sacramento, CA 95821, 916-760-7641

Purging And Sampling Data Sheet

Job#: 1350.15	**Sampler:** J Kerns B Myers	**Client:** Montgomery & Associates
Well ID: ML-1	**Date** (DDOct2012): 11OCT2012	**Site:** Rio Algom Mining, Lisbon, UT
Weather Conditions: Cool - Cloudy	**Sampler Signature:**	
Well diam: 1/4" 1" 2" 3" (4") 6" Other:	**DTW:** 43.46 **Total Depth:** 157	
Purge equip: ES - diam: Bladder Peri Waterra Positive Air Displacement Ext. System disp bailer teflon bailer other:	**Tubing:** OD: New (Dedicated) NA	
Purge method: 3-5 Case Volume (Micro/Low-Flow) Extraction Other:		
Pump depth/ intake: 147	**Multipliers:** 1"= 0.04 2"= 0.16 3"= 0.37 4"= 0.65 5"=1.02 6"= 1.47 Radius² X 0.163	
(TD - DTW X Multiplier = 1 Volume —	80% Recovery (TD - DTW X 0.20 + DTW) —	

1 Volume = — X — = — (Total Purge) 80%= —

Time	Temp (°C) °F	pH	SP Cond (mS / µS)	Turbidity (NTU)	Purge Rate (gal or mL/min)	Volume Removed (gal / L)	DO (mg/l)	ORP (mv)	DTW	Notes
1255	11.1	7.3	1451	23	300	1.0	3.50	145.0	43.65	
1258	11.2	7.3	1446	19	300	1.9	3.48	145.0	43.69	
1301	11.3	7.2	1449	27	300	2.8	3.43	144.6	43.69	
1304	11.3	7.2	1452	25	300	3.7	3.37	142.3	43.70	
1307	11.1	7.2	1454	23	300	4.6	3.37	133.9	43.70	
1310	11.1	7.2	1454	22	300	5.5	3.42	128.4	43.70	
1313	11.2	7.2	1452	21	300	6.4	3.43	125.6	43.70	

Did well dewater? YES (NO)	Total volume removed: 6.4 (gal / (L))	
Sample method: Disp Bailer Hydrasleeve New Tubing Ext. Port Other: Dedicated Tubing		
Sample date: 11OCT2012	Sample time: 1315	DTW at sample: 43.70
Sample ID: 7070	Lab: Energy Labs	Number of bottles: 2
Analysis: 500 ml NP poly - Alkalinity, Cl, SO4, TDS, EC, pH 250 ml HNO3 poly *field filtered - Dissolved Metals		
Equipment blank ID @	Field blank ID @	
Duplicate ID:	Pre-purge DO:	Post purge DO:
Fe2+:	Pre-purge ORP:	Post purge ORP:
NAPL depth:	Volume of NAPL:	Volume removed: ml

Confluence Environmental, Inc
3308 El Camino Ave, Suite 300 #148, Sacramento, CA 95821, 916-760-7641

Purging And Sampling Data Sheet

Job#: 1350.15	**Sampler:** J Kerns B Myers	**Client:** Montgomery & Associates
Well ID: MW-13	**Date** (DDOct2012): 12OCT2013	**Site:** Rio Algom Mining, Lisbon, UT
Weather Conditions: Windy - Cool	**Sampler Signature:**	
Well diam: 1/4" 1" 2" 3" (4") 6" Other:	**DTW:** 93.92 **Total Depth:** 206	
Purge equip: ES - diam: Bladder Peri Waterra Positive Air Displacement Ext. System disp bailer teflon bailer other:	**Tubing:** OD: New Dedicated NA	
Purge method: 3-5 Case Volume Micro/Low-Flow Extraction Other:		
Pump depth/ intake: —	**Multipliers:** 1"= 0.04 2"= 0.16 3"= 0.37 4"= 0.65 5"=1.02 6"= 1.47 Radius² X 0.163	

(TD - DTW X Multiplier = 1 Volume	80% Recovery (TD - DTW X 0.20 + DTW)

1 Volume = — X — = — (Total Purge) 80%= —

Time	Temp (°C / °F)	pH	SP Cond (mS / µS)	Turbidity (NTU)	Purge Rate (gal or mL/ min)	Volume Removed (gal / L)	DO (mg/l)	ORP (mv)	DTW	Notes
—	Hydrasleeve set @					169.5	—	—	—	—
1100	11.3	7.9	463	24	—	—	4.42	154.7	—	

Did well dewater? YES (NO)	Total volume removed: — (gal / L)
Sample method: Disp Bailer (Hydrasleeve) New Tubing Ext. Port Other:	
Sample date: 12OCT2013 Sample time: 1100	DTW at sample: 93.92
Sample ID: 6960 Lab: Energy Labs	Number of bottles: (2)
Analysis: 500 ml NP poly - Alkalinity, Cl, SO4, TDS, EC, pH 250 ml HNO3 poly *field filtered - Dissolved Metals	

Equipment blank ID @	Field blank ID @	
Duplicate ID:	Pre-purge DO:	Post purge DO:
Fe^{2+}:	Pre-purge ORP:	Post purge ORP:
NAPL depth:	Volume of NAPL:	Volume removed: ml

Confluence Environmental, Inc
3308 El Camino Ave, Suite 300 #148, Sacramento, CA 95821, 916-760-7641

Purging And Sampling Data Sheet

Job#: 1350.15	**Sampler:** J Kerns B Myers	**Client:** Montgomery & Associates
Well ID: MW-13	**Date** (DDOct2012): 12OCT2013	**Site:** Rio Algom Mining, Lisbon, UT
Weather Conditions: Windy - Cool	**Sampler Signature:**	
Well diam: 1/4" 1" 2" 3" (4") 6" Other:	**DTW:** 93.92 **Total Depth:** 206	
Purge equip: (ES - diam:) Bladder Peri Waterra Positive Air Displacement Ext. System disp bailer teflon bailer other:	**Tubing:** OD: New (Dedicated) NA	
Purge method: 3-5 Case Volume (Micro/Low-Flow) Extraction Other:		
Pump depth/ intake: 167	**Multipliers:** 1"= 0.04 2"= 0.16 3"= 0.37 4"= 0.65 5"=1.02 6"= 1.47 Radius² X 0.163	
(TD - DTW X Multiplier = 1 Volume	80% Recovery (TD - DTW X 0.20 + DTW)	

1 Volume = — X — = — (Total Purge) 80%= —

Time	Temp (°C) °F	pH	SP Cond (mS) (µS)	Turbidity (NTU)	Purge Rate (gal or (ml)/ min)	Volume Removed (gal /(L))	DO (mg/l)	ORP (mv)	DTW	Notes
1114	11.7	7.3	834	11	400	1.0	2.89	145.2	93.92	
1117	12.0	7.2	915	5	400	2.2	1.63	145.4	93.92	
1120	11.9	7.2	935	3	400	3.4	1.21	135.1	93.92	
1123	11.9	7.2	933	5	400	4.6	1.14	122.1	93.92	
1126	12.0	7.2	934	4	400	5.8	1.15	117.6	93.92	
1129	11.9	7.2	935	2	400	7.0	1.14	113.0	93.92	

Did well dewater? YES (NO)	Total volume removed: 7.0 (gal /(L))	
Sample method: Disp Bailer Hydrasleeve New Tubing Ext. Port Other: Dedicated Tubing		
Sample date: 12OCT2013	Sample time: 1130	DTW at sample: 93.92
Sample ID: 6961	Lab: Energy Labs	Number of bottles: (2)
Analysis: 500 ml NP poly - Alkalinity, Cl, SO4, TDS, EC, pH 250 ml HNO3 poly *field filtered - Dissolved Metals		
Equipment blank ID @	Field blank ID @	
Duplicate ID:	Pre-purge DO:	Post purge DO:
Fe^{2+}:	Pre-purge ORP:	Post purge ORP:
NAPL depth:	Volume of NAPL:	Volume removed: ml

Confluence Environmental, Inc
3308 El Camino Ave, Suite 300 #148, Sacramento, CA 95821, 916-760-7641

Purging And Sampling Data Sheet

Job#: 1350.15	**Sampler:** J Kerns B Myers	**Client:** Montgomery & Associates
Well ID: MW-5	**Date** (DDOct2012): 10OCT2013	**Site:** Rio Algom Mining, Lisbon, UT
Weather Conditions: Rain - Cold	**Sampler Signature:**	
Well diam: 1/4" 1" 2" 3" 4" (6") Other:	**DTW:** 154.03 **Total Depth:** 197	
Purge equip: ES - diam: Bladder Peri Waterra Positive Air Displacement Ext. System disp bailer teflon bailer other:	**Tubing:** OD: New Dedicated NA	
Purge method: 3-5 Case Volume Micro/Low-Flow Extraction Other:		
Pump depth/ intake: —	**Multipliers:** 1"= 0.04 2"= 0.16 3"= 0.37 4"= 0.65 5"=1.02 6"= 1.47 Radius² X 0.163	
(TD - DTW X Multiplier = 1 Volume —	80% Recovery (TD - DTW X 0.20 + DTW)	

1 Volume = — X — = — (Total Purge) 80%= —

Time	Temp (°C / °F)	pH	SP Cond (mS / µS)	Turbidity (NTU)	Purge Rate (gal or mL/ min)	Volume Removed (gal / L)	DO (mg/l)	ORP (mv)	DTW	Notes
—	Hydrasleeve Set @				184	—	—	—	—	
0900	11.0	6.9	986	7	—	—	1.20	207.0	—	

Did well dewater? YES (NO) Total volume removed: — (gal / L)

Sample method: Disp Bailer (Hydrasleeve) New Tubing Ext. Port Other:

Sample date: 10OCT2013	Sample time: 0900	DTW at sample: 197 —
Sample ID: 7023	Lab: Energy Labs	Number of bottles: (2)
Analysis: 500 ml NP poly - Alkalinity, Cl, SO4, TDS, EC, pH 250 ml HNO3 poly *field filtered - Dissolved Metals		
Equipment blank ID @	Field blank ID @	
Duplicate ID:	Pre-purge DO:	Post purge DO:
Fe^{2+}:	Pre-purge ORP:	Post purge ORP:
NAPL depth:	Volume of NAPL:	Volume removed: ml

Confluence Environmental, Inc
3308 El Camino Ave, Suite 300 #148, Sacramento, CA 95821, 916-760-7641

Purging And Sampling Data Sheet

Job#: 1350.15	**Sampler:** J Kerns B Myers	**Client:** Montgomery & Associates
Well ID: MW-5	**Date** (DDOct2012): 10OCT2013	**Site:** Rio Algom Mining, Lisbon, UT
Weather Conditions: Rain - Cold	**Sampler Signature:**	
Well diam: 1/4" 1" 2" 3" 4" (6") Other:	**DTW:** 154.03 **Total Depth:** 197 —	
Purge equip: (ES - diam: 2") Bladder Peri Waterra Positive Air Displacement Ext. System (ES - 2")		
disp bailer teflon bailer other:	**Tubing:** OD: New (Dedicated) NA	
Purge method: 3-5 Case Volume (Micro/Low-Flow) Extraction Other:		
Pump depth/ intake: 182 —	**Multipliers:** 1"= 0.04 2"= 0.16 3"= 0.37 4"= 0.65 5"=1.02 6"= 1.47 Radius² X 0.163	
(TD - DTW X Multiplier = 1 Volume —	80% Recovery (TD - DTW X 0.20 + DTW)	

1 Volume = _____ X _____ = _____ (Total Purge) 80%= —

Time	Temp (°C) °F	pH	SP Cond (mS) (µS)	Turbidity (NTU)	Purge Rate (gal or (ml) min)	Volume Removed (gal /(L))	DO (mg/l)	ORP (mv)	DTW	Notes
0930	9.2	6.9	1852	5	300	1.0	1.04	175.9	155.10	
0933	8.4	6.9	1840	9	300	1.9	0.67	174.8	155.10	
0936	8.2	6.9	1812	8	300	2.8	0.53	170.1	155.11	
0939	8.9	6.9	1832	11	300	3.7	0.45	158.3	155.12	
0942	8.9	6.9	1829	9	300	4.6	0.42	150.0	155.12	
0945	8.8	6.9	1829	7	300	5.5	0.42	147.4	155.12	
0948	8.8	6.9	1828	7	300	6.4	0.43	142.0	155.12	

Did well dewater? YES (NO)	Total volume removed:	(gal /(L))
Sample method: Disp Bailer Hydrasleeve New Tubing Ext. Port Other: Dedicated tubing		
Sample date: 10OCT2013 Sample time: 0950		DTW at sample:
Sample ID: 7024	Lab: Energy Labs	Number of bottles: (2)
Analysis: 500 ml NP poly - Alkalinity, Cl, SO4, TDS, EC, pH 250 ml HNO3 poly *field filtered - Dissolved Metals		
Equipment blank ID @	Field blank ID @	
Duplicate ID:	Pre-purge DO:	Post purge DO:
$Fe2^{+}$:	Pre-purge ORP:	Post purge ORP:
NAPL depth:	Volume of NAPL:	Volume removed: ml

Confluence Environmental, Inc
3308 El Camino Ave, Suite 300 #148, Sacramento, CA 95821, 916-760-7641

Purging And Sampling Data Sheet

Job#: 1350.15	**Sampler:** J Kerns B Myers	**Client:** Montgomery & Associates
Well ID: CW-MT-9	**Date** (DDOct2012): 13OCT2013	**Site:** Rio Algom Mining, Lisbon, UT
Weather Conditions: Windy	**Sampler Signature:**	
Well diam: 1/4" 1" 2" 3" 4" (6") Other:	**DTW:** 123.35	**Total Depth:** 142
Purge equip: ES - diam: Bladder Peri Waterra Positive Air Displacement Ext. System disp bailer – teflon bailer other:	**Tubing:** OD: New Dedicated NA	
Purge method: 3-5 Case Volume Micro/Low-Flow Extraction Other:		
Pump depth/ intake: —	**Multipliers:** 1"= 0.04 2"= 0.16 3"= 0.37 4"= 0.65 5"=1.02 6"= 1.47 Radius² X 0.163	

(TD - DTW X Multiplier = 1 Volume	80% Recovery (TD - DTW X 0.20 + DTW)

1 Volume = — X — = — (Total Purge) 80%= —

Time	Temp (°C / °F)	pH	SP Cond (mS / µS)	Turbidity (NTU)	Purge Rate (gal or mL/ min)	Volume Removed (gal / L)	DO (mg/l)	ORP (mv)	DTW	Notes
—	Hydra	Sleeve	Set @		132.75		—	—	—	
1145	15.4	9.7	40747	52	—	—	0.63	107.1	—	Brown / Tea color
—	reactive w/ preservative				—	Added	3 vials pres / high pH			

Did well dewater? YES (NO)	Total volume removed: — (gal / L)	
Sample method: Disp Bailer (Hydrasleeve) New Tubing Ext. Port Other:		
Sample date: 13OCT2013	Sample time: 1145	DTW at sample: 123.35
Sample ID: 6970	Lab: Energy Labs	Number of bottles: 2
Analysis: 500 ml NP poly - Alkalinity, Cl, SO4, TDS, EC, pH 250 ml HNO3 poly *field filtered - Dissolved Metals		

Equipment blank ID @	Field blank ID @	
Duplicate ID:	Pre-purge DO:	Post purge DO:
Fe^{2+}:	Pre-purge ORP:	Post purge ORP:
NAPL depth:	Volume of NAPL:	Volume removed: ml

Confluence Environmental, Inc
3308 El Camino Ave, Suite 300 #148, Sacramento, CA 95821, 916-760-7641

Purging And Sampling Data Sheet

Job#: 1350.15	**Sampler:** (J Kerns) B Myers	**Client:** Montgomery & Associates
Well ID: OW-UT-9	**Date** (DDOct2012): 130CT2013	**Site:** Rio Algom Mining, Lisbon, UT
Weather Conditions: Windy	**Sampler Signature:**	
Well diam: 1/4" 1" 2" 3" 4" (6") Other:	**DTW:** 123.35	**Total Depth:** 142

Purge equip: (ES - diam:) Bladder Peri Waterra Positive Air Displacement Ext. System

disp bailer teflon bailer other: **Tubing:** OD: New (Dedicated) NA

Purge method: 3-5 Case Volume (Micro/Low-Flow) Extraction Other:

Pump depth/ intake: 130 **Multipliers:** 1"= 0.04 2"= 0.16 3"= 0.37 4"= 0.65 5"=1.02 6"= 1.47 Radius² X 0.163

(TD - DTW X Multiplier = 1 Volume | 80% Recovery (TD - DTW X 0.20 + DTW)

1 Volume = ___ X ___ = ___ (Total Purge) 80%= ___

Time	Temp (°C / °F)	pH	SP Cond (mS / µS)	Turbidity (NTU)	Purge Rate (gal or mL/ min)	Volume Removed (gal / L)	DO (mg/l)	ORP (mv)	DTW	Notes
1212	12.9	9.7	41338	29.3	500	1.0	0.07	-177.6	123.35	
1215	13.1	9.7	41540	10.1	500	2.5	0.16	-144.8	123.35	
1218	14.3	9.7	40989	7.3	500	4.0	0.06	-219.0	123.35	
1221	14.2	9.7	41447	6.2	500	5.5	0.06	-230.7	123.35	
1224	15.1	9.7	41492	6.1	500	7.0	0.05	-226.8	123.35	
1227	15.1	9.7	41487	5.2	500	8.5	0.05	-226.4	123.35	
1230	15.1	9.7	41492	5.5	500	10.0	0.05	-227.4	123.35	

Did well dewater? YES (NO) Total volume removed: 10.0 (gal / L)

Sample method: Disp Bailer Hydrasleeve New Tubing Ext. Port Other: Dedicated Tubing

Sample date: 130CT2013 Sample time: 1235 DTW at sample: 123.35

Sample ID: 6971 Lab: Energy Labs Number of bottles (2)

Analysis: 500 ml NP poly - Alkalinity, Cl, SO4, TDS, EC, pH 250 ml HNO3 poly *field filtered - Dissolved Metals

Equipment blank ID @ Field blank ID @

Duplicate ID: Pre-purge DO: Post purge DO:

Fe^{2+}: Pre-purge ORP: Post purge ORP:

NAPL depth: Volume of NAPL: Volume removed: ml

Confluence Environmental, Inc
3308 El Camino Ave, Suite 300 #148, Sacramento, CA 95821, 916-760-7641

Purging And Sampling Data Sheet

Job#: 1350.15	**Sampler:** J Kerns B Myers	**Client:** Montgomery & Associates
Well ID: RL-1	**Date** (DDOct2012): 14OCT2013	**Site:** Rio Algom Mining, Lisbon, UT
Weather Conditions: Windy - Cold	**Sampler Signature:**	
Well diam: 1/4" 1" 2" 3" 4" 6" Other: (5)	**DTW:** 115.80	**Total Depth:** 125
Purge equip: ES - diam: Bladder Peri Waterra Positive Air Displacement Ext. System disp bailer teflon bailer other:	**Tubing:** OD: New Dedicated NA	
Purge method: 3-5 Case Volume Micro/Low-Flow Extraction Other:		
Pump depth/ intake: —	**Multipliers:** 1"= 0.04 2"= 0.16 3"= 0.37 4"= 0.65 5"=1.02 6"= 1.47 Radius^2 X 0.163	
(TD - DTW X Multiplier = 1 Volume	80% Recovery (TD - DTW X 0.20 + DTW)	
1 Volume = — X — = — (Total Purge)	80%= —	

Time	Temp (°C) °F	pH	SP Cond (mS) µS	Turbidity (NTU)	Purge Rate (gal or mL/min)	Volume Removed (gal) L	DO (mg/l)	ORP (mv)	DTW	Notes
—	Hydrasleeve set @ 120.					5 L	—	—	—	—
1200	10.6	7.2	10413	21	—	—	5.00	175.7	—	

Did well dewater? YES (NO) — Total volume removed: — (gal / L)

Sample method: Disp Bailer (Hydrasleeve) New Tubing Ext. Port Other:

Sample date: 14OCT2013	Sample time: 1200	DTW at sample: 115.80
Sample ID: 6941	Lab: Energy Labs	Number of bottles: 2
Analysis: 500 ml NP poly - Alkalinity, Cl, SO4, TDS, EC, pH 250 ml HNO3 poly *field filtered - Dissolved Metals		
Equipment blank ID @	Field blank ID @	
Duplicate ID:	Pre-purge DO:	Post purge DO:
Fe^{2+}:	Pre-purge ORP:	Post purge ORP:
NAPL depth:	Volume of NAPL:	Volume removed: ml

Confluence Environmental, Inc
3308 El Camino Ave, Suite 300 #148, Sacramento, CA 95821, 916-760-7641

Purging And Sampling Data Sheet

Job#: 1350.15	**Sampler:** J Kerns B Myers	**Client:** Montgomery & Associates
Well ID: RL-1	**Date** (DDOct2012): 14OCT2013	**Site:** Rio Algom Mining, Lisbon, UT
Weather Conditions: Windy	**Sampler Signature:**	
Well diam: 1/4" 1" 2" 3" 4" 6" Other: (5)	**DTW:** 115.80	**Total Depth:** 125
Purge equip: ES - diam: (Bladder) Peri Waterra Positive Air Displacement Ext. System		
disp bailer teflon bailer other:	**Tubing:** OD: New (Dedicated) NA	
Purge method: 3-5 Case Volume (Micro/Low-Flow) Extraction Other:		
Pump depth/ intake: 120	**Multipliers:** 1"= 0.04 2"= 0.16 3"= 0.37 4"= 0.65 5"=1.02 6"= 1.47 Radius² X 0.163	
(TD - DTW X Multiplier = 1 Volume	80% Recovery (TD - DTW X 0.20 + DTW)	

1 Volume = — X — = — (Total Purge) 80%= —

Time	Temp (°C) / °F	pH	SP Cond (mS / (uS))	Turbidity (NTU)	Purge Rate (gal or mL / min)	Volume Removed (gal / (L))	DO (mg/l)	ORP (mv)	DTW	Notes
1217	10.6	7.6	7098	11	200	1.0	10.95	167.8	116.05	
1220	10.6	7.4	11002	4	200	1.6	10.89	170.8	116.25	
1223	11.5	7.0	11126	2	200	2.4	5.60	170.9	116.25	
1226	11.6	7.0	11120	3	200	3.0	5.18	169.2	116.25	
1229	11.6	7.0	11114	3	200	3.6	5.15	168.8	116.25	
1232	11.7	7.0	11118	5	200	4.2	5.05	167.7	116.25	
1235	11.7	7.0	11089	2	200	4.8	4.98	166.2	116.25	
1238	11.7	7.0	11094	2	200	5.4	5.01	165.7	116.25	

Did well dewater? YES (NO) Total volume removed: 5.4 (gal / (L))

Sample method: Disp Bailer Hydrasleeve New Tubing Ext. Port Other: Dedicated Tubing

Sample date: 14OCT2013 Sample time: 1240 DTW at sample: 116.25

Sample ID: 6942 Lab: Energy Labs Number of bottles: 2

Analysis: 500 ml NP poly - Alkalinity, Cl, SO4, TDS, EC, pH 250 ml HNO3 poly *field filtered - Dissolved Metals

Equipment blank ID @ Field blank ID @

Duplicate ID: Pre-purge DO: Post purge DO:

Fe2+: Pre-purge ORP: Post purge ORP:

NAPL depth: Volume of NAPL: Volume removed: ml

Confluence Environmental, Inc
3308 El Camino Ave, Suite 300 #148, Sacramento, CA 95821, 916-760-7641

Purging And Sampling Data Sheet

Job#: 1350.15	**Sampler:** J Kerns B Myers	**Client:** Montgomery & Associates
Well ID: RL-3	**Date** (DDOct2012): 14OCT2013	**Site:** Rio Algom Mining, Lisbon, UT
Weather Conditions: Cold	**Sampler Signature:**	
Well diam: 1/4" 1" 2" 3" 4" 6" Other: (5)	**DTW:** 170.07	**Total Depth:** 185
Purge equip: ES - diam: Bladder Peri Waterra Positive Air Displacement Ext. System disp bailer teflon bailer other:	**Tubing:** OD: New Dedicated NA	
Purge method: 3-5 Case Volume Micro/Low-Flow Extraction Other:		
Pump depth/ intake: —	**Multipliers:** 1"= 0.04 2"= 0.16 3"= 0.37 4"= 0.65 5"=1.02 6"= 1.47 Radius² X 0.163	
(TD - DTW X Multiplier = 1 Volume	80% Recovery (TD - DTW X 0.20 + DTW)	

1 Volume = ___ X ___ = ___ (Total Purge) 80%= ___

Time	Temp (°C / °F)	pH	SP Cond (mS / µS)	Turbidity (NTU)	Purge Rate (gal or mL/ min)	Volume Removed (gal / L)	DO (mg/l)	ORP (mv)	DTW	Notes
—	Hydra	Sleeve	Set	@	180'	—	—	—	—	
0805	10.8	7.1	6933	7	—	—	6.44	219.2	—	

Did well dewater? YES (NO) Total volume removed: — (gal / L)

Sample method: Disp Bailer (Hydrasleeve) New Tubing Ext. Port Other:

Sample date: 14OCT2013	Sample time: 0805	DTW at sample: 170.07
Sample ID: 6976	Lab: Energy Labs	Number of bottles: (2)
Analysis: 500 ml NP poly - Alkalinity, Cl, SO4, TDS, EC, pH	250 ml HNO3 poly *field filtered - Dissolved Metals	

Equipment blank ID @	Field blank ID @	
Duplicate ID:	Pre-purge DO:	Post purge DO:
$Fe2^{+}$:	Pre-purge ORP:	Post purge ORP:
NAPL depth:	Volume of NAPL:	Volume removed: ml

Confluence Environmental, Inc
3308 El Camino Ave, Suite 300 #148, Sacramento, CA 95821, 916-760-7641

Purging And Sampling Data Sheet

Job#: 1350.15	**Sampler:** J Kerns B Myers	**Client:** Montgomery & Associates
Well ID: RL-3	**Date** (DDOct2012): 14OCT2013	**Site:** Rio Algom Mining, Lisbon, UT
Weather Conditions: Cold	**Sampler Signature:**	
Well diam: 1/4" 1" 2" 3" 4" 6" Other: (5)	**DTW:** 170.07 **Total Depth:** 185	
Purge equip: (ES - diam:) Bladder Peri Waterra Positive Air Displacement Ext. System		
disp bailer teflon bailer other:	**Tubing:** OD: New (Dedicated) NA	
Purge method: 3-5 Case Volume (Micro/Low-Flow) Extraction Other:		
Pump depth/ intake: 182	**Multipliers:** 1"= 0.04 2"= 0.16 3"= 0.37 4"= 0.65 5"=1.02 6"= 1.47 Radius² X 0.163	
(TD - DTW X Multiplier = 1 Volume	80% Recovery (TD - DTW X 0.20 + DTW)	

1 Volume = — X — = — (Total Purge) 80%= —

Time	Temp (°C / °F)	pH	SP Cond (mS / µS)	Turbidity (NTU)	Purge Rate (gal or mL/ min)	Volume Removed (gal (L))	DO (mg/l)	ORP (mv)	DTW	Notes
0837	11.7	6.9	10412	11	500	1.0	3.96	182.6	170.63	
0840	12.7	7.0	10515	17	500	2.5	4.10	146.6	170.66	
0843	15.7	7.0	10586	9	500	4.0	4.41	121.6	170.73	
0846	17.4	7.0	10647	3	500	5.5	4.53	115.5	170.79	
0849	17.9	7.0	10676	5	500	7.0	4.55	112.7	170.73	
0852	17.9	7.0	10664	4	500	8.5	4.75	110.9	170.73	
0855	17.7	7.0	10620	2	500	10.0	4.94	109.1	170.73	
0858	17.8	7.0	10583	3	500	11.5	5.03	106.6	170.73	
0901	17.8	7.0	10578	5	500	13.0	5.21	105.0	170.73	
0904	17.8	7.0	10545	5	500	14.5	5.35	105.6	170.73	
0907	17.8	7.0	10535	4	500	16.0	5.41	106.8	170.73	

Did well dewater? YES (NO) Total volume removed: 16.0 (gal (L))

Sample method: Disp Bailer Hydrasleeve New Tubing Ext. Port Other: Dedicated Tubing

Sample date: 14OCT2013	Sample time: 0910	DTW at sample: 170.73
Sample ID: 6977	Lab: Energy Labs	Number of bottles: (2)
Analysis: 500 ml NP poly - Alkalinity, Cl, SO4, TDS, EC, pH 250 ml HNO3 poly *field filtered - Dissolved Metals		
Equipment blank ID @	Field blank ID @	
Duplicate ID:	Pre-purge DO:	Post purge DO:
Fe2+:	Pre-purge ORP:	Post purge ORP:
NAPL depth:	Volume of NAPL:	Volume removed: ml

Confluence Environmental, Inc
3308 El Camino Ave, Suite 300 #148, Sacramento, CA 95821, 916-760-7641

Purging And Sampling Data Sheet

Job#: 1350.15	**Sampler:** (Kerns B Myers)	**Client:** Montgomery & Associates
Well ID: RL-4	**Date** (DDOct2012): 10OCT2013	**Site:** Rio Algom Mining, Lisbon, UT
Weather Conditions: Rain - Cold	**Sampler Signature:**	
Well diam: 1/4" 1" 2" 3" 4" 6" Other: (.5)	**DTW:** 156.34 **Total Depth:** 178	
Purge equip: ES - diam: Bladder Peri Waterra Positive Air Displacement Ext. System disp bailer teflon bailer other:	**Tubing:** OD: New Dedicated NA	
Purge method: 3-5 Case Volume Micro/Low-Flow Extraction Other:		
Pump depth/ intake: —	**Multipliers:** 1"= 0.04 2"= 0.16 3"= 0.37 4"= 0.65 5"=1.02 6"= 1.47 Radius² X 0.163	
(TD - DTW X Multiplier = 1 Volume —	80% Recovery (TD - DTW X 0.20 + DTW)	

1 Volume = — X — = — (Total Purge) 80%= —

Time	Temp (°C / °F)	pH	SP Cond (mS / µS)	Turbidity (NTU)	Purge Rate (gal or mL/ min)	Volume Removed (gal / L)	DO (mg/l)	ORP (mv)	DTW	Notes
—	Hydrasleeve set @				—	—	169.75	—	—	—
1130	9.9	7.6	894	7	—	—	7.98	95.4	—	
(X) Split w/ DUP										

Did well dewater? YES (NO) Total volume removed: — (gal / L)

Sample method: Disp Bailer (Hydrasleeve) New Tubing Ext. Port Other:

Sample date: 10OCT2013	Sample time: 1130	DTW at sample: 156.34
Sample ID: 7025	Lab: Energy Labs	Number of bottles: (2) + (2)
Analysis: 500 ml NP poly - Alkalinity, Cl, SO4, TDS, EC, pH 250 ml HNO3 poly *field filtered - Dissolved Metals		
Equipment blank ID @	Field blank ID @	
~~Duplicate~~ SPLIT ID: 7026 @ 1135	Pre-purge DO:	Post purge DO:
Fe2+:	Pre-purge ORP:	Post purge ORP:
NAPL depth:	Volume of NAPL:	Volume removed: ml

Confluence Environmental, Inc
3308 El Camino Ave, Suite 300 #148, Sacramento, CA 95821, 916-760-7641

Purging And Sampling Data Sheet

Job#: 1350.15	**Sampler:** J Kerns B Myers	**Client:** Montgomery & Associates
Well ID: RL-4	**Date** (DDOct2012): 10OCT2013	**Site:** Rio Algom Mining, Lisbon, UT
Weather Conditions: Rain - Cold	**Sampler Signature:**	
Well diam: 1/4" 1" 2" 3" 4" 6" Other: (5)	**DTW:** 156.34 **Total Depth:** 178 —	

Purge equip: (ES - diam:) Bladder Peri Waterra Positive Air Displacement Ext. System
disp bailer teflon bailer other: **Tubing:** OD: New (Dedicated) NA

Purge method: 3-5 Case Volume (Micro/Low-Flow) Extraction Other:

Pump depth/ intake: 167 — **Multipliers:** 1"= 0.04 2"= 0.16 3"= 0.37 4"= 0.65 5"=1.02 6"= 1.47 Radius² X 0.163

(TD - DTW X Multiplier = 1 Volume —	80% Recovery (TD - DTW X 0.20 + DTW) —

1 Volume = — X — = — (Total Purge) 80%= —

Time	Temp (°C) (°F)	pH	SP Cond (mS) (µS)	Turbidity (NTU)	Purge Rate (gal or mL) min	Volume Removed (gal) (L)	DO (mg/l)	ORP (mv)	DTW	Notes
1149	10.4	7.8	890	3	500	1.0	8.91	87.1	157.14	
1151	10.6	7.5	883	7	500	2.5	8.23	87.0	156.96	
1154	10.6	7.5	897	11	500	4.0	8.01	87.9	156.90	
1157	10.9	7.5	895	13	500	5.5	7.58	86.7	156.81	
1200	10.8	7.5	897	12	500	7.0	7.63	86.2	156.81	
1203	10.8	7.5	896	11	500	8.5	7.63	84.0	156.81	
X	Split w/	ACZ								

Did well dewater? YES (NO) Total volume removed: (gal) (L)

Sample method: Disp Bailer Hydrasleeve New Tubing Ext. Port Other: Dedicated

Sample date: 10OCT2013	Sample time: 1205	DTW at sample:
Sample ID: 7027	Lab: Energy Labs	Number of bottles: (2) + (3)

Analysis: 500 ml NP poly - Alkalinity, Cl, SO4, TDS, EC, pH 250 ml HNO3 poly *field filtered - Dissolved Metals

Equipment blank ID @	Field blank ID @	
~~Duplicate~~ SPLIT ID: 7028 @ 1210	Pre-purge DO:	Post purge DO:
Fe2+:	Pre-purge ORP:	Post purge ORP:
NAPL depth:	Volume of NAPL:	Volume removed: ml

Confluence Environmental, Inc
3308 El Camino Ave, Suite 300 #148, Sacramento, CA 95821, 916-760-7641

Purging And Sampling Data Sheet

Job#: 1350.15	**Sampler:** J Kerns B Myers	**Client:** Montgomery & Associates
Well ID: RL-5	**Date** (DDOct2012): 09Oct2013	**Site:** Rio Algom Mining, Lisbon, UT
Weather Conditions: Cool	**Sampler Signature:**	
Well diam: 1/4" 1" 2" 3" 4" 6" Other: (5)	**DTW:** 151.78 **Total Depth:** 186.00	
Purge equip: ES - diam: Bladder Peri Waterra Positive Air Displacement Ext. System		
disp bailer teflon bailer other: (HS)	**Tubing:** OD: New Dedicated NA	
Purge method: 3-5 Case Volume Micro/Low-Flow Extraction Other: (FS)		
Pump depth/ intake: 170'	**Multipliers:** 1"= 0.04 2"= 0.16 3"= 0.37 4"= 0.65 5"=1.02 6"= 1.47 Radius² X 0.163	
(TD - DTW X Multiplier = 1 Volume	80% Recovery (TD - DTW X 0.20 + DTW)	

1 Volume = _____ X _____ = _____ (Total Purge) 80%= _____

Time	Temp (°C / °F)	pH	SP Cond (mS/ µS)	Turbidity (NTU)	Purge Rate (gal or mL/ min)	Volume Removed (gal / L)	DO (mg/l)	ORP (mv)	DTW	Notes
1000	12.0	7.8	1621	13	—	—	8.7	128	—	

Did well dewater? YES (NO) Total volume removed: — (gal / L)

Sample method: Disp Bailer (Hydrasleeve) New Tubing Ext. Port Other:

Sample date: 09Oct2013	Sample time: 1000	DTW at sample: —
Sample ID: 0990	Lab: Energy Labs	Number of bottles: 2
Analysis: 500 ml NP poly - Alkalinity, Cl, SO4, TDS, EC, pH	250 ml HNO3 poly *field filtered - Dissolved Metals	

Equipment blank ID @	Field blank ID @	
Duplicate ID:	Pre-purge DO:	Post purge DO:
Fe^{2+}:	Pre-purge ORP:	Post purge ORP:
NAPL depth:	Volume of NAPL:	Volume removed: ml

Confluence Environmental, Inc
3308 El Camino Ave, Suite 300 #148, Sacramento, CA 95821, 916-760-7641

Purging And Sampling Data Sheet

Job#: 1350.15	**Sampler:** J Kerns B Myers	**Client:** Montgomery & Associates
Well ID: RL-5	**Date** (DDOct2012): 09Oct2013	**Site:** Rio Algom Mining, Lisbon, UT
Weather Conditions: Cool	**Sampler Signature:**	
Well diam: 1/4" 1" 2" 3" 4" 6" Other: (5)	**DTW:** 151.78 **Total Depth:** 186.00	
Purge equip: (ES - diam) Bladder Peri Waterra Positive Air Displacement Ext. System		
disp bailer teflon bailer other:	**Tubing:** OD: New Dedicated NA	
Purge method: 3-5 Case Volume (Micro/Low-Flow) Extraction Other:		
Pump depth/ intake: 170'	**Multipliers:** 1"= 0.04 2"= 0.16 3"= 0.37 4"= 0.65 5"=1.02 6"= 1.47 Radius² X 0.163	
(TD - DTW X Multiplier = 1 Volume	80% Recovery (TD - DTW X 0.20 + DTW)	

1 Volume = ___ X ___ = ___ (Total Purge) 80%= ___

Time	Temp (°C / °F)	pH	SP Cond (mS / µS)	Turbidity (NTU)	Purge Rate (gal or mL/ min)	Volume Removed (gal / L)	DO (mg/l)	ORP (mv)	DTW	Notes
1013	11.7	7.8	6677	13	500	1.5	10.2	131	151.85	
1016	11.8	7.7	6680	10		3	11.1	130	151.85	
1019	11.8	7.6	6680	10		4.5	11.6	126	151.85	
1022	12.1	7.6	6678	10		6	11.7	123	151.85	
1025	12.2	7.6	6676	9		7.5	11.9	118	151.85	
1028	12.5	7.6	6675	9		9	12.5	116	151.85	

Did well dewater? YES (NO)	Total volume removed: 9 (gal (L))	
Sample method: Disp Bailer Hydrasleeve New Tubing Ext. Port Other:		
Sample date: 09Oct2013	Sample time: ~~1028~~ 1030	DTW at sample: 151.85
Sample ID: 0991	Lab: Energy Labs	Number of bottles: 2
Analysis: 500 ml NP poly - Alkalinity, Cl, SO4, TDS, EC, pH 250 ml HNO3 poly *field filtered - Dissolved Metals		
Equipment blank ID @	Field blank ID @	
Duplicate ID:	Pre-purge DO:	Post purge DO:
Fe2+:	Pre-purge ORP:	Post purge ORP:
NAPL depth:	Volume of NAPL:	Volume removed: ml

Confluence Environmental, Inc
3308 El Camino Ave, Suite 300 #148, Sacramento, CA 95821, 916-760-7641

Purging And Sampling Data Sheet

Job#: 1350.15	**Sampler:** J Kerns B Myers	**Client:** Montgomery & Associates
Well ID: RL-6	**Date** (DDOct2012): 08Oct2013	**Site:** Rio Algom Mining, Lisbon, UT
Weather Conditions: Windy	**Sampler Signature:**	
Well diam: 1/4" 1" 2" 3" 4" 6" Other: (5)	**DTW:** 15.70	**Total Depth:** 20.00
Purge equip: ES diam: Bladder Peri Waterra Positive Air Displacement Ext. System disp bailer teflon bailer other:	**Tubing:** OD: New Dedicated NA	
Purge method: 3-5 Case Volume Micro/Low-Flow Extraction Other: None		
Pump depth/ intake: —	**Multipliers:** 1"= 0.04 2"= 0.16 3"= 0.37 4"= 0.65 5"=1.02 6"= 1.47 Radius² X 0.163	

(TD - DTW X Multiplier = 1 Volume	80% Recovery (TD - DTW X 0.20 + DTW)

1 Volume = — X — = — (Total Purge) 80%= —

Time	Temp (°C / °F)	pH	SP Cond (mS / µS)	Turbidity (NTU)	Purge Rate (gal or mL/ min)	Volume Removed (gal / L)	DO (mg/l)	ORP (mv)	DTW	Notes
—	Hydra	Sleeve	set at		18.5	feet	—	—	—	—
1245	13.8	7.2	2363	12.3	—	—	2.56	236.7	—	

Did well dewater? YES (NO)	Total volume removed: — (gal / L)	
Sample method: Disp Bailer (Hydrasleeve) New Tubing Ext. Port Other:		
Sample date: 08Oct2013	Sample time: 1245	DTW at sample: 15.70
Sample ID: 7011	Lab: Energy Labs	Number of bottles (2)
Analysis: 500 ml NP poly - Alkalinity, Cl, SO4, TDS, EC, pH 250 ml HNO3 poly *field filtered - Dissolved Metals		
Equipment blank ID @	Field blank ID @	
Duplicate ID:	Pre-purge DO:	Post purge DO:
Fe^{2+}:	Pre-purge ORP:	Post purge ORP:
NAPL depth:	Volume of NAPL:	Volume removed: ml

Confluence Environmental, Inc
3308 El Camino Ave, Suite 300 #148, Sacramento, CA 95821, 916-760-7641

Purging And Sampling Data Sheet

Job#: 1350.15	**Sampler:** (Kerns B Myers	**Client:** Montgomery & Associates
Well ID: RL-6	**Date** (DDOct2012): 08OCT2013	**Site:** Rio Algom Mining, Lisbon, UT
Weather Conditions: Windy	**Sampler Signature:**	
Well diam: 1/4" 1" 2" 3" 4" 6" Other: (5)	**DTW:** 15.70 **Total Depth:** 20.0	

Purge equip: (ES - diam: Bladder Peri Waterra Positive Air Displacement Ext. System
disp bailer teflon bailer other: **Tubing:** OD: New (Dedicated) NA

Purge method: 3-5 Case Volume (Micro/Low-Flow) Extraction Other:

Pump depth/ intake: 18.5 **Multipliers:** 1"= 0.04 2"= 0.16 3"= 0.37 4"= 0.65 5"=1.02 6"= 1.47 Radius² X 0.163

(TD - DTW X Multiplier = 1 Volume	80% Recovery (TD - DTW X 0.20 + DTW)

1 Volume = ___ X ___ = ___ (Total Purge) 80%= ___

Time	Temp (°C) °F)	pH	SP Cond (mS / µS)	Turbidity (NTU)	Purge Rate (gal or (mL) / min)	Volume Removed (gal / (L))	DO (mg/l)	ORP (mv)	DTW	Notes
1300	13.4	7.2	2119	98	400	1.0	1.97	101.8	15.71	
1303	13.8	7.2	2123	42	400	2.2	1.95	94.0	15.70	
1306	13.9	7.2	2126	35	400	3.4	1.97	92.1	15.70	
1309	14.1	7.2	2134	42	400	4.6	1.98	85.3	15.70	
1312	14.0	7.2	2132	39	400	5.8	1.99	83.9	15.70	
1315	14.0	7.2	2130	41	400	7.0	2.00	83.1	15.70	

Did well dewater? YES (NO) Total volume removed: 7.0 (gal (L))

Sample method: Disp Bailer Hydrasleeve New Tubing Ext. Port Other: Dedicated Tubing

Sample date: 08OCT2013	Sample time: 1320	DTW at sample: 15.70
Sample ID: 7012	Lab: Energy Labs	Number of bottles (2)

Analysis: 500 ml NP poly - Alkalinity, Cl, SO4, TDS, EC, pH 250 ml HNO3 poly *field filtered - Dissolved Metals

Equipment blank ID @	Field blank ID @	
Duplicate ID:	Pre-purge DO:	Post purge DO:
Fe2+:	Pre-purge ORP:	Post purge ORP:
NAPL depth:	Volume of NAPL:	Volume removed: ml

Confluence Environmental, Inc
3308 El Camino Ave, Suite 300 #148, Sacramento, CA 95821, 916-760-7641

Purging And Sampling Data Sheet

Job#: 1350.15	**Sampler:** JKerns B Myers	**Client:** Montgomery & Associates
Well ID: MW-109	**Date** (DDOct2012): 09OCT2013	**Site:** Rio Algom Mining, Lisbon, UT
Weather Conditions: Brisk	**Sampler Signature:**	
Well diam: 1/4" 1" 2" 3" (4") 6" Other:	**DTW:** 147.35 **Total Depth:** 204	
Purge equip: ES - diam: Bladder Peri Waterra Positive Air Displacement Ext. System disp bailer teflon bailer other: **Tubing:** OD: New Dedicated NA		
Purge method: 3-5 Case Volume Micro/Low-Flow Extraction Other:		
Pump depth/ intake: —	**Multipliers:** 1"= 0.04 2"= 0.16 3"= 0.37 4"= 0.65 5"=1.02 6"= 1.47 Radius² X 0.163	
(TD - DTW X Multiplier = 1 Volume —	80% Recovery (TD - DTW X 0.20 + DTW)	

1 Volume = — X — = — (Total Purge) 80%= —

Time	Temp (°C / °F)	pH	SP Cond (mS / µS)	Turbidity (NTU)	Purge Rate (gal or mL/ min)	Volume Removed (gal / L)	DO (mg/l)	ORP (mv)	DTW	Notes
—	Dropped HS - D		Recovered HS - D				Deployed new HS			10/9
1010	10.5	7.3	896	13	—	—	2.01	125.5	—	
—	Hydra Sleeve Set @ — 177.5 10/9/13									

Did well dewater? YES (NO)	Total volume removed: — (gal / L)	
Sample method: Disp Bailer (Hydrasleeve) New Tubing Ext. Port Other:		
Sample date: 10OCT2013	Sample time: ~~0815~~ JK 1010	DTW at sample: 147.35
Sample ID: 7016	Lab: Energy Labs	Number of bottles: (2) + (2)
Analysis: 500 ml NP poly - Alkalinity, Cl, SO4, TDS, EC, pH 250 ml HNO3 poly *field filtered - Dissolved Metals		
Equipment blank ID @	Field blank ID @	
Duplicate ID: 7018	@ ~~0820~~ JK 1015	Pre-purge DO: Post purge DO:
Fe2+:	Pre-purge ORP:	Post purge ORP:
NAPL depth:	Volume of NAPL:	Volume removed: ml

Confluence Environmental, Inc
3308 El Camino Ave, Suite 300 #148, Sacramento, CA 95821, 916-760-7641

Purging And Sampling Data Sheet

Job#: 1350.15	**Sampler:** ~~J Kerns~~ B Myers	**Client:** Montgomery & Associates
Well ID: MW-100	**Date** (DDOct2012): 10 OCT 2013	**Site:** Rio Algom Mining, Lisbon, UT
Weather Conditions: Rain - Cold	**Sampler Signature:**	
Well diam: 1/4" 1" 2" 3" (4") 6" Other:	**DTW:** 147.35 **Total Depth:** 204	
Purge equip: (ES - diam) Bladder Peri Waterra Positive Air Displacement Ext. System		
disp bailer teflon bailer other:	**Tubing:** OD: New (Dedicated) NA	
Purge method: 3-5 Case Volume (Micro/Low-Flow) Extraction Other:		
Pump depth/ intake: 175	**Multipliers:** 1"= 0.04 2"= 0.16 3"= 0.37 4"= 0.65 5"=1.02 6"= 1.47 Radius² X 0.163	
(TD - DTW X Multiplier = 1 Volume	80% Recovery (TD - DTW X 0.20 + DTW)	

1 Volume = — X — = — (Total Purge) 80%= —

Time	Temp (°C / °F)	pH	SP Cond (mS / µS)	Turbidity (NTU)	Purge Rate (gal or mL/ min)	Volume Removed (gal / L)	DO (mg/l)	ORP (mv)	DTW	Notes
1033	10.5	7.3	864	17	500	1.0	2.10	126.3	147.55	
1036	10.4	7.2	871	15	500	2.5	1.60	125.0	147.10	
1039	10.6	7.2	877	11	500	4.0	1.47	117.5	147.08	
1042	10.7	7.2	877	13	500	5.5	1.46	109.4	147.08	
1045	10.8	7.2	878	10	500	7.0	1.43	102.3	147.08	
1048	11.0	7.2	872	10	500	8.5	1.47	83.0	147.08	
1051	11.1	7.2	869	7	500	10.0	1.48	60.0	147.08	
1054	11.4	7.2	872	9	500	11.5	1.47	54.2	147.08	
1057	11.6	7.2	869	10	500	13.0	1.48	54.1	147.08	
1100	11.7	7.2	867	9	500	14.5	1.47	50.2	147.08	
1103	11.7	7.2	871	9	500	16.0	1.47	48.7	147.08	

Did well dewater? YES (NO)	Total volume removed: 16.0 (gal / L)	
Sample method: Disp Bailer Hydrasleeve New Tubing Ext. Port Other: Dedicated Tubing		
Sample date: 10 OCT 2013	Sample time: 1105	DTW at sample: 147.08
Sample ID: 7017	Lab: Energy Labs	Number of bottles: (2)
Analysis: 500 ml NP poly - Alkalinity, Cl, SO4, TDS, EC, pH 250 ml HNO3 poly *field filtered - Dissolved Metals		
Equipment blank ID @	Field blank ID @	
Duplicate ID:	Pre-purge DO:	Post purge DO:
Fe^{2+}:	Pre-purge ORP:	Post purge ORP:
NAPL depth:	Volume of NAPL:	Volume removed: ml

Confluence Environmental, Inc
3308 El Camino Ave, Suite 300 #148, Sacramento, CA 95821, 916-760-7641

Purging And Sampling Data Sheet

Job#: 1350.15	**Sampler:** (Kerns) B Myers	**Client:** Montgomery & Associates
Well ID: MW-101	**Date** (DDOct2012): 130CT2013	**Site:** Rio Algom Mining, Lisbon, UT
Weather Conditions: Windy	**Sampler Signature:**	
Well diam: 1/4" 1" 2" 3" (4") 6" Other:	**DTW:** 150.90	**Total Depth:** 161.00
Purge equip: ES - diam: Bladder Peri Waterra Positive Air Displacement Ext. System disp bailer teflon bailer other;	**Tubing:** OD: New Dedicated NA	
Purge method: 3-5 Case Volume Micro/Low-Flow Extraction Other:		
Pump depth/ intake: —	**Multipliers:** 1"= 0.04 2"= 0.16 3"= 0.37 4"= 0.65 5"=1.02 6"= 1.47 Radius² X 0.163	

(TD - DTW X Multiplier = 1 Volume	80% Recovery (TD - DTW X 0.20 + DTW)

1 Volume = — X — = — (Total Purge) 80%= —

Time	Temp (°C/ °F)	pH	SP Cond (mS (µS))	Turbidity (NTU)	Purge Rate (gal or mL/ min)	Volume Removed (gal / L)	DO (mg/l)	ORP (mv)	DTW	Notes
—	Hydra	Sleeve	Set	@	153'	—	—	—	—	
1355	13.6	7.1	16418	22	—	—	3.59	115.2	—	

Did well dewater? YES (NO)	Total volume removed: — (gal / L)	
Sample method: Disp Bailer (Hydrasleeve) New Tubing Ext. Port Other:		
Sample date: 130CT2013	Sample time: 1355	DTW at sample: 150.90
Sample ID: 6972	Lab: Energy Labs	Number of bottles (2)
Analysis: 500 ml NP poly - Alkalinity, Cl, SO4, TDS, EC, pH 250 ml HNO3 poly *field filtered - Dissolved Metals		

Equipment blank ID @	Field blank ID @	
Duplicate ID:	Pre-purge DO:	Post purge DO:
Fe2+:	Pre-purge ORP:	Post purge ORP:
NAPL depth:	Volume of NAPL:	Volume removed: ml

Confluence Environmental, Inc
3308 El Camino Ave, Suite 300 #148, Sacramento, CA 95821, 916-760-7641

Purging And Sampling Data Sheet

Job#: 1350.15	**Sampler:** J(Kerns B Myers	**Client:** Montgomery & Associates
Well ID: MW-101	**Date** (DDOct2012): 13OCT2013	**Site:** Rio Algom Mining, Lisbon, UT
Weather Conditions: Windy	**Sampler Signature:**	
Well diam: 1/4" 1" 2" 3" (4") 6" Other:	**DTW:** 150.90	**Total Depth:** 161 –
Purge equip: (ES - diam:) Bladder Peri Waterra Positive Air Displacement Ext. System		
disp bailer teflon bailer other:	**Tubing:** OD: New (Dedicated) NA	
Purge method: 3-5 Case Volume (Micro/Low-Flow) Extraction Other:		
Pump depth/ intake: 151	**Multipliers:** 1"= 0.04 2"= 0.16 3"= 0.37 4"= 0.65 5"=1.02 6"= 1.47 Radius² X 0.163	
(TD - DTW X Multiplier = 1 Volume	80% Recovery (TD - DTW X 0.20 + DTW)	

1 Volume = ____ X ____ = ____ (Total Purge) 80%= ____

Time	Temp (°C) °F	pH	SP Cond (mS) µS	Turbidity (NTU)	Purge Rate (gal or mL) min	Volume Removed (gal) L	DO (mg/l)	ORP (mv)	DTW	Notes
1430	13.0	7.0	17391	39	300	1.0	4.01	93.7	151.22	
1433	13.2	7.0	17445	37	300	1.9	3.91	98.2	151.20	
1436	13.5	7.0	17447	29	300	2.8	3.82	100.6	151.15	
1439	13.7	7.0	17459	21	300	3.7	3.89	99.1	151.15	
1442	13.3	7.0	17379	39	300	4.6	3.98	96.1	151.15	
1445	12.9	7.0	17478	22	300	5.5	4.22	87.5	151.15	
1448	13.6	7.0	17421	19	300	6.4	3.68	77.2	151.15	
1451	14.5	7.0	17420	15	300	7.2	3.87	75.3	151.13	
1454	14.5	7.0	17420	14	300	8.1	3.78	79.4	151.15	
1457	14.5	7.0	17424	14	300	9.0	3.76	81.9	151.15	

Did well dewater? YES (NO)	Total volume removed:	(gal) L
Sample method: Disp Bailer Hydrasleeve New Tubing Ext. Port Other: Dedicated Tubing		
Sample date: 13OCT2013	Sample time: 1500	DTW at sample:
Sample ID: 6973	Lab: Energy Labs	Number of bottles: (2) + (2)
Analysis: 500 ml NP poly - Alkalinity, Cl, SO4, TDS, EC, pH 250 ml HNO3 poly *field filtered - Dissolved Metals		
Equipment blank ID 6974@ 1515	Field blank ID @	
Duplicate ID:	Pre-purge DO:	Post purge DO:
Fe^{2+}:	Pre-purge ORP:	Post purge ORP:
NAPL depth:	Volume of NAPL:	Volume removed: ml

Confluence Environmental, Inc
3308 El Camino Ave, Suite 300 #148, Sacramento, CA 95821, 916-760-7641

Purging And Sampling Data Sheet

Job#: 1350.15	**Sampler:** J Kerns B Myers	**Client:** Montgomery & Associates
Well ID: MW-102	**Date** (DDOct2012): 09OCT2013	**Site:** Rio Algom Mining, Lisbon, UT
Weather Conditions: Windy	**Sampler Signature:**	
Well diam: 1/4" 1" 2" 3" (4") 6" Other:	**DTW:** 125.25 **Total Depth:** 136	
Purge equip: ~~ES~~ diam: Bladder Peri Waterra Positive Air Displacement Ext. System disp bailer teflon bailer other:	**Tubing:** OD: New Dedicated NA	
Purge method: 3-5 Case Volume Micro/Low-Flow Extraction Other:		
Pump depth/ intake:	**Multipliers:** 1"= 0.04 2"= 0.16 3"= 0.37 4"= 0.65 5"=1.02 6"= 1.47 Radius² X 0.163	
(TD - DTW X Multiplier = 1 Volume —	80% Recovery (TD - DTW X 0.20 + DTW)	

1 Volume = — X — = — (Total Purge) 80%= —

Time	Temp (°C/°F)	pH	SP Cond (mS/µS)	Turbidity (NTU)	Purge Rate (gal or mL/ min)	Volume Removed (gal / L)	DO (mg/l)	ORP (mv)	DTW	Notes
—	Hydrasleeve	Set	@		132.5	1 —	—	—	—	—
0955	11.3	8.5	18293	72	—	—	0.52	61.4	—	-Tea/Brown color

Did well dewater? YES (NO)	Total volume removed: — (gal / L)		
Sample method: Disp Bailer (Hydrasleeve) New Tubing Ext. Port Other:			
Sample date: ~~09~~ 10OCT2013	Sample time: 0955	DTW at sample: 125.25	
Sample ID: ~~0719~~ JIL 7019	Lab: Energy Labs	Number of bottles: 2	
Analysis: 500 ml NP poly - Alkalinity, Cl, SO4, TDS, EC, pH 250 ml HNO3 poly *field filtered - Dissolved Metals			
Equipment blank ID @	Field blank ID @		
Duplicate ID:	Pre-purge DO:	Post purge DO:	
Fe^{2+}:	Pre-purge ORP:	Post purge ORP:	
NAPL depth:	Volume of NAPL:	Volume removed: ml	

Confluence Environmental, Inc
3308 El Camino Ave, Suite 300 #148, Sacramento, CA 95821, 916-760-7641

Purging And Sampling Data Sheet

Job#: 1350.15	**Sampler:** J Kerns B Myers	**Client:** Montgomery & Associates
Well ID: MW-102	**Date** (DDOct2012): 09OCT2013	**Site:** Rio Algom Mining, Lisbon, UT
Weather Conditions: Windy - Cold	**Sampler Signature:**	
Well diam: 1/4" 1" 2" 3" (4") 6" Other:	**DTW:** 125.25 **Total Depth:** 136	
Purge equip: (ES - diam:) Bladder Peri Waterra Positive Air Displacement Ext. System		
disp bailer teflon bailer other:	**Tubing:** OD: New (Dedicated) NA	
Purge method: 3-5 Case Volume (Micro/Low-Flow) Extraction Other:		
Pump depth/ intake: 131	**Multipliers:** 1"= 0.04 2"= 0.16 3"= 0.37 4"= 0.65 5"=1.02 6"= 1.47 Radius² X 0.163	
(TD - DTW X Multiplier = 1 Volume —	80% Recovery (TD - DTW X 0.20 + DTW)	

1 Volume = — X — = — (Total Purge) 80%= —

Time	Temp (°C / °F)	pH	SP Cond (mS / µS)	Turbidity (NTU)	Purge Rate (gal or mL / min)	Volume Removed (gal / L)	DO (mg/l)	ORP (mv)	DTW	Notes
1020	12.5	8.4	19192	77	500	1.0	Ø.13	-60.0	126.05	
1023	12.9	8.4	19665	53	500	2.5	Ø.08	-75.2	126.05	
1026	13.0	8.4	19552	67	500	4.0	Ø.07	-92.7	126.05	
1029	13.5	8.4	18722	63	500	5.5	Ø.10	-48.3	126.05	
1032	14.4	8.4	19403	75	500	7.0	Ø.16	-98.5	126.05	
1035	14.4	8.4	19347	73	500	8.5	Ø.15	-91.5	126.05	
1038	14.4	8.4	19442	77	500	10.0	Ø.12	-90.2	126.05	
1041	15.3	8.4	19477	72	500	11.5	Ø.07	-100.4	126.05	
1044	16.2	8.4	19285	73	500	13.0	Ø.08	-105.8	126.05	
1047	16.2	8.4	19250	73	500	14.5	Ø.07	-106.1	126.05	
1050	16.2	8.4	19250	73	500	16.0	Ø.07	-105.2	126.05	

Did well dewater? YES (NO) Total volume removed: 16.0 (gal / L)

Sample method: Disp Bailer Hydrasleeve New Tubing Ext. Port Other: Dedicated Tubing

Sample date: 09OCT2013	Sample time: 1055	DTW at sample: 126.05
Sample ID: 7020	Lab: Energy Labs	Number of bottles: 2
Analysis: 500 ml NP poly - Alkalinity, Cl, SO4, TDS, EC, pH	250 ml HNO3 poly *field filtered - Dissolved Metals	

Equipment blank ID @	Field blank ID @	
Duplicate ID:	Pre-purge DO:	Post purge DO:
Fe^{2+}:	Pre-purge ORP:	Post purge ORP:
NAPL depth:	Volume of NAPL:	Volume removed: ml

Confluence Environmental, Inc
3308 El Camino Ave, Suite 300 #148, Sacramento, CA 95821, 916-760-7641

Purging And Sampling Data Sheet

Job#: 1350.15	**Sampler:** J Kerns B Myers	**Client:** Montgomery & Associates
Well ID: MW-102DB	**Date** (DDOct2012): 09OCT2012	**Site:** Rio Algom Mining, Lisbon, UT
Weather Conditions: Windy	**Sampler Signature:**	
Well diam: 1/4" 1" 2" 3" (4") 6" Other:	**DTW:** 120.07 **Total Depth:** 175	
Purge equip: ES - diam: Bladder Peri Waterra Positive Air Displacement Ext. System disp bailer teflon bailer other:	**Tubing:** OD: New Dedicated NA	
Purge method: 3-5 Case Volume Micro/Low-Flow Extraction Other:		
Pump depth/ intake: —	**Multipliers:** 1"= 0.04 2"= 0.16 3"= 0.37 4"= 0.65 5"=1.02 6"= 1.47 Radius² X 0.163	
(TD - DTW X Multiplier = 1 Volume —	80% Recovery (TD - DTW X 0.20 + DTW) —	

1 Volume = — X — = — (Total Purge) 80%= —

Time	Temp (°C / °F)	pH	SP Cond (mS / µS)	Turbidity (NTU)	Purge Rate (gal or mL/ min)	Volume Removed (gal / L)	DO (mg/l)	ORP (mv)	DTW	Notes
—	Hydrasleeve set @				164	—	—	—	—	—
1110	13.3	8.1	1165	7	—	—	0.45	-137.5	—	

Did well dewater? YES (NO) Total volume removed: — (gal / L)

Sample method: Disp Bailer (Hydrasleeve) New Tubing Ext. Port Other:

Sample date: 09OCT2012	Sample time: 1110	DTW at sample: 120.07
Sample ID: 7021	Lab: Energy Labs	Number of bottles: (2)
Analysis: 500 ml NP poly - Alkalinity, Cl, SO4, TDS, EC, pH 250 ml HNO3 poly *field filtered - Dissolved Metals		

Equipment blank ID @	Field blank ID @	
Duplicate ID:	Pre-purge DO:	Post purge DO:
$Fe2^+$:	Pre-purge ORP:	Post purge ORP:
NAPL depth:	Volume of NAPL:	Volume removed: ml

Confluence Environmental, Inc
3308 El Camino Ave, Suite 300 #148, Sacramento, CA 95821, 916-760-7641

Purging And Sampling Data Sheet

Job#: 1350.15	**Sampler:** J Kerns B Myers	**Client:** Montgomery & Associates
Well ID: MW-1020B	**Date** (DDOct2012): 09OCT2013	**Site:** Rio Algom Mining, Lisbon, UT
Weather Conditions: Windy	**Sampler Signature:**	
Well diam: 1/4" 1" 2" 3" (4") 6" Other:	**DTW:** 120.07 **Total Depth:** 175 —	
Purge equip: (ES - diam) Bladder Peri Waterra Positive Air Displacement Ext. System		
disp bailer teflon bailer other:	**Tubing:** OD: New (Dedicated) NA	
Purge method: 3-5 Case Volume (Micro/Low-Flow) Extraction Other:		
Pump depth/ intake: 135 —	**Multipliers:** 1"= 0.04 2"= 0.16 3"= 0.37 4"= 0.65 5"=1.02 6"= 1.47 Radius² X 0.163	
(TD - DTW X Multiplier = 1 Volume —	80% Recovery (TD - DTW X 0.20 + DTW)	

1 Volume = — X — = — (Total Purge) 80%= —

Time	Temp (°C / °F)	pH	SP Cond (mS / µS)	Turbidity (NTU)	Purge Rate (gal or (mL) min)	Volume Removed (gal / (L))	DO (mg/l)	ORP (mv)	DTW	Notes
1130	11.8	7.8	1029	11	500	1.0	0.19	-150.1	121.05	
1133	12.1	7.8	1045	9	500	2.5	0.17	-154.3	120.90	
1136	12.4	7.8	1013	13	500	4.0	0.14	-160.9	120.89	
1139	12.4	7.8	1004	8	500	5.5	0.14	-164.1	120.88	
1142	12.4	7.8	1007	9	500	7.0	0.14	-166.5	120.90	
1145	12.8	7.8	1000	10	500	8.5	0.16	-168.5	120.93	
1148	13.6	7.9	984	7	500	10.0	0.17	-171.2	121.00	
1151	14.1	7.9	969	6	500	11.5	0.16	-172.6 ~~-1226~~	121.00	
1154	14.3	7.9	960	9	500	13.0	0.16	-173.9	121.00	
1157	14.4	7.9	958	8	500	14.5	0.16	-174.3	121.00	
1200	14.4	7.9	957	8	500	16.0	0.16	-174.5	121.00	

Did well dewater? YES (NO)	Total volume removed:	(gal / (L))
Sample method: Disp Bailer Hydrasleeve New Tubing Ext. Port Other: Dedicated Tubing		
Sample date: 09OCT2013	Sample time: 1205	DTW at sample:
Sample ID: 0722	Lab: Energy Labs	Number of bottles: (2)
Analysis: 500 ml NP poly - Alkalinity, Cl, SO4, TDS, EC, pH 250 ml HNO3 poly *field filtered - Dissolved Metals		
Equipment blank ID @	Field blank ID @	
Duplicate ID:	Pre-purge DO:	Post purge DO:
$Fe2^+$:	Pre-purge ORP:	Post purge ORP:
NAPL depth:	Volume of NAPL:	Volume removed: ml

Confluence Environmental, Inc
3308 El Camino Ave, Suite 300 #148, Sacramento, CA 95821, 916-760-7641

Purging And Sampling Data Sheet

Job#: 1350.15	**Sampler:** J Kerns B Myers	**Client:** Montgomery & Associates
Well ID: MW-103	**Date** (DDOct2012): 13OCT2013	**Site:** Rio Algom Mining, Lisbon, UT
Weather Conditions: Windy - Cool	**Sampler Signature:**	
Well diam: 1/4" 1" 2" 3" (4") 6" Other:	**DTW:** 83.12	**Total Depth:** 111.5
Purge equip: ES - diam: Bladder Peri Waterra Positive Air Displacement Ext. System		
disp bailer teflon bailer other:	**Tubing:** OD: New Dedicated NA	
Purge method: 3-5 Case Volume Micro/Low-Flow Extraction Other:		
Pump depth/ intake: —	**Multipliers:** 1"= 0.04 2"= 0.16 3"= 0.37 4"= 0.65 5"=1.02 6"= 1.47 Radius² X 0.163	
(TD - DTW X Multiplier = 1 Volume	80% Recovery (TD - DTW X 0.20 + DTW)	

1 Volume = — X — = — (Total Purge) 80%= —

Time	Temp (C) °F	pH	SP Cond (mS / µS)	Turbidity (NTU)	Purge Rate (gal or mL/ min)	Volume Removed (gal / L)	DO (mg/l)	ORP (mv)	DTW	Notes
—	Hydrasleeve		set	@		99.25	—	—	—	—
1030	13.7	7.0	6715	15	—	—	0.43	169.7	—	

Did well dewater? YES (NO) Total volume removed: — (gal / L)

Sample method: Disp Bailer (Hydrasleeve) New Tubing Ext. Port Other:

Sample date: 13OCT2013	Sample time: 1030	DTW at sample: 83.12
Sample ID: 6968	Lab: Energy Labs	Number of bottles: (2)
Analysis: 500 ml NP poly - Alkalinity, Cl, SO4, TDS, EC, pH 250 ml HNO3 poly *field filtered - Dissolved Metals		

Equipment blank ID @	Field blank ID @	
Duplicate ID:	Pre-purge DO:	Post purge DO:
Fe^{2+}:	Pre-purge ORP:	Post purge ORP:
NAPL depth:	Volume of NAPL:	Volume removed: ml

Confluence Environmental, Inc
3308 El Camino Ave, Suite 300 #148, Sacramento, CA 95821, 916-760-7641

Purging And Sampling Data Sheet

Job#: 1350.15	**Sampler:** (J Kerns) B Myers	**Client:** Montgomery & Associates
Well ID: MW-103	**Date** (DDOct2012): 13OCT2013	**Site:** Rio Algom Mining, Lisbon, UT
Weather Conditions: Windy - Cool	**Sampler Signature:**	
Well diam: 1/4" 1" 2" 3" (4") 6" Other:	**DTW:** 83.12	**Total Depth:** 111.5

Purge equip: (ES - diam:) Bladder Peri Waterra Positive Air Displacement Ext. System
disp bailer teflon bailer other: **Tubing:** OD: New (Dedicated) NA

Purge method: 3-5 Case Volume (Micro/Low-Flow) Extraction Other:

Pump depth/ intake: 97 – **Multipliers:** 1"= 0.04 2"= 0.16 3"= 0.37 4"= 0.65 5"=1.02 6"= 1.47 Radius² X 0.163

(TD - DTW X Multiplier = 1 Volume	80% Recovery (TD - DTW X 0.20 + DTW)

1 Volume = — X — = — (Total Purge) 80%= —

Time	Temp (°C) °F	pH	SP Cond (mS) µS	Turbidity (NTU)	Purge Rate (gal or mL) min	Volume Removed (gal) L	DO (mg/l)	ORP (mv)	DTW	Notes
1051	12.0	7.0	6618	7	400	1.0	0.43	132.4	84.30	
1054	12.4	7.0	6804	2	400	2.2	0.26	118.9	84.40	
1057	12.8	7.0	6820	1	400	3.4	0.23	112.2	84.45	
1100	13.2	7.0	6834	5	400	4.6	0.22	109.8	84.48	
1103	13.6	7.0	6800	3	400	5.8	0.24	105.9	85.50	
1106	13.8	7.0	6821	3	400	7.0	0.26	102.6	85.52	
1109	13.8	7.0	6825	3	400	8.2	0.27	100.7	85.52	
1112	13.9	7.0	6827	2	400	9.4	0.28	98.6	85.52	

Did well dewater? YES (NO) Total volume removed: (gal) L

Sample method: Disp Bailer Hydrasleeve New Tubing Ext. Port Other: Dedicated Tubing

Sample date: 13OCT2013	Sample time: 1115	DTW at sample:
Sample ID: 6969	Lab: Energy Labs	Number of bottles: 2

Analysis: 500 ml NP poly - Alkalinity, Cl, SO4, TDS, EC, pH 250 ml HNO3 poly *field filtered - Dissolved Metals

Equipment blank ID @	Field blank ID @	
Duplicate ID:	Pre-purge DO:	Post purge DO:
Fe^{2+}:	Pre-purge ORP:	Post purge ORP:
NAPL depth:	Volume of NAPL:	Volume removed: ml

Confluence Environmental, Inc
3308 El Camino Ave, Suite 300 #148, Sacramento, CA 95821, 916-760-7641

Purging And Sampling Data Sheet

Job#: 1350.15	**Sampler:** J Kerns, B Myers	**Client:** Montgomery & Associates
Well ID: MW-104	**Date** (DDOct2012): 08OCT2013	**Site:** Rio Algom Mining, Lisbon, UT
Weather Conditions: cool	**Sampler Signature:**	
Well diam: 1/4" 1" 2" 3" (4") 6" Other:	**DTW:** 94.29	**Total Depth:** 108.00

Purge equip: ES - diam: Bladder Peri Waterra Positive Air Displacement Ext. System
(disp bailer) teflon bailer other: **Tubing:** OD: New Dedicated NA

Purge method: 3-5 Case Volume Micro/Low-Flow Extraction Other:

Pump depth/ intake: **Multipliers:** 1"= 0.04 2"= 0.16 3"= 0.37 4"= 0.65 5"=1.02 6"= 1.47 Radius² X 0.163

(TD - DTW X Multiplier = 1 Volume	80% Recovery (TD - DTW X 0.20 + DTW)

1 Volume = 9 X ____ = _____ (Total Purge) 80%= 97.03

Time	Temp (°C/ °F)	pH	SP Cond (mS/ µS)	Turbidity (NTU)	Purge Rate (gal or mL/ min)	Volume Removed (gal/L)	DO (mg/l)	ORP (mv)	DTW	Notes
1055	11.5	7.8	1637	71000	—	5	3.4	95	—	
1103	11.5	7.9	1458	71000	—	10	3.3	85	—	
1108	11.2	7.8	1467	71000	—	15	3.3	74	—	
	well	dewatered	@	19	gal					
1700	10.9	6.6	1395	23	—	—	7.16	172.8	105.70	

Did well dewater? (YES) NO Total volume removed: 19 (gal/L)

Sample method: Disp Bailer Hydrasleeve New Tubing Ext. Port Other:

Sample date: 10OCT2013	Sample time: ~~1700~~ 1700	DTW at sample: 105.70
Sample ID: 6944	Lab: Energy Labs	Number of bottles: 2
Analysis: 500 ml NP poly - Alkalinity, Cl, SO4, TDS, EC, pH 250 ml HNO3 poly *field filtered - Dissolved Metals		

Equipment blank ID @	Field blank ID @	
Duplicate ID:	Pre-purge DO:	Post purge DO:
$Fe2^{+}$:	Pre-purge ORP:	Post purge ORP:
NAPL depth:	Volume of NAPL:	Volume removed: ml

Confluence Environmental, Inc
3308 El Camino Ave, Suite 300 #148, Sacramento, CA 95821, 916-760-7641

16.71

Purging And Sampling Data Sheet

Job#: 1350.15	**Sampler:** J Kerns B Myers	**Client:** Montgomery & Associates
Well ID: MW-105	**Date** (DDOct2012): 12OCT2013	**Site:** Rio Algom Mining, Lisbon, UT
Weather Conditions: Cool - Partly Cloudy	**Sampler Signature:**	
Well diam: 1/4" 1" 2" 3" (4") 6" Other:	**DTW:** 73.48 **Total Depth:** 135	
Purge equip: ES - diam: Bladder Peri Waterra Positive Air Displacement Ext. System disp bailer teflon bailer other:	**Tubing:** OD: New Dedicated NA	
Purge method: 3-5 Case Volume Micro/Low-Flow Extraction Other:		
Pump depth/ intake: —	**Multipliers:** 1"= 0.04 2"= 0.16 3"= 0.37 4"= 0.65 5"=1.02 6"= 1.47 Radius² X 0.163	

(TD - DTW X Multiplier = 1 Volume	80% Recovery (TD - DTW X 0.20 + DTW)

1 Volume = — X — = — (Total Purge) 80%= —

Time	Temp (°C / °F)	pH	SP Cond (mS / (µS))	Turbidity (NTU)	Purge Rate (gal or mL/ min)	Volume Removed (gal / L)	DO (mg/l)	ORP (mv)	DTW	Notes
—	Hydra Sleeve Set @					166.5	—	—	—	—
0945	11.5	7.3	1084	20	—	—	0.56	158.0	—	

Did well dewater? YES (NO)	Total volume removed: — (gal / L)
Sample method: Disp Bailer (Hydrasleeve) New Tubing Ext. Port Other:	
Sample date: 12OCT2013 Sample time: 0945	DTW at sample: 73.48
Sample ID: 6957 Lab: Energy Labs	Number of bottles: (2)
Analysis: 500 ml NP poly - Alkalinity, Cl, SO4, TDS, EC, pH 250 ml HNO3 poly *field filtered - Dissolved Metals	
Equipment blank ID @	Field blank ID @
Duplicate ID:	Pre-purge DO: Post purge DO:
Fe2+:	Pre-purge ORP: Post purge ORP:
NAPL depth: Volume of NAPL:	Volume removed: ml

Confluence Environmental, Inc
3308 El Camino Ave, Suite 300 #148, Sacramento, CA 95821, 916-760-7641

Purging And Sampling Data Sheet

Job#: 1350.15	**Sampler:** J Kerns B Myers	**Client:** Montgomery & Associates
Well ID: MW-105	**Date** (DDOct2012): 17OCT2013	**Site:** Rio Algom Mining, Lisbon, UT
Weather Conditions: Windy	**Sampler Signature:**	
Well diam: 1/4" 1" 2" 3" (4") 6" Other:	**DTW:** 73.48 **Total Depth:** 135	
Purge equip: (ES - diam) Bladder Peri Waterra Positive Air Displacement Ext. System		
disp bailer teflon bailer other:	**Tubing:** OD: New (Dedicated) NA	
Purge method: 3-5 Case Volume (Micro/Low-Flow) Extraction Other:		
Pump depth/ intake: 104	**Multipliers:** 1"= 0.04 2"= 0.16 3"= 0.37 4"= 0.65 5"=1.02 6"= 1.47 Radius² X 0.163	
(TD - DTW X Multiplier = 1 Volume	80% Recovery (TD - DTW X 0.20 + DTW)	

1 Volume = ____ X ____ = ____ (Total Purge) 80%= ____

Time	Temp (°C / °F)	pH	SP Cond (mS / µS)	Turbidity (NTU)	Purge Rate (gal or mL / min)	Volume Removed (gal / L)	DO (mg/l)	ORP (mv)	DTW	Notes
1002	11.4	7.1	1669	14	400	1.0	1.49	162.5	73.49	
1005	11.6	7.1	1717	12	400	2.2	1.35	151.5	73.49	
1008	11.7	7.1	1718	13	400	3.4	1.38	140.6	73.49	
1011	11.8	7.1	1718	9	400	4.6	1.37	126.0	73.49	
1014	12.0	7.1	1719	9	400	5.8	1.43	116.9	73.49	
1017	12.2	7.1	1716	7	400	7.0	1.43	109.0	73.49	
1020	12.4	7.1	1714	8	400	8.2	1.48	104.6	73.49	
1023	12.5	7.1	1715	9	400	9.4	1.54	102.1	73.49	
1026	12.5	7.1	1715	7	400	10.6	1.54	100.8	73.49	
1029	12.5	7.1	1714	7	400	11.8	1.55	99.1	73.49	

Did well dewater? YES (NO)	Total volume removed: (gal / L)	
Sample method: Disp Bailer Hydrasleeve New Tubing Ext. Port Other: Dedicated Tubing		
Sample date: 17OCT2013	Sample time: 1030	DTW at sample:
Sample ID: 6958	Lab: Energy Labs	Number of bottles: 2 + 2
Analysis: 500 ml NP poly - Alkalinity, Cl, SO4, TDS, EC, pH 250 ml HNO3 poly *field filtered - Dissolved Metals		
Equipment blank ID @	Field blank ID @	
Duplicate ID: 6959 @ 1035	Pre-purge DO:	Post purge DO:
Fe2+:	Pre-purge ORP:	Post purge ORP:
NAPL depth:	Volume of NAPL:	Volume removed: ml

Confluence Environmental, Inc
3308 El Camino Ave, Suite 300 #148, Sacramento, CA 95821, 916-760-7641

Purging And Sampling Data Sheet

Job#: 1350.15	**Sampler:** J Kerns B Myers	**Client:** Montgomery & Associates
Well ID: MW-100	**Date** (DDOct2012): 09OCT2013	**Site:** Rio Algom Mining, Lisbon, UT
Weather Conditions: cool, windy	**Sampler Signature:**	
Well diam: 1/4" 1" 2" 3" (4") 6" Other:	**DTW:** 227.00 **Total Depth:** 264.52	
Purge equip: ES - diam: Bladder Peri Waterra Positive Air Displacement Ext. System		
disp bailer teflon bailer other: (115) **Tubing:** OD: New Dedicated NA		
Purge method: 3-5 Case Volume Micro/Low-Flow Extraction Other: (115)		
Pump depth/ intake:	**Multipliers:** 1"= 0.04 2"= 0.16 3"= 0.37 4"= 0.65 5"=1.02 6"= 1.47 Radius² X 0.163	

(TD - DTW X Multiplier = 1 Volume	80% Recovery (TD - DTW X 0.20 + DTW)

1 Volume = — X — = — (Total Purge) 80%= —

Time	Temp (°C/°F)	pH	SP Cond (mS/µS)	Turbidity (NTU)	Purge Rate (gal or mL/ min)	Volume Removed (gal / L)	DO (mg/l)	ORP (mv)	DTW	Notes
1520	12.2	7.80	3209	11	—	—	1.3	109	—	

Did well dewater? YES (NO)	Total volume removed: — (gal / L)	
Sample method: Disp Bailer (Hydrasleeve) New Tubing Ext. Port Other:		
Sample date: 09OCT2013	Sample time: 1520	DTW at sample: —
Sample ID: 0995	Lab: Energy Labs	Number of bottles: 2
Analysis: 500 ml NP poly - Alkalinity, Cl, SO4, TDS, EC, pH 250 ml HNO3 poly *field filtered - Dissolved Metals		
Equipment blank ID @	Field blank ID @	
Duplicate ID:	Pre-purge DO:	Post purge DO:
Fe^{2+}:	Pre-purge ORP:	Post purge ORP:
NAPL depth:	Volume of NAPL:	Volume removed: ml

Confluence Environmental, Inc
3308 El Camino Ave, Suite 300 #148, Sacramento, CA 95821, 916-760-7641

Purging And Sampling Data Sheet

Job#: 1350.15	**Sampler:** J Kerns B Myers	**Client:** Montgomery & Associates
Well ID: MW106	**Date** (DDOct2012): 09Oct2013	**Site:** Rio Algom Mining, Lisbon, UT
Weather Conditions: Cool, Wind	**Sampler Signature:**	
Well diam: 1/4" 1" 2" 3" (4") 6" Other:	**DTW:** 227.00	**Total Depth:** 264.50

Purge equip: (ES - diam:) Bladder Peri Waterra Positive Air Displacement Ext. System
disp bailer teflon bailer other: **Tubing:** OD: New Dedicated NA

Purge method: 3-5 Case Volume (Micro/Low-Flow) Extraction Other:

Pump depth/ intake: **Multipliers:** 1"= 0.04 2"= 0.16 3"= 0.37 4"= 0.65 5"=1.02 6"= 1.47 Radius² X 0.163

(TD - DTW X Multiplier = 1 Volume	80% Recovery (TD - DTW X 0.20 + DTW)

1 Volume = ___ X ___ = ___ (Total Purge) 80%= 234.5

Time	Temp (°C / °F)	pH	SP Cond (mS / µS)	Turbidity (NTU)	Purge Rate (gal or mL / min)	Volume Removed (gal / L)	DO (mg/l)	ORP (mv)	DTW	Notes
1514	13.6	7.6	3253	73	~~500~~	1.5	0.78	-53	230.10	
1517	13.3	7.5	3263	~~75~~ 67	1	3	0.77	-79	230.97	
1520	13.60	7.5	3279	75	300	3.8	0.81	-83	231.25	
1523	13.2	7.5	3285	72		4.8	0.68	-112	231.69	
1526	13.1	7.5	3281	71		5.7	0.69	-119	232.00	
1529	13.0	7.5	3286	69		6.6	0.62	-123	232.43	
1532	13.2	7.5	3291	65		7.5	0.75	-124	232.85	
1535	13.2	7.5	3266	59		8.4	0.63	-126	233.20	
1538	13.3	7.5	3265	59		9.3	0.66	-125	233.65	
1541	13.7	7.5	3295	57		10.2	0.64	-125	234.00	
1544	13.8	7.5	3391	56		11.1	0.60	-125	234.25	

Did well dewater? (YES) NO Total volume removed: 90 (gal / L)

Sample method: Disp Bailer Hydrasleeve New Tubing Ext. Port Other:

Sample date:	Sample time:	DTW at sample:
Sample ID:	Lab: Energy Labs	Number of bottles: 2

Analysis: 500 ml NP poly - Alkalinity, Cl, SO4, TDS, EC, pH 250 ml HNO3 poly *field filtered - Dissolved Metals

Equipment blank ID @	Field blank ID @	
Duplicate ID:	Pre-purge DO:	Post purge DO:
Fe^{2+}:	Pre-purge ORP:	Post purge ORP:

NAPL depth:	Volume of NAPL:	Volume removed: ml

Confluence Environmental, Inc
3308 El Camino Ave, Suite 300 #148, Sacramento, CA 95821, 916-760-7641

Purging And Sampling Data Sheet

Job#: 1350.15	**Sampler:** J Kerns B Myers	**Client:** Montgomery & Associates
Well ID: MW-100	**Date** (DDOct2012): 09Oct2013	**Site:** Rio Algom Mining, Lisbon, UT
Weather Conditions: cool, windy	**Sampler Signature:**	
Well diam: 1/4" 1" 2" 3" 4" 6" Other:	**DTW:**	**Total Depth:**
Purge equip: ES - diam: Bladder Peri Waterra Positive Air Displacement Ext. System		
disp bailer teflon bailer other:	**Tubing:** OD: New Dedicated NA	
Purge method: 3-5 Case Volume Micro/Low-Flow Extraction Other:		
Pump depth/ intake:	**Multipliers:** 1"= 0.04 2"= 0.16 3"= 0.37 4"= 0.65 5"=1.02 6"= 1.47 Radius² X 0.163	
(TD - DTW X Multiplier = 1 Volume	80% Recovery (TD - DTW X 0.20 + DTW)	

1 Volume = ___ X ___ = ___ (Total Purge) 80%= ___

Time	Temp (°C / °F)	pH	SP Cond (mS / µS)	Turbidity (NTU)	Purge Rate (gal or mL/ min)	Volume Removed (gal / L)	DO (mg/l)	ORP (mv)	DTW	Notes
1547	14.3	7.5	3231	42	300	12	0.04	-124	234.70	
1550	14.5	7.5	3231	41	"	12.9	0.58	-124	234.94	
1553	14.8	7.6	3224	38	"	13.8	0.54	-122	235.33	
1556	14.9	7.6	3224	36	"	14.7	0.50	-120	235.65	
~~1559~~	Turned up rate to elevate - DL would not stabilize									
	at slow rate									
1630	11.6	5.9	3105	29	—	—	2.44	224.6	247.32 ~~224~~ (DTW)	

Did well dewater? YES NO Total volume removed: 70 (gal / L)

Sample method: Disp Bailer Hydrasleeve New Tubing Ext. Port Other:

Sample date: 14OCT2013	Sample time: 1630	DTW at sample: 247.32
Sample ID: 6943	Lab: Energy Labs	Number of bottles: 2
Analysis: 500 ml NP poly - Alkalinity, Cl, SO4, TDS, EC, pH	250 ml HNO3 poly *field filtered - Dissolved Metals	

Equipment blank ID @	Field blank ID @	
Duplicate ID:	Pre-purge DO:	Post purge DO:
Fe^{2+}:	Pre-purge ORP:	Post purge ORP:
NAPL depth:	Volume of NAPL:	Volume removed: ml

Confluence Environmental, Inc
3308 El Camino Ave, Suite 300 #148, Sacramento, CA 95821, 916-760-7641

Purging And Sampling Data Sheet

Job#: 1350.15	**Sampler:** J Kerns B Myers	**Client:** Montgomery & Associates
Well ID: MW-1075	**Date** (DDOct2012): 05OCT2013	**Site:** Rio Algom Mining, Lisbon, UT
Weather Conditions: Windy	**Sampler Signature:**	
Well diam: 1/4" 1" 2" 3" (4") 6" Other:	**DTW:** 50.95 **Total Depth:** 62.51	
Purge equip: ES - diam: Bladder Peri Waterra Positive Air Displacement Ext. System disp bailer teflon bailer other:	**Tubing:** OD: New Dedicated (NA)	
Purge method: 3-5 Case Volume Micro/Low-Flow Extraction Other: None		
Pump depth/ intake: —	**Multipliers:** 1"= 0.04 2"= 0.16 3"= 0.37 4"= 0.65 5"=1.02 6"= 1.47 Radius² X 0.163	

(TD - DTW X Multiplier = 1 Volume —	80% Recovery (TD - DTW X 0.20 + DTW)

1 Volume = — X — = — (Total Purge) 80%= —

Time	Temp (°C / °F)	pH	SP Cond (mS / (S))	Turbidity (NTU)	Purge Rate (gal or mL/ min)	Volume Removed (gal / L)	DO (mg/l)	ORP (mv)	DTW	Notes
—	Hydrasleeve set @				59	feet	—	—	—	—
1430	13.6	4.7	2239	17	—	—	5.83	296.0	50.95	

Did well dewater? YES (NO)	Total volume removed: — (gal / L)
Sample method: Disp Bailer (Hydrasleeve) New Tubing Ext. Port Other:	
Sample date: 05OCT2013 Sample time: 1430	DTW at sample: 50.95
Sample ID: 7013 Lab: Energy Labs	Number of bottles: (2)
Analysis: 500 ml NP poly - Alkalinity, Cl, SO4, TDS, EC, pH 250 ml HNO3 poly *field filtered - Dissolved Metals	
Equipment blank ID @	Field blank ID @
Duplicate ID:	Pre-purge DO: Post purge DO:
Fe2+:	Pre-purge ORP: Post purge ORP:
NAPL depth: Volume of NAPL:	Volume removed: ml

Confluence Environmental, Inc
3308 El Camino Ave, Suite 300 #148, Sacramento, CA 95821, 916-760-7641

Purging And Sampling Data Sheet

Job#: 1350.15	**Sampler:** J Kerns B Myers	**Client:** Montgomery & Associates
Well ID: MW-1075	**Date** (DDOct2012): 08OCT2013	**Site:** Rio Algom Mining, Lisbon, UT
Weather Conditions: Windy	**Sampler Signature:**	
Well diam: 1/4" 1" 2" 3" (4") 6" Other:	**DTW:** 50.95 **Total Depth:** 625	
Purge equip: (ES - diam:) Bladder Peri Waterra Positive Air Displacement Ext. System disp bailer teflon bailer other:	**Tubing:** OD: (New) Dedicated NA	
Purge method: 3-5 Case Volume (Micro/Low-Flow) Extraction Other:		
Pump depth/ intake: 57	**Multipliers:** 1"= 0.04 2"= 0.16 3"= 0.37 4"= 0.65 5"=1.02 6"= 1.47 Radius² X 0.163	

(TD - DTW X Multiplier = 1 Volume	80% Recovery (TD - DTW X 0.20 + DTW)

1 Volume = ___ X ___ = ___ (Total Purge) 80%= ___

Time	Temp (°C) / °F)	pH	SP Cond (mS / (µS))	Turbidity (NTU)	Purge Rate (gal or mL / min)	Volume Removed (gal / (L))	DO (mg/l)	ORP (mv)	DTW	Notes
1450	13.4	4.6	2224	11	400	1.0	5.80	338.0	51.03	
1453	13.4	4.6 ✓✓	2227 ✓✓	9	400	2.7	5.81	337.1	51.01	
1456	13.8	4.5	2215	17	400	3.4	5.60	334.3	50.99	
1459	14.5	4.5	2237	23	400	4.6	5.78	333.0	51.00	
1502	14.7	4.5	2223	25	400	5.8	5.83	333.3	51.00	
1505	14.9	4.5	2235	31	400	7.0	5.77	333.0	50.99	
1508	15.0	4.5	2234	32	400	8.2	5.70	333.5	50.99	
1511	15.0	4.5	2232	31	400	9.4	5.67	332.0	50.99	

Did well dewater? YES (NO)	Total volume removed: 9.4 (gal / (L))	
Sample method: Disp Bailer Hydrasleeve (New Tubing) Ext. Port Other:		
Sample date: 08OCT2013	Sample time: 1515	DTW at sample: 50.99
Sample ID: 7014	Lab: Energy Labs	Number of bottles (2)
Analysis: 500 ml NP poly - Alkalinity, Cl, SO4, TDS, EC, pH 250 ml HNO3 poly *field filtered - Dissolved Metals		

Equipment blank ID @	Field blank ID @	
Duplicate ID:	Pre-purge DO:	Post purge DO:
Fe^{2+}:	Pre-purge ORP:	Post purge ORP:
NAPL depth:	Volume of NAPL:	Volume removed: ml

Confluence Environmental, Inc
3308 El Camino Ave, Suite 300 #148, Sacramento, CA 95821, 916-760-7641

Purging And Sampling Data Sheet

Job#: 1350.15	**Sampler:** J Kerns B Myers	**Client:** Montgomery & Associates
Well ID: MW-1075	**Date** (DDOct2012): 08OCT2013	**Site:** Rio Algom Mining, Lisbon, UT
Weather Conditions: windy	**Sampler Signature:**	
Well diam: 1/4" 1" 2" 3" (4") 6" Other:	**DTW:** 50.95 **Total Depth:** 62.51	

Purge equip: (ES - diam:) Bladder Peri Waterra Positive Air Displacement Ext. System
disp bailer teflon bailer other: **Tubing:** OD: (New) Dedicated NA

Purge method: (3-5 Case Volume) Micro/Low-Flow Extraction Other:

Pump depth/ intake: 57 **Multipliers:** 1"= 0.04 2"= 0.16 3"= 0.37 4"= 0.65 5"=1.02 6"= 1.47 Radius² X 0.163

(TD - DTW X Multiplier = 1 Volume	80% Recovery (TD - DTW X 0.20 + DTW)

1 Volume = 7.5 X 3 = 22.5 (Total Purge) 80%= _____

Time	Temp (°C) °F)	pH	SP Cond (mS / µS)	Turbidity (NTU)	Purge Rate (gal) or mL/ min)	Volume Removed (gal / L)	DO (mg/l)	ORP (mv)	DTW	Notes
1521	12.3	4.4	2228	33	1.0	7.5	6.10	357.0	52.63	
1527	12.0	4.4	2211	27	1.0	15.0	6.07	359.0	52.95	
1532	12.0	4.3	2215	25	1.0	22.5	5.98	359.9	53.05	

Did well dewater? YES (NO) Total volume removed: (gal / L)

Sample method: Disp Bailer Hydrasleeve (New Tubing) Ext. Port Other:

Sample date: ~~7015~~ 08OCT2013	Sample time: 1535	DTW at sample: 53.05
Sample ID: 7015	Lab: Energy Labs	Number of bottles: (2)

Analysis: 500 ml NP poly - Alkalinity, Cl, SO4, TDS, EC, pH 250 ml HNO3 poly *field filtered - Dissolved Metals

Equipment blank ID @	Field blank ID @	
Duplicate ID:	Pre-purge DO:	Post purge DO:
Fe^{2+}:	Pre-purge ORP:	Post purge ORP:
NAPL depth:	Volume of NAPL:	Volume removed: ml

Confluence Environmental, Inc
3308 El Camino Ave, Suite 300 #148, Sacramento, CA 95821, 916-760-7641

Purging And Sampling Data Sheet

Job#: 1350.15	**Sampler:** J Kerns B Myers	**Client:** Montgomery & Associates
Well ID: MW-107D	**Date** (DDOct2013): 08Oct2013	**Site:** Rio Algom Mining, Lisbon, UT
Weather Conditions: Wind	**Sampler Signature:**	
Well diam: 1/4" 1" 2" 3" (4") 6" Other:	**DTW:** 57.05 **Total Depth:** 81.41	
Purge equip: ES - diam: Bladder Peri Waterra Positive Air Displacement Ext. System disp bailer teflon bailer other: (HS)	**Tubing:** OD: New Dedicated NA	
Purge method: 3-5 Case Volume Micro/Low-Flow Extraction Other: (HS)		
Pump depth/ intake: 74'	**Multipliers:** 1"= 0.04 2"= 0.16 3"= 0.37 4"= 0.65 5"=1.02 6"= 1.47 Radius² X 0.163	
(TD - DTW X Multiplier = 1 Volume	80% Recovery (TD - DTW X 0.20 + DTW)	

1 Volume = _____ X _____ = _____ (Total Purge) 80%= _____

Time	Temp (°C) °F	pH	SP Cond (mS) (µS)	Turbidity (NTU)	Purge Rate (gal or mL/ min)	Volume Removed (gal / L)	DO (mg/l)	ORP (mv)	DTW	Notes
1435	15.1	7.1	1197	15	—	—	1.77	55	—	

Did well dewater? YES (NO) Total volume removed: — (gal / L)

Sample method: Disp Bailer (Hydrasleeve) New Tubing Ext. Port Other:

Sample date: 08Oct2013	Sample time: 1435	DTW at sample: —
Sample ID: 0984	Lab: Energy Labs	Number of bottles: 2
Analysis: 500 ml NP poly - Alkalinity, Cl, SO4, TDS, EC, pH 250 ml HNO3 poly *field filtered - Dissolved Metals		
Equipment blank ID @	Field blank ID @	
Duplicate ID: 0985 @ 1445	Pre-purge DO:	Post purge DO:
Fe2+:	Pre-purge ORP:	Post purge ORP:
NAPL depth:	Volume of NAPL:	Volume removed: ml

Confluence Environmental, Inc
3308 El Camino Ave, Suite 300 #148, Sacramento, CA 95821, 916-760-7641

Purging And Sampling Data Sheet

Job#: 1350.15	**Sampler:** J Kerns B Myers	**Client:** Montgomery & Associates
Well ID: MW-107D	**Date** (DDOct2012): 08Oct2013	**Site:** Rio Algom Mining, Lisbon, UT
Weather Conditions: wind	**Sampler Signature:**	
Well diam: 1/4" 1" 2" 3" (4") 6" Other:	**DTW:** 51.05 **Total Depth:** 81.41	
Purge equip: ES - diam; Bladder Peri Waterra Positive Air Displacement Ext. System disp bailer teflon bailer other:	**Tubing:** OD: New Dedicated NA	
Purge method: 3-5 Case Volume Micro/Low-Flow Extraction Other:		
Pump depth/ intake: 72'	**Multipliers:** 1"= 0.04 2"= 0.16 3"= 0.37 4"= 0.65 5"=1.02 6"= 1.47 Radius² X 0.163	

(TD - DTW X Multiplier = 1 Volume	80% Recovery (TD - DTW X 0.20 + DTW)

1 Volume = — X — = — (Total Purge) 80%= —

Time	Temp (°C / °F)	pH	SP Cond (mS / µS)	Turbidity (NTU)	Purge Rate (gal or mL/ min)	Volume Removed (gal / L)	DO (mg/l)	ORP (mv)	DTW	Notes
1450	12.9	6.7	1126	17	400	1.2	1.2	118	51.20	
1501	13.4	6.6	1091	15		2.4	1.1	117	51.20	
1504	13.9	6.5	1093	15		3.6	1.1	115	51.20	
1507	14.5	6.5	1113	15		4.8	1.1	114	51.22	
1510	14.9	6.5	1098	14		6	1.2	111	51.21	
1513	15.0	6.5	1107	14		7.2	1.2	110	51.21	
1516	14.9	6.5	1108	14		8.4	1.2	110	51.21	
1519	14.9	6.5	1128	14	—	9.6	1.2	109	51.21	

Did well dewater? YES (NO)	Total volume removed: ~~8.4~~ 9.6 (gal / L)	
Sample method: Disp Bailer Hydrasleeve (New Tubing) Ext. Port Other:		
Sample date: 08oct2013	Sample time: 1520	DTW at sample: 51.21
Sample ID: 6980	Lab: Energy Labs	Number of bottles: 2
Analysis: 500 ml NP poly - Alkalinity, Cl, SO4, TDS, EC, pH 250 ml HNO3 poly *field filtered - Dissolved Metals		

Equipment blank ID @	Field blank ID @	
Duplicate ID:	Pre-purge DO:	Post purge DO:
Fe^{2+}:	Pre-purge ORP:	Post purge ORP:
NAPL depth:	Volume of NAPL:	Volume removed: ml

Confluence Environmental, Inc
3308 El Camino Ave, Suite 300 #148, Sacramento, CA 95821, 916-760-7641

Purging And Sampling Data Sheet

Job#: 1350.15	**Sampler:** J Kerns B Myers	**Client:** Montgomery & Associates
Well ID: MW-10D	**Date** (DDOct2012): 08Oct2013	**Site:** Rio Algom Mining, Lisbon, UT
Weather Conditions: Wind	**Sampler Signature:**	
Well diam: 1/4" 1" 2" 3" (4") 6" Other:	**DTW:** 57.05 **Total Depth:** 81.41	
Purge equip: (ES - diam:) Bladder Peri Waterra Positive Air Displacement Ext. System		
disp bailer teflon bailer other:	**Tubing:** OD: New Dedicated NA	
Purge method: (3-5 Case Volume) Micro/Low-Flow Extraction Other:		
Pump depth/ intake:	**Multipliers:** 1"= 0.04 2"= 0.16 3"= 0.37 4"= 0.65 5"=1.02 6"= 1.47 Radius² X 0.163	
(TD - DTW X Multiplier = 1 Volume	80% Recovery (TD - DTW X 0.20 + DTW)	

1 Volume = 20 X 3 = 60 (Total Purge) 80%= 57.12

Time	Temp (°C) °F	pH	SP Cond (mS) µS	Turbidity (NTU)	Purge Rate (gal or mL/ min)	Volume Removed (gal / L)	DO (mg/l)	ORP (mv)	DTW	Notes
1530	12.4	6.4	1101	13	2	20	1.5	116	53.90	
1540	12.2	6.4	1127	12	↓	40	1.5	123	54.60	
1550	12.1	6.4	1118	12	↓	60	1.6	126	54.82	

Did well dewater? YES (NO) Total volume removed: 60 (gal / L)

Sample method: Disp Bailer Hydrasleeve (New Tubing) Ext. Port Other:

Sample date: 08Oct2013	Sample time: 1550	DTW at sample: 54.82
Sample ID: 0987	Lab: Energy Labs	Number of bottles: 2
Analysis: 500 ml NP poly - Alkalinity, Cl, SO4, TDS, EC, pH	250 ml HNO3 poly *field filtered - Dissolved Metals	

Equipment blank ID @	Field blank ID @	
Duplicate ID:	Pre-purge DO:	Post purge DO:
Fe^{2+}:	Pre-purge ORP:	Post purge ORP:
NAPL depth:	Volume of NAPL:	Volume removed: ml

Confluence Environmental, Inc
3308 El Camino Ave, Suite 300 #148, Sacramento, CA 95821, 916-760-7641

Purging And Sampling Data Sheet

Job#: 1350.15	**Sampler:** J Kerns B Myers	**Client:** Montgomery & Associates
Well ID: MW108	**Date** (DDOct2012): 120CT2013	**Site:** Rio Algom Mining, Lisbon, UT
Weather Conditions: Cool	**Sampler Signature:**	
Well diam: 1/4" 1" 2" 3" 4" 6" Other:	**DTW:** 27.11 **Total Depth:** 170.46	
Purge equip: ES - diam: Bladder Peri Waterra Positive Air Displacement Ext. System		
disp bailer teflon bailer other: HS **Tubing:** OD: New Dedicated NA		
Purge method: 3-5 Case Volume Micro/Low-Flow Extraction Other: HS		
Pump depth/ intake: 132	**Multipliers:** 1"= 0.04 2"= 0.16 3"= 0.37 4"= 0.65 5"=1.02 6"= 1.47 Radius^2 X 0.163	

(TD - DTW X Multiplier = 1 Volume	80% Recovery (TD - DTW X 0.20 + DTW)

1 Volume = _____ X _____ = _____ (Total Purge) 80%= _____

Time	Temp (°C / °F)	pH	SP Cond (mS / µS)	Turbidity (NTU)	Purge Rate (gal or mL/ min)	Volume Removed (gal / L)	DO (mg/l)	ORP (mv)	DTW	Notes
0825	11.4	7.4	1115	21	—	—	8.40	168	—	

Did well dewater? YES NO	Total volume removed: — (gal / L)
Sample method: Disp Bailer Hydrasleeve New Tubing Ext. Port Other:	
Sample date: 120CT2013	Sample time: 0825 DTW at sample: —
Sample ID: 7006	Lab: Energy Labs Number of bottles: 2
Analysis: 500 ml NP poly - Alkalinity, Cl, SO4, TDS, EC, pH 250 ml HNO3 poly *field filtered - Dissolved Metals	
Equipment blank ID @	Field blank ID @
Duplicate ID:	Pre-purge DO: Post purge DO:
Fe^{2+}:	Pre-purge ORP: Post purge ORP:
NAPL depth:	Volume of NAPL: Volume removed: ml

Confluence Environmental, Inc
3308 El Camino Ave, Suite 300 #148, Sacramento, CA 95821, 916-760-7641

Purging And Sampling Data Sheet

Job#: 1350.15	**Sampler:** J Kerns B Myers	**Client:** Montgomery & Associates
Well ID: MW108	**Date** (DDOct2012): 12OCT2013	**Site:** Rio Algom Mining, Lisbon, UT
Weather Conditions: Cool	**Sampler Signature:**	
Well diam: 1/4" 1" 2" 3" 4" 6" Other:	**DTW:** 27.11	**Total Depth:** 170.46

Purge equip: ES - diam: Bladder Peri Waterra Positive Air Displacement Ext. System
disp bailer teflon bailer other: **Tubing:** OD: New Dedicated NA

Purge method: 3-5 Case Volume Micro/Low-Flow Extraction Other:

Pump depth/ intake: 132 **Multipliers:** 1"= 0.04 2"= 0.16 3"= 0.37 4"= 0.65 5"=1.02 6"= 1.47 Radius² X 0.163

(TD - DTW X Multiplier = 1 Volume	80% Recovery (TD - DTW X 0.20 + DTW)

1 Volume = ____ X ____ = ____ (Total Purge) 80%= ____

Time	Temp (°C / °F)	pH	SP Cond (mS / µS)	Turbidity (NTU)	Purge Rate (gal or mL/ min)	Volume Removed (gal / L)	DO (mg/l)	ORP (mv)	DTW	Notes
851	11.4	7.4	1106	13	500	1.5	9.99	159	27.33	
854	11.4	7.3	1133	12		3	11.3	157	27.33	
857	11.5	7.3	1137	10		4.5	12.5	151	27.33	
900	11.7	7.3	1154	10		6	12.7	144	27.33	
903	11.8	7.3	1135	9		7.5	13.7	140	27.33	
906	11.9	7.3	1134	9		9	13.8	136	27.33	
909	11.8	7.3	1126	9		10.5	13.5	132	27.33	

Did well dewater? YES NO Total volume removed: 10.5 (gal / L)

Sample method: Disp Bailer Hydrasleeve New Tubing Ext. Port Other:

Sample date: 12OCT2013	Sample time: 910	DTW at sample: 27.33
Sample ID: 7007	Lab: Energy Labs	Number of bottles: 2

Analysis: 500 ml NP poly - Alkalinity, Cl, SO4, TDS, EC, pH 250 ml HNO3 poly *field filtered - Dissolved Metals

Equipment blank ID @	Field blank ID @	
Duplicate ID:	Pre-purge DO:	Post purge DO:
Fe^{2+}:	Pre-purge ORP:	Post purge ORP:
NAPL depth:	Volume of NAPL:	Volume removed: ml

Confluence Environmental, Inc
3308 El Camino Ave, Suite 300 #148, Sacramento, CA 95821, 916-760-7641

Purging And Sampling Data Sheet

Job#: 1350.15	**Sampler:** J Kerns B Myers	**Client:** Montgomery & Associates
Well ID: MW-108	**Date** (DDOct2012): 12OCT2013	**Site:** Rio Algom Mining, Lisbon, UT
Weather Conditions: Cool	**Sampler Signature:**	
Well diam: 1/4" 1" 2" 3" (4") 6" Other:	**DTW:** 27.11	**Total Depth:** 170.46

Purge equip: (ES - diam:) Bladder Peri Waterra Positive Air Displacement Ext. System
disp bailer teflon bailer other: **Tubing:** OD: New Dedicated NA

Purge method: (3-5 Case Volume) Micro/Low-Flow Extraction Other:

Pump depth/ intake: 132 **Multipliers:** 1"= 0.04 2"= 0.16 3"= 0.37 4"= 0.65 5"=1.02 6"= 1.47 Radius² X 0.163

(TD - DTW X Multiplier = 1 Volume	80% Recovery (TD - DTW X 0.20 + DTW)

1 Volume = 93.2 X 3 = 280 (Total Purge) 80%= 55.78

Time	Temp (°C) °F	pH	SP Cond (mS (µS))	Turbidity (NTU)	Purge Rate (gal or mL/ min)	Volume Removed (gal /L)	DO (mg/l)	ORP (mv)	DTW	Notes
934	12.3	7.3	1162	9	5	93	11.2	139	31.35	
953	12.3	7.3	1140	7	↓	186	10.3	141	31.43	
1012	12.4	7.3	1136	7	↓	280	10.2	142	31.45	

Did well dewater? YES (NO) Total volume removed: 280 (gal /L)

Sample method: Disp Bailer Hydrasleeve (New Tubing) Ext. Port Other:

Sample date: 12OCT2013	Sample time: 1015	DTW at sample: 31.45
Sample ID: 7008	Lab: Energy Labs	Number of bottles: 2

Analysis: 500 ml NP poly - Alkalinity, Cl, SO4, TDS, EC, pH 250 ml HNO3 poly *field filtered - Dissolved Metals

Equipment blank ID @	Field blank ID @	
Duplicate ID: 7009 @ 1025	Pre-purge DO:	Post purge DO:
Fe2+:	Pre-purge ORP:	Post purge ORP:
NAPL depth:	Volume of NAPL:	Volume removed: ml

Confluence Environmental, Inc
3308 El Camino Ave, Suite 300 #148, Sacramento, CA 95821, 916-760-7641

Purging And Sampling Data Sheet

Job#: 1350.15	**Sampler:** J Kerns B Myers	**Client:** Montgomery & Associates
Well ID: MW-109	**Date** (DDOct2012): 09Oct2013	**Site:** Rio Algom Mining, Lisbon, UT
Weather Conditions: cool	**Sampler Signature:**	
Well diam: 1/4" 1" 2" 3" 4" 6" Other:	**DTW:** 136.20 **Total Depth:** 156.00	
Purge equip: ES - diam: Bladder Peri Waterra Positive Air Displacement Ext. System disp bailer teflon bailer other: ~~1-TS~~ **Tubing:** OD: New Dedicated NA		
Purge method: 3-5 Case Volume Micro/Low-Flow Extraction Other: ~~1TS~~		
Pump depth/ intake: 148	**Multipliers:** 1"= 0.04 2"= 0.16 3"= 0.37 4"= 0.65 5"=1.02 6"= 1.47 Radius² X 0.163	

(TD - DTW X Multiplier = 1 Volume	80% Recovery (TD - DTW X 0.20 + DTW)

1 Volume = — X — = — (Total Purge) 80%= _____

Time	Temp (°C / °F)	pH	SP Cond (mS / µS)	Turbidity (NTU)	Purge Rate (gal or mL/ min)	Volume Removed (gal / L)	DO (mg/l)	ORP (mv)	DTW	Notes
1120	13.1	7.5	3252	9	—	—	7.1	139	—	

Did well dewater? YES ~~NO~~	Total volume removed: — (gal / L)	
Sample method: Disp Bailer ~~Hydrasleeve~~ New Tubing Ext. Port Other:		
Sample date: 09Oct2013	Sample time: 1120	DTW at sample: —
Sample ID: 0992	Lab: Energy Labs	Number of bottles: 2
Analysis: 500 ml NP poly - Alkalinity, Cl, SO4, TDS, EC, pH 250 ml HNO3 poly *field filtered - Dissolved Metals		
Equipment blank ID @	Field blank ID @	
Duplicate ID:	Pre-purge DO:	Post purge DO:
$Fe2^{+}$:	Pre-purge ORP:	Post purge ORP:
NAPL depth:	Volume of NAPL:	Volume removed: ml

Confluence Environmental, Inc
3308 El Camino Ave, Suite 300 #148, Sacramento, CA 95821, 916-760-7641

Purging And Sampling Data Sheet

Job#: 1350.15	**Sampler:** J Kerns, B Myers	**Client:** Montgomery & Associates
Well ID: MW-09	**Date** (DDOct2012): 09Oct2013	**Site:** Rio Algom Mining, Lisbon, UT
Weather Conditions: Wind, cool	**Sampler Signature:**	
Well diam: 1/4" 1" 2" 3" 4" 6" Other:	**DTW:** 136.20	**Total Depth:** 156.60
Purge equip: ES - diam: Bladder Peri Waterra Positive Air Displacement Ext. System		
disp bailer teflon bailer other:	**Tubing:** OD: New Dedicated NA	
Purge method: 3-5 Case Volume Micro/Low-Flow Extraction Other:		
Pump depth/ intake: 148	**Multipliers:** 1"= 0.04 2"= 0.16 3"= 0.37 4"= 0.65 5"=1.02 6"= 1.47 Radius² X 0.163	

(TD - DTW X Multiplier = 1 Volume	80% Recovery (TD - DTW X 0.20 + DTW)

1 Volume = ____ X ____ = ____ (Total Purge) 80%= ____

Time	Temp (°C) °F	pH	SP Cond (mS) µS	Turbidity (NTU)	Purge Rate (gal or mL/ min)	Volume Removed (gal) L	DO (mg/l)	ORP (mv)	DTW	Notes
1131	12.5	7.5	3480	13	500	1.5	9.5	144	137.70	
1134	12.5	7.4	3473	11	400	2.7	9.3	142	137.73	
1137	12.5	7.4	3459	10	"	3.9	9.3	141	137.80	
1140	12.6	7.4	3443	9	"	5.1	9.2	146	137.81	
1143	12.7	7.4	3442	9	200	5.7	9.3	138	137.85	
1146	12.8	7.4	3406	9	"	6.3	8.7	134	137.89	
1149	13.1	7.4	3395	8	"	6.9	9.3	131	137.94	
1152	14.1	7.4	3356	8	"	7.5	9.0	127	138.10	
1155	14.5	7.4	3319	8	"	8.1	8.8	124	138.15	
1158	14.7	7.4	3300	8	"	8.7	8.1	119	138.16	
1201	14.6	7.4	3271	8	"	9.3	8.0	114	138.17	
1204	14.5	7.4	3249	8	"	9.9	8.1	111	138.17	

Did well dewater? YES (NO)	Total volume removed: 9.9 (gal) L
Sample method: Disp Bailer Hydrasleeve (New Tubing) Ext. Port Other:	

Sample date: 09Oct2013	Sample time: 1205	DTW at sample: 138.17
Sample ID: MW09	Lab: Energy Labs	Number of bottles: 2
Analysis: 500 ml NP poly - Alkalinity, Cl, SO4, TDS, EC, pH	250 ml HNO3 poly *field filtered - Dissolved Metals	

Equipment blank ID @	Field blank ID @	
Duplicate ID:	Pre-purge DO:	Post purge DO:
Fe2+:	Pre-purge ORP:	Post purge ORP:
NAPL depth:	Volume of NAPL:	Volume removed: ml

Confluence Environmental, Inc
3308 El Camino Ave, Suite 300 #148, Sacramento, CA 95821, 916-760-7641

Purging And Sampling Data Sheet

Job#: 1350.15	**Sampler:** J Kerns B Myers	**Client:** Montgomery & Associates
Well ID: MW-09	**Date** (DDOct2012): 09Oct2013	**Site:** Rio Algom Mining, Lisbon, UT
Weather Conditions: Cool, Wind	**Sampler Signature:**	
Well diam: 1/4" 1" 2" 3" (4") 6" Other:	**DTW:** 136.20 **Total Depth:** 156.60	
Purge equip: (ES - diam:) Bladder Peri Waterra Positive Air Displacement Ext. System		
disp bailer teflon bailer other:	**Tubing:** OD: New Dedicated NA	
Purge method: (3-5 Case Volume) Micro/Low-Flow Extraction Other:		
Pump depth/ intake: 148	**Multipliers:** 1"= 0.04 2"= 0.16 3"= 0.37 4"= 0.65 5"=1.02 6"= 1.47 Radius² X 0.163	

(TD - DTW X Multiplier = 1 Volume	80% Recovery (TD - DTW X 0.20 + DTW)

1 Volume = 13.3 X 3 = 39.9 (Total Purge) 80%= 140.28

Time	Temp (°C / °F)	pH	SP Cond (mS / µS)	Turbidity (NTU)	Purge Rate (gal or mL/ min)	Volume Removed (gal / L)	DO (mg/l)	ORP (mv)	DTW	Notes
1217	15.4	7.5	2476	7	1.5	13.3	5.4	98	146.45	
1226	14.3	7.6	.3348	7	1	26.6	7.8	100	151.90	
well dewatered @ 32 gallons										
1425	13.3	7.6	3515	10	—	—	7.4	100	—	

Did well dewater? (YES) NO	Total volume removed: 32	(gal) / L)
Sample method: Disp Bailer Hydrasleeve (New Tubing) Ext. Port Other:		
Sample date: 09Oct2013	Sample time: 1425	DTW at sample: 140.28
Sample ID: 0994	Lab: Energy Labs	Number of bottles: 2
Analysis: 500 ml NP poly - Alkalinity, Cl, SO4, TDS, EC, pH 250 ml HNO3 poly *field filtered - Dissolved Metals		

Equipment blank ID @	Field blank ID @	
Duplicate ID:	Pre-purge DO:	Post purge DO:
Fe^{2+}:	Pre-purge ORP:	Post purge ORP:
NAPL depth:	Volume of NAPL:	Volume removed: ml

Confluence Environmental, Inc
3308 El Camino Ave, Suite 300 #148, Sacramento, CA 95821, 916-760-7641

Purging And Sampling Data Sheet

Job#: 1350.15	**Sampler:** J Kerns B Myers	**Client:** Montgomery & Associates
Well ID: MW-110	**Date** (DDOct2012): 08Oct2013	**Site:** Rio Algom Mining, Lisbon, UT
Weather Conditions: cool	**Sampler Signature:**	
Well diam: 1/4" 1" 2" 3" 4" 6" Other:	**DTW:** 141.02	**Total Depth:** 142.40
Purge equip: ES - diam: Bladder Peri Waterra Positive Air Displacement Ext. System		
disp bailer teflon bailer other:	**Tubing:** OD: New Dedicated NA	
Purge method: 3-5 Case Volume Micro/Low-Flow Extraction Other:		
Pump depth/ intake:	**Multipliers:** 1"= 0.04 2"= 0.16 3"= 0.37 4"= 0.65 5"=1.02 6"= 1.47 Radius² X 0.163	

(TD - DTW X Multiplier = 1 Volume	80% Recovery (TD - DTW X 0.20 + DTW)

1 Volume = 0.9 X ____ = _____ (Total Purge) 80%= _____

Time	Temp (°C / °F)	pH	SP Cond (mS / µS)	Turbidity (NTU)	Purge Rate (gal or mL/ min)	Volume Removed (gal / L)	DO (mg/l)	ORP (mv)	DTW	Notes
900	12.4	6.4	928	7000	—	1	5.4	174	—	
	well dewatered @					1 gallon				
0835	unable to collect			Sample	—		Insufficient		141.79	water 10/10
1750	Unable to collect			Sample +	Insufficient		Wate	—	141.97	10/14

Did well dewater? (YES) NO	Total volume removed: 1.0 (gal / L)	
Sample method: Disp Bailer Hydrasleeve New Tubing Ext. Port Other:		
Sample date: ~~13Oct2013~~ (JK)	Sample time: (JK) ~~0835~~	DTW at sample: 141.79
Sample ID: 6965	Lab: Energy Labs	Number of bottles: 2
Analysis: 500 ml NP poly - Alkalinity, Cl, SO4, TDS, EC, pH 250 ml HNO3 poly *field filtered - Dissolved Metals		

Equipment blank ID @	Field blank ID @	
Duplicate ID:	Pre-purge DO:	Post purge DO:
Fe^{2+}:	Pre-purge ORP:	Post purge ORP:
NAPL depth:	Volume of NAPL:	Volume removed: ml

Confluence Environmental, Inc
3308 El Camino Ave, Suite 300 #148, Sacramento, CA 95821, 916-760-7641

Purging And Sampling Data Sheet

Job#: 1350.15	**Sampler:** J Kerns B Myers	**Client:** Montgomery & Associates
Well ID: MW-12	**Date** (DDOct2012): 11Oct2013	**Site:** Rio Algom Mining, Lisbon, UT
Weather Conditions: cool	**Sampler Signature:**	
Well diam: 1/4" 1" 2" 3" (4") 6" Other:	**DTW:** 45.63 **Total Depth:** 142.70	
Purge equip: ES - diam: Bladder Peri Waterra Positive Air Displacement Ext. System disp bailer teflon bailer other:	**Tubing:** OD: New Dedicated NA (HS)	
Purge method: 3-5 Case Volume Micro/Low-Flow Extraction Other: (HS)		
Pump depth/ intake: 96'	**Multipliers:** 1"= 0.04 2"= 0.16 3"= 0.37 4"= 0.65 5"=1.02 6"= 1.47 Radius² X 0.163	
(TD - DTW X Multiplier = 1 Volume	80% Recovery (TD - DTW X 0.20 + DTW)	

1 Volume = _____ X _____ = _____ (Total Purge) 80%= _____

Time	Temp (°C) °F	pH	SP Cond (mS / µS)	Turbidity (NTU)	Purge Rate (gal or mL/ min)	Volume Removed (gal / L)	DO (mg/l)	ORP (mv)	DTW	Notes
1230	13.0	7.5	1106	41	—	—	9.4	135	—	

Did well dewater? YES (NO) Total volume removed: — (gal / L)

Sample method: Disp Bailer Hydrasleeve New Tubing Ext. Port Other:

Sample date: @11Oct2013	Sample time: 1230 / 1230	DTW at sample: —
Sample ID: 6996 / ~~6997~~	Lab: Energy Labs	Number of bottles: 2
Analysis: 500 ml NP poly - Alkalinity, Cl, SO4, TDS, EC, pH 250 ml HNO3 poly *field filtered - Dissolved Metals		
Equipment blank ID @	Field blank ID @	
~~Duplicate~~ Split ID: 6997	Pre-purge DO:	Post purge DO:
Fe^{2+}:	Pre-purge ORP:	Post purge ORP:
NAPL depth:	Volume of NAPL:	Volume removed: ml

* 6997 Split to ACZ

Confluence Environmental, Inc
3308 El Camino Ave, Suite 300 #148, Sacramento, CA 95821, 916-760-7641

Purging And Sampling Data Sheet

Job#: 1350.15	**Sampler:** J Kerns B Myers	**Client:** Montgomery & Associates
Well ID: MW-12	**Date** (DDOct2012): 11OCT2013	**Site:** Rio Algom Mining, Lisbon, UT
Weather Conditions: cool	**Sampler Signature:**	
Well diam: 1/4" 1" 2" 3" (4") 6" Other:	**DTW:** 45.63 **Total Depth:** 142.70	
Purge equip: (ES - diam:) Bladder Peri Waterra Positive Air Displacement Ext. System		
disp bailer teflon bailer other:	**Tubing:** OD: New Dedicated NA	
Purge method: 3-5 Case Volume (Micro/Low-Flow) Extraction Other:		
Pump depth/ intake: 91.61	**Multipliers:** 1"= 0.04 2"= 0.16 3"= 0.37 4"= 0.65 5"=1.02 6"= 1.47 Radius² X 0.163	

(TD - DTW X Multiplier = 1 Volume	80% Recovery (TD - DTW X 0.20 + DTW)

1 Volume = _____ X _____ = _____ (Total Purge) 80%= _____

Time	Temp (°C/°F)	pH	SP Cond (mS/µS)	Turbidity (NTU)	Purge Rate (gal or mL/ min)	Volume Removed (gal/L)	DO (mg/l)	ORP (mv)	DTW	Notes
1242	11.5	7.4	1142	31	500	1.5	9.1	219	45.75	
1245	11.5	7.4	1174	27	|	3	9.5	216	45.75	
1248	11.4	7.4	1138	25	|	4.5	9.9	205	45.75	
1251	11.9	7.4	1169	21	|	6	11.0	176	45.75	
1254	12.2	7.4	1141	20	|	7.5	10.1	163	45.75	
1257	12.1	7.4	1134	18	|	9	9.7	156	45.75	
1300	12.4	7.4	1143	18	|	10.5	9.9	153	45.75	
1303	12.3	7.4	1146	17	|	12	9.8	149	45.75	
1306	12.2	7.4	1151	16	|	13.5	9.5	142	45.75	
1309	12.2	7.4	1152	16	—	15	9.6	138	45.75	

Did well dewater? YES (NO)	Total volume removed: 15 (gal/L)	
Sample method: Disp Bailer Hydrasleeve New Tubing Ext. Port Other:		
Sample date: 11OCT2013	Sample time: 1310	DTW at sample: 45.75
Sample ID: 6998/~~6999~~	Lab: Energy Labs	Number of bottles: 2
Analysis: 500 ml NP poly - Alkalinity, Cl, SO4, TDS, EC, pH 250 ml HNO3 poly *field filtered - Dissolved Metals		
Equipment blank ID @	Field blank ID @	
~~Duplicate~~ Split ID: 6999	Pre-purge DO:	Post purge DO:
Fe2+:	Pre-purge ORP:	Post purge ORP:
NAPL depth:	Volume of NAPL:	Volume removed: ml

*6999 Split to ACZ

Confluence Environmental, Inc
3308 El Camino Ave, Suite 300 #148, Sacramento, CA 95821, 916-760-7641

Purging And Sampling Data Sheet

Job#: 1350.15	**Sampler:** J Kerns B Myers	**Client:** Montgomery & Associates
Well ID: MW-12	**Date** (DDOct2012): 11Oct2013	**Site:** Rio Algom Mining, Lisbon, UT
Weather Conditions: cool	**Sampler Signature:**	
Well diam: 1/4" 1" 2" 3" (4") 6" Other:	**DTW:** 45.63 **Total Depth:** 142.70	
Purge equip: (ES - diam:) Bladder Peri Waterra Positive Air Displacement Ext. System		
disp bailer teflon bailer other:	**Tubing:** OD: New Dedicated NA	
Purge method: (3-5 Case Volume) Micro/Low-Flow Extraction Other:		
Pump depth/ intake: 96'	**Multipliers:** 1"= 0.04 2"= 0.16 3"= 0.37 4"= 0.65 5"=1.02 6"= 1.47 Radius² X 0.163	

(TD - DTW X Multiplier = 1 Volume	80% Recovery (TD - DTW X 0.20 + DTW)

1 Volume = 63 X 3 = 189 (Total Purge) 80%= 151.04

Time	Temp (°C) °F	pH	SP Cond (mS) µS	Turbidity (NTU)	Purge Rate (gal) or mL/ min	Volume Removed (gal-/L)	DO (mg/l)	ORP (mv)	DTW	Notes
1339	11.9	7.4	1139	21	4.5	63	10.5	132	52.70	
1351	11.6	7.4	1201	19	4.5	126	10.3	129	55.45	
1405	11.8	7.4	1236	19	4.5	189	10.1	129	55.80	

Did well dewater? YES (NO)	Total volume removed: 189 (gal) L)	
Sample method: Disp Bailer Hydrasleeve (New Tubing) Ext. Port Other:		
Sample date: 11Oct2013	Sample time: 1405	DTW at sample: 55.80
Sample ID: 7000	Lab: Energy Labs	Number of bottles: 2
Analysis: 500 ml NP poly - Alkalinity, Cl, SO4, TDS, EC, pH 250 ml HNO3 poly *field filtered - Dissolved Metals		
Equipment blank ID @	Field blank ID @	
~~Duplicate~~ Split ID: 7001	Pre-purge DO:	Post purge DO:
Fe2+:	Pre-purge ORP:	Post purge ORP:
NAPL depth:	Volume of NAPL:	Volume removed: ml

Confluence Environmental, Inc
3308 El Camino Ave, Suite 300 #148, Sacramento, CA 95821, 916-760-7641

Purging And Sampling Data Sheet

Job#: 1350.15	**Sampler:** J Kerns B Myers	**Client:** Montgomery & Associates
Well ID: MW13	**Date** (DDOct2012): 11Oct2013	**Site:** Rio Algom Mining, Lisbon, UT
Weather Conditions: cool	**Sampler Signature:**	
Well diam: 1/4" 1" 2" 3" 4" 6" Other:	**DTW:** 68.43 **Total Depth:** 105.00	
Purge equip: ES - diam: Bladder Peri Waterra Positive Air Displacement Ext. System disp bailer teflon bailer other: HS	**Tubing:** OD: New Dedicated NA	
Purge method: 3-5 Case Volume Micro/Low-Flow Extraction Other:		
Pump depth/ intake: 88.5	**Multipliers:** 1"= 0.04 2"= 0.16 3"= 0.37 4"= 0.65 5"=1.02 6"= 1.47 Radius² X 0.163	

(TD - DTW X Multiplier = 1 Volume	80% Recovery (TD - DTW X 0.20 + DTW)

1 Volume = _____ X _____ = _____ (Total Purge) 80%= _____

Time	Temp (°C / °F)	pH	SP Cond (mS / µS)	Turbidity (NTU)	Purge Rate (gal or mL/ min)	Volume Removed (gal / L)	DO (mg/l)	ORP (mv)	DTW	Notes
1435	12.5	7.3	2173	13	—	—	7.3	143	—	

Did well dewater? YES NO	Total volume removed: — (gal / L)	
Sample method: Disp Bailer Hydrasleeve New Tubing Ext. Port Other:		
Sample date: 11Oct2013	Sample time: 1435	DTW at sample: —
Sample ID: 7002	Lab: Energy Labs	Number of bottles: 2
Analysis: 500 ml NP poly - Alkalinity, Cl, SO4, TDS, EC, pH 250 ml HNO3 poly *field filtered - Dissolved Metals		

Equipment blank ID @	Field blank ID @	
Duplicate ID: —	Pre-purge DO:	Post purge DO:
Fe^{2+}:	Pre-purge ORP:	Post purge ORP:
NAPL depth:	Volume of NAPL:	Volume removed: ml

Confluence Environmental, Inc
3308 El Camino Ave, Suite 300 #148, Sacramento, CA 95821, 916-760-7641

Purging And Sampling Data Sheet

Job#: 1350.15	**Sampler:** J Kerns B Myers	**Client:** Montgomery & Associates
Well ID: MW13	**Date** (DDOct2012): 11Oct2013	**Site:** Rio Algom Mining, Lisbon, UT
Weather Conditions: Cool	**Sampler Signature:**	
Well diam: 1/4" 1" 2" 3" 4" 6" Other:	**DTW:** 68.43 **Total Depth:** 105.00	
Purge equip: ES - diam: Bladder Peri Waterra Positive Air Displacement Ext. System		
disp bailer teflon bailer other:	**Tubing:** OD: New Dedicated NA	
Purge method: 3-5 Case Volume Micro/Low-Flow Extraction Other:		
Pump depth/ intake: 88.5	**Multipliers:** 1"= 0.04 2"= 0.16 3"= 0.37 4"= 0.65 5"=1.02 6"= 1.47 Radius² X 0.163	

(TD - DTW X Multiplier = 1 Volume	80% Recovery (TD - DTW X 0.20 + DTW)

1 Volume = _____ X _____ = _____ (Total Purge) 80%= _____

Time	Temp (°C / °F)	pH	SP Cond (mS / µS)	Turbidity (NTU)	Purge Rate (gal or mL/ min)	Volume Removed (gal / L)	DO (mg/l)	ORP (mv)	DTW	Notes
1445	12.0	7.2	3583	9	500	1.5	9.3	157	68.45	
1448	12.1	7.2	3400	9		3	9.3	150	68.45	
1451	12.5	7.2	3515	8		4.5	9.2	137	68.45	
1454	12.7	7.2	3492	8		6	9.3	132	68.45	
1457	13.5	7.1	3503	7		7.5	9.3	123	68.45	
1500	13.7	7.1	3545	7		9	9.3	118	68.45	
1503	13.8	7.1	3546	7		10.5	9.2	112	68.45	
1506	14.0	7.1	3563	7		12	9.2	110	68.45	
1509	14.0	7.1	3566	7		13.5	9.2	108	68.45	

Did well dewater? YES NO	Total volume removed: 13.5 (gal / L)	
Sample method: Disp Bailer Hydrasleeve New Tubing Ext. Port Other:		
Sample date: 11Oct2013	Sample time: 1510	DTW at sample: 68.45
Sample ID: 7003	Lab: Energy Labs	Number of bottles: 2
Analysis: 500 ml NP poly - Alkalinity, Cl, SO4, TDS, EC, pH 250 ml HNO3 poly *field filtered - Dissolved Metals		

Equipment blank ID @	Field blank ID @	
Duplicate ID: 7004 @ 1515	Pre-purge DO:	Post purge DO:
Fe^{2+}:	Pre-purge ORP:	Post purge ORP:
NAPL depth:	Volume of NAPL:	Volume removed: ml

Confluence Environmental, Inc
3308 El Camino Ave, Suite 300 #148, Sacramento, CA 95821, 916-760-7641

Purging And Sampling Data Sheet

Job#: 1350.15	**Sampler:** J Kerns & Myers	**Client:** Montgomery & Associates
Well ID: MW13	**Date** (DDOct2012): 11OCT2013	**Site:** Rio Algom Mining, Lisbon, UT
Weather Conditions: Cool	**Sampler Signature:**	
Well diam: 1/4" 1" 2" 3" (4") 6" Other:	**DTW:** 68.43 **Total Depth:** 105.00	
Purge equip: (ES - diam;) Bladder Peri Waterra Positive Air Displacement Ext. System disp bailer teflon bailer other:	**Tubing:** OD: New Dedicated NA	
Purge method: (3-5 Case Volume) Micro/Low-Flow Extraction Other:		
Pump depth/ intake: 86.5	**Multipliers:** 1"= 0.04 2"= 0.16 3"= 0.37 4"= 0.65 5"=1.02 6"= 1.47 Radius² X 0.163	

(TD - DTW X Multiplier = 1 Volume	80% Recovery (TD - DTW X 0.20 + DTW)

1 Volume = 23.7 X 3 = 71 (Total Purge) 80%= 75.74

Time	Temp (°C / °F)	pH	SP Cond (mS / µS)	Turbidity (NTU)	Purge Rate (gal or mL/ min)	Volume Removed (gal / L)	DO (mg/l)	ORP (mv)	DTW	Notes
1527	12.4	7.2	3467	7	3	24	8.88	111	70.55	
1535	12.1	7.2	3528	6	1	48	9.0	113	71.00	
1543	12.1	7.2	3502	6	1	72	9.1	115	71.35	

Did well dewater? YES (NO)	Total volume removed: 72 (gal / L)	
Sample method: Disp Bailer Hydrasleeve (New Tubing) Ext. Port Other:		
Sample date: 11OCT2013	Sample time: 1545	DTW at sample: 71.35
Sample ID: TW05	Lab: Energy Labs	Number of bottles: 2
Analysis: 500 ml NP poly - Alkalinity, Cl, SO4, TDS, EC, pH 250 ml HNO3 poly *field filtered - Dissolved Metals		

Equipment blank ID @	Field blank ID @	
Duplicate ID:	Pre-purge DO:	Post purge DO:
Fe^{2+}:	Pre-purge ORP:	Post purge ORP:
NAPL depth:	Volume of NAPL:	Volume removed: ml

Confluence Environmental, Inc
3308 El Camino Ave, Suite 300 #148, Sacramento, CA 95821, 916-760-7641

Purging And Sampling Data Sheet

Job#: 1350.15	**Sampler:** J Kerns B Myers	**Client:** Montgomery & Associates
Well ID: MW114	**Date** (DDOct2012): 13OCT2013	**Site:** Rio Algom Mining, Lisbon, UT
Weather Conditions: Cool	**Sampler Signature:**	
Well diam: 1/4" 1" 2" 3" 4" 6" Other:	**DTW:** 58.03 **Total Depth:** 199.53	
Purge equip: ES - diam: Bladder Peri Waterra Positive Air Displacement Ext. System disp bailer teflon bailer other: IS	**Tubing:** OD: New Dedicated NA	
Purge method: 3-5 Case Volume Micro/Low-Flow Extraction Other:		
Pump depth/ intake: 122.5	**Multipliers:** 1"= 0.04 2"= 0.16 3"= 0.37 4"= 0.65 5"=1.02 6"= 1.47 Radius² X 0.163	
(TD - DTW X Multiplier = 1 Volume	80% Recovery (TD - DTW X 0.20 + DTW)	

1 Volume = — X — = — (Total Purge) 80%= —

Time	Temp (°C / °F)	pH	SP Cond (mS / µS)	Turbidity (NTU)	Purge Rate (gal or mL/ min)	Volume Removed (gal / L)	DO (mg/l)	ORP (mv)	DTW	Notes
840	11.8	7.2	779	2.73	—	—	9.2	301	—	

Did well dewater? YES NO Total volume removed: — (gal / L)

Sample method: Disp Bailer Hydrasleeve New Tubing Ext. Port Other:

Sample date: 13OCT2013 Sample time: 840 DTW at sample: —

Sample ID: 7037 Lab: Energy Labs Number of bottles: 2

Analysis: 500 ml NP poly - Alkalinity, Cl, SO4, TDS, EC, pH 250 ml HNO3 poly *field filtered - Dissolved Metals

Equipment blank ID @ Field blank ID @

Duplicate ID: Pre-purge DO: Post purge DO:

Fe2+: Pre-purge ORP: Post purge ORP:

NAPL depth: Volume of NAPL: Volume removed: ml

Confluence Environmental, Inc
3308 El Camino Ave, Suite 300 #148, Sacramento, CA 95821, 916-760-7641

Purging And Sampling Data Sheet

Job#: 1350.15	**Sampler:** J Kerns B Myers	**Client:** Montgomery & Associates
Well ID: MW114	**Date** (DDOct2012): 30CT2013	**Site:** Rio Algom Mining, Lisbon, UT
Weather Conditions: cool	**Sampler Signature:**	
Well diam: 1/4" 1" 2" 3" 4" 6" Other:	**DTW:** 58.03 **Total Depth:** 199.53	
Purge equip: ES - diam: Bladder Peri Waterra Positive Air Displacement Ext. System		
disp bailer teflon bailer other:	**Tubing:** OD: New Dedicated NA	
Purge method: 3-5 Case Volume Micro/Low-Flow Extraction Other:		
Pump depth/ intake: 122.5	**Multipliers:** 1"= 0.04 2"= 0.16 3"= 0.37 4"= 0.65 5"=1.02 6"= 1.47 Radius² X 0.163	

(TD - DTW X Multiplier = 1 Volume	80% Recovery (TD - DTW X 0.20 + DTW)

1 Volume = — X — = — (Total Purge) 80%= —

Time	Temp (°C) °F	pH	SP Cond (mS) µS	Turbidity (NTU)	Purge Rate (gal or mL/ min)	Volume Removed (gal/L)	DO (mg/l)	ORP (mv)	DTW	Notes
850	11.4	6.9	800	43	400	1.5	10.7	186	58.10	
853	11.5	7.1	770	41		3	12.9	172	58.10	
856	11.6	7.0	862	41		4.5	10.2	91	58.10	
859	11.9	6.8	879	38		6	9.9	76	58.10	
902	12.1	6.8	883	35		7.5	10.0	75	58.10	
905	12.2	6.8	857	35		9	10.0	76	58.10	

Did well dewater? YES NO	Total volume removed: 9 (gal/L)
Sample method: Disp Bailer Hydrasleeve New Tubing Ext. Port Other:	

Sample date: 30CT2013	Sample time: 905	DTW at sample: 58.10
Sample ID: 7038	Lab: Energy Labs	Number of bottles: 2
Analysis: 500 ml NP poly - Alkalinity, Cl, SO4, TDS, EC, pH 250 ml HNO3 poly *field filtered - Dissolved Metals		

Equipment blank ID @	Field blank ID @	
Duplicate ID:	Pre-purge DO:	Post purge DO:
Fe^{2+}:	Pre-purge ORP:	Post purge ORP:
NAPL depth:	Volume of NAPL:	Volume removed: ml

Confluence Environmental, Inc
3308 El Camino Ave, Suite 300 #148, Sacramento, CA 95821, 916-760-7641

Purging And Sampling Data Sheet

Job#: 1350.15	**Sampler:** J Kerns B Myers	**Client:** Montgomery & Associates
Well ID: MW-14	**Date** (DDOct2012): 13OCT2013	**Site:** Rio Algom Mining, Lisbon, UT
Weather Conditions: cool, breezy	**Sampler Signature:**	
Well diam: 1/4" 1" 2" 3" 4" 6" Other:	**DTW:** 58.03 **Total Depth:** 99.53	
Purge equip: ES - diam: Bladder Peri Waterra Positive Air Displacement Ext. System		
disp bailer teflon bailer other: **Tubing:** OD: New Dedicated NA		
Purge method: 3-5 Case Volume Micro/Low-Flow Extraction Other:		
Pump depth/ intake: 122.5	**Multipliers:** 1"= 0.04 2"= 0.16 3"= 0.37 4"= 0.65 5"=1.02 6"= 1.47 Radius² X 0.163	
(TD - DTW X Multiplier = 1 Volume	80% Recovery (TD - DTW X 0.20 + DTW)	

1 Volume = 92 X 3 = 276 (Total Purge) 80%= 86.33

Time	Temp (°C) °F	pH	SP Cond (mS / µS)	Turbidity (NTU)	Purge Rate (gal or mL/ min)	Volume Removed (gal / L)	DO (mg/l)	ORP (mv)	DTW	Notes
929	12.1	7.4	773	21	4.5	92	15.3	124	60.30	
949	12.1	7.5	782	18	1	184	14.5	135	60.45	
1010	12.1	7.5	783	18	1	276	14.3	140	60.58	

Did well dewater? YES NO — Total volume removed: 276 (gal / L)

Sample method: Disp Bailer Hydrasleeve New Tubing Ext. Port Other:

Sample date: 13OCT2013	Sample time: 1010	DTW at sample: 60.58
Sample ID: 7039	Lab: Energy Labs	Number of bottles: 2
Analysis: 500 ml NP poly - Alkalinity, Cl, SO4, TDS, EC, pH 250 ml HNO3 poly *field filtered - Dissolved Metals		

Equipment blank ID @	Field blank ID @	
Duplicate ID: 7040 @ 1020	Pre-purge DO:	Post purge DO:
Fe2+:	Pre-purge ORP:	Post purge ORP:
NAPL depth:	Volume of NAPL:	Volume removed: ml

Confluence Environmental, Inc
3308 El Camino Ave, Suite 300 #148, Sacramento, CA 95821, 916-760-7641

Purging And Sampling Data Sheet

Job#: 1350.15	**Sampler:** J Kerns B Myers	**Client:** Montgomery & Associates
Well ID: MW11SS	**Date** (DDOct2012): 13OCT2013	**Site:** Rio Algom Mining, Lisbon, UT
Weather Conditions: cool, breezy	**Sampler Signature:**	
Well diam: 1/4" 1" 2" 3" (4") 6" Other:	**DTW:** 75.73	**Total Depth:** 125.80

Purge equip: ES - diam: Bladder Peri Waterra Positive Air Displacement Ext. System
disp bailer teflon bailer other: (HS) **Tubing:** OD: New Dedicated NA

Purge method: 3-5 Case Volume Micro/Low-Flow Extraction Other: (HS)

Pump depth/ intake: 103 **Multipliers:** 1"= 0.04 2"= 0.16 3"= 0.37 4"= 0.65 5"=1.02 6"= 1.47 Radius² X 0.163

(TD - DTW X Multiplier = 1 Volume	80% Recovery (TD - DTW X 0.20 + DTW)

1 Volume = _____ X _____ = _____ (Total Purge) 80%= _____

Time	Temp (°C) °F	pH	SP Cond (mS / µS)	Turbidity (NTU)	Purge Rate (gal or mL/ min)	Volume Removed (gal / L)	DO (mg/l)	ORP (mv)	DTW	Notes
1040	11.7	7.5	1711	31	—	—	12.8	148	—	

Did well dewater? YES (NO) Total volume removed: — (gal / L)

Sample method: Disp Bailer (Hydrasleeve) New Tubing Ext. Port Other:

Sample date: 13OCT2013	Sample time: 1040	DTW at sample: —
Sample ID: 7041	Lab: Energy Labs	Number of bottles: 2

Analysis: 500 ml NP poly - Alkalinity, Cl, SO4, TDS, EC, pH 250 ml HNO3 poly *field filtered - Dissolved Metals

Equipment blank ID @	Field blank ID @	
Duplicate ID:	Pre-purge DO:	Post purge DO:
Fe^{2+}:	Pre-purge ORP:	Post purge ORP:
NAPL depth:	Volume of NAPL:	Volume removed: ml

Confluence Environmental, Inc
3308 El Camino Ave, Suite 300 #148, Sacramento, CA 95821, 916-760-7641

Purging And Sampling Data Sheet

Job#: 1350.15	**Sampler:** J Kerns B Myers	**Client:** Montgomery & Associates
Well ID: MW155	**Date** (DDOct2012): 30CT2013	**Site:** Rio Algom Mining, Lisbon, UT
Weather Conditions: cool, breezy	**Sampler Signature:**	
Well diam: 1/4" 1" 2" 3" (4") 6" Other:	**DTW:** 75.73 **Total Depth:** 125.80	
Purge equip: (ES - diam:) Bladder Peri Waterra Positive Air Displacement Ext. System		
disp bailer teflon bailer other:	**Tubing:** OD: New Dedicated NA	
Purge method: 3-5 Case Volume (Micro/Low-Flow) Extraction Other:		
Pump depth/ intake: 103	**Multipliers:** 1"= 0.04 2"= 0.16 3"= 0.37 4"= 0.65 5"=1.02 6"= 1.47 Radius² X 0.163	

(TD - DTW X Multiplier = 1 Volume	80% Recovery (TD - DTW X 0.20 + DTW)

1 Volume = — X — = — (Total Purge) 80%= —

Time	Temp (°C / °F)	pH	SP Cond (mS / µS)	Turbidity (NTU)	Purge Rate (gal or mL/ min)	Volume Removed (gal / L)	DO (mg/l)	ORP (mv)	DTW	Notes
1046	12.2	7.60	1180	23	500	1.5	15.8	151	75.74	
1049	12.2	7.60	1197	21		3	15.1	151	75.74	
1052	12.3	7.60	1208	18		4.5	15.2	148	75.74	
1055	12.7	7.60	1192	17		6	15.0	147	75.74	
1058	13.4	7.60	1230	17		7.5	15.6	147	75.74	
1101	13.60	7.60	1222	16		9	15.8	147	75.74	
1104	13.7	7.60	1223	16		10.5	15.6	147	75.74	

Did well dewater? YES (NO)	Total volume removed: 10.5 (gal / L)	
Sample method: Disp Bailer Hydrasleeve (New Tubing) Ext. Port Other:		
Sample date: 30CT2013	Sample time: 1105	DTW at sample: 75.74
Sample ID: 7042	Lab: Energy Labs	Number of bottles: 2
Analysis: 500 ml NP poly - Alkalinity, Cl, SO4, TDS, EC, pH 250 ml HNO3 poly *field filtered - Dissolved Metals		

Equipment blank ID @		Field blank ID @	
Duplicate ID:		Pre-purge DO:	Post purge DO:
$Fe2^{+}$:		Pre-purge ORP:	Post purge ORP:
NAPL depth:	Volume of NAPL:	Volume removed: ml	

Confluence Environmental, Inc
3308 El Camino Ave, Suite 300 #148, Sacramento, CA 95821, 916-760-7641

Purging And Sampling Data Sheet

Job#: 1350.15	**Sampler:** J Kerns B Myers	**Client:** Montgomery & Associates
Well ID: MW-11SS	**Date** (DDOct2012): 13OCT2013	**Site:** Rio Algom Mining, Lisbon, UT
Weather Conditions: cool, breezy	**Sampler Signature:**	
Well diam: 1/4" 1" 2" 3" (4") 6" Other:	**DTW:** 75.73	**Total Depth:** 125.80

Purge equip: (ES - diam:) Bladder Peri Waterra Positive Air Displacement Ext. System

disp bailer teflon bailer other: **Tubing:** OD: New Dedicated NA

Purge method: (3-5 Case Volume) Micro/Low-Flow Extraction Other:

Pump depth/ intake: 107 **Multipliers:** 1"= 0.04 2"= 0.16 3"= 0.37 4"= 0.65 5"=1.02 6"= 1.47 Radius² X 0.163

(TD - DTW X Multiplier = 1 Volume	80% Recovery (TD - DTW X 0.20 + DTW)

1 Volume = 32.5 X 3 = 97.5 (Total Purge) 80%= 85.74

Time	Temp (°C/°F)	pH	SP Cond (mS/(µS))	Turbidity (NTU)	Purge Rate (gal or mL/ min)	Volume Removed (gal/ L)	DO (mg/l)	ORP (mv)	DTW	Notes
1117	12.3	7.60	1229	71000	4	32.5	19.1	151	76.10	
1125	12.4	7.66	1199	~~71000~~ 98	4	65	19.5	150	76.20	
1133	12.4	7.66	1220	87	4	97.5	19.66	150	76.28	

Did well dewater? YES (NO) Total volume removed: 97.5 (gal/ L)

Sample method: Disp Bailer Hydrasleeve (New Tubing) Ext. Port Other:

Sample date: 13OCT2013	Sample time: 1135	DTW at sample: 76.28
Sample ID: 7043	Lab: Energy Labs	Number of bottles: 2
Analysis: 500 ml NP poly - Alkalinity, Cl, SO4, TDS, EC, pH	250 ml HNO3 poly *field filtered - Dissolved Metals	

Equipment blank ID @	Field blank ID @	
Duplicate ID: 7044 @ 1145	Pre-purge DO:	Post purge DO:
Fe^{2+}:	Pre-purge ORP:	Post purge ORP:
NAPL depth:	Volume of NAPL:	Volume removed: ml

Confluence Environmental, Inc
3308 El Camino Ave, Suite 300 #148, Sacramento, CA 95821, 916-760-7641

Development Data Sheet

Job#: 1350, 15	**Developer:** BM	**Client:** Montgomery
Well ID: MW15M	**Date:** 10/11/13	**Site:** Rio Algom Mining, Lisbon, CT
Well diam: 1/4" 1" 2" 3" 4" 6" Other:	**DTW:** 75.70	**TD Before:** 242.12 **TD After:** 242.15
Purge equip: ES - diam: Bladder Peri Waterra Positive Air Displacement Ext. System disp bailer teflon bailer other:	**Surge block used:** Y N	
Length of time surged prior to development: 15 mins		
Pump depth/ intake:	**Multipliers:** 1"= 0.04 2"= 0.16 3"= 0.37 4"= 0.65 5"=1.02 6"= 1.47 Radius² X 0.163	
(TD - DTW X Multiplier = 1 Volume	80% Recovery (TD - DTW X 0.20 + DTW)	

1 Volume = _____ X 10 = _____ (Total Purge) Meter(s): _____

Time	Temp (°C / °F)	pH	Cond (mS / µS)	Turbidity (NTU)	Purge Rate (gal or mL/ min)	Volume Removed (gal / L)	DTW	Notes
1100	11.9	6.9	1191	71000	45	50	76.25	
1111	11.8	7.3	1249	71000		100	76.37	
1122	11.5	7.4	1313	71000		150	76.40	
1132	12.0	7.4	1369	112		200	76.40	
1142	12.1	7.5	1405	30		250	76.40	
1152	12.2	7.6	1429	26		300	76.40	
1202	12.2	7.6	1435	25	↓	350	76.40	
∅ well bottom	clean	+			hard - der done per client			

Did well dewater? YES NO Total volume removed: 350 (gal / L)

Sample method (if applicable): Disp Bailer Ded. Tubing New Tubing Ext. Port Other:

Sample date:	Sample time:	DTW at sample:
Sample ID:	Lab:	Number of bottles:
Analysis:		

Purging And Sampling Data Sheet

Job#: 1350.15	**Sampler:** J Kerns, B Myers	**Client:** Montgomery & Associates
Well ID: MW11SM	**Date** (DDOct2012): 14OCT2013	**Site:** Rio Algom Mining, Lisbon, UT
Weather Conditions: cool	**Sampler Signature:**	
Well diam: 1/4" 1" 2" 3" (4") 6" Other:	**DTW:** 75.70	**Total Depth:** 242.15

Purge equip: ES - diam: Bladder Peri Waterra Positive Air Displacement Ext. System

disp bailer teflon bailer other: (HS) **Tubing:** OD: New Dedicated NA

Purge method: 3-5 Case Volume Micro/Low-Flow Extraction Other: (HS)

Pump depth/ intake: 174 **Multipliers:** 1"= 0.04 2"= 0.16 3"= 0.37 4"= 0.65 5"=1.02 6"= 1.47 Radius² X 0.163

(TD - DTW X Multiplier = 1 Volume	80% Recovery (TD - DTW X 0.20 + DTW)

1 Volume = — X — = — (Total Purge) 80%= —

Time	Temp (°C / °F)	pH	SP Cond (mS (µS))	Turbidity (NTU)	Purge Rate (gal or mL/ min)	Volume Removed (gal / L)	DO (mg/l)	ORP (mv)	DTW	Notes
	~~10.0~~	~~9.9~~		~~13~~	—	—	~~9.4~~	~~94~~	—	
950	11.8	9.7	1378	13	—	—	11.2	104	—	

Did well dewater? YES (NO) Total volume removed: — (gal / L)

Sample method: Disp Bailer ~~Hydrasleeve~~ New Tubing Ext. Port Other:

Sample date: 14OCT2013	Sample time: 950	DTW at sample: —
Sample ID: 7052	Lab: Energy Labs	Number of bottles: 2
Analysis: 500 ml NP poly - Alkalinity, Cl, SO4, TDS, EC, pH	250 ml HNO3 poly *field filtered - Dissolved Metals	

Equipment blank ID @	Field blank ID @	
Duplicate ID:	Pre-purge DO:	Post purge DO:
Fe2+:	Pre-purge ORP:	Post purge ORP:
NAPL depth:	Volume of NAPL:	Volume removed: ml

Confluence Environmental, Inc
3308 El Camino Ave, Suite 300 #148, Sacramento, CA 95821, 916-760-7641

Purging And Sampling Data Sheet

Job#: 1350.15	**Sampler:** J Kerns B Myers	**Client:** Montgomery & Associates
Well ID: MW15M	**Date** (DDOct2012): 14OCT2013	**Site:** Rio Algom Mining, Lisbon, UT
Weather Conditions: cool	**Sampler Signature:**	
Well diam: 1/4" 1" 2" 3" (4") 6" Other:	**DTW:** 75.70	**Total Depth:** 202.15

Purge equip: (ES - diam:) Bladder Peri Waterra Positive Air Displacement Ext. System
disp bailer teflon bailer other: **Tubing:** OD: New Dedicated NA

Purge method: 3-5 Case Volume (Micro/Low-Flow) Extraction Other:

Pump depth/ intake: 174 **Multipliers:** 1"= 0.04 2"= 0.16 3"= 0.37 4"= 0.65 5"=1.02 6"= 1.47 Radius² X 0.163

(TD - DTW X Multiplier = 1 Volume | 80% Recovery (TD - DTW X 0.20 + DTW)

1 Volume = — X — = — (Total Purge) 80%= —

Time	Temp (°C / °F)	pH	SP Cond (mS / (µS))	Turbidity (NTU)	Purge Rate (gal or (mL) / min)	Volume Removed (gal / (L))	DO (mg/l)	ORP (mv)	DTW	Notes
1014	12.1	7.6 8.	1315	17	500	1.5	12.6	111	75.72	
1017	12.6	7.6	1302	17		3	14.3	115	75.72	
1020	12.7	7.6	1293	15		345	15.0	117	75.72	
1023	14.0	7.6	1303	14		6	16.1	121	75.72	
1026	14.0	7.6	1305	14		7.5	16.4	122	75.72	
1029	14.3	7.6	1275	14		9	17.0	121	75.72	
1032	14.4	7.6	1265	13		10.5	17.4	114	75.72	
1035	14.4	7.6	1263	13		12	17.6	118	75.72	

Did well dewater? YES (NO) Total volume removed: 12 (gal (L))

Sample method: Disp Bailer Hydrasleeve (New Tubing) Ext. Port Other:

Sample date: 14OCT2013 Sample time: 1035 DTW at sample: 75.72

Sample ID: 7053 Lab: Energy Labs Number of bottles: 2

Analysis: 500 ml NP poly - Alkalinity, Cl, SO4, TDS, EC, pH 250 ml HNO3 poly *field filtered - Dissolved Metals

Equipment blank ID @ Field blank ID @

Duplicate ID: Pre-purge DO: Post purge DO:

$Fe2^{+}$: Pre-purge ORP: Post purge ORP:

NAPL depth: Volume of NAPL: Volume removed: ml

Confluence Environmental, Inc
3308 El Camino Ave, Suite 300 #148, Sacramento, CA 95821, 916-760-7641

Purging And Sampling Data Sheet

Job#: 1350.15	**Sampler:** J Kerns B Myers	**Client:** Montgomery & Associates
Well ID: MW15M	**Date** (DDOct2012): 14OCT2013	**Site:** Rio Algom Mining, Lisbon, UT
Weather Conditions: Cool	**Sampler Signature:**	
Well diam: 1/4" 1" 2" 3" (4") 6" Other:	**DTW:** 75.70	**Total Depth:** 142.15

Purge equip: (ES - diam:) Bladder Peri Waterra Positive Air Displacement Ext. System
disp bailer teflon bailer other: **Tubing:** OD: New Dedicated NA

Purge method: (3-5 Case Volume) Micro/Low-Flow Extraction Other:

Pump depth/ intake: 114 **Multipliers:** 1"= 0.04 2"= 0.16 3"= 0.37 4"= 0.65 5"=1.02 6"= 1.47 Radius² X 0.163

(TD - DTW X Multiplier = 1 Volume | 80% Recovery (TD - DTW X 0.20 + DTW)

1 Volume = 108 X 3 = 324 (Total Purge) 80%= 108.99

Time	Temp (°C/ °F)	pH	SP Cond (mS (µS))	Turbidity (NTU)	Purge Rate (gal/ or mL/ min)	Volume Removed (gal/L)	DO (mg/l)	ORP (mv)	DTW	Notes
1104	12.4	7.9	1586	13	5	108	10.2	129	76.20	
1125	12.3	7.7	1715	11	|	216	12.0	134	76.30	
1147	12.3	7.7	1701	11	|	324	12.2	137	76.30	

Did well dewater? YES (NO) Total volume removed: 324 (gal/L)

Sample method: Disp Bailer Hydrasleeve (New Tubing) Ext. Port Other:

Sample date: 14OCT2013 Sample time: 1150 DTW at sample: 76.30

Sample ID: 7054 Lab: Energy Labs Number of bottles: 2

Analysis: 500 ml NP poly - Alkalinity, Cl, SO4, TDS, EC, pH 250 ml HNO3 poly *field filtered - Dissolved Metals

Equipment blank ID @ Field blank ID @

Duplicate ID: Pre-purge DO: Post purge DO:

$Fe2^{+}$: Pre-purge ORP: Post purge ORP:

NAPL depth: Volume of NAPL: Volume removed: ml

Confluence Environmental, Inc
3308 El Camino Ave, Suite 300 #148, Sacramento, CA 95821, 916-760-7641

Purging And Sampling Data Sheet

Job#: 1350.15	**Sampler:** J Kerns, B Myers	**Client:** Montgomery & Associates
Well ID: MW-114	**Date** (DDOct2012): 12OCT2013	**Site:** Rio Algom Mining, Lisbon, UT
Weather Conditions: breezy	**Sampler Signature:**	
Well diam: 1/4" 1" 2" 3" (4") 6" Other:	**DTW:** 85.35 **Total Depth:** 124.82	
Purge equip: ES - diam: Bladder Peri Waterra Positive Air Displacement Ext. System disp bailer teflon bailer other: (PS)	**Tubing:** OD: New Dedicated NA	
Purge method: 3-5 Case Volume Micro/Low-Flow Extraction Other: (PS)		
Pump depth/ intake: 116'	**Multipliers:** 1"= 0.04 2"= 0.16 3"= 0.37 4"= 0.65 5"=1.02 6"= 1.47 Radius² X 0.163	
(TD - DTW X Multiplier = 1 Volume	80% Recovery (TD - DTW X 0.20 + DTW)	

1 Volume = _____ X _____ = _____ (Total Purge) 80%= _____

Time	Temp (°C) °F	pH	SP Cond (mS / µS)	Turbidity (NTU)	Purge Rate (gal or mL/ min)	Volume Removed (gal / L)	DO (mg/l)	ORP (mv)	DTW	Notes
1505	21.1	3.7	11458	42	—	—	2.1	273	—	water is
										blue like
										windex

Did well dewater? YES (NO) Total volume removed: — (gal / L)

Sample method: Disp Bailer (Hydrasleeve) New Tubing Ext. Port Other:

Sample date: 12OCT2013	Sample time: 1505	DTW at sample: —
Sample ID: 7033	Lab: Energy Labs	Number of bottles: 2
Analysis: 500 ml NP poly - Alkalinity, Cl, SO4, TDS, EC, pH 250 ml HNO3 poly *field filtered - Dissolved Metals		

Equipment blank ID @	Field blank ID @	
Duplicate ID:	Pre-purge DO:	Post purge DO:
Fe^{2+}:	Pre-purge ORP:	Post purge ORP:
NAPL depth:	Volume of NAPL:	Volume removed: ml

Confluence Environmental, Inc
3308 El Camino Ave, Suite 300 #148, Sacramento, CA 95821, 916-760-7641

Purging And Sampling Data Sheet

Job#: 1350.15	**Sampler:** J Kerns (B Myers)	**Client:** Montgomery & Associates
Well ID: MW-116	**Date** (DDOct2012): 12OCT2013	**Site:** Rio Algom Mining, Lisbon, UT
Weather Conditions: breezy	**Sampler Signature:**	
Well diam: 1/4" 1" 2" 3" (4") 6" Other:	**DTW:** 85.35 **Total Depth:** 124.82	
Purge equip: (ES - diam:) Bladder Peri Waterra Positive Air Displacement Ext. System		
disp bailer teflon bailer other:	**Tubing:** OD: New Dedicated NA	
Purge method: 3-5 Case Volume (Micro/Low-Flow) Extraction Other:		
Pump depth/ intake:	**Multipliers:** 1"= 0.04 2"= 0.16 3"= 0.37 4"= 0.65 5"=1.02 6"= 1.47 Radius² X 0.163	

(TD - DTW X Multiplier = 1 Volume	80% Recovery (TD - DTW X 0.20 + DTW)

1 Volume = — X — = — (Total Purge) 80%= —

Time	Temp (°C / °F)	pH	SP Cond (mS / µS)	Turbidity (NTU)	Purge Rate (gal or mL / min)	Volume Removed (gal / L)	DO (mg/l)	ORP (mv)	DTW	Notes
1535	13.6	3.7	11476	702	400	1.2	2.2	290	86.00	water is blue like windex
1538	13.7	3.7	11445	748		2.4	2.8	286	86.00	
1541	14.2	3.7	11397	757		3.6	2.8	280	86.00	
1544	14.1	3.7	11394	746		4.8	2.4	275	86.00	
1547	15.4	3.7	11350	735		6	2.0	275	86.08	
1550	15.6	3.7	11365	721		7.2	2.0	276	86.08	
1553	15.8	3.7	11352	720		8.4	2.0	281	86.08	

Did well dewater? YES (NO)	Total volume removed: 8.4 (gal (L))	
Sample method: Disp Bailer Hydrasleeve (New Tubing) Ext. Port Other:		
Sample date: 12OCT2013	Sample time: 1555	DTW at sample: 86.08
Sample ID: 7031	Lab: Energy Labs	Number of bottles: 2
Analysis: 500 ml NP poly - Alkalinity, Cl, SO4, TDS, EC, pH 250 ml HNO3 poly *field filtered - Dissolved Metals		

Equipment blank ID @	Field blank ID @	
Duplicate ID:	Pre-purge DO:	Post purge DO:
Fe^{2+}:	Pre-purge ORP:	Post purge ORP:
NAPL depth:	Volume of NAPL:	Volume removed: ml

Confluence Environmental, Inc
3308 El Camino Ave, Suite 300 #148, Sacramento, CA 95821, 916-760-7641

Purging And Sampling Data Sheet

Job#: 1350.15	**Sampler:** J Kerns/B Myers	**Client:** Montgomery & Associates
Well ID: MW11C	**Date** (DDOct2012): 12OCT2013	**Site:** Rio Algom Mining, Lisbon, UT
Weather Conditions: breezy	**Sampler Signature:**	
Well diam: 1/4" 1" 2" 3" (4") 6" Other:	**DTW:** 85.35 **Total Depth:** 124.82	
Purge equip: (ES - diam:) Bladder Peri Waterra Positive Air Displacement Ext. System		
disp bailer teflon bailer other:	**Tubing:** OD: New Dedicated NA	
Purge method: (3-5 Case Volume) Micro/Low-Flow Extraction Other:		
Pump depth/ intake: 116	**Multipliers:** 1"= 0.04 2"= 0.16 3"= 0.37 4"= 0.65 5"=1.02 6"= 1.47 Radius² X 0.163	

(TD - DTW X Multiplier = 1 Volume	80% Recovery (TD - DTW X 0.20 + DTW)

1 Volume = 27 X 3 = 81 (Total Purge) 80%= 93.24

Time	Temp (°C) °F	pH	SP Cond (mS) µS	Turbidity (NTU)	Purge Rate (gal) or mL/ min	Volume Removed (gal) L	DO (mg/l)	ORP (mv)	DTW	Notes
1612	13.0	3.60	12064	96	2	27	2.1	295	96.10	water is blue like
1625	12.9	3.5	12643	90	2	54	2.4	309	100.44	windex
1638	13.0	3.5	12884	90	2	81	2.6	316	103.42	
	waited	for	80%							

Did well dewater? YES (NO)	Total volume removed: 81 ((gal) / L)
Sample method: Disp Bailer Hydrasleeve (New Tubing) Ext. Port Other:	
Sample date: 12OCT2013 Sample time: 1700	DTW at sample: 93.24
Sample ID: 7035 Lab: Energy Labs	Number of bottles: 2
Analysis: 500 ml NP poly - Alkalinity, Cl, SO4, TDS, EC, pH 250 ml HNO3 poly *field filtered - Dissolved Metals	
Equipment blank ID 7036@ 0800 on 10/3/13 Field blank ID @	
Duplicate ID: Pre-purge DO:	Post purge DO:
Fe2+: Pre-purge ORP:	Post purge ORP:
NAPL depth: Volume of NAPL:	Volume removed: ml

Confluence Environmental, Inc
3308 El Camino Ave, Suite 300 #148, Sacramento, CA 95821, 916-760-7641

Purging And Sampling Data Sheet

Job#: 1350.15	**Sampler:** J Kerns B Myers	**Client:** Montgomery & Associates
Well ID: MW-17S	**Date** (DDOct2012): 12OCT2013	**Site:** Rio Algom Mining, Lisbon, UT
Weather Conditions: Cool	**Sampler Signature:**	
Well diam: 1/4" 1" 2" 3" 4" 6" Other:	**DTW:** 82.82 **Total Depth:** 127.03	

Purge equip: ES - diam: Bladder Peri Waterra Positive Air Displacement Ext. System
disp bailer teflon bailer other: HS **Tubing:** OD: New Dedicated NA

Purge method: 3-5 Case Volume Micro/Low-Flow Extraction Other: HS

Pump depth/ intake: 106.9 **Multipliers:** 1"= 0.04 2"= 0.16 3"= 0.37 4"= 0.65 5"=1.02 6"= 1.47 Radius² X 0.163

(TD - DTW X Multiplier = 1 Volume	80% Recovery (TD - DTW X 0.20 + DTW)

1 Volume = _____ X _____ = _____ (Total Purge) 80%= _____

Time	Temp (°C / °F)	pH	SP Cond (mS / µS)	Turbidity (NTU)	Purge Rate (gal or mL/ min)	Volume Removed (gal / L)	DO (mg/l)	ORP (mv)	DTW	Notes
1100	12.1	7.9	1252	944	—	—	8.2	142	—	

Did well dewater? YES NO Total volume removed: — (gal / L)

Sample method: Disp Bailer Hydrasleeve New Tubing Ext. Port Other:

Sample date: 12OCT2013	Sample time: 1100	DTW at sample: —
Sample ID: 7010	Lab: Energy Labs	Number of bottles: 2
Analysis: 500 ml NP poly - Alkalinity, Cl, SO4, TDS, EC, pH 250 ml HNO3 poly *field filtered - Dissolved Metals		

Equipment blank ID @	Field blank ID @	
Duplicate ID:	Pre-purge DO:	Post purge DO:
$Fe2^{+}$:	Pre-purge ORP:	Post purge ORP:
NAPL depth:	Volume of NAPL:	Volume removed: ml

Confluence Environmental, Inc
3308 El Camino Ave, Suite 300 #148, Sacramento, CA 95821, 916-760-7641

Purging And Sampling Data Sheet

Job#: 1350.15	**Sampler:** J Kerns B Myers	**Client:** Montgomery & Associates
Well ID: MW-11TS	**Date** (DDOct2012): 12OCT2013	**Site:** Rio Algom Mining, Lisbon, UT
Weather Conditions: cool	**Sampler Signature:**	
Well diam: 1/4" 1" 2" 3" 4" 6" Other:	**DTW:** 82.82 **Total Depth:** 127.03	
Purge equip: ES - diam Bladder Peri Waterra Positive Air Displacement Ext. System		
disp bailer teflon bailer other:	**Tubing:** OD: New Dedicated NA	
Purge method: 3-5 Case Volume Micro/Low-Flow Extraction Other:		
Pump depth/ intake: 107	**Multipliers:** 1"= 0.04 2"= 0.16 3"= 0.37 4"= 0.65 5"=1.02 6"= 1.47 Radius² X 0.163	
(TD - DTW X Multiplier = 1 Volume	80% Recovery (TD - DTW X 0.20 + DTW)	

1 Volume = ___ X ___ = ___ (Total Purge) 80%= ___

Time	Temp (°C / °F)	pH	SP Cond (mS / µS)	Turbidity (NTU)	Purge Rate (gal or mL/ min)	Volume Removed (gal / L)	DO (mg/l)	ORP (mv)	DTW	Notes
1118	12.5	7.7	1309	841	500	1.5	10.2	158	82.84	
1121	12.3	7.7	1327	839		3	10.1	150	82.84	
1124	12.6	7.7	1351	839		4.5	9.1	140	82.84	
1127	12.4	7.6	1350	837		6	10.7	130	82.85	
1130	13.3	7.6	1367	835		7.5	10.8	119	82.85	
1133	13.9	7.6	1358	834		9	8.9	108	82.85	
1136	14.2	7.6	1367	830		10.5	8.5	103	82.85	
1139	14.5	7.6	1397	830		12	8.5	100	82.85	
1142	14.6	7.6	1397	838		13.5	8.4	98	82.85	

Did well dewater? YES NO — Total volume removed: 13.5 (gal / L)

Sample method: Disp Bailer Hydrasleeve New Tubing Ext. Port Other:

Sample date: 12OCT2013	Sample time: 1145	DTW at sample: 82.85
Sample ID: 7031	Lab: Energy Labs	Number of bottles: 2
Analysis: 500 ml NP poly - Alkalinity, Cl, SO4, TDS, EC, pH 250 ml HNO3 poly *field filtered - Dissolved Metals		

Equipment blank ID @	Field blank ID @	
Duplicate ID:	Pre-purge DO:	Post purge DO:
Fe^{2+}:	Pre-purge ORP:	Post purge ORP:
NAPL depth:	Volume of NAPL:	Volume removed: ml

Confluence Environmental, Inc
3308 El Camino Ave, Suite 300 #148, Sacramento, CA 95821, 916-760-7641

Purging And Sampling Data Sheet

Job#: 1350.15	**Sampler:** J Kerns B Myers	**Client:** Montgomery & Associates
Well ID: MW-117S	**Date** (DDOct2012): 12OCT2013	**Site:** Rio Algom Mining, Lisbon, UT
Weather Conditions: cool, breezy	**Sampler Signature:**	
Well diam: 1/4" 1" 2" 3" (4") 6" Other:	**DTW:** 82.82 **Total Depth:** 127.03	
Purge equip: (ES - diam) Bladder Peri Waterra Positive Air Displacement Ext. System disp bailer teflon bailer other: **Tubing:** OD: New Dedicated NA		
Purge method: (3-5 Case Volume) Micro/Low-Flow Extraction Other:		
Pump depth/ intake: 107	**Multipliers:** 1"= 0.04 2"= 0.16 3"= 0.37 4"= 0.65 5"=1.02 6"= 1.47 Radius² X 0.163	

(TD - DTW X Multiplier = 1 Volume	80% Recovery (TD - DTW X 0.20 + DTW)

1 Volume = 29 X 3 = 87 (Total Purge) 80%= 91.66

Time	Temp (°C / °F)	pH	SP Cond (mS / µS)	Turbidity (NTU)	Purge Rate (gal or mL/ min)	Volume Removed (gal / L)	DO (mg/l)	ORP (mv)	DTW	Notes
1157	12.5	7.7	1523	36	3	29	11.5	84	83.30	
1207	12.4	7.6	1539	33	1	58	12.5	90	83.32	
1217	12.5	7.6	1571	31	1	87	12.8	93	83.33	

Did well dewater? YES (NO)	Total volume removed: 87 (gal / L)	
Sample method: Disp Bailer Hydrasleeve (New Tubing) Ext. Port Other:		
Sample date: 12OCT2013	Sample time: 1220	DTW at sample: 83.33
Sample ID: 7032	Lab: Energy Labs	Number of bottles: 2
Analysis: 500 ml NP poly - Alkalinity, Cl, SO4, TDS, EC, pH 250 ml HNO3 poly *field filtered - Dissolved Metals		
Equipment blank ID @	Field blank ID @	
Duplicate ID:	Pre-purge DO:	Post purge DO:
Fe2+:	Pre-purge ORP:	Post purge ORP:
NAPL depth:	Volume of NAPL:	Volume removed: ml

Confluence Environmental, Inc
3308 El Camino Ave, Suite 300 #148, Sacramento, CA 95821, 916-760-7641

Purging And Sampling Data Sheet

Job#: 1350.15	**Sampler:** J Kerns B Myers	**Client:** Montgomery & Associates
Well ID: MW17M	**Date** (DDOct2012): 14OCT2013	**Site:** Rio Algom Mining, Lisbon, UT
Weather Conditions: cold	**Sampler Signature:**	
Well diam: 1/4" 1" 2" 3" 4" 6" Other:	**DTW:** 83.30 **Total Depth:** 157.10	
Purge equip: ES - diam: Bladder Peri Waterra Positive Air Displacement Ext. System disp bailer teflon bailer other: HS	**Tubing:** OD: New Dedicated NA	
Purge method: 3-5 Case Volume Micro/Low-Flow Extraction Other: HS		
Pump depth/ intake: 141	**Multipliers:** 1"= 0.04 2"= 0.16 3"= 0.37 4"= 0.65 5"=1.02 6"= 1.47 Radius² X 0.163	

(TD - DTW X Multiplier = 1 Volume	80% Recovery (TD - DTW X 0.20 + DTW)

1 Volume = _____ X _____ = _____ (Total Purge) 80%= _____

Time	Temp (°C / °F)	pH	SP Cond (mS / µS)	Turbidity (NTU)	Purge Rate (gal or mL/ min)	Volume Removed (gal / L)	DO (mg/l)	ORP (mv)	DTW	Notes
755	11.0	12.5	3214	22	—	—	2.5	172	—	
*	White substance in Hydrasleeve that separated & sunk to bottom									
	(drilling mud?)									
**	Added extra acid due to high pH									

Did well dewater? YES (NO)	Total volume removed: — (gal / L)
Sample method: Disp Bailer (Hydrasleeve) New Tubing Ext. Port Other:	
Sample date: 14OCT2013	Sample time: 755 DTW at sample: —
Sample ID: 7049 Lab: Energy Labs	Number of bottles: 2
Analysis: 500 ml NP poly - Alkalinity, Cl, SO4, TDS, EC, pH 250 ml HNO3 poly *field filtered - Dissolved Metals	
Equipment blank ID @	Field blank ID @
Duplicate ID:	Pre-purge DO: Post purge DO:
Fe^{2+}:	Pre-purge ORP: Post purge ORP:
NAPL depth: Volume of NAPL:	Volume removed: ml

Confluence Environmental, Inc
3308 El Camino Ave, Suite 300 #148, Sacramento, CA 95821, 916-760-7641

Purging And Sampling Data Sheet

Job#: 1350.15	**Sampler:** J Kerns B Myers	**Client:** Montgomery & Associates
Well ID: MW-17M	**Date** (DDOct2012): 14OCT2013	**Site:** Rio Algom Mining, Lisbon, UT
Weather Conditions: cold	**Sampler Signature:**	
Well diam: 1/4" 1" 2" 3" 4" 6" Other:	**DTW:** 83.30 **Total Depth:** 151.10	
Purge equip: ES - diam Bladder Peri Waterra Positive Air Displacement Ext. System		
disp bailer teflon bailer other:	**Tubing:** OD: New Dedicated NA	
Purge method: 3-5 Case Volume Micro/Low-Flow Extraction Other:		
Pump depth/ intake: 141	**Multipliers:** 1"= 0.04 2"= 0.16 3"= 0.37 4"= 0.65 5"=1.02 6"= 1.47 Radius² X 0.163	

(TD - DTW X Multiplier = 1 Volume	80% Recovery (TD - DTW X 0.20 + DTW)

1 Volume = — X — = — (Total Purge) 80%= —

Time	Temp (°C / °F)	pH	SP Cond (mS / µS)	Turbidity (NTU)	Purge Rate (gal or mL/ min)	Volume Removed (gal / L)	DO (mg/l)	ORP (mv)	DTW	Notes
803	10.6	12.5	3152	21	500	1.5	4.9	149	83.50	
806	11.2	12.7	3492	21		3	3.1	143	83.50	
809	11.5	12.7	3458	21		4.5	3.2	137	83.50	
812	11.7	12.7	3450	19		6	3.6	132	83.50	
815	12.0	12.6	3456	18		7.5	3.5	127	83.50	
818	12.2	12.6	3476	18		9	3.6	125	83.50	
* Added extra acid due to high pH										

Did well dewater? YES NO	Total volume removed: 9	(gal / L)
Sample method: Disp Bailer Hydrasleeve New Tubing Ext. Port Other:		
Sample date: 14OCT2013	Sample time: 820	DTW at sample: 83.50
Sample ID: 7050	Lab: Energy Labs	Number of bottles: 2
Analysis: 500 ml NP poly - Alkalinity, Cl, SO4, TDS, EC, pH 250 ml HNO3 poly *field filtered - Dissolved Metals		
Equipment blank ID @	Field blank ID @	
Duplicate ID:	Pre-purge DO:	Post purge DO:
Fe^{2+}:	Pre-purge ORP:	Post purge ORP:
NAPL depth:	Volume of NAPL:	Volume removed: ml

Confluence Environmental, Inc
3308 El Camino Ave, Suite 300 #148, Sacramento, CA 95821, 916-760-7641

Purging And Sampling Data Sheet

Job#: 1350.15	**Sampler:** J Kerns B Myers	**Client:** Montgomery & Associates
Well ID: MW17M	**Date** (DDOct2012)**:** 14OCT2013	**Site:** Rio Algom Mining, Lisbon, UT
Weather Conditions: Cool	**Sampler Signature:**	
Well diam: 1/4" 1" 2" 3" (4") 6" Other:	**DTW:** 83.30 **Total Depth:** 151.10	
Purge equip: (ES - diam:) Bladder Peri Waterra Positive Air Displacement Ext. System		
disp bailer teflon bailer other: **Tubing:** OD: New Dedicated NA		
Purge method: (3-5 Case Volume) Micro/Low-Flow Extraction Other:		
Pump depth/ intake: 141	**Multipliers:** 1"= 0.04 2"= 0.16 3"= 0.37 4"= 0.65 5"=1.02 6"= 1.47 Radius² X 0.163	

(TD - DTW X Multiplier = 1 Volume	80% Recovery (TD - DTW X 0.20 + DTW)

1 Volume = 44 X 3 = 132 (Total Purge) 80%= 96.80

Time	Temp (°C / °F)	pH	SP Cond (mS / µS)	Turbidity (NTU)	Purge Rate (gal or mL/ min)	Volume Removed (gal / L)	DO (mg/l)	ORP (mv)	DTW	Notes
837	12.8	12.1	3080	54	3	44	3.2	106	89.00	White in color
852	12.8	11.6	2981	49	|	88	3.0	101	89.05	
907	12.8	11.6	2976	48	+	132	3.1	103	89.06	
* Added extra acid due to high pH										

Did well dewater? YES (NO)	Total volume removed: 132 (gal / L)
Sample method: Disp Bailer Hydrasleeve (New Tubing) Ext. Port Other:	

Sample date: 14OCT2013	Sample time: 910	DTW at sample: 89.06
Sample ID: 7051	Lab: Energy Labs	Number of bottles: 2
Analysis: 500 ml NP poly - Alkalinity, Cl, SO4, TDS, EC, pH 250 ml HNO3 poly *field filtered - Dissolved Metals		

Equipment blank ID @	Field blank ID @	
Duplicate ID:	Pre-purge DO:	Post purge DO:
Fe^{2+}:	Pre-purge ORP:	Post purge ORP:
NAPL depth:	Volume of NAPL:	Volume removed: ml

Confluence Environmental, Inc
3308 El Camino Ave, Suite 300 #148, Sacramento, CA 95821, 916-760-7641

Purging And Sampling Data Sheet

Job#: 1350.15	**Sampler:** J Kerns B Myers	**Client:** Montgomery & Associates
Well ID: MW-18	**Date** (DDOct2012): 08Oct2013	**Site:** Rio Algom Mining, Lisbon, UT
Weather Conditions: Windy	**Sampler Signature:**	
Well diam: 1/4" 1" 2" 3" (4") 6" Other:	**DTW:** 15.73 **Total Depth:** 16.90	
Purge equip: ES - diam: Bladder Peri Waterra Positive Air Displacement Ext. System		
disp bailer teflon bailer other: (HS) **Tubing:** OD: New Dedicated NA		
Purge method: 3-5 Case Volume Micro/Low-Flow Extraction Other: (HS)		
Pump depth/ intake:	**Multipliers:** 1"= 0.04 2"= 0.16 3"= 0.37 4"= 0.65 5"=1.02 6"= 1.47 Radius² X 0.163	

(TD - DTW X Multiplier = 1 Volume	80% Recovery (TD - DTW X 0.20 + DTW)

1 Volume = — X — = — (Total Purge) 80%= —

Time	Temp (°C / °F)	pH	SP Cond (mS / µS)	Turbidity (NTU)	Purge Rate (gal or mL/ min)	Volume Removed (gal / L)	DO (mg/l)	ORP (mv)	DTW	Notes
1240	12.6	7.7	1319	>1000	—	—	1.1	205	—	

Did well dewater? YES (NO)	Total volume removed: — (gal / L)	
Sample method: Disp Bailer (Hydrasleeve) New Tubing Ext. Port Other:		
Sample date: 08Oct2013	Sample time: 1240	DTW at sample: —
Sample ID: C-981	Lab: Energy Labs	Number of bottles: 2
Analysis: 500 ml NP poly - Alkalinity, Cl, SO4, TDS, EC, pH 250 ml HNO3 poly *field filtered - Dissolved Metals		
Equipment blank ID @	Field blank ID @	
Duplicate ID:	Pre-purge DO:	Post purge DO:
$Fe2^{+}$:	Pre-purge ORP:	Post purge ORP:
NAPL depth:	Volume of NAPL:	Volume removed: ml

Confluence Environmental, Inc
3308 El Camino Ave, Suite 300 #148, Sacramento, CA 95821, 916-760-7641

Purging And Sampling Data Sheet

Job#: 1350.15	**Sampler:** J Kerns B Myers	**Client:** Montgomery & Associates
Well ID: MW18	**Date** (DDOct2012): 08Oct2013	**Site:** Rio Algom Mining, Lisbon, UT
Weather Conditions: Windy	**Sampler Signature:**	
Well diam: 1/4" 1" 2" 3" (4") 6" Other:	**DTW:** 15.73 **Total Depth:** (66.90)	
Purge equip: (ES - diam:) Bladder Peri Waterra Positive Air Displacement Ext. System		
disp bailer teflon bailer other:	**Tubing:** OD: New Dedicated NA	
Purge method: 3-5 Case Volume (Micro/Low-Flow) Extraction Other:		
Pump depth/ intake: 41'	**Multipliers:** 1"= 0.04 2"= 0.16 3"= 0.37 4"= 0.65 5"=1.02 6"= 1.47 Radius² X 0.163	

(TD - DTW X Multiplier = 1 Volume	80% Recovery (TD - DTW X 0.20 + DTW)

1 Volume = — X — = — (Total Purge) 80%= —

Time	Temp (°C) °F	pH	SP Cond (mS) µS	Turbidity (NTU)	Purge Rate (gal or mL/ min)	Volume Removed (gal) L	DO (mg/l)	ORP (mv)	DTW	Notes
1306	13.2	7.3	1000	>1000	400	1.2L	0.86	47	15.81	
1309	13.9	7.3	996	>1000		2.4	0.80	19	15.81	
1312	13.9	7.2	999	>1000		3.6	0.76	11	15.81	
1315	14.2	7.2	997	>1000		4.8	0.71	8	15.81	
1318	14.3	7.2	995	>1000		6	0.68	5	15.81	
1321	14.5	7.2	998	>1000		7.2	0.61	1	15.81	
1324	14.0	7.2	998	>1000		8.4	0.64	1	15.81	

Did well dewater? YES (NO)	Total volume removed: 8.4 (gal) (L)
Sample method: Disp Bailer Hydrasleeve (New Tubing) Ext. Port Other:	
Sample date: 08Oct2013	Sample time: 1325 DTW at sample: 15.81
Sample ID: 0982	Lab: Energy Labs Number of bottles: 2
Analysis: 500 ml NP poly - Alkalinity, Cl, SO4, TDS, EC, pH 250 ml HNO3 poly *field filtered - Dissolved Metals	

Equipment blank ID @	Field blank ID @	
Duplicate ID:	Pre-purge DO:	Post purge DO:
Fe^{2+}:	Pre-purge ORP:	Post purge ORP:
NAPL depth:	Volume of NAPL:	Volume removed: ml

Confluence Environmental, Inc
3308 El Camino Ave, Suite 300 #148, Sacramento, CA 95821, 916-760-7641

Purging And Sampling Data Sheet

Job#: 1350.15	**Sampler:** J Kerns (B Myers)	**Client:** Montgomery & Associates
Well ID: MW-118	**Date** (DDOct2012): 08Oct2013	**Site:** Rio Algom Mining, Lisbon, UT
Weather Conditions: Windy	**Sampler Signature:**	
Well diam: 1/4" 1" 2" 3" (4") 6" Other:	**DTW:** 15.73	**Total Depth:** (60.90)

Purge equip: (ES - diam:) Bladder Peri Waterra Positive Air Displacement Ext. System
disp bailer teflon bailer other: **Tubing:** OD: New Dedicated NA

Purge method: (3-5 Case Volume) Micro/Low-Flow Extraction Other:

Pump depth/ intake: **Multipliers:** 1"= 0.04 2"= 0.16 3"= 0.37 4"= 0.65 5"=1.02 6"= 1.47 Radius² X 0.163

(TD - DTW X Multiplier = 1 Volume	80% Recovery (TD - DTW X 0.20 + DTW)

1 Volume = 33.3 X 3 = 99.9 (Total Purge) 80%= 25.96

Time	Temp (°C / °F)	pH	SP Cond (mS / (µS))	Turbidity (NTU)	Purge Rate ((gal) or mL/ min)	Volume Removed ((gal / L))	DO (mg/l)	ORP (mv)	DTW	Notes
1339	11.1	7.3	1018	871	3	33.3	1.6	28	16.95	
1350	11.1	7.2	1074	48	1	66.6	3.0	42	17.00	
1401	11.0	7.2	1071	42	1	99.9	3.3	47	17.05	

Did well dewater? YES (NO) Total volume removed: 100 ((gal / L))

Sample method: Disp Bailer Hydrasleeve (New Tubing) Ext. Port Other:

Sample date: 08Oct2013	Sample time: 1405	DTW at sample: 17.05
Sample ID: 6983	Lab: Energy Labs	Number of bottles: 2

Analysis: 500 ml NP poly - Alkalinity, Cl, SO4, TDS, EC, pH 250 ml HNO3 poly *field filtered - Dissolved Metals

Equipment blank ID @	Field blank ID @	
Duplicate ID:	Pre-purge DO:	Post purge DO:
$Fe2^{+}$:	Pre-purge ORP:	Post purge ORP:
NAPL depth:	Volume of NAPL:	Volume removed: ml

Confluence Environmental, Inc
3308 El Camino Ave, Suite 300 #148, Sacramento, CA 95821, 916-760-7641

Purging And Sampling Data Sheet

Job#: 1350.15	**Sampler:** J Kerns/B Myers	**Client:** Montgomery & Associates
Well ID: MW119	**Date** (DDOct2012): 08Oct2013	**Site:** Rio Algom Mining, Lisbon, UT
Weather Conditions: Cool	**Sampler Signature:**	
Well diam: 1/4" 1" 2" 3" (4") 6" Other:	**DTW:** 70.24	**Total Depth:** 90.02
Purge equip: ES - diam: Bladder Peri Waterra Positive Air Displacement Ext. System		
(disp bailer) teflon bailer other:	**Tubing:** OD: New Dedicated NA	
Purge method: 3-5 Case Volume Micro/Low-Flow Extraction Other:		
Pump depth/ intake:	**Multipliers:** 1"= 0.04 2"= 0.16 3"= 0.37 4"= 0.65 5"=1.02 6"= 1.47 Radius² X 0.163	
(TD - DTW X Multiplier = 1 Volume	80% Recovery (TD - DTW X 0.20 + DTW)	

1 Volume = 12.9 X ____ = ____ (Total Purge) 80%= 74.20

Time	Temp (°C) / °F	pH	SP Cond (mS / µS)	Turbidity (NTU)	Purge Rate (gal or mL/ min)	Volume Removed (gal / L)	DO (mg/l)	ORP (mv)	DTW	Notes
925	11.1	6.60	4970	71000	—	5	5.7	149	—	
930	11.2	7.1	5178	73	—	10	5.7	114	—	
937	11.1	7.3	5200	21	—	15	5.5	90	86.70	
—	well	dewatered	@ approx	19 gallons			—	—		
1720	12.0	7.0	4778	25	—	—	7.27	173.5	70.34	
1725	begin	second	purge							
1730	12.4	7.0	5072	33	1.0	5.0	7.31	168.3	—	
1735	12.1	7.3	5100	37	1.0	10.0	7.21	164.6	—	
1740	12.0	7.2	5039	35	1.0	15.0	7.22	161.7	—	
—	well	dewatered	@ approx	17	gallons	—	—			
1630	12.8	7.2	5199	3	—	—	6.86	116.4	70.40	

Did well dewater? (YES) NO — Total volume removed: 19/17 (gal) / L)

Sample method: Disp Bailer Hydrasleeve (New Tubing) Ext. Port Other:

Second Sample @1300CT2013
Sample date: 08OCT2013 — Sample time: 1720 / 1630 — DTW at sample: 70.34 / 70.40

Sample ID: 6964 / 6975 — Lab: Energy Labs — Number of bottles: 2

Analysis: 500 ml NP poly - Alkalinity, Cl, SO4, TDS, EC, pH 250 ml HNO3 poly *field filtered - Dissolved Metals

Equipment blank ID @	Field blank ID @	
Duplicate ID:	Pre-purge DO:	Post purge DO:
Fe^{2+}:	Pre-purge ORP:	Post purge ORP:
NAPL depth:	Volume of NAPL:	Volume removed: ml

Confluence Environmental, Inc
3308 El Camino Ave, Suite 300 #148, Sacramento, CA 95821, 916-760-7641

Purging And Sampling Data Sheet

Job#: 1350.15	**Sampler:** J Kerns B Myers	**Client:** Montgomery & Associates
Well ID: MW120	**Date** (DDOct2012): 30CT2013	**Site:** Rio Algom Mining, Lisbon, UT
Weather Conditions: breezy	**Sampler Signature:**	
Well diam: 1/4" 1" 2" 3" (4") 6" Other:	**DTW:** 126.32	**Total Depth:** 247.70
Purge equip: ES - diam: Bladder Peri Waterra Positive Air Displacement Ext. System		
disp bailer teflon bailer other: (HS)	**Tubing:** OD: New Dedicated NA	
Purge method: 3-5 Case Volume Micro/Low-Flow Extraction Other: (HS)		
Pump depth/ intake: 184	**Multipliers:** 1"= 0.04 2"= 0.16 3"= 0.37 4"= 0.65 5"=1.02 6"= 1.47 Radius² X 0.163	

(TD - DTW X Multiplier = 1 Volume	80% Recovery (TD - DTW X 0.20 + DTW)

1 Volume = _____ X _____ = _____ (Total Purge) 80%= _____

Time	Temp (°C) °F	pH	SP Cond (mS (µS))	Turbidity (NTU)	Purge Rate (gal or mL/ min)	Volume Removed (gal / L)	DO (mg/l)	ORP (mv)	DTW	Notes
1400	12.2	7.9	878	148	—	—	6.4	156	—	

Did well dewater? YES (NO)	Total volume removed: — (gal / L)	
Sample method: Disp Bailer (Hydrasleeve) New Tubing Ext. Port Other:		
Sample date: 30CT2013	Sample time: 1400	DTW at sample: —
Sample ID: 7045	Lab: Energy Labs	Number of bottles: 2
Analysis: 500 ml NP poly - Alkalinity, Cl, SO4, TDS, EC, pH 250 ml HNO3 poly *field filtered - Dissolved Metals		
Equipment blank ID @	Field blank ID @	
Duplicate ID:	Pre-purge DO:	Post purge DO:
Fe^{2+}:	Pre-purge ORP:	Post purge ORP:
NAPL depth:	Volume of NAPL:	Volume removed: ml

Confluence Environmental, Inc
3308 El Camino Ave, Suite 300 #148, Sacramento, CA 95821, 916-760-7641

Purging And Sampling Data Sheet

Job#: 1350.15	**Sampler:** J Kerns B Myers	**Client:** Montgomery & Associates
Well ID: MW-20	**Date** (DDOct2012): 30CT2013	**Site:** Rio Algom Mining, Lisbon, UT
Weather Conditions: breezy	**Sampler Signature:**	
Well diam: 1/4" 1" 2" 3" (4") 6" Other:	**DTW:** 126.32 **Total Depth:** 247.70	
Purge equip: (ES - diam:) Bladder Peri Waterra Positive Air Displacement Ext. System		
disp bailer teflon bailer other:	**Tubing:** OD: New Dedicated NA	
Purge method: 3-5 Case Volume (Micro/Low-Flow) Extraction Other:		
Pump depth/ intake: 184	**Multipliers:** 1"= 0.04 2"= 0.16 3"= 0.37 4"= 0.65 5"=1.02 6"= 1.47 Radius² X 0.163	

(TD - DTW X Multiplier = 1 Volume	80% Recovery (TD - DTW X 0.20 + DTW)

1 Volume = — X — = — (Total Purge) 80%= —

Time	Temp (°C) °F	pH	SP Cond (mS (µS)	Turbidity (NTU)	Purge Rate (gal or mL/ min)	Volume Removed (gal (L)	DO (mg/l)	ORP (mv)	DTW	Notes
1410	13.3	7.7	876	123	500	1.5	7.4	213	126.20	
1413	12.2	7.7	850	89	|	3	7.3	197	126.21	
1416	12.4	7.6	840	81	|	4.5	6.8	191	126.21	
1419	12.8	7.6	841	79	|	6	7.0	183	126.21	
1422	13.8	7.6	837	77	|	7.5	6.8	177	126.21	
1425	14.2	7.6	840	75	|	9	6.6	174	126.21	
1428	14.3	7.6	840	75	↓	10.5	6.5	173	126.21	

Did well dewater? YES (NO)	Total volume removed: 10.5 (gal (L))	
Sample method: Disp Bailer Hydrasleeve (New Tubing) Ext. Port Other:		
Sample date: 30CT2013	Sample time: 1430	DTW at sample: 126.21
Sample ID: 7046	Lab: Energy Labs	Number of bottles: 2
Analysis: 500 ml NP poly - Alkalinity, Cl, SO4, TDS, EC, pH 250 ml HNO3 poly *field filtered - Dissolved Metals		

Equipment blank ID @	Field blank ID @	
Duplicate ID:	Pre-purge DO:	Post purge DO:
$Fe2^{+}$:	Pre-purge ORP:	Post purge ORP:
NAPL depth:	Volume of NAPL:	Volume removed: ml

Confluence Environmental, Inc
3308 El Camino Ave, Suite 300 #148, Sacramento, CA 95821, 916-760-7641

Purging And Sampling Data Sheet

Job#: 1350.15	**Sampler:** J Kerns (B Myers)	**Client:** Montgomery & Associates
Well ID: MW20	**Date** (DDOct2012): 13OCT2013	**Site:** Rio Algom Mining, Lisbon, UT
Weather Conditions: breezy	**Sampler Signature:**	
Well diam: 1/4" 1" 2" 3" (4") 6" Other:	**DTW:** 126.32 **Total Depth:** 247.70	
Purge equip: (ES - diam:) Bladder Peri Waterra Positive Air Displacement Ext. System		
disp bailer teflon bailer other: **Tubing:** OD: New Dedicated NA		
Purge method: (3-5 Case Volume) Micro/Low-Flow Extraction Other:		
Pump depth/ intake: 184'	**Multipliers:** 1"= 0.04 2"= 0.16 3"= 0.37 4"= 0.65 5"=1.02 6"= 1.47 Radius² X 0.163	

(TD - DTW X Multiplier = 1 Volume	80% Recovery (TD - DTW X 0.20 + DTW)

1 Volume = 79 X 3 = 237 (Total Purge) 80%= 150.60

Time	Temp (°C) °F	pH	SP Cond (mS) (µS)	Turbidity (NTU)	Purge Rate (gal) or mL/ min	Volume Removed (gal) /L	DO (mg/l)	ORP (mv)	DTW	Notes
1501 ~~1515~~	13.2	7.60	788	39	3	79	6.60	162	126.38	
1527	13.0	7.60	788	35	↓	158	7.3	157	126.38	
1554	12.8	7.60	786	34	↓	237	7.5	154	126.38	

Did well dewater? YES (NO)	Total volume removed: 237 (gal) L)	
Sample method: Disp Bailer Hydrasleeve (New Tubing) Ext. Port Other:		
Sample date: 13OCT2013	Sample time: 1555	DTW at sample: 126.38
Sample ID: 7047	Lab: Energy Labs	Number of bottles: 2
Analysis: 500 ml NP poly - Alkalinity, Cl, SO4, TDS, EC, pH 250 ml HNO3 poly *field filtered - Dissolved Metals		

Equipment blank ID @	Field blank ID @	
Duplicate ID: 7048 @ 1600	Pre-purge DO:	Post purge DO:
Fe^{2+}:	Pre-purge ORP:	Post purge ORP:
NAPL depth:	Volume of NAPL:	Volume removed: ml

Confluence Environmental, Inc
3308 El Camino Ave, Suite 300 #148, Sacramento, CA 95821, 916-760-7641

ANALYTICAL SUMMARY REPORT

November 04, 2013

Rio Algom Mining Corporation LLC
Hwy 605 and 509
Grants, NM 87020

Workorder No.: C13100454 Quote ID: C3636 - Groundwater

Project Name: Lisbon, UT Facility

Energy Laboratories, Inc. Casper WY received the following 31 samples for Rio Algom Mining Corporation LLC on 10/11/2013 for analysis.

Sample ID	Client Sample ID	Collect Date	Receive Date	Matrix	Test
C13100454-001	7023	10/10/13 9:00	10/11/13	Aqueous	Metals by ICP/ICPMS, Dissolved Alkalinity QA Calculations Conductivity E300.0 Anions pH Solids, Total Dissolved Solids, Total Dissolved - Calculated
C13100454-002	7024	10/10/13 9:50	10/11/13	Aqueous	Same As Above
C13100454-003	7016	10/10/13 10:10	10/11/13	Aqueous	Same As Above
C13100454-004	7018	10/10/13 10:15	10/11/13	Aqueous	Same As Above
C13100454-005	7017	10/10/13 11:05	10/11/13	Aqueous	Same As Above
C13100454-006	7025	10/10/13 11:30	10/11/13	Aqueous	Same As Above
C13100454-007	7027	10/10/13 12:05	10/11/13	Aqueous	Same As Above
C13100454-008	7011	10/08/13 12:45	10/11/13	Aqueous	Same As Above
C13100454-009	7012	10/08/13 13:20	10/11/13	Aqueous	Same As Above
C13100454-010	7013	10/08/13 14:30	10/11/13	Aqueous	Metals by ICP/ICPMS, Dissolved Acidity, Total as CaCO3 Alkalinity QA Calculations Conductivity E300.0 Anions pH Solids, Total Dissolved Solids, Total Dissolved - Calculated
C13100454-011	7014	10/08/13 15:15	10/11/13	Aqueous	Same As Above
C13100454-012	7015	10/08/13 15:35	10/11/13	Aqueous	Same As Above
C13100454-013	7019	10/09/13 9:55	10/11/13	Aqueous	Metals by ICP/ICPMS, Dissolved Alkalinity QA Calculations Conductivity E300.0 Anions pH Solids, Total Dissolved Solids, Total Dissolved - Calculated
C13100454-014	7020	10/09/13 10:55	10/11/13	Aqueous	Same As Above
C13100454-015	7021	10/09/13 11:10	10/11/13	Aqueous	Same As Above
C13100454-016	7022	10/09/13 12:05	10/11/13	Aqueous	Same As Above

ANALYTICAL SUMMARY REPORT

C13100454-017	6981	10/08/13 12:40	10/11/13	Aqueous	Same As Above
C13100454-018	6982	10/08/13 13:25	10/11/13	Aqueous	Same As Above
C13100454-019	6983	10/08/13 14:05	10/11/13	Aqueous	Same As Above
C13100454-020	6984	10/08/13 14:35	10/11/13	Aqueous	Same As Above
C13100454-021	6985	10/08/13 14:45	10/11/13	Aqueous	Same As Above
C13100454-022	6986	10/08/13 15:20	10/11/13	Aqueous	Same As Above
C13100454-023	6987	10/08/13 15:50	10/11/13	Aqueous	Same As Above
C13100454-024	6988	10/09/13 8:20	10/11/13	Aqueous	Same As Above
C13100454-025	6989	10/09/13 9:20	10/11/13	Aqueous	Same As Above
C13100454-026	6990	10/09/13 10:00	10/11/13	Aqueous	Same As Above
C13100454-027	6991	10/09/13 10:30	10/11/13	Aqueous	Same As Above
C13100454-028	6992	10/09/13 11:20	10/11/13	Aqueous	Same As Above
C13100454-029	6993	10/09/13 12:05	10/11/13	Aqueous	Same As Above
C13100454-030	6994	10/09/13 14:25	10/11/13	Aqueous	Same As Above
C13100454-031	6995	10/09/13 15:00	10/11/13	Aqueous	Same As Above

The results as reported relate only to the item(s) submitted for testing. The analyses presented in this report were performed at Energy Laboratories, Inc., 2393 Salt Creek Hwy., Casper, WY 82601, unless otherwise noted. Radiochemistry analyses were performed at Energy Laboratories, Inc., 2325 Kerzell Lane, Casper, WY 82601, unless otherwise noted. Any exceptions or problems with the analyses are noted in the Laboratory Analytical Report, the QA/QC Summary Report, or the Case Narrative.

If you have any questions regarding these test results, please call.

Report Approved By:

CLIENT: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility
Sample Delivery Group: C13100454

Revised Date: 11/04/13
Report Date: 10/24/13

CASE NARRATIVE

REVISED/SUPPLEMENTAL REPORT
The attached analytical report has been revised from a previously submitted report due to the request by Leilani Bew on October 30, 2013 for the reanalysis of Iron on samples -019 and -031. The data presented here is from that recheck analysis. The report has been revised and replaces any previously issued report in its entirety.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility
Lab ID: C13100454-001
Client Sample ID: 7023

Revised Date: 11/04/13
Report Date: 10/24/13
Collection Date: 10/10/13 09:00
DateReceived: 10/11/13
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Carbonate as CO3	ND	mg/L		5		A2320 B	10/11/13 18:26 / jba
Bicarbonate as HCO3	322	mg/L		5		A2320 B	10/11/13 18:26 / jba
Calcium	278	mg/L		1		E200.7	10/14/13 12:52 / sf
Chloride	12	mg/L		1		E300.0	10/14/13 15:51 / wc
Magnesium	86	mg/L		1		E200.7	10/14/13 12:52 / sf
Potassium	4	mg/L		1		E200.7	10/14/13 12:52 / sf
Sodium	18	mg/L		1		E200.7	10/14/13 12:52 / sf
Sulfate	798	mg/L	D	4		E300.0	10/14/13 15:51 / wc
PHYSICAL PROPERTIES							
Conductivity @ 25 C	1700	umhos/cm		1		A2510 B	10/11/13 14:43 / tmm
pH	7.11	s.u.	H	0.01		A4500-H B	10/11/13 14:43 / tmm
Solids, Total Dissolved TDS @ 180 C	1470	mg/L		10		A2540 C	10/11/13 15:22 / alp
METALS - DISSOLVED							
Arsenic	ND	mg/L		0.001		E200.8	10/15/13 17:37 / clm
Iron	ND	mg/L		0.03		E200.7	10/14/13 12:52 / sf
Molybdenum	ND	mg/L		0.01		E200.7	10/14/13 12:52 / sf
Selenium	0.068	mg/L		0.001		E200.8	10/15/13 17:37 / clm
Uranium	0.0074	mg/L		0.0003		E200.8	10/15/13 17:37 / clm
DATA QUALITY							
A/C Balance (± 5)	-0.809	%				A1030 E	10/18/13 12:01 / kbh
Anions	22.2	meq/L				A1030 E	10/18/13 12:01 / kbh
Cations	21.9	meq/L				A1030 E	10/18/13 12:01 / kbh
Solids, Total Dissolved Calculated	1400	mg/L				A1030 E	10/18/13 12:01 / kbh
TDS Balance (0.80 - 1.20)	1.09					A1030 E	10/18/13 12:01 / kbh

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
H - Analysis performed past recommended holding time.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility
Lab ID: C13100454-002
Client Sample ID: 7024

Revised Date: 11/04/13
Report Date: 10/24/13
Collection Date: 10/10/13 09:50
DateReceived: 10/11/13
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Carbonate as CO3	ND	mg/L		5		A2320 B	10/11/13 18:42 / jba
Bicarbonate as HCO3	332	mg/L		5		A2320 B	10/11/13 18:42 / jba
Calcium	278	mg/L		1		E200.7	10/14/13 13:03 / sf
Chloride	12	mg/L		1		E300.0	10/14/13 16:46 / wc
Magnesium	86	mg/L		1		E200.7	10/14/13 13:03 / sf
Potassium	4	mg/L		1		E200.7	10/14/13 13:03 / sf
Sodium	19	mg/L		1		E200.7	10/14/13 13:03 / sf
Sulfate	774	mg/L	D	4		E300.0	10/14/13 16:46 / wc
PHYSICAL PROPERTIES							
Conductivity @ 25 C	1700	umhos/cm		1		A2510 B	10/11/13 14:46 / tmm
pH	7.11	s.u.	H	0.01		A4500-H B	10/11/13 14:46 / tmm
Solids, Total Dissolved TDS @ 180 C	1470	mg/L		10		A2540 C	10/11/13 15:22 / alp
METALS - DISSOLVED							
Arsenic	ND	mg/L		0.001		E200.8	10/15/13 17:50 / clm
Iron	ND	mg/L		0.03		E200.7	10/14/13 13:03 / sf
Molybdenum	ND	mg/L		0.01		E200.7	10/14/13 13:03 / sf
Selenium	0.067	mg/L		0.001		E200.8	10/15/13 17:50 / clm
Uranium	0.0132	mg/L		0.0003		E200.8	10/15/13 17:50 / clm
DATA QUALITY							
A/C Balance (± 5)	0.00889	%				A1030 E	10/18/13 12:01 / kbh
Anions	21.9	meq/L				A1030 E	10/18/13 12:01 / kbh
Cations	21.9	meq/L				A1030 E	10/18/13 12:01 / kbh
Solids, Total Dissolved Calculated	1300	mg/L				A1030 E	10/18/13 12:01 / kbh
TDS Balance (0.80 - 1.20)	1.10					A1030 E	10/18/13 12:01 / kbh

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
H - Analysis performed past recommended holding time.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility
Lab ID: C13100454-003
Client Sample ID: 7016

Revised Date: 11/04/13
Report Date: 10/24/13
Collection Date: 10/10/13 10:10
DateReceived: 10/11/13
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Carbonate as CO3	ND	mg/L		5		A2320 B	10/11/13 18:50 / jba
Bicarbonate as HCO3	362	mg/L		5		A2320 B	10/11/13 18:50 / jba
Calcium	81	mg/L		1		E200.7	10/14/13 13:06 / sf
Chloride	10	mg/L		1		E300.0	10/12/13 08:13 / wc
Magnesium	59	mg/L		1		E200.7	10/14/13 13:06 / sf
Potassium	3	mg/L		1		E200.7	10/14/13 13:06 / sf
Sodium	12	mg/L		1		E200.7	10/14/13 13:06 / sf
Sulfate	158	mg/L	D	2		E300.0	10/12/13 08:13 / wc
PHYSICAL PROPERTIES							
Conductivity @ 25 C	809	umhos/cm		1		A2510 B	10/11/13 14:49 / tmm
pH	7.42	s.u.	H	0.01		A4500-H B	10/11/13 14:49 / tmm
Solids, Total Dissolved TDS @ 180 C	525	mg/L		10		A2540 C	10/11/13 15:22 / alp
METALS - DISSOLVED							
Arsenic	ND	mg/L		0.001		E200.8	10/15/13 17:53 / clm
Iron	ND	mg/L		0.03		E200.7	10/14/13 13:06 / sf
Molybdenum	ND	mg/L		0.01		E200.7	10/14/13 13:06 / sf
Selenium	0.008	mg/L		0.001		E200.8	10/15/13 17:53 / clm
Uranium	0.0028	mg/L		0.0003		E200.8	10/15/13 17:53 / clm
DATA QUALITY							
A/C Balance (± 5)	-0.550	%				A1030 E	10/18/13 12:01 / kbh
Anions	9.55	meq/L				A1030 E	10/18/13 12:01 / kbh
Cations	9.44	meq/L				A1030 E	10/18/13 12:01 / kbh
Solids, Total Dissolved Calculated	500	mg/L				A1030 E	10/18/13 12:01 / kbh
TDS Balance (0.80 - 1.20)	1.04					A1030 E	10/18/13 12:01 / kbh

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
H - Analysis performed past recommended holding time.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility
Lab ID: C13100454-004
Client Sample ID: 7018

Revised Date: 11/04/13
Report Date: 10/24/13
Collection Date: 10/10/13 10:15
DateReceived: 10/11/13
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Carbonate as CO3	ND	mg/L		5		A2320 B	10/11/13 18:58 / jba
Bicarbonate as HCO3	364	mg/L		5		A2320 B	10/11/13 18:58 / jba
Calcium	81	mg/L		1		E200.7	10/14/13 13:10 / sf
Chloride	10	mg/L		1		E300.0	10/12/13 08:32 / wc
Magnesium	58	mg/L		1		E200.7	10/14/13 13:10 / sf
Potassium	3	mg/L		1		E200.7	10/14/13 13:10 / sf
Sodium	11	mg/L		1		E200.7	10/14/13 13:10 / sf
Sulfate	153	mg/L	D	2		E300.0	10/12/13 08:32 / wc
PHYSICAL PROPERTIES							
Conductivity @ 25 C	808	umhos/cm		1		A2510 B	10/11/13 14:52 / tmm
pH	7.43	s.u.	H	0.01		A4500-H B	10/11/13 14:52 / tmm
Solids, Total Dissolved TDS @ 180 C	507	mg/L		10		A2540 C	10/11/13 15:22 / alp
METALS - DISSOLVED							
Arsenic	ND	mg/L		0.001		E200.8	10/15/13 17:56 / clm
Iron	ND	mg/L		0.03		E200.7	10/14/13 13:10 / sf
Molybdenum	ND	mg/L		0.01		E200.7	10/14/13 13:10 / sf
Selenium	0.008	mg/L		0.001		E200.8	10/15/13 17:56 / clm
Uranium	0.0028	mg/L		0.0003		E200.8	10/15/13 17:56 / clm
DATA QUALITY							
A/C Balance (± 5)	-0.470	%				A1030 E	10/18/13 12:02 / kbh
Anions	9.46	meq/L				A1030 E	10/18/13 12:02 / kbh
Cations	9.37	meq/L				A1030 E	10/18/13 12:02 / kbh
Solids, Total Dissolved Calculated	500	mg/L				A1030 E	10/18/13 12:02 / kbh
TDS Balance (0.80 - 1.20)	1.02					A1030 E	10/18/13 12:02 / kbh

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
H - Analysis performed past recommended holding time.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility
Lab ID: C13100454-005
Client Sample ID: 7017

Revised Date: 11/04/13
Report Date: 10/24/13
Collection Date: 10/10/13 11:05
DateReceived: 10/11/13
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Carbonate as CO3	ND	mg/L		5		A2320 B	10/11/13 19:29 / jba
Bicarbonate as HCO3	363	mg/L		5		A2320 B	10/11/13 19:29 / jba
Calcium	81	mg/L		1		E200.7	10/14/13 13:28 / sf
Chloride	11	mg/L		1		E300.0	10/12/13 09:27 / wc
Magnesium	59	mg/L		1		E200.7	10/14/13 13:28 / sf
Potassium	3	mg/L		1		E200.7	10/14/13 13:28 / sf
Sodium	11	mg/L		1		E200.7	10/14/13 13:28 / sf
Sulfate	154	mg/L	D	2		E300.0	10/12/13 09:27 / wc
PHYSICAL PROPERTIES							
Conductivity @ 25 C	808	umhos/cm		1		A2510 B	10/11/13 14:55 / tmm
pH	7.42	s.u.	H	0.01		A4500-H B	10/11/13 14:55 / tmm
Solids, Total Dissolved TDS @ 180 C	517	mg/L		10		A2540 C	10/14/13 16:16 / tmm
METALS - DISSOLVED							
Arsenic	ND	mg/L		0.001		E200.8	10/15/13 18:00 / clm
Iron	0.03	mg/L		0.03		E200.7	10/14/13 13:28 / sf
Molybdenum	ND	mg/L		0.01		E200.7	10/14/13 13:28 / sf
Selenium	0.008	mg/L		0.001		E200.8	10/15/13 18:00 / clm
Uranium	0.0043	mg/L		0.0003		E200.8	10/15/13 18:00 / clm
DATA QUALITY							
A/C Balance (± 5)	-0.149	%				A1030 E	10/18/13 12:02 / kbh
Anions	9.50	meq/L				A1030 E	10/18/13 12:02 / kbh
Cations	9.48	meq/L				A1030 E	10/18/13 12:02 / kbh
Solids, Total Dissolved Calculated	500	mg/L				A1030 E	10/18/13 12:02 / kbh
TDS Balance (0.80 - 1.20)	1.03					A1030 E	10/18/13 12:02 / kbh

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
H - Analysis performed past recommended holding time.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility
Lab ID: C13100454-006
Client Sample ID: 7025

Revised Date: 11/04/13
Report Date: 10/24/13
Collection Date: 10/10/13 11:30
DateReceived: 10/11/13
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Carbonate as CO3	ND	mg/L		5		A2320 B	10/11/13 19:45 / jba
Bicarbonate as HCO3	229	mg/L		5		A2320 B	10/11/13 19:45 / jba
Calcium	86	mg/L		1		E200.7	10/14/13 13:32 / sf
Chloride	47	mg/L		1		E300.0	10/12/13 10:22 / wc
Magnesium	29	mg/L		1		E200.7	10/14/13 13:32 / sf
Potassium	3	mg/L		1		E200.7	10/14/13 13:32 / sf
Sodium	48	mg/L		1		E200.7	10/14/13 13:32 / sf
Sulfate	176	mg/L	D	2		E300.0	10/12/13 10:22 / wc
PHYSICAL PROPERTIES							
Conductivity @ 25 C	831	umhos/cm		1		A2510 B	10/11/13 15:00 / tmm
pH	7.60	s.u.	H	0.01		A4500-H B	10/11/13 15:00 / tmm
Solids, Total Dissolved TDS @ 180 C	540	mg/L		10		A2540 C	10/14/13 16:17 / tmm
METALS - DISSOLVED							
Arsenic	ND	mg/L		0.001		E200.8	10/15/13 18:03 / clm
Iron	ND	mg/L		0.03		E200.7	10/14/13 13:32 / sf
Molybdenum	ND	mg/L		0.01		E200.7	10/14/13 13:32 / sf
Selenium	0.006	mg/L		0.001		E200.8	10/15/13 18:03 / clm
Uranium	0.0028	mg/L		0.0003		E200.8	10/15/13 18:03 / clm
DATA QUALITY							
A/C Balance (± 5)	-0.152	%				A1030 E	10/18/13 12:02 / kbh
Anions	8.92	meq/L				A1030 E	10/18/13 12:02 / kbh
Cations	8.89	meq/L				A1030 E	10/18/13 12:02 / kbh
Solids, Total Dissolved Calculated	510	mg/L				A1030 E	10/18/13 12:02 / kbh
TDS Balance (0.80 - 1.20)	1.05					A1030 E	10/18/13 12:02 / kbh

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
H - Analysis performed past recommended holding time.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility
Lab ID: C13100454-007
Client Sample ID: 7027

Revised Date: 11/04/13
Report Date: 10/24/13
Collection Date: 10/10/13 12:05
DateReceived: 10/11/13
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Carbonate as CO3	ND	mg/L		5		A2320 B	10/11/13 20:01 / jba
Bicarbonate as HCO3	228	mg/L		5		A2320 B	10/11/13 20:01 / jba
Calcium	84	mg/L		1		E200.7	10/14/13 13:36 / sf
Chloride	47	mg/L		1		E300.0	10/12/13 10:41 / wc
Magnesium	29	mg/L		1		E200.7	10/14/13 13:36 / sf
Potassium	3	mg/L		1		E200.7	10/14/13 13:36 / sf
Sodium	48	mg/L		1		E200.7	10/14/13 13:36 / sf
Sulfate	176	mg/L	D	2		E300.0	10/12/13 10:41 / wc
PHYSICAL PROPERTIES							
Conductivity @ 25 C	829	umhos/cm		1		A2510 B	10/11/13 15:03 / tmm
pH	7.62	s.u.	H	0.01		A4500-H B	10/11/13 15:03 / tmm
Solids, Total Dissolved TDS @ 180 C	552	mg/L		10		A2540 C	10/14/13 16:17 / tmm
METALS - DISSOLVED							
Arsenic	ND	mg/L		0.001		E200.8	10/15/13 18:19 / clm
Iron	ND	mg/L		0.03		E200.7	10/14/13 13:36 / sf
Molybdenum	ND	mg/L		0.01		E200.7	10/14/13 13:36 / sf
Selenium	0.006	mg/L		0.001		E200.8	10/15/13 18:19 / clm
Uranium	0.0062	mg/L		0.0003		E200.8	10/15/13 18:19 / clm
DATA QUALITY							
A/C Balance (± 5)	-0.645	%				A1030 E	10/18/13 12:02 / kbh
Anions	8.89	meq/L				A1030 E	10/18/13 12:02 / kbh
Cations	8.78	meq/L				A1030 E	10/18/13 12:02 / kbh
Solids, Total Dissolved Calculated	510	mg/L				A1030 E	10/18/13 12:02 / kbh
TDS Balance (0.80 - 1.20)	1.08					A1030 E	10/18/13 12:02 / kbh

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
H - Analysis performed past recommended holding time.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility
Lab ID: C13100454-008
Client Sample ID: 7011

Revised Date: 11/04/13
Report Date: 10/24/13
Collection Date: 10/08/13 12:45
DateReceived: 10/11/13
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Carbonate as CO3	ND	mg/L		5		A2320 B	10/11/13 20:09 / jba
Bicarbonate as HCO3	344	mg/L		5		A2320 B	10/11/13 20:09 / jba
Calcium	301	mg/L		1		E200.7	10/14/13 13:39 / sf
Chloride	36	mg/L		1		E300.0	10/12/13 10:59 / wc
Magnesium	102	mg/L		1		E200.7	10/14/13 13:39 / sf
Potassium	2	mg/L		1		E200.7	10/14/13 13:39 / sf
Sodium	45	mg/L		1		E200.7	10/14/13 13:39 / sf
Sulfate	925	mg/L	D	4		E300.0	10/12/13 10:59 / wc
PHYSICAL PROPERTIES							
Conductivity @ 25 C	1970	umhos/cm		1		A2510 B	10/11/13 15:06 / tmm
pH	7.24	s.u.	H	0.01		A4500-H B	10/11/13 15:06 / tmm
Solids, Total Dissolved TDS @ 180 C	1700	mg/L		20		A2540 C	10/14/13 16:17 / tmm
METALS - DISSOLVED							
Arsenic	0.002	mg/L		0.001		E200.8	10/15/13 18:22 / clm
Iron	ND	mg/L		0.03		E200.7	10/14/13 13:39 / sf
Molybdenum	ND	mg/L		0.01		E200.7	10/14/13 13:39 / sf
Selenium	0.007	mg/L		0.001		E200.8	10/15/13 18:22 / clm
Uranium	0.0170	mg/L		0.0003		E200.8	10/15/13 18:22 / clm
DATA QUALITY							
A/C Balance (± 5)	-0.991	%				A1030 E	10/18/13 12:02 / kbh
Anions	25.9	meq/L				A1030 E	10/18/13 12:02 / kbh
Cations	25.4	meq/L				A1030 E	10/18/13 12:02 / kbh
Solids, Total Dissolved Calculated	1600	mg/L				A1030 E	10/18/13 12:02 / kbh
TDS Balance (0.80 - 1.20)	1.08					A1030 E	10/18/13 12:02 / kbh

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
H - Analysis performed past recommended holding time.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility
Lab ID: C13100454-009
Client Sample ID: 7012

Revised Date: 11/04/13
Report Date: 10/24/13
Collection Date: 10/08/13 13:20
DateReceived: 10/11/13
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Carbonate as CO3	ND	mg/L		5		A2320 B	10/11/13 20:17 / jba
Bicarbonate as HCO3	335	mg/L		5		A2320 B	10/11/13 20:17 / jba
Calcium	300	mg/L		1		E200.7	10/14/13 13:43 / sf
Chloride	36	mg/L		1		E300.0	10/12/13 11:18 / wc
Magnesium	101	mg/L		1		E200.7	10/14/13 13:43 / sf
Potassium	2	mg/L		1		E200.7	10/14/13 13:43 / sf
Sodium	44	mg/L		1		E200.7	10/14/13 13:43 / sf
Sulfate	922	mg/L	D	4		E300.0	10/12/13 11:18 / wc
PHYSICAL PROPERTIES							
Conductivity @ 25 C	1970	umhos/cm		1		A2510 B	10/11/13 15:09 / tmm
pH	7.23	s.u.	H	0.01		A4500-H B	10/11/13 15:09 / tmm
Solids, Total Dissolved TDS @ 180 C	1670	mg/L		20		A2540 C	10/14/13 16:18 / tmm
METALS - DISSOLVED							
Arsenic	0.002	mg/L		0.001		E200.8	10/15/13 18:26 / clm
Iron	ND	mg/L		0.03		E200.7	10/14/13 13:43 / sf
Molybdenum	0.02	mg/L		0.01		E200.7	10/14/13 13:43 / sf
Selenium	0.007	mg/L		0.001		E200.8	10/15/13 18:26 / clm
Uranium	0.0170	mg/L		0.0003		E200.8	10/15/13 18:26 / clm
DATA QUALITY							
A/C Balance (± 5)	-1.01	%				A1030 E	10/18/13 12:02 / kbh
Anions	25.7	meq/L				A1030 E	10/18/13 12:02 / kbh
Cations	25.2	meq/L				A1030 E	10/18/13 12:02 / kbh
Solids, Total Dissolved Calculated	1600	mg/L				A1030 E	10/18/13 12:02 / kbh
TDS Balance (0.80 - 1.20)	1.06					A1030 E	10/18/13 12:02 / kbh

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
H - Analysis performed past recommended holding time.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility
Lab ID: C13100454-010
Client Sample ID: 7013

Revised Date: 11/04/13
Report Date: 10/24/13
Collection Date: 10/08/13 14:30
DateReceived: 10/11/13
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Acidity, Total as CaCO3	151	mg/L		5		A2310 B	10/14/13 07:56 / jba
Carbonate as CO3	ND	mg/L		5		A2320 B	10/11/13 20:22 / jba
Bicarbonate as HCO3	ND	mg/L		5		A2320 B	10/11/13 20:22 / jba
Calcium	266	mg/L		1		E200.7	10/21/13 16:00 / sf
Chloride	19	mg/L		1		E300.0	10/21/13 23:21 / wc
Magnesium	125	mg/L		1		E200.7	10/21/13 16:00 / sf
Potassium	8	mg/L		1		E200.7	10/21/13 16:00 / sf
Sodium	37	mg/L		1		E200.7	10/21/13 16:00 / sf
Sulfate	1330	mg/L	D	4		E300.0	10/21/13 23:21 / wc
PHYSICAL PROPERTIES							
Conductivity @ 25 C	2060	umhos/cm		1		A2510 B	10/11/13 15:12 / tmm
pH	4.62	s.u.	H	0.01		A4500-H B	10/11/13 15:12 / tmm
Solids, Total Dissolved TDS @ 180 C	1900	mg/L		20		A2540 C	10/14/13 16:18 / tmm
METALS - DISSOLVED							
Arsenic	0.004	mg/L		0.001		E200.8	10/15/13 18:29 / clm
Iron	0.12	mg/L		0.03		E200.7	10/14/13 13:47 / sf
Molybdenum	ND	mg/L		0.01		E200.7	10/14/13 13:47 / sf
Selenium	0.005	mg/L		0.001		E200.8	10/15/13 18:29 / clm
Uranium	0.0016	mg/L		0.0003		E200.8	10/15/13 18:29 / clm
DATA QUALITY							
A/C Balance (± 5)	0.139	%				A1030 E	10/24/13 07:40 / kbh
Anions	28.3	meq/L				A1030 E	10/24/13 07:40 / kbh
Cations	28.4	meq/L				A1030 E	10/24/13 07:40 / kbh
Solids, Total Dissolved Calculated	1800	mg/L				A1030 E	10/24/13 07:40 / kbh
TDS Balance (0.80 - 1.20)	1.05					A1030 E	10/24/13 07:40 / kbh

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
H - Analysis performed past recommended holding time.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility
Lab ID: C13100454-011
Client Sample ID: 7014

Revised Date: 11/04/13
Report Date: 10/24/13
Collection Date: 10/08/13 15:15
DateReceived: 10/11/13
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Acidity, Total as CaCO3	157	mg/L		5		A2310 B	10/14/13 08:04 / jba
Carbonate as CO3	ND	mg/L		5		A2320 B	10/11/13 20:26 / jba
Bicarbonate as HCO3	ND	mg/L		5		A2320 B	10/11/13 20:26 / jba
Calcium	269	mg/L		1		E200.7	10/14/13 13:57 / sf
Chloride	19	mg/L		1		E300.0	10/12/13 11:54 / wc
Magnesium	126	mg/L		1		E200.7	10/14/13 13:57 / sf
Potassium	8	mg/L		1		E200.7	10/14/13 13:57 / sf
Sodium	37	mg/L		1		E200.7	10/14/13 13:57 / sf
Sulfate	1340	mg/L	D	4		E300.0	10/12/13 11:54 / wc
PHYSICAL PROPERTIES							
Conductivity @ 25 C	2060	umhos/cm		1		A2510 B	10/11/13 15:15 / tmm
pH	4.61	s.u.	H	0.01		A4500-H B	10/11/13 15:15 / tmm
Solids, Total Dissolved TDS @ 180 C	1950	mg/L		20		A2540 C	10/14/13 16:18 / tmm
METALS - DISSOLVED							
Arsenic	0.003	mg/L		0.001		E200.8	10/15/13 18:32 / clm
Iron	0.34	mg/L		0.03		E200.7	10/14/13 13:57 / sf
Molybdenum	ND	mg/L		0.01		E200.7	10/14/13 13:57 / sf
Selenium	0.005	mg/L		0.001		E200.8	10/15/13 18:32 / clm
Uranium	0.0017	mg/L		0.0003		E200.8	10/15/13 18:32 / clm
DATA QUALITY							
A/C Balance (± 5)	0.445	%				A1030 E	10/18/13 12:02 / kbh
Anions	28.5	meq/L				A1030 E	10/18/13 12:02 / kbh
Cations	28.8	meq/L				A1030 E	10/18/13 12:02 / kbh
Solids, Total Dissolved Calculated	1800	mg/L				A1030 E	10/18/13 12:02 / kbh
TDS Balance (0.80 - 1.20)	1.08					A1030 E	10/18/13 12:02 / kbh

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
H - Analysis performed past recommended holding time.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility
Lab ID: C13100454-012
Client Sample ID: 7015

Revised Date: 11/04/13
Report Date: 10/24/13
Collection Date: 10/08/13 15:35
DateReceived: 10/11/13
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Acidity, Total as CaCO3	136	mg/L		5		A2310 B	10/14/13 08:11 / jba
Carbonate as CO3	ND	mg/L		5		A2320 B	10/11/13 20:30 / jba
Bicarbonate as HCO3	ND	mg/L		5		A2320 B	10/11/13 20:30 / jba
Calcium	265	mg/L		1		E200.7	10/14/13 14:16 / sf
Chloride	19	mg/L		1		E300.0	10/12/13 12:13 / wc
Magnesium	125	mg/L		1		E200.7	10/14/13 14:16 / sf
Potassium	8	mg/L		1		E200.7	10/14/13 14:16 / sf
Sodium	37	mg/L		1		E200.7	10/14/13 14:16 / sf
Sulfate	1300	mg/L	D	4		E300.0	10/12/13 12:13 / wc
PHYSICAL PROPERTIES							
Conductivity @ 25 C	2040	umhos/cm		1		A2510 B	10/11/13 15:18 / tmm
pH	4.49	s.u.	H	0.01		A4500-H B	10/11/13 15:18 / tmm
Solids, Total Dissolved TDS @ 180 C	1910	mg/L		20		A2540 C	10/14/13 16:19 / tmm
METALS - DISSOLVED							
Arsenic	0.005	mg/L		0.001		E200.8	10/15/13 18:45 / clm
Iron	0.07	mg/L		0.03		E200.7	10/14/13 14:16 / sf
Molybdenum	ND	mg/L		0.01		E200.7	10/14/13 14:16 / sf
Selenium	0.005	mg/L		0.001		E200.8	10/15/13 18:45 / clm
Uranium	0.0015	mg/L		0.0003		E200.8	10/15/13 18:45 / clm
DATA QUALITY							
A/C Balance (± 5)	0.716	%				A1030 E	10/18/13 12:02 / kbh
Anions	27.6	meq/L				A1030 E	10/18/13 12:02 / kbh
Cations	28.0	meq/L				A1030 E	10/18/13 12:02 / kbh
Solids, Total Dissolved Calculated	1800	mg/L				A1030 E	10/18/13 12:02 / kbh
TDS Balance (0.80 - 1.20)	1.09					A1030 E	10/18/13 12:02 / kbh

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
H - Analysis performed past recommended holding time.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility
Lab ID: C13100454-013
Client Sample ID: 7019

Revised Date: 11/04/13
Report Date: 10/24/13
Collection Date: 10/09/13 09:55
DateReceived: 10/11/13
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Carbonate as CO3	151	mg/L		5		A2320 B	10/11/13 20:48 / jba
Bicarbonate as HCO3	3760	mg/L		5		A2320 B	10/11/13 20:48 / jba
Calcium	40	mg/L		1		E200.7	10/21/13 16:04 / sf
Chloride	1030	mg/L	D	20		E300.0	10/21/13 23:40 / wc
Magnesium	61	mg/L		1		E200.7	10/21/13 16:04 / sf
Potassium	8	mg/L		1		E200.7	10/21/13 16:04 / sf
Sodium	4700	mg/L	D	4		E200.7	10/21/13 16:04 / sf
Sulfate	4910	mg/L	D	80		E300.0	10/21/13 23:40 / wc
PHYSICAL PROPERTIES							
Conductivity @ 25 C	14900	umhos/cm		1		A2510 B	10/11/13 15:21 / tmm
pH	8.52	s.u.	H	0.01		A4500-H B	10/11/13 15:21 / tmm
Solids, Total Dissolved TDS @ 180 C	11900	mg/L		100		A2540 C	10/14/13 16:19 / tmm
METALS - DISSOLVED							
Arsenic	0.153	mg/L		0.001		E200.8	10/15/13 19:01 / clm
Iron	0.51	mg/L	D	0.04		E200.7	10/14/13 14:19 / sf
Molybdenum	20.7	mg/L	D	0.06		E200.7	10/14/13 14:19 / sf
Selenium	0.093	mg/L	D	0.003		E200.8	10/15/13 19:01 / clm
Uranium	122	mg/L	D	6		E200.7	10/14/13 14:19 / sf
DATA QUALITY							
A/C Balance (± 5)	3.38	%				A1030 E	10/24/13 07:40 / kbh
Anions	198	meq/L				A1030 E	10/24/13 07:40 / kbh
Cations	212	meq/L				A1030 E	10/24/13 07:40 / kbh
Solids, Total Dissolved Calculated	13000	mg/L				A1030 E	10/24/13 07:40 / kbh
TDS Balance (0.80 - 1.20)	0.940					A1030 E	10/24/13 07:40 / kbh

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
H - Analysis performed past recommended holding time.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility
Lab ID: C13100454-014
Client Sample ID: 7020

Revised Date: 11/04/13
Report Date: 10/24/13
Collection Date: 10/09/13 10:55
DateReceived: 10/11/13
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Carbonate as CO3	150	mg/L		5		A2320 B	10/14/13 10:10 / jba
Bicarbonate as HCO3	3960	mg/L		5		A2320 B	10/14/13 10:10 / jba
Calcium	46	mg/L		1		E200.7	10/14/13 14:23 / sf
Chloride	1190	mg/L	D	20		E300.0	10/12/13 12:50 / wc
Magnesium	66	mg/L		1		E200.7	10/14/13 14:23 / sf
Potassium	9	mg/L		1		E200.7	10/14/13 14:23 / sf
Sodium	5000	mg/L	D	4		E200.7	10/14/13 14:23 / sf
Sulfate	5750	mg/L	D	80		E300.0	10/12/13 12:50 / wc
PHYSICAL PROPERTIES							
Conductivity @ 25 C	17600	umhos/cm		1		A2510 B	10/11/13 15:24 / tmm
pH	8.41	s.u.	H	0.01		A4500-H B	10/11/13 15:24 / tmm
Solids, Total Dissolved TDS @ 180 C	14600	mg/L		100		A2540 C	10/14/13 16:19 / tmm
METALS - DISSOLVED							
Arsenic	0.160	mg/L		0.001		E200.8	10/15/13 19:04 / clm
Iron	0.47	mg/L	D	0.04		E200.7	10/14/13 14:23 / sf
Molybdenum	20.8	mg/L	D	0.06		E200.7	10/14/13 14:23 / sf
Selenium	0.117	mg/L	D	0.003		E200.8	10/15/13 19:04 / clm
Uranium	123	mg/L	D	6		E200.7	10/14/13 14:23 / sf
DATA QUALITY							
A/C Balance (± 5)	0.542	%				A1030 E	10/18/13 12:03 / kbh
Anions	223	meq/L				A1030 E	10/18/13 12:03 / kbh
Cations	226	meq/L				A1030 E	10/18/13 12:03 / kbh
Solids, Total Dissolved Calculated	14000	mg/L				A1030 E	10/18/13 12:03 / kbh
TDS Balance (0.80 - 1.20)	1.03					A1030 E	10/18/13 12:03 / kbh

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
H - Analysis performed past recommended holding time.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility
Lab ID: C13100454-015
Client Sample ID: 7021

Revised Date: 11/04/13
Report Date: 10/24/13
Collection Date: 10/09/13 11:10
DateReceived: 10/11/13
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Carbonate as CO3	ND	mg/L		5		A2320 B	10/11/13 21:15 / jba
Bicarbonate as HCO3	428	mg/L		5		A2320 B	10/11/13 21:15 / jba
Calcium	30	mg/L		1		E200.7	10/14/13 14:27 / sf
Chloride	41	mg/L		1		E300.0	10/12/13 13:45 / wc
Magnesium	11	mg/L		1		E200.7	10/14/13 14:27 / sf
Potassium	4	mg/L		1		E200.7	10/14/13 14:27 / sf
Sodium	183	mg/L		1		E200.7	10/14/13 14:27 / sf
Sulfate	80	mg/L	D	2		E300.0	10/12/13 13:45 / wc
PHYSICAL PROPERTIES							
Conductivity @ 25 C	906	umhos/cm		5		A2510 B	10/11/13 15:52 / tmm
pH	8.03	s.u.	H	0.01		A4500-H B	10/11/13 15:52 / tmm
Solids, Total Dissolved TDS @ 180 C	563	mg/L		10		A2540 C	10/14/13 16:19 / tmm
METALS - DISSOLVED							
Arsenic	0.004	mg/L		0.001		E200.8	10/15/13 19:07 / clm
Iron	0.48	mg/L		0.03		E200.7	10/14/13 14:27 / sf
Molybdenum	0.02	mg/L		0.01		E200.7	10/14/13 14:27 / sf
Selenium	ND	mg/L		0.001		E200.8	10/15/13 19:07 / clm
Uranium	0.0198	mg/L		0.0003		E200.8	10/15/13 19:07 / clm
DATA QUALITY							
A/C Balance (± 5)	2.52	%				A1030 E	10/18/13 12:03 / kbh
Anions	9.94	meq/L				A1030 E	10/18/13 12:03 / kbh
Cations	10.5	meq/L				A1030 E	10/18/13 12:03 / kbh
Solids, Total Dissolved Calculated	560	mg/L				A1030 E	10/18/13 12:03 / kbh
TDS Balance (0.80 - 1.20)	1.00					A1030 E	10/18/13 12:03 / kbh

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
H - Analysis performed past recommended holding time.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility
Lab ID: C13100454-016
Client Sample ID: 7022

Revised Date: 11/04/13
Report Date: 10/24/13
Collection Date: 10/09/13 12:05
DateReceived: 10/11/13
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Carbonate as CO3	ND	mg/L		5		A2320 B	10/11/13 21:31 / jba
Bicarbonate as HCO3	402	mg/L		5		A2320 B	10/11/13 21:31 / jba
Calcium	20	mg/L		1		E200.7	10/14/13 14:31 / sf
Chloride	38	mg/L		1		E300.0	10/12/13 14:41 / wc
Magnesium	8	mg/L		1		E200.7	10/14/13 14:31 / sf
Potassium	4	mg/L		1		E200.7	10/14/13 14:31 / sf
Sodium	173	mg/L		1		E200.7	10/14/13 14:31 / sf
Sulfate	64	mg/L	D	2		E300.0	10/12/13 14:41 / wc
PHYSICAL PROPERTIES							
Conductivity @ 25 C	841	umhos/cm		5		A2510 B	10/11/13 15:55 / tmm
pH	8.10	s.u.	H	0.01		A4500-H B	10/11/13 15:55 / tmm
Solids, Total Dissolved TDS @ 180 C	504	mg/L		10		A2540 C	10/14/13 16:20 / tmm
METALS - DISSOLVED							
Arsenic	0.003	mg/L		0.001		E200.8	10/15/13 19:10 / clm
Iron	0.36	mg/L		0.03		E200.7	10/14/13 14:31 / sf
Molybdenum	0.01	mg/L		0.01		E200.7	10/14/13 14:31 / sf
Selenium	ND	mg/L		0.001		E200.8	10/15/13 19:10 / clm
Uranium	0.0241	mg/L		0.0003		E200.8	10/15/13 19:10 / clm
DATA QUALITY							
A/C Balance (± 5)	0.455	%				A1030 E	10/18/13 12:03 / kbh
Anions	9.18	meq/L				A1030 E	10/18/13 12:03 / kbh
Cations	9.26	meq/L				A1030 E	10/18/13 12:03 / kbh
Solids, Total Dissolved Calculated	510	mg/L				A1030 E	10/18/13 12:03 / kbh
TDS Balance (0.80 - 1.20)	0.990					A1030 E	10/18/13 12:03 / kbh

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
H - Analysis performed past recommended holding time.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility
Lab ID: C13100454-017
Client Sample ID: 6981

Revised Date: 11/04/13
Report Date: 10/24/13
Collection Date: 10/08/13 12:40
DateReceived: 10/11/13
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Carbonate as CO3	ND	mg/L		5		A2320 B	10/11/13 21:39 / jba
Bicarbonate as HCO3	247	mg/L		5		A2320 B	10/11/13 21:39 / jba
Calcium	110	mg/L		1		E200.7	10/14/13 14:34 / sf
Chloride	23	mg/L		1		E300.0	10/12/13 14:59 / wc
Magnesium	41	mg/L		1		E200.7	10/14/13 14:34 / sf
Potassium	4	mg/L		1		E200.7	10/14/13 14:34 / sf
Sodium	26	mg/L		1		E200.7	10/14/13 14:34 / sf
Sulfate	258	mg/L	D	2		E300.0	10/12/13 14:59 / wc
PHYSICAL PROPERTIES							
Conductivity @ 25 C	892	umhos/cm		5		A2510 B	10/11/13 15:58 / tmm
pH	7.37	s.u.	H	0.01		A4500-H B	10/11/13 15:58 / tmm
Solids, Total Dissolved TDS @ 180 C	614	mg/L		10		A2540 C	10/14/13 16:20 / tmm
METALS - DISSOLVED							
Arsenic	0.008	mg/L		0.001		E200.8	10/15/13 19:14 / clm
Iron	0.48	mg/L		0.03		E200.7	10/14/13 14:34 / sf
Molybdenum	0.04	mg/L		0.01		E200.7	10/14/13 14:34 / sf
Selenium	ND	mg/L		0.001		E200.8	10/15/13 19:14 / clm
Uranium	0.0043	mg/L		0.0003		E200.8	10/15/13 19:14 / clm
DATA QUALITY							
A/C Balance (± 5)	-0.0602	%				A1030 E	10/18/13 12:03 / kbh
Anions	10.1	meq/L				A1030 E	10/18/13 12:03 / kbh
Cations	10.1	meq/L				A1030 E	10/18/13 12:03 / kbh
Solids, Total Dissolved Calculated	580	mg/L				A1030 E	10/18/13 12:03 / kbh
TDS Balance (0.80 - 1.20)	1.05					A1030 E	10/18/13 12:03 / kbh

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
H - Analysis performed past recommended holding time.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility
Lab ID: C13100454-018
Client Sample ID: 6982

Revised Date: 11/04/13
Report Date: 10/24/13
Collection Date: 10/08/13 13:25
DateReceived: 10/11/13
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Carbonate as CO3	ND	mg/L		5		A2320 B	10/11/13 21:47 / jba
Bicarbonate as HCO3	235	mg/L		5		A2320 B	10/11/13 21:47 / jba
Calcium	109	mg/L		1		E200.7	10/14/13 14:38 / sf
Chloride	24	mg/L		1		E300.0	10/12/13 15:18 / wc
Magnesium	41	mg/L		1		E200.7	10/14/13 14:38 / sf
Potassium	3	mg/L		1		E200.7	10/14/13 14:38 / sf
Sodium	26	mg/L		1		E200.7	10/14/13 14:38 / sf
Sulfate	267	mg/L	D	2		E300.0	10/12/13 15:18 / wc
PHYSICAL PROPERTIES							
Conductivity @ 25 C	897	umhos/cm		5		A2510 B	10/11/13 16:01 / tmm
pH	7.30	s.u.	H	0.01		A4500-H B	10/11/13 16:01 / tmm
Solids, Total Dissolved TDS @ 180 C	628	mg/L		10		A2540 C	10/14/13 16:20 / tmm
METALS - DISSOLVED							
Arsenic	0.007	mg/L		0.001		E200.8	10/15/13 19:17 / clm
Iron	0.34	mg/L		0.03		E200.7	10/14/13 14:38 / sf
Molybdenum	0.03	mg/L		0.01		E200.7	10/14/13 14:38 / sf
Selenium	ND	mg/L		0.001		E200.8	10/15/13 19:17 / clm
Uranium	0.0045	mg/L		0.0003		E200.8	10/15/13 19:17 / clm
DATA QUALITY							
A/C Balance (± 5)	-0.442	%				A1030 E	10/18/13 12:03 / kbh
Anions	10.1	meq/L				A1030 E	10/18/13 12:03 / kbh
Cations	10.0	meq/L				A1030 E	10/18/13 12:03 / kbh
Solids, Total Dissolved Calculated	590	mg/L				A1030 E	10/18/13 12:03 / kbh
TDS Balance (0.80 - 1.20)	1.07					A1030 E	10/18/13 12:03 / kbh

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
H - Analysis performed past recommended holding time.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility
Lab ID: C13100454-019
Client Sample ID: 6983

Revised Date: 11/04/13
Report Date: 10/24/13
Collection Date: 10/08/13 14:05
DateReceived: 10/11/13
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Carbonate as CO3	ND	mg/L		5		A2320 B	10/11/13 21:55 / jba
Bicarbonate as HCO3	247	mg/L		5		A2320 B	10/11/13 21:55 / jba
Calcium	120	mg/L		1		E200.7	10/14/13 14:42 / sf
Chloride	26	mg/L		1		E300.0	10/12/13 15:36 / wc
Magnesium	45	mg/L		1		E200.7	10/14/13 14:42 / sf
Potassium	4	mg/L		1		E200.7	10/14/13 14:42 / sf
Sodium	33	mg/L		1		E200.7	10/14/13 14:42 / sf
Sulfate	306	mg/L	D	2		E300.0	10/12/13 15:36 / wc
PHYSICAL PROPERTIES							
Conductivity @ 25 C	988	umhos/cm		5		A2510 B	10/11/13 16:04 / tmm
pH	7.24	s.u.	H	0.01		A4500-H B	10/11/13 16:04 / tmm
Solids, Total Dissolved TDS @ 180 C	703	mg/L		10		A2540 C	10/14/13 16:20 / tmm
METALS - DISSOLVED							
Arsenic	0.002	mg/L		0.001		E200.8	10/15/13 19:20 / clm
Iron	0.05	mg/L		0.03		E200.7	10/31/13 16:48 / sf
Molybdenum	0.03	mg/L		0.01		E200.7	10/14/13 14:42 / sf
Selenium	0.002	mg/L		0.001		E200.8	10/15/13 19:20 / clm
Uranium	0.0125	mg/L		0.0003		E200.8	10/15/13 19:20 / clm
DATA QUALITY							
A/C Balance (± 5)	-0.00368	%				A1030 E	10/18/13 12:03 / kbh
Anions	11.2	meq/L				A1030 E	10/18/13 12:03 / kbh
Cations	11.2	meq/L				A1030 E	10/18/13 12:03 / kbh
Solids, Total Dissolved Calculated	660	mg/L				A1030 E	10/18/13 12:03 / kbh
TDS Balance (0.80 - 1.20)	1.07					A1030 E	10/18/13 12:03 / kbh

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
H - Analysis performed past recommended holding time.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility
Lab ID: C13100454-020
Client Sample ID: 6984

Revised Date: 11/04/13
Report Date: 10/24/13
Collection Date: 10/08/13 14:35
DateReceived: 10/11/13
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Carbonate as CO3	ND	mg/L		5		A2320 B	10/11/13 22:02 / jba
Bicarbonate as HCO3	125	mg/L		5		A2320 B	10/11/13 22:02 / jba
Calcium	118	mg/L		1		E200.7	10/14/13 15:34 / sf
Chloride	19	mg/L		1		E300.0	10/12/13 15:54 / wc
Magnesium	52	mg/L		1		E200.7	10/14/13 15:34 / sf
Potassium	6	mg/L		1		E200.7	10/14/13 15:34 / sf
Sodium	33	mg/L		1		E200.7	10/14/13 15:34 / sf
Sulfate	428	mg/L	D	4		E300.0	10/12/13 15:54 / wc
PHYSICAL PROPERTIES							
Conductivity @ 25 C	1010	umhos/cm		1		A2510 B	10/11/13 16:07 / tmm
pH	6.45	s.u.	H	0.01		A4500-H B	10/11/13 16:07 / tmm
Solids, Total Dissolved TDS @ 180 C	763	mg/L		10		A2540 C	10/14/13 16:20 / tmm
METALS - DISSOLVED							
Arsenic	0.002	mg/L		0.001		E200.8	10/15/13 19:23 / clm
Iron	0.08	mg/L		0.03		E200.7	10/14/13 15:34 / sf
Molybdenum	ND	mg/L		0.01		E200.7	10/14/13 15:34 / sf
Selenium	ND	mg/L		0.001		E200.8	10/15/13 19:23 / clm
Uranium	0.0005	mg/L		0.0003		E200.8	10/15/13 19:23 / clm
DATA QUALITY							
A/C Balance (± 5)	1.19	%				A1030 E	10/18/13 12:03 / kbh
Anions	11.5	meq/L				A1030 E	10/18/13 12:03 / kbh
Cations	11.8	meq/L				A1030 E	10/18/13 12:03 / kbh
Solids, Total Dissolved Calculated	720	mg/L				A1030 E	10/18/13 12:03 / kbh
TDS Balance (0.80 - 1.20)	1.06					A1030 E	10/18/13 12:03 / kbh

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
H - Analysis performed past recommended holding time.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility
Lab ID: C13100454-021
Client Sample ID: 6985

Revised Date: 11/04/13
Report Date: 10/24/13
Collection Date: 10/08/13 14:45
DateReceived: 10/11/13
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Carbonate as CO3	ND	mg/L		5		A2320 B	10/11/13 22:09 / jba
Bicarbonate as HCO3	124	mg/L		5		A2320 B	10/11/13 22:09 / jba
Calcium	118	mg/L		1		E200.7	10/14/13 15:37 / sf
Chloride	18	mg/L		1		E300.0	10/12/13 16:13 / wc
Magnesium	52	mg/L		1		E200.7	10/14/13 15:37 / sf
Potassium	6	mg/L		1		E200.7	10/14/13 15:37 / sf
Sodium	33	mg/L		1		E200.7	10/14/13 15:37 / sf
Sulfate	410	mg/L	D	4		E300.0	10/12/13 16:13 / wc
PHYSICAL PROPERTIES							
Conductivity @ 25 C	1020	umhos/cm		1		A2510 B	10/11/13 16:10 / tmm
pH	6.46	s.u.	H	0.01		A4500-H B	10/11/13 16:10 / tmm
Solids, Total Dissolved TDS @ 180 C	774	mg/L		10		A2540 C	10/14/13 16:21 / tmm
METALS - DISSOLVED							
Arsenic	0.002	mg/L		0.001		E200.8	10/15/13 19:26 / clm
Iron	0.08	mg/L		0.03		E200.7	10/14/13 15:37 / sf
Molybdenum	ND	mg/L		0.01		E200.7	10/14/13 15:37 / sf
Selenium	0.001	mg/L		0.001		E200.8	10/15/13 19:26 / clm
Uranium	0.0005	mg/L		0.0003		E200.8	10/15/13 19:26 / clm
DATA QUALITY							
A/C Balance (± 5)	3.02	%				A1030 E	10/18/13 12:03 / kbh
Anions	11.1	meq/L				A1030 E	10/18/13 12:03 / kbh
Cations	11.8	meq/L				A1030 E	10/18/13 12:03 / kbh
Solids, Total Dissolved Calculated	700	mg/L				A1030 E	10/18/13 12:03 / kbh
TDS Balance (0.80 - 1.20)	1.11					A1030 E	10/18/13 12:03 / kbh

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
H - Analysis performed past recommended holding time.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility
Lab ID: C13100454-022
Client Sample ID: 6986

Revised Date: 11/04/13
Report Date: 10/24/13
Collection Date: 10/08/13 15:20
DateReceived: 10/11/13
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Carbonate as CO3	ND	mg/L		5		A2320 B	10/11/13 22:16 / jba
Bicarbonate as HCO3	126	mg/L		5		A2320 B	10/11/13 22:16 / jba
Calcium	113	mg/L		1		E200.7	10/14/13 15:41 / sf
Chloride	19	mg/L		1		E300.0	10/12/13 16:31 / wc
Magnesium	50	mg/L		1		E200.7	10/14/13 15:41 / sf
Potassium	6	mg/L		1		E200.7	10/14/13 15:41 / sf
Sodium	33	mg/L		1		E200.7	10/14/13 15:41 / sf
Sulfate	416	mg/L	D	4		E300.0	10/12/13 16:31 / wc
PHYSICAL PROPERTIES							
Conductivity @ 25 C	1000	umhos/cm		1		A2510 B	10/11/13 16:13 / tmm
pH	6.48	s.u.	H	0.01		A4500-H B	10/11/13 16:13 / tmm
Solids, Total Dissolved TDS @ 180 C	767	mg/L		10		A2540 C	10/14/13 16:21 / tmm
METALS - DISSOLVED							
Arsenic	0.002	mg/L		0.001		E200.8	10/15/13 19:52 / clm
Iron	0.05	mg/L		0.03		E200.7	10/14/13 15:41 / sf
Molybdenum	0.01	mg/L		0.01		E200.7	10/14/13 15:41 / sf
Selenium	ND	mg/L		0.001		E200.8	10/15/13 19:52 / clm
Uranium	0.0005	mg/L		0.0003		E200.8	10/15/13 19:52 / clm
DATA QUALITY							
A/C Balance (± 5)	0.310	%				A1030 E	10/18/13 12:04 / kbh
Anions	11.3	meq/L				A1030 E	10/18/13 12:04 / kbh
Cations	11.3	meq/L				A1030 E	10/18/13 12:04 / kbh
Solids, Total Dissolved Calculated	700	mg/L				A1030 E	10/18/13 12:04 / kbh
TDS Balance (0.80 - 1.20)	1.10					A1030 E	10/18/13 12:04 / kbh

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
H - Analysis performed past recommended holding time.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility
Lab ID: C13100454-023
Client Sample ID: 6987

Revised Date: 11/04/13
Report Date: 10/24/13
Collection Date: 10/08/13 15:50
DateReceived: 10/11/13
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Carbonate as CO3	ND	mg/L		5		A2320 B	10/11/13 22:24 / jba
Bicarbonate as HCO3	127	mg/L		5		A2320 B	10/11/13 22:24 / jba
Calcium	109	mg/L		1		E200.7	10/14/13 15:45 / sf
Chloride	19	mg/L		1		E300.0	10/12/13 16:50 / wc
Magnesium	49	mg/L		1		E200.7	10/14/13 15:45 / sf
Potassium	6	mg/L		1		E200.7	10/14/13 15:45 / sf
Sodium	34	mg/L		1		E200.7	10/14/13 15:45 / sf
Sulfate	401	mg/L	D	2		E300.0	10/12/13 16:50 / wc
PHYSICAL PROPERTIES							
Conductivity @ 25 C	989	umhos/cm		1		A2510 B	10/11/13 16:16 / tmm
pH	6.49	s.u.	H	0.01		A4500-H B	10/11/13 16:16 / tmm
Solids, Total Dissolved TDS @ 180 C	739	mg/L		10		A2540 C	10/14/13 16:21 / tmm
METALS - DISSOLVED							
Arsenic	0.002	mg/L		0.001		E200.8	10/15/13 19:56 / clm
Iron	ND	mg/L		0.03		E200.7	10/14/13 15:45 / sf
Molybdenum	ND	mg/L		0.01		E200.7	10/14/13 15:45 / sf
Selenium	ND	mg/L		0.001		E200.8	10/15/13 19:56 / clm
Uranium	0.0005	mg/L		0.0003		E200.8	10/15/13 19:56 / clm
DATA QUALITY							
A/C Balance (± 5)	0.547	%				A1030 E	10/18/13 12:04 / kbh
Anions	11.0	meq/L				A1030 E	10/18/13 12:04 / kbh
Cations	11.1	meq/L				A1030 E	10/18/13 12:04 / kbh
Solids, Total Dissolved Calculated	680	mg/L				A1030 E	10/18/13 12:04 / kbh
TDS Balance (0.80 - 1.20)	1.09					A1030 E	10/18/13 12:04 / kbh

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
H - Analysis performed past recommended holding time.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility
Lab ID: C13100454-024
Client Sample ID: 6988

Revised Date: 11/04/13
Report Date: 10/24/13
Collection Date: 10/09/13 08:20
DateReceived: 10/11/13
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Carbonate as CO3	ND	mg/L		5		A2320 B	10/11/13 22:31 / jba
Bicarbonate as HCO3	207	mg/L		5		A2320 B	10/11/13 22:31 / jba
Calcium	64	mg/L		1		E200.7	10/14/13 15:48 / sf
Chloride	10	mg/L		1		E300.0	10/12/13 17:08 / wc
Magnesium	16	mg/L		1		E200.7	10/14/13 15:48 / sf
Potassium	3	mg/L		1		E200.7	10/14/13 15:48 / sf
Sodium	31	mg/L		1		E200.7	10/14/13 15:48 / sf
Sulfate	112	mg/L	D	2		E300.0	10/12/13 17:08 / wc
PHYSICAL PROPERTIES							
Conductivity @ 25 C	559	umhos/cm		1		A2510 B	10/11/13 16:19 / tmm
pH	7.55	s.u.	H	0.01		A4500-H B	10/11/13 16:19 / tmm
Solids, Total Dissolved TDS @ 180 C	349	mg/L		10		A2540 C	10/14/13 16:21 / tmm
METALS - DISSOLVED							
Arsenic	ND	mg/L		0.001		E200.8	10/15/13 19:59 / clm
Iron	ND	mg/L		0.03		E200.7	10/14/13 15:48 / sf
Molybdenum	ND	mg/L		0.01		E200.7	10/14/13 15:48 / sf
Selenium	0.003	mg/L		0.001		E200.8	10/15/13 19:59 / clm
Uranium	0.0019	mg/L		0.0003		E200.8	10/15/13 19:59 / clm
DATA QUALITY							
A/C Balance (± 5)	-0.257	%				A1030 E	10/18/13 12:04 / kbh
Anions	6.02	meq/L				A1030 E	10/18/13 12:04 / kbh
Cations	5.99	meq/L				A1030 E	10/18/13 12:04 / kbh
Solids, Total Dissolved Calculated	340	mg/L				A1030 E	10/18/13 12:04 / kbh
TDS Balance (0.80 - 1.20)	1.03					A1030 E	10/18/13 12:04 / kbh

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
H - Analysis performed past recommended holding time.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility
Lab ID: C13100454-025
Client Sample ID: 6989

Revised Date: 11/04/13
Report Date: 10/24/13
Collection Date: 10/09/13 09:20
DateReceived: 10/11/13
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Carbonate as CO3	ND	mg/L		5		A2320 B	10/11/13 23:04 / jba
Bicarbonate as HCO3	208	mg/L		5		A2320 B	10/11/13 23:04 / jba
Calcium	64	mg/L		1		E200.7	10/14/13 15:52 / sf
Chloride	10	mg/L		1		E300.0	10/12/13 18:22 / wc
Magnesium	16	mg/L		1		E200.7	10/14/13 15:52 / sf
Potassium	3	mg/L		1		E200.7	10/14/13 15:52 / sf
Sodium	31	mg/L		1		E200.7	10/14/13 15:52 / sf
Sulfate	113	mg/L	D	2		E300.0	10/12/13 18:22 / wc
PHYSICAL PROPERTIES							
Conductivity @ 25 C	558	umhos/cm		1		A2510 B	10/11/13 16:25 / tmm
pH	7.58	s.u.	H	0.01		A4500-H B	10/11/13 16:25 / tmm
Solids, Total Dissolved TDS @ 180 C	352	mg/L		10		A2540 C	10/14/13 16:22 / tmm
METALS - DISSOLVED							
Arsenic	ND	mg/L		0.001		E200.8	10/15/13 20:02 / clm
Iron	ND	mg/L		0.03		E200.7	10/14/13 15:52 / sf
Molybdenum	ND	mg/L		0.01		E200.7	10/14/13 15:52 / sf
Selenium	0.002	mg/L		0.001		E200.8	10/15/13 20:02 / clm
Uranium	0.0018	mg/L		0.0003		E200.8	10/15/13 20:02 / clm
DATA QUALITY							
A/C Balance (± 5)	-0.422	%				A1030 E	10/18/13 12:04 / kbh
Anions	6.03	meq/L				A1030 E	10/18/13 12:04 / kbh
Cations	5.98	meq/L				A1030 E	10/18/13 12:04 / kbh
Solids, Total Dissolved Calculated	340	mg/L				A1030 E	10/18/13 12:04 / kbh
TDS Balance (0.80 - 1.20)	1.04					A1030 E	10/18/13 12:04 / kbh

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
H - Analysis performed past recommended holding time.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility
Lab ID: C13100454-026
Client Sample ID: 6990

Revised Date: 11/04/13
Report Date: 10/24/13
Collection Date: 10/09/13 10:00
DateReceived: 10/11/13
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Carbonate as CO3	ND	mg/L		5		A2320 B	10/11/13 23:20 / jba
Bicarbonate as HCO3	224	mg/L		5		A2320 B	10/11/13 23:20 / jba
Calcium	61	mg/L		1		E200.7	10/14/13 15:56 / sf
Chloride	15	mg/L		1		E300.0	10/12/13 19:17 / wc
Magnesium	15	mg/L		1		E200.7	10/14/13 15:56 / sf
Potassium	2	mg/L		1		E200.7	10/14/13 15:56 / sf
Sodium	36	mg/L		1		E200.7	10/14/13 15:56 / sf
Sulfate	99	mg/L	D	2		E300.0	10/12/13 19:17 / wc
PHYSICAL PROPERTIES							
Conductivity @ 25 C	574	umhos/cm		1		A2510 B	10/11/13 16:28 / tmm
pH	7.70	s.u.	H	0.01		A4500-H B	10/11/13 16:28 / tmm
Solids, Total Dissolved TDS @ 180 C	361	mg/L		10		A2540 C	10/14/13 16:23 / tmm
METALS - DISSOLVED							
Arsenic	ND	mg/L		0.001		E200.8	10/15/13 20:06 / clm
Iron	ND	mg/L		0.03		E200.7	10/14/13 15:56 / sf
Molybdenum	ND	mg/L		0.01		E200.7	10/14/13 15:56 / sf
Selenium	0.003	mg/L		0.001		E200.8	10/15/13 20:06 / clm
Uranium	0.0019	mg/L		0.0003		E200.8	10/15/13 20:06 / clm
DATA QUALITY							
A/C Balance (± 5)	-2.37	%				A1030 E	10/18/13 12:04 / kbh
Anions	6.17	meq/L				A1030 E	10/18/13 12:04 / kbh
Cations	5.88	meq/L				A1030 E	10/18/13 12:04 / kbh
Solids, Total Dissolved Calculated	340	mg/L				A1030 E	10/18/13 12:04 / kbh
TDS Balance (0.80 - 1.20)	1.07					A1030 E	10/18/13 12:04 / kbh

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
H - Analysis performed past recommended holding time.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility
Lab ID: C13100454-027
Client Sample ID: 6991

Revised Date: 11/04/13
Report Date: 10/24/13
Collection Date: 10/09/13 10:30
DateReceived: 10/11/13
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Carbonate as CO3	ND	mg/L		5		A2320 B	10/11/13 23:36 / jba
Bicarbonate as HCO3	254	mg/L		5		A2320 B	10/11/13 23:36 / jba
Calcium	65	mg/L		1		E200.7	10/14/13 15:59 / sf
Chloride	15	mg/L		1		E300.0	10/12/13 19:36 / wc
Magnesium	16	mg/L		1		E200.7	10/14/13 15:59 / sf
Potassium	3	mg/L		1		E200.7	10/14/13 15:59 / sf
Sodium	42	mg/L		1		E200.7	10/14/13 15:59 / sf
Sulfate	105	mg/L	D	2		E300.0	10/12/13 19:36 / wc
PHYSICAL PROPERTIES							
Conductivity @ 25 C	608	umhos/cm		1		A2510 B	10/11/13 16:31 / tmm
pH	7.65	s.u.	H	0.01		A4500-H B	10/11/13 16:31 / tmm
Solids, Total Dissolved TDS @ 180 C	372	mg/L		10		A2540 C	10/14/13 16:23 / tmm
METALS - DISSOLVED							
Arsenic	ND	mg/L		0.001		E200.8	10/15/13 20:09 / clm
Iron	ND	mg/L		0.03		E200.7	10/14/13 15:59 / sf
Molybdenum	ND	mg/L		0.01		E200.7	10/14/13 15:59 / sf
Selenium	0.003	mg/L		0.001		E200.8	10/15/13 20:09 / clm
Uranium	0.0022	mg/L		0.0003		E200.8	10/15/13 20:09 / clm
DATA QUALITY							
A/C Balance (± 5)	-2.14	%				A1030 E	10/18/13 12:04 / kbh
Anions	6.79	meq/L				A1030 E	10/18/13 12:04 / kbh
Cations	6.50	meq/L				A1030 E	10/18/13 12:04 / kbh
Solids, Total Dissolved Calculated	370	mg/L				A1030 E	10/18/13 12:04 / kbh
TDS Balance (0.80 - 1.20)	1.00					A1030 E	10/18/13 12:04 / kbh

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
H - Analysis performed past recommended holding time.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility
Lab ID: C13100454-028
Client Sample ID: 6992

Revised Date: 11/04/13
Report Date: 10/24/13
Collection Date: 10/09/13 11:20
DateReceived: 10/11/13
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Carbonate as CO3	ND	mg/L		5		A2320 B	10/11/13 23:44 / jba
Bicarbonate as HCO3	270	mg/L		5		A2320 B	10/11/13 23:44 / jba
Calcium	246	mg/L		1		E200.7	10/14/13 16:18 / sf
Chloride	227	mg/L	D	2		E300.0	10/12/13 19:54 / wc
Magnesium	70	mg/L		1		E200.7	10/14/13 16:18 / sf
Potassium	12	mg/L		1		E200.7	10/14/13 16:18 / sf
Sodium	292	mg/L		1		E200.7	10/14/13 16:18 / sf
Sulfate	1060	mg/L	D	8		E300.0	10/12/13 19:54 / wc
PHYSICAL PROPERTIES							
Conductivity @ 25 C	2820	umhos/cm		1		A2510 B	10/11/13 16:34 / tmm
pH	7.44	s.u.	H	0.01		A4500-H B	10/11/13 16:34 / tmm
Solids, Total Dissolved TDS @ 180 C	2140	mg/L		20		A2540 C	10/14/13 16:24 / tmm
METALS - DISSOLVED							
Arsenic	0.001	mg/L		0.001		E200.8	10/15/13 20:25 / clm
Iron	ND	mg/L		0.03		E200.7	10/14/13 16:18 / sf
Molybdenum	ND	mg/L		0.01		E200.8	10/15/13 20:25 / clm
Selenium	0.026	mg/L		0.001		E200.8	10/15/13 20:25 / clm
Uranium	0.581	mg/L		0.0003		E200.8	10/15/13 20:25 / clm
DATA QUALITY							
A/C Balance (± 5)	-2.83	%				A1030 E	10/18/13 12:04 / kbh
Anions	32.8	meq/L				A1030 E	10/18/13 12:04 / kbh
Cations	31.0	meq/L				A1030 E	10/18/13 12:04 / kbh
Solids, Total Dissolved Calculated	2000	mg/L				A1030 E	10/18/13 12:04 / kbh
TDS Balance (0.80 - 1.20)	1.05					A1030 E	10/18/13 12:04 / kbh

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
H - Analysis performed past recommended holding time.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility
Lab ID: C13100454-029
Client Sample ID: 6993

Revised Date: 11/04/13
Report Date: 10/24/13
Collection Date: 10/09/13 12:05
DateReceived: 10/11/13
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Carbonate as CO3	ND	mg/L		5		A2320 B	10/11/13 23:52 / jba
Bicarbonate as HCO3	278	mg/L		5		A2320 B	10/11/13 23:52 / jba
Calcium	262	mg/L		1		E200.7	10/14/13 16:29 / sf
Chloride	231	mg/L	D	2		E300.0	10/12/13 20:12 / wc
Magnesium	76	mg/L		1		E200.7	10/14/13 16:29 / sf
Potassium	12	mg/L		1		E200.7	10/14/13 16:29 / sf
Sodium	310	mg/L		1		E200.7	10/14/13 16:29 / sf
Sulfate	1090	mg/L	D	8		E300.0	10/12/13 20:12 / wc
PHYSICAL PROPERTIES							
Conductivity @ 25 C	2880	umhos/cm		1		A2510 B	10/11/13 16:37 / tmm
pH	7.46	s.u.	H	0.01		A4500-H B	10/11/13 16:37 / tmm
Solids, Total Dissolved TDS @ 180 C	2230	mg/L		20		A2540 C	10/14/13 16:24 / tmm
METALS - DISSOLVED							
Arsenic	ND	mg/L		0.001		E200.8	10/15/13 20:28 / clm
Iron	0.05	mg/L		0.03		E200.7	10/14/13 16:29 / sf
Molybdenum	0.01	mg/L		0.01		E200.8	10/15/13 20:28 / clm
Selenium	0.026	mg/L		0.001		E200.8	10/15/13 20:28 / clm
Uranium	0.751	mg/L		0.0003		E200.8	10/15/13 20:28 / clm
DATA QUALITY							
A/C Balance (± 5)	-0.901	%				A1030 E	10/18/13 12:04 / kbh
Anions	33.7	meq/L				A1030 E	10/18/13 12:04 / kbh
Cations	33.1	meq/L				A1030 E	10/18/13 12:04 / kbh
Solids, Total Dissolved Calculated	2100	mg/L				A1030 E	10/18/13 12:04 / kbh
TDS Balance (0.80 - 1.20)	1.06					A1030 E	10/18/13 12:04 / kbh

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
H - Analysis performed past recommended holding time.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility
Lab ID: C13100454-030
Client Sample ID: 6994

Revised Date: 11/04/13
Report Date: 10/24/13
Collection Date: 10/09/13 14:25
DateReceived: 10/11/13
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Carbonate as CO3	ND	mg/L		5		A2320 B	10/12/13 00:00 / jba
Bicarbonate as HCO3	297	mg/L		5		A2320 B	10/12/13 00:00 / jba
Calcium	304	mg/L		1		E200.7	10/14/13 16:32 / sf
Chloride	255	mg/L	D	2		E300.0	10/12/13 20:31 / wc
Magnesium	89	mg/L		1		E200.7	10/14/13 16:32 / sf
Potassium	13	mg/L		1		E200.7	10/14/13 16:32 / sf
Sodium	362	mg/L		1		E200.7	10/14/13 16:32 / sf
Sulfate	1230	mg/L	D	8		E300.0	10/12/13 20:31 / wc
PHYSICAL PROPERTIES							
Conductivity @ 25 C	3160	umhos/cm		1		A2510 B	10/11/13 16:40 / tmm
pH	7.55	s.u.	H	0.01		A4500-H B	10/11/13 16:40 / tmm
Solids, Total Dissolved TDS @ 180 C	2440	mg/L		20		A2540 C	10/14/13 16:24 / tmm
METALS - DISSOLVED							
Arsenic	0.001	mg/L		0.001		E200.8	10/15/13 20:31 / clm
Iron	ND	mg/L		0.03		E200.7	10/14/13 16:32 / sf
Molybdenum	0.01	mg/L		0.01		E200.8	10/15/13 20:31 / clm
Selenium	0.032	mg/L		0.001		E200.8	10/15/13 20:31 / clm
Uranium	1.53	mg/L		0.0003		E200.8	10/15/13 20:31 / clm
DATA QUALITY							
A/C Balance (± 5)	1.24	%				A1030 E	10/18/13 12:05 / kbh
Anions	37.6	meq/L				A1030 E	10/18/13 12:05 / kbh
Cations	38.6	meq/L				A1030 E	10/18/13 12:05 / kbh
Solids, Total Dissolved Calculated	2400	mg/L				A1030 E	10/18/13 12:05 / kbh
TDS Balance (0.80 - 1.20)	1.02					A1030 E	10/18/13 12:05 / kbh

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
H - Analysis performed past recommended holding time.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility
Lab ID: C13100454-031
Client Sample ID: 6995

Revised Date: 11/04/13
Report Date: 10/24/13
Collection Date: 10/09/13 15:00
DateReceived: 10/11/13
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Carbonate as CO3	ND	mg/L		5		A2320 B	10/12/13 00:08 / jba
Bicarbonate as HCO3	260	mg/L		5		A2320 B	10/12/13 00:08 / jba
Calcium	146	mg/L		1		E200.7	10/14/13 16:36 / sf
Chloride	66	mg/L	D	2		E300.0	10/12/13 20:49 / wc
Magnesium	69	mg/L		1		E200.7	10/14/13 16:36 / sf
Potassium	18	mg/L		1		E200.7	10/14/13 16:36 / sf
Sodium	419	mg/L		1		E200.7	10/14/13 16:36 / sf
Sulfate	1120	mg/L	D	8		E300.0	10/12/13 20:49 / wc
PHYSICAL PROPERTIES							
Conductivity @ 25 C	2800	umhos/cm		1		A2510 B	10/14/13 09:39 / alp
pH	7.57	s.u.	H	0.01		A4500-H B	10/14/13 09:39 / alp
Solids, Total Dissolved TDS @ 180 C	2150	mg/L		20		A2540 C	10/14/13 16:24 / tmm
METALS - DISSOLVED							
Arsenic	0.003	mg/L		0.001		E200.8	10/15/13 20:35 / clm
Iron	0.11	mg/L		0.03		E200.7	10/31/13 16:52 / sf
Molybdenum	ND	mg/L		0.01		E200.8	10/15/13 20:35 / clm
Selenium	0.002	mg/L		0.001		E200.8	10/15/13 20:35 / clm
Uranium	0.0083	mg/L		0.0003		E200.8	10/15/13 20:35 / clm
DATA QUALITY							
A/C Balance (± 5)	3.45	%				A1030 E	10/18/13 12:05 / kbh
Anions	29.5	meq/L				A1030 E	10/18/13 12:05 / kbh
Cations	31.6	meq/L				A1030 E	10/18/13 12:05 / kbh
Solids, Total Dissolved Calculated	2000	mg/L				A1030 E	10/18/13 12:05 / kbh
TDS Balance (0.80 - 1.20)	1.09					A1030 E	10/18/13 12:05 / kbh

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
H - Analysis performed past recommended holding time.

QA/QC Summary Report

Prepared by Casper, WY Branch

Revised Date: 11/04/13
Report Date: 10/24/13
Work Order: C13100454

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: A2310 B										Batch: R179484
Sample ID: MBLK		Method Blank				Run: MANTECH_131014A				10/14/13 07:21
Acidity, Total as CaCO3		2	mg/L	1						
Sample ID: LCS_131014		Laboratory Control Sample				Run: MANTECH_131014A				10/14/13 07:41
Acidity, Total as CaCO3		914	mg/L	5.0	107	80	120			
Sample ID: C13100403-001CDUP		Sample Duplicate				Run: MANTECH_131014A				10/14/13 07:50
Acidity, Total as CaCO3		2.20	mg/L	5.0					20	

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

QA/QC Summary Report

Prepared by Casper, WY Branch

Revised Date: 11/04/13

Client: Rio Algom Mining Corporation LLC **Report Date:** 10/24/13

Project: Lisbon, UT Facility **Work Order:** C13100454

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: A2320 B										Batch: R179456
Sample ID: MBLK	3	Method Blank				Run: MANTECH_131011C				10/11/13 14:59
Alkalinity, Total as CaCO3		ND	mg/L	2						
Carbonate as CO3		ND	mg/L	1						
Bicarbonate as HCO3		ND	mg/L	1						
Sample ID: LCS_130917		Laboratory Control Sample				Run: MANTECH_131011C				10/11/13 15:14
Alkalinity, Total as CaCO3		262	mg/L	5.0	105	90	110			
Sample ID: C13100417-006ADUP	3	Sample Duplicate				Run: MANTECH_131011C				10/11/13 16:49
Alkalinity, Total as CaCO3		323	mg/L	5.0				2.7	10	
Carbonate as CO3		ND	mg/L	5.0					10	
Bicarbonate as HCO3		394	mg/L	5.0				2.7	10	
Sample ID: C13100417-007AMS		Sample Matrix Spike				Run: MANTECH_131011C				10/11/13 17:07
Alkalinity, Total as CaCO3		552	mg/L	5.0	104	80	120			
Sample ID: C13100454-005ADUP	3	Sample Duplicate				Run: MANTECH_131011C				10/11/13 19:37
Alkalinity, Total as CaCO3		306	mg/L	5.0				2.9	10	
Carbonate as CO3		ND	mg/L	5.0					10	
Bicarbonate as HCO3		374	mg/L	5.0				2.9	10	
Sample ID: C13100454-006AMS		Sample Matrix Spike				Run: MANTECH_131011C				10/11/13 19:53
Alkalinity, Total as CaCO3		446	mg/L	5.0	103	80	120			
Sample ID: C13100454-025ADUP	3	Sample Duplicate				Run: MANTECH_131011C				10/11/13 23:12
Alkalinity, Total as CaCO3		170	mg/L	5.0				0.1	10	
Carbonate as CO3		ND	mg/L	5.0					10	
Bicarbonate as HCO3		207	mg/L	5.0				0.1	10	
Sample ID: C13100454-026AMS		Sample Matrix Spike				Run: MANTECH_131011C				10/11/13 23:28
Alkalinity, Total as CaCO3		441	mg/L	5.0	103	80	120			
Sample ID: C13100455-002AMS		Sample Matrix Spike				Run: MANTECH_131011C				10/12/13 02:32
Alkalinity, Total as CaCO3		1430	mg/L	5.0	96	80	120			
Sample ID: C13100460-006ADUP	3	Sample Duplicate				Run: MANTECH_131011C				10/12/13 05:05
Alkalinity, Total as CaCO3		244	mg/L	5.0				3.2	10	
Carbonate as CO3		4.34	mg/L	5.0					10	
Bicarbonate as HCO3		289	mg/L	5.0				3.6	10	

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

QA/QC Summary Report

Prepared by Casper, WY Branch

Revised Date: 11/04/13
Report Date: 10/24/13
Work Order: C13100454

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: A2320 B									Batch: 131014_1_ALK-W	
Sample ID: MBLK1_131014_	3	Method Blank				Run: TTR-ALK_131014A			10/14/13 09:54	
Alkalinity, Total as CaCO3		1	mg/L	1						
Carbonate as CO3		ND	mg/L	1						
Bicarbonate as HCO3		2	mg/L	1						
Sample ID: LCS_130618		Laboratory Control Sample				Run: TTR-ALK_131014A			10/14/13 10:01	
Alkalinity, Total as CaCO3		1250	mg/L	5.0	100	90	110			
Sample ID: C13100454-014ADUP	3	Sample Duplicate				Run: TTR-ALK_131014A			10/14/13 10:17	
Alkalinity, Total as CaCO3		3600	mg/L	5.0				2.8	10	
Carbonate as CO3		150	mg/L	5.0				0.0	10	
Bicarbonate as HCO3		4080	mg/L	5.0				3.0	10	
Sample ID: C13100454-014AMS		Sample Matrix Spike				Run: TTR-ALK_131014A			10/14/13 10:25	
Alkalinity, Total as CaCO3		6400	mg/L	5.0	116	80	120			

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

QA/QC Summary Report

Prepared by Casper, WY Branch

Revised Date: 11/04/13
Report Date: 10/24/13
Work Order: C13100454

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: A2510 B									Analytical Run: PHSC_101-C_131011A	
Sample ID: CCV - SC 1413		Continuing Calibration Verification Standard							10/11/13 11:06	
Conductivity @ 25 C		1400	umhos/cm	5.0	99	90	110			
Method: A2510 B									Batch: R179398	
Sample ID: SC 100		Initial Calibration Verification Standard				Run: PHSC_101-C_131011A			10/11/13 08:33	
Conductivity @ 25 C		96.8	umhos/cm	5.0	97	90	110			
Sample ID: SC 2ND 1413		Laboratory Control Sample				Run: PHSC_101-C_131011A			10/11/13 08:45	
Conductivity @ 25 C		1400	umhos/cm	5.0	99	90	110			
Sample ID: MBLK		Method Blank				Run: PHSC_101-C_131011A			10/11/13 10:00	
Conductivity @ 25 C		2	umhos/cm	0.7						
Sample ID: C13100454-005ADUP		Sample Duplicate				Run: PHSC_101-C_131011A			10/11/13 14:57	
Conductivity @ 25 C		807	umhos/cm	5.0				0.1	10	
Sample ID: C13100454-014ADUP		Sample Duplicate				Run: PHSC_101-C_131011A			10/11/13 15:27	
Conductivity @ 25 C		17600	umhos/cm	5.0				0.2	10	
Sample ID: C13100454-024ADUP		Sample Duplicate				Run: PHSC_101-C_131011A			10/11/13 16:22	
Conductivity @ 25 C		559	umhos/cm	5.0				0.0	10	
Sample ID: C13100454-030ADUP		Sample Duplicate				Run: PHSC_101-C_131011A			10/11/13 16:43	
Conductivity @ 25 C		3160	umhos/cm	5.0				0.2	10	
Method: A2510 B									Analytical Run: PHSC_101-C_131014A	
Sample ID: CCV - SC 1413		Continuing Calibration Verification Standard							10/14/13 10:45	
Conductivity @ 25 C		1390	umhos/cm	5.0	99	90	110			
Method: A2510 B									Batch: R179463	
Sample ID: SC 100		Initial Calibration Verification Standard				Run: PHSC_101-C_131014A			10/14/13 08:37	
Conductivity @ 25 C		96.3	umhos/cm	5.0	96	90	110			
Sample ID: SC 2ND 1413		Laboratory Control Sample				Run: PHSC_101-C_131014A			10/14/13 08:49	
Conductivity @ 25 C		1400	umhos/cm	5.0	99	90	110			
Sample ID: MBLK		Method Blank				Run: PHSC_101-C_131014A			10/14/13 09:36	
Conductivity @ 25 C		2	umhos/cm	0.7						
Sample ID: C13100457-001ADUP		Sample Duplicate				Run: PHSC_101-C_131014A			10/14/13 10:09	
Conductivity @ 25 C		4910	umhos/cm	5.0				0.1	10	

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

QA/QC Summary Report

Prepared by Casper, WY Branch

Revised Date: 11/04/13
Report Date: 10/24/13
Work Order: C13100454

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: A2540 C										Batch: TDS131011A
Sample ID: MB-1_131011A		Method Blank				Run: BAL-19_131011B				10/11/13 15:13
Solids, Total Dissolved TDS @ 180 C		ND	mg/L	10						
Sample ID: LCS-2_131011A		Laboratory Control Sample				Run: BAL-19_131011B				10/11/13 15:13
Solids, Total Dissolved TDS @ 180 C		2000	mg/L	20	100	90	110			
Sample ID: C13100417-008A MS		Sample Matrix Spike				Run: BAL-19_131011B				10/11/13 15:19
Solids, Total Dissolved TDS @ 180 C		1730	mg/L	11	99	90	110			
Sample ID: C13100453-006B DUP		Sample Duplicate				Run: BAL-19_131011B				10/11/13 15:22
Solids, Total Dissolved TDS @ 180 C		1320	mg/L	20				0.9	5	
Method: A2540 C										Batch: TDS131014A
Sample ID: MB-1_131014A		Method Blank				Run: BAL-19_131014A				10/14/13 16:13
Solids, Total Dissolved TDS @ 180 C		ND	mg/L	10						
Sample ID: LCS-2_131014A		Laboratory Control Sample				Run: BAL-19_131014A				10/14/13 16:16
Solids, Total Dissolved TDS @ 180 C		2030	mg/L	20	101	90	110			
Sample ID: C13100454-005A DUP		Sample Duplicate				Run: BAL-19_131014A				10/14/13 16:16
Solids, Total Dissolved TDS @ 180 C		514	mg/L	10				0.6	5	
Sample ID: C13100454-006A MS		Sample Matrix Spike				Run: BAL-19_131014A				10/14/13 16:17
Solids, Total Dissolved TDS @ 180 C		1680	mg/L	11	103	90	110			
Sample ID: C13100454-015A DUP		Sample Duplicate				Run: BAL-19_131014A				10/14/13 16:19
Solids, Total Dissolved TDS @ 180 C		558	mg/L	10				0.9	5	
Sample ID: C13100454-025A DUP		Sample Duplicate				Run: BAL-19_131014A				10/14/13 16:22
Solids, Total Dissolved TDS @ 180 C		356	mg/L	10				1.1	5	
Sample ID: C13100454-026A MS		Sample Matrix Spike				Run: BAL-19_131014A				10/14/13 16:23
Solids, Total Dissolved TDS @ 180 C		1480	mg/L	11	101	90	110			
Sample ID: C13100459-008B MS		Sample Matrix Spike				Run: BAL-19_131014A				10/14/13 16:52
Solids, Total Dissolved TDS @ 180 C		7590	mg/L	40	93	90	110			
Sample ID: C13100464-004A DUP		Sample Duplicate				Run: BAL-19_131014A				10/14/13 16:55
Solids, Total Dissolved TDS @ 180 C		259	mg/L	10				1.9	5	

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

QA/QC Summary Report

Prepared by Casper, WY Branch

Revised Date: 11/04/13
Report Date: 10/24/13
Work Order: C13100454

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: **A4500-H B**									Analytical Run: PHSC_101-C_131011A	
Sample ID: **pH 6.86**	Initial Calibration Verification Standard								10/11/13 08:30	
pH		6.84	s.u.	0.010	100	98	102			
Sample ID: **CCV - pH 7**	Continuing Calibration Verification Standard								10/11/13 11:03	
pH		6.99	s.u.	0.010	100	98	102			
Method: **A4500-H B**									Batch: R179398	
Sample ID: **C13100454-005ADUP**	Sample Duplicate					Run: PHSC_101-C_131011A			10/11/13 14:57	
pH		7.42	s.u.	0.010				0.0	3	
Sample ID: **C13100454-014ADUP**	Sample Duplicate					Run: PHSC_101-C_131011A			10/11/13 15:27	
pH		8.40	s.u.	0.010				0.1	3	
Sample ID: **C13100454-024ADUP**	Sample Duplicate					Run: PHSC_101-C_131011A			10/11/13 16:22	
pH		7.54	s.u.	0.010				0.1	3	
Sample ID: **C13100454-030ADUP**	Sample Duplicate					Run: PHSC_101-C_131011A			10/11/13 16:43	
pH		7.54	s.u.	0.010				0.1	3	
Method: **A4500-H B**									Analytical Run: PHSC_101-C_131014A	
Sample ID: **pH 6.86**	Initial Calibration Verification Standard								10/14/13 08:34	
pH		6.83	s.u.	0.010	100	98	102			
Sample ID: **CCV - pH 7**	Continuing Calibration Verification Standard								10/14/13 10:42	
pH		6.98	s.u.	0.010	100	98	102			
Method: **A4500-H B**									Batch: R179463	
Sample ID: **C13100457-001ADUP**	Sample Duplicate					Run: PHSC_101-C_131014A			10/14/13 10:09	
pH		6.89	s.u.	0.010				0.0	3	

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

QA/QC Summary Report

Prepared by Casper, WY Branch

Revised Date: 11/04/13

Client: Rio Algom Mining Corporation LLC **Report Date:** 10/24/13

Project: Lisbon, UT Facility **Work Order:** C13100454

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E200.7									Analytical Run: ICP2-C_131031A	
Sample ID: ICV		Initial Calibration Verification Standard							10/31/13 10:47	
Iron		5.15	mg/L	0.030	103	95	105			
Sample ID: ICSA		Interference Check Sample A							10/31/13 11:15	
Iron		193	mg/L	0.030	97	80	120			
Sample ID: ICSAB		Interference Check Sample AB							10/31/13 11:19	
Iron		196	mg/L	0.030	98	80	120			
Method: E200.7									Batch: R180267	
Sample ID: MB-131031A		Method Blank				Run: ICP2-C_131031A			10/31/13 11:44	
Iron		ND	mg/L	0.001						
Sample ID: LFB-131031A		Laboratory Fortified Blank				Run: ICP2-C_131031A			10/31/13 11:48	
Iron		0.976	mg/L	0.030	98	85	115			
Sample ID: C13101073-003BMS2		Sample Matrix Spike				Run: ICP2-C_131031A			10/31/13 17:08	
Iron		2.03	mg/L	0.030	100	70	130			
Sample ID: C13101073-003BMSD2		Sample Matrix Spike Duplicate				Run: ICP2-C_131031A			10/31/13 17:12	
Iron		2.04	mg/L	0.030	100	70	130	0.2	20	

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

QA/QC Summary Report

Prepared by Casper, WY Branch

Revised Date: 11/04/13
Report Date: 10/24/13
Work Order: C13100454

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E200.7								Analytical Run: ICP4-C_131014A		
Sample ID: ICV	7	Initial Calibration Verification Standard							10/14/13 12:03	
Calcium		50.3	mg/L	0.50	101	95	105			
Iron		4.95	mg/L	0.030	99	95	105			
Magnesium		50.4	mg/L	0.50	101	95	105			
Molybdenum		0.963	mg/L	0.10	96	95	105			
Potassium		49.3	mg/L	0.50	99	95	105			
Sodium		50.0	mg/L	0.50	100	95	105			
Uranium		4.86	mg/L	1.0	97	95	105			
Sample ID: ICSA	7	Interference Check Sample A							10/14/13 12:18	
Calcium		465	mg/L	0.50	93	80	120			
Iron		176	mg/L	0.030	88	80	120			
Magnesium		505	mg/L	0.50	101	80	120			
Molybdenum		0.00236	mg/L	0.10						
Potassium		-0.00382	mg/L	0.50						
Sodium		-0.104	mg/L	0.50						
Uranium		0.512	mg/L	1.0						
Sample ID: ICSAB	7	Interference Check Sample AB							10/14/13 12:22	
Calcium		467	mg/L	0.50	93	80	120			
Iron		177	mg/L	0.030	88	80	120			
Magnesium		508	mg/L	0.50	102	80	120			
Molybdenum		-0.00235	mg/L	0.10						
Potassium		0.00282	mg/L	0.50						
Sodium		-0.148	mg/L	0.50						
Uranium		0.488	mg/L	1.0						
Method: E200.7									Batch: R179524	
Sample ID: MB-131014A	7	Method Blank				Run: ICP4-C_131014A			10/14/13 12:41	
Calcium		ND	mg/L	0.02						
Iron		ND	mg/L	0.002						
Magnesium		0.03	mg/L	0.01						
Molybdenum		ND	mg/L	0.003						
Potassium		ND	mg/L	0.04						
Sodium		ND	mg/L	0.2						
Uranium		ND	mg/L	0.3						
Sample ID: LFB-131014A	7	Laboratory Fortified Blank				Run: ICP4-C_131014A			10/14/13 12:44	
Calcium		48.4	mg/L	0.50	97	85	115			
Iron		0.962	mg/L	0.030	96	85	115			
Magnesium		48.2	mg/L	0.50	96	85	115			
Molybdenum		0.943	mg/L	0.10	94	85	115			
Potassium		48.0	mg/L	0.50	96	85	115			
Sodium		48.4	mg/L	0.50	97	85	115			
Uranium		4.80	mg/L	1.0	96	85	115			

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

QA/QC Summary Report

Prepared by Casper, WY Branch

Revised Date: 11/04/13
Report Date: 10/24/13
Work Order: C13100454

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E200.7										Batch: R179524
Sample ID: C13100454-001BMS2	7	Sample Matrix Spike				Run: ICP4-C_131014A				10/14/13 12:55
Calcium		372	mg/L	1.0	92	70	130			
Iron		1.91	mg/L	0.030	94	70	130			
Magnesium		187	mg/L	1.0	99	70	130			
Molybdenum		1.91	mg/L	0.0059	93	70	130			
Potassium		105	mg/L	1.0	99	70	130			
Sodium		120	mg/L	1.0	100	70	130			
Uranium		9.82	mg/L	0.61	96	70	130			
Sample ID: C13100454-001BMSD2	7	Sample Matrix Spike Duplicate				Run: ICP4-C_131014A				10/14/13 12:59
Calcium		370	mg/L	1.0	90	70	130	0.6	20	
Iron		1.92	mg/L	0.030	94	70	130	0.5	20	
Magnesium		186	mg/L	1.0	98	70	130	0.6	20	
Molybdenum		1.88	mg/L	0.0059	92	70	130	1.4	20	
Potassium		101	mg/L	1.0	95	70	130	4.0	20	
Sodium		119	mg/L	1.0	98	70	130	1.4	20	
Uranium		9.55	mg/L	0.61	94	70	130	2.8	20	
Sample ID: C13100454-010BMS2	7	Sample Matrix Spike				Run: ICP4-C_131014A				10/14/13 13:50
Calcium		359	mg/L	1.0	91	70	130			
Iron		2.05	mg/L	0.030	95	70	130			
Magnesium		223	mg/L	1.0	96	70	130			
Molybdenum		1.89	mg/L	0.0059	93	70	130			
Potassium		103	mg/L	1.0	93	70	130			
Sodium		135	mg/L	1.0	96	70	130			
Uranium		9.65	mg/L	0.61	95	70	130			
Sample ID: C13100454-010BMSD2	7	Sample Matrix Spike Duplicate				Run: ICP4-C_131014A				10/14/13 13:54
Calcium		354	mg/L	1.0	86	70	130	1.5	20	
Iron		1.99	mg/L	0.030	92	70	130	3.0	20	
Magnesium		221	mg/L	1.0	94	70	130	0.7	20	
Molybdenum		1.86	mg/L	0.0059	91	70	130	1.6	20	
Potassium		99.8	mg/L	1.0	90	70	130	3.0	20	
Sodium		132	mg/L	1.0	94	70	130	2.1	20	
Uranium		9.36	mg/L	0.61	92	70	130	3.0	20	
Sample ID: C13100454-019BMS2	7	Sample Matrix Spike				Run: ICP4-C_131014A				10/14/13 14:46
Calcium		213	mg/L	1.0	91	70	130			
Iron		1.99	mg/L	0.030	96	70	130			
Magnesium		143	mg/L	1.0	96	70	130			
Molybdenum		1.94	mg/L	0.0059	94	70	130			
Potassium		97.6	mg/L	1.0	92	70	130			
Sodium		130	mg/L	1.0	95	70	130			
Uranium		9.56	mg/L	0.61	94	70	130			
Sample ID: C13100454-019BMSD2	7	Sample Matrix Spike Duplicate				Run: ICP4-C_131014A				10/14/13 15:30
Calcium		216	mg/L	1.0	94	70	130	1.2	20	

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

QA/QC Summary Report

Prepared by Casper, WY Branch

Revised Date: 11/04/13
Report Date: 10/24/13
Work Order: C13100454

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E200.7										Batch: R179524
Sample ID: C13100454-019BMSD2	7	Sample Matrix Spike Duplicate				Run: ICP4-C_131014A				10/14/13 15:30
Iron		2.04	mg/L	0.030	98	70	130	2.5	20	
Magnesium		144	mg/L	1.0	97	70	130	1.0	20	
Molybdenum		1.98	mg/L	0.0059	96	70	130	2.0	20	
Potassium		104	mg/L	1.0	99	70	130	6.6	20	
Sodium		134	mg/L	1.0	98	70	130	2.4	20	
Uranium		10.0	mg/L	0.61	98	70	130	4.6	20	
Sample ID: C13100454-028BMS2	7	Sample Matrix Spike				Run: ICP4-C_131014A				10/14/13 16:21
Calcium		476	mg/L	1.0	90	70	130			
Iron		4.82	mg/L	0.030	94	70	130			
Magnesium		309	mg/L	1.0	94	70	130			
Molybdenum		4.75	mg/L	0.015	93	70	130			
Potassium		249	mg/L	1.0	93	70	130			
Sodium		518	mg/L	1.0	89	70	130			
Uranium		23.6	mg/L	1.5	93	70	130			
Sample ID: C13100454-028BMSD2	7	Sample Matrix Spike Duplicate				Run: ICP4-C_131014A				10/14/13 16:25
Calcium		479	mg/L	1.0	92	70	130	0.7	20	
Iron		4.82	mg/L	0.030	95	70	130	0.1	20	
Magnesium		310	mg/L	1.0	94	70	130	0.1	20	
Molybdenum		4.79	mg/L	0.015	94	70	130	0.8	20	
Potassium		255	mg/L	1.0	95	70	130	2.3	20	
Sodium		526	mg/L	1.0	91	70	130	1.4	20	
Uranium		23.7	mg/L	1.5	93	70	130	0.4	20	

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

QA/QC Summary Report

Prepared by Casper, WY Branch

Revised Date: 11/04/13
Report Date: 10/24/13
Work Order: C13100454

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E200.7									Analytical Run: ICP4-C_131021A	
Sample ID: ICV	4	Initial Calibration Verification Standard							10/21/13 13:36	
Calcium		51.2	mg/L	0.50	102	95	105			
Magnesium		50.7	mg/L	0.50	101	95	105			
Potassium		50.3	mg/L	0.50	101	95	105			
Sodium		50.6	mg/L	0.50	101	95	105			
Sample ID: ICSA	4	Interference Check Sample A							10/21/13 13:50	
Calcium		470	mg/L	0.50	94	80	120			
Magnesium		511	mg/L	0.50	102	80	120			
Potassium		-0.0117	mg/L	0.50						
Sodium		-0.0569	mg/L	0.50						
Sample ID: ICSAB	4	Interference Check Sample AB							10/21/13 13:55	
Calcium		475	mg/L	0.50	95	80	120			
Magnesium		516	mg/L	0.50	103	80	120			
Potassium		0.00212	mg/L	0.50						
Sodium		-0.310	mg/L	0.50						
Method: E200.7									Batch: R179835	
Sample ID: MB-131021A	4	Method Blank				Run: ICP4-C_131021A			10/21/13 14:13	
Calcium		ND	mg/L	0.02						
Magnesium		0.04	mg/L	0.01						
Potassium		ND	mg/L	0.04						
Sodium		ND	mg/L	0.2						
Sample ID: LFB-131021A	4	Laboratory Fortified Blank				Run: ICP4-C_131021A			10/21/13 14:17	
Calcium		49.2	mg/L	0.50	98	85	115			
Magnesium		48.6	mg/L	0.50	97	85	115			
Potassium		48.2	mg/L	0.50	96	85	115			
Sodium		48.3	mg/L	0.50	97	85	115			
Sample ID: C13100222-010CMS2	4	Sample Matrix Spike				Run: ICP4-C_131021A			10/21/13 15:30	
Calcium		531	mg/L	1.0		70	130			A
Magnesium		160	mg/L	1.0	92	70	130			
Potassium		99.2	mg/L	1.0	90	70	130			
Sodium		185	mg/L	1.0	87	70	130			
Sample ID: C13100222-010CMSD2	4	Sample Matrix Spike Duplicate				Run: ICP4-C_131021A			10/21/13 15:49	
Calcium		532	mg/L	1.0		70	130	0.2	20	A
Magnesium		159	mg/L	1.0	91	70	130	0.6	20	
Potassium		101	mg/L	1.0	92	70	130	1.4	20	
Sodium		188	mg/L	1.0	89	70	130	1.1	20	

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

A - The analyte level was greater than four times the spike level. In accordance with the method % recovery is not calculated.

QA/QC Summary Report

Prepared by Casper, WY Branch

Revised Date: 11/04/13
Report Date: 10/24/13
Work Order: C13100454

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E200.8									Analytical Run: ICPMS2-C_131015A	
Sample ID: ICV	4	Initial Calibration Verification Standard							10/15/13 17:21	
Arsenic		0.0503	mg/L	0.0010	101	90	110			
Molybdenum		0.0506	mg/L	0.0010	101	90	110			
Selenium		0.0504	mg/L	0.0010	101	90	110			
Uranium		0.0500	mg/L	0.00030	100	90	110			
Method: E200.8									Batch: R179577	
Sample ID: LRB	4	Method Blank				Run: ICPMS2-C_131015A			10/15/13 12:38	
Arsenic		0.0001	mg/L	0.00010						
Molybdenum		ND	mg/L	4E-05						
Selenium		ND	mg/L	0.0002						
Uranium		ND	mg/L	1E-05						
Sample ID: LFB	4	Laboratory Fortified Blank				Run: ICPMS2-C_131015A			10/15/13 12:41	
Arsenic		0.0515	mg/L	0.0010	103	85	115			
Molybdenum		0.0520	mg/L	0.0010	104	85	115			
Selenium		0.0518	mg/L	0.0010	104	85	115			
Uranium		0.0505	mg/L	0.00030	101	85	115			
Sample ID: C13100454-001BMS4	4	Sample Matrix Spike				Run: ICPMS2-C_131015A			10/15/13 17:40	
Arsenic		0.0559	mg/L	0.0010	112	70	130			
Molybdenum		0.0524	mg/L	0.0010	104	70	130			
Selenium		0.123	mg/L	0.0010	110	70	130			
Uranium		0.0620	mg/L	0.00030	109	70	130			
Sample ID: C13100454-001BMSD4	4	Sample Matrix Spike Duplicate				Run: ICPMS2-C_131015A			10/15/13 17:43	
Arsenic		0.0550	mg/L	0.0010	110	70	130	1.6	20	
Molybdenum		0.0515	mg/L	0.0010	103	70	130	1.8	20	
Selenium		0.121	mg/L	0.0010	107	70	130	1.5	20	
Uranium		0.0604	mg/L	0.00030	106	70	130	2.6	20	
Sample ID: C13100454-011BMS4	4	Sample Matrix Spike				Run: ICPMS2-C_131015A			10/15/13 18:35	
Arsenic		0.0557	mg/L	0.0010	105	70	130			
Molybdenum		0.0564	mg/L	0.0010	104	70	130			
Selenium		0.0588	mg/L	0.0010	107	70	130			
Uranium		0.0547	mg/L	0.00030	106	70	130			
Sample ID: C13100454-011BMSD4	4	Sample Matrix Spike Duplicate				Run: ICPMS2-C_131015A			10/15/13 18:38	
Arsenic		0.0557	mg/L	0.0010	105	70	130	0.1	20	
Molybdenum		0.0564	mg/L	0.0010	104	70	130	0.0	20	
Selenium		0.0590	mg/L	0.0010	108	70	130	0.3	20	
Uranium		0.0540	mg/L	0.00030	105	70	130	1.3	20	
Sample ID: C13100454-021BMS4	4	Sample Matrix Spike				Run: ICPMS2-C_131015A			10/15/13 19:43	
Arsenic		0.0561	mg/L	0.0010	108	70	130			
Molybdenum		0.0536	mg/L	0.0010	103	70	130			
Selenium		0.0554	mg/L	0.0010	109	70	130			

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

QA/QC Summary Report

Prepared by Casper, WY Branch

Revised Date: 11/04/13
Report Date: 10/24/13
Work Order: C13100454

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E200.8										Batch: R179577
Sample ID: C13100454-021BMS4	4	Sample Matrix Spike				Run: ICPMS2-C_131015A				10/15/13 19:43
Uranium		0.0520	mg/L	0.00030	103	70	130			
Sample ID: C13100454-021BMSD4	4	Sample Matrix Spike Duplicate				Run: ICPMS2-C_131015A				10/15/13 19:46
Arsenic		0.0557	mg/L	0.0010	107	70	130	0.7	20	
Molybdenum		0.0542	mg/L	0.0010	105	70	130	1.1	20	
Selenium		0.0554	mg/L	0.0010	109	70	130	0.1	20	
Uranium		0.0519	mg/L	0.00030	103	70	130	0.2	20	
Sample ID: C13100454-031BMS4	4	Sample Matrix Spike				Run: ICPMS2-C_131015A				10/15/13 20:38
Arsenic		0.110	mg/L	0.0010	107	70	130			
Molybdenum		0.118	mg/L	0.0010	109	70	130			
Selenium		0.106	mg/L	0.0010	104	70	130			
Uranium		0.117	mg/L	0.00030	109	70	130			
Sample ID: C13100454-031BMSD4	4	Sample Matrix Spike Duplicate				Run: ICPMS2-C_131015A				10/15/13 20:41
Arsenic		0.108	mg/L	0.0010	105	70	130	2.3	20	
Molybdenum		0.116	mg/L	0.0010	107	70	130	1.5	20	
Selenium		0.102	mg/L	0.0010	101	70	130	3.1	20	
Uranium		0.116	mg/L	0.00030	107	70	130	1.6	20	

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

QA/QC Summary Report

Prepared by Casper, WY Branch

Revised Date: 11/04/13
Report Date: 10/24/13
Work Order: C13100454

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E300.0									Analytical Run: IC2-C_131011A	
Sample ID: CCV-101113-04	2	Continuing Calibration Verification Standard							10/12/13 04:14	
Chloride		9.69	mg/L	1.0	97	90	110			
Sulfate		38.8	mg/L	1.0	97	90	110			
Sample ID: CCV-101113-05	2	Continuing Calibration Verification Standard							10/12/13 08:50	
Chloride		9.70	mg/L	1.0	97	90	110			
Sulfate		38.8	mg/L	1.0	97	90	110			
Sample ID: CCV-101113-06	2	Continuing Calibration Verification Standard							10/12/13 13:08	
Chloride		9.76	mg/L	1.0	98	90	110			
Sulfate		38.9	mg/L	1.0	97	90	110			
Sample ID: CCV-101113-07	2	Continuing Calibration Verification Standard							10/12/13 17:27	
Chloride		9.71	mg/L	1.0	97	90	110			
Sulfate		38.8	mg/L	1.0	97	90	110			
Method: E300.0									Batch: R179461	
Sample ID: ICB-101113	2	Method Blank				Run: IC2-C_131011A			10/11/13 15:01	
Chloride		ND	mg/L	0.03						
Sulfate		0.1	mg/L	0.07						
Sample ID: LFB-101113-01	2	Laboratory Fortified Blank				Run: IC2-C_131011A			10/11/13 15:19	
Chloride		9.79	mg/L	1.0	98	90	110			
Sulfate		39.1	mg/L	1.0	98	90	110			
Sample ID: C13100453-001BMS	2	Sample Matrix Spike				Run: IC2-C_131011A			10/12/13 05:27	
Chloride		246	mg/L	4.2	104	90	110			
Sulfate		3750	mg/L	17	102	90	110			
Sample ID: C13100453-001BMSD	2	Sample Matrix Spike Duplicate				Run: IC2-C_131011A			10/12/13 05:46	
Chloride		247	mg/L	4.2	105	90	110	0.6	20	
Sulfate		3750	mg/L	17	103	90	110	0.1	20	
Sample ID: C13100454-005AMS	2	Sample Matrix Spike				Run: IC2-C_131011A			10/12/13 09:45	
Chloride		31.3	mg/L	1.0	100	90	110			
Sulfate		238	mg/L	1.7	105	90	110			
Sample ID: C13100454-005AMSD	2	Sample Matrix Spike Duplicate				Run: IC2-C_131011A			10/12/13 10:04	
Chloride		31.2	mg/L	1.0	100	90	110	0.3	20	
Sulfate		238	mg/L	1.7	105	90	110	0.0	20	
Sample ID: C13100454-015AMS	2	Sample Matrix Spike				Run: IC2-C_131011A			10/12/13 14:04	
Chloride		63.0	mg/L	1.0	108	90	110			
Sulfate		164	mg/L	1.7	106	90	110			
Sample ID: C13100454-015AMSD	2	Sample Matrix Spike Duplicate				Run: IC2-C_131011A			10/12/13 14:22	
Chloride		62.5	mg/L	1.0	105	90	110	0.8	20	
Sulfate		163	mg/L	1.7	104	90	110	0.8	20	

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

QA/QC Summary Report

Prepared by Casper, WY Branch

Revised Date: 11/04/13
Report Date: 10/24/13
Work Order: C13100454

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E300.0										Batch: R179461
Sample ID: C13100454-025AMS	2	Sample Matrix Spike				Run: IC2-C_131011A				10/12/13 18:40
Chloride		30.9	mg/L	1.0	104	90	110			
Sulfate		195	mg/L	1.7	103	90	110			
Sample ID: C13100454-025AMSD	2	Sample Matrix Spike Duplicate				Run: IC2-C_131011A				10/12/13 18:59
Chloride		31.0	mg/L	1.0	105	90	110	0.4	20	
Sulfate		196	mg/L	1.7	103	90	110	0.0	20	
Method: E300.0									Analytical Run: IC2-C_131014A	
Sample ID: CCV-101413-02	2	Continuing Calibration Verification Standard								10/14/13 14:55
Chloride		9.80	mg/L	1.0	98	90	110			
Sulfate		38.9	mg/L	1.0	97	90	110			
Sample ID: CCV-101413-07	2	Continuing Calibration Verification Standard								10/15/13 17:42
Chloride		9.82	mg/L	1.0	98	90	110			
Sulfate		38.9	mg/L	1.0	97	90	110			
Method: E300.0										Batch: R179569
Sample ID: ICB-101413	2	Method Blank				Run: IC2-C_131014A				10/14/13 10:18
Chloride		ND	mg/L	0.03						
Sulfate		0.1	mg/L	0.07						
Sample ID: LFB-101413-01	2	Laboratory Fortified Blank				Run: IC2-C_131014A				10/14/13 10:37
Chloride		9.69	mg/L	1.0	97	90	110			
Sulfate		38.7	mg/L	1.0	97	90	110			
Sample ID: C13100454-001AMS	2	Sample Matrix Spike				Run: IC2-C_131014A				10/14/13 16:09
Chloride		63.1	mg/L	1.0	101	90	110			
Sulfate		970	mg/L	4.2	86	90	110			S
- Matrix spike recoveries outside the acceptance range are considered matrix-related.										
Sample ID: C13100454-001AMSD	2	Sample Matrix Spike Duplicate				Run: IC2-C_131014A				10/14/13 16:28
Chloride		61.9	mg/L	1.0	99	90	110	1.9	20	
Sulfate		962	mg/L	4.2	82	90	110	0.8	20	S
- Matrix spike recoveries outside the acceptance range are considered matrix-related.										

Qualifiers:

RL - Analyte reporting limit.
ND - Not detected at the reporting limit.
S - Spike recovery outside of advisory limits.

QA/QC Summary Report

Prepared by Casper, WY Branch

Revised Date: 11/04/13

Client: Rio Algom Mining Corporation LLC **Report Date:** 10/24/13

Project: Lisbon, UT Facility **Work Order:** C13100454

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E300.0									Analytical Run: IC2-C_131021A	
Sample ID: CCV-102113-01	2	Continuing Calibration Verification Standard							10/21/13 20:17	
Chloride		9.99	mg/L	1.0	100	90	110			
Sulfate		39.7	mg/L	1.0	99	90	110			
Method: E300.0									Batch: R179857	
Sample ID: ICB-102113	2	Method Blank				Run: IC2-C_131021A			10/21/13 19:03	
Chloride		ND	mg/L	0.03						
Sulfate		0.1	mg/L	0.07						
Sample ID: LFB-102113-01	2	Laboratory Fortified Blank				Run: IC2-C_131021A			10/21/13 19:40	
Chloride		9.72	mg/L	1.0	97	90	110			
Sulfate		38.3	mg/L	1.0	95	90	110			
Sample ID: LFBD-102113-01	2	Laboratory Fortified Blank Duplicate				Run: IC2-C_131021A			10/21/13 19:58	
Chloride		9.73	mg/L	1.0	97	90	110	0.1	20	
Sulfate		38.7	mg/L	1.0	96	90	110	1.0	20	
Sample ID: C13100728-001AMS	2	Sample Matrix Spike				Run: IC2-C_131021A			10/21/13 22:07	
Chloride		31.4	mg/L	1.0	104	90	110			
Sulfate		151	mg/L	1.7	104	90	110			
Sample ID: C13100728-001AMSD	2	Sample Matrix Spike Duplicate				Run: IC2-C_131021A			10/21/13 22:26	
Chloride		31.4	mg/L	1.0	104	90	110	0.0	20	
Sulfate		151	mg/L	1.7	104	90	110	0.1	20	

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

Workorder Receipt Checklist

Rio Algom Mining Corporation LLC

C13100454

Login completed by: Jillian Anderson
Date Received: 10/11/2013

Reviewed by: BL2000\khelm
Received by: cav

Reviewed Date: 10/14/2013
Carrier name: FedEx

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on all shipping container(s)/cooler(s)?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on all sample bottles?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time? (Exclude analyses that are considered field parameters such as pH, DO, Res Cl, Sulfite, Ferrous Iron, etc.)	Yes ☑	No ☐	
Temp Blank received in all shipping container(s)/cooler(s)?	Yes ☑	No ☐	Not Applicable ☐
Container/Temp Blank temperature:	0.4°C On Ice		
Water - VOA vials have zero headspace?	Yes ☐	No ☐	No VOA vials submitted ☑
Water - pH acceptable upon receipt?	Yes ☐	No ☑	Not Applicable ☐

Standard Reporting Procedures:

Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH, Dissolved Oxygen and Residual Chlorine, are qualified as being analyzed outside of recommended holding time.

Solid/soil samples are reported on a wet weight basis (as received) unless specifically indicated. If moisture corrected, data units are typically noted as –dry. For agricultural and mining soil parameters/characteristics, all samples are dried and ground prior to sample analysis.

Contact and Corrective Action Comments:

Samples for 7019 and 7020 were received at pH 9; 2 mLs of HNO3 were added to preserve to pH <2. Three coolers were received with Temperature Blanks; a blue Casper cooler at a temperature of 1.1 degrees C, C4165 cooler at 0.4 degrees C, and C-4151 cooler at 2.8 degrees C.

Chain of Custody and Analytical Request Record

ENERGY LABORATORIES

PLEASE PRINT- Provide as much information as possible.

Company Name: Rio Algom Mining Corp	Project Name, PWS, Permit, Etc.: Lisbon, UT Facility	Sample Origin State: UT	EPA/State Compliance: Yes ☐ No ☐
Report Mail Address: Montgomery and Associates. Results retrieved from Energy Source	Contact Name: John Laney; Phone/Fax: (520) 425-2219; Email: jlaney@clmontgomery.com		Sampler: (Please Print) Josh Kerns
Invoice Address: Email invoice to Gail, PO Box 218, Grants, NM 87020	Invoice Contact & Phone: Gail Alexander (505) 287-8851	Purchase Order:	Quote/Bottle Order: C3636

Special Report/Formats – ELI must be notified prior to sample submittal for the following:

☐ DW ☐ A2LA
☐ GSA ☐ EDD/EDT (Electronic Data) Format:_____
☐ POTW/WWTP ☐ LEVEL IV
☐ State: _____ ☐ NELAC
☐ Other: _____

RUSH

Contact ELI prior to RUSH sample submittal for charges and scheduling – See Instruction Page

Comments: metals samples filtered + preserved in field

Shipped by: Fed Ex Exp

Cooler ID(s): ELI-C

Receipt Temp: 1.1 °C

On Ice: (Yes) No

Custody Seal (Y) N

Intact (Y) N

Signature Match (Y) N

	SAMPLE IDENTIFICATION (Name, Location, Interval, etc.)	Collection Date	Collection Time	MATRIX	Number of Containers / Sample Type: A W S V B O / Air Water Soils/Solids Vegetation Bioassay Other	ANALYSIS REQUESTED: C3636	SEE ATTACHED	Normal Turnaround (TAT)
1	7023	10OCT2013	0900	W	X			
2	7024	10OCT2013	0950	W	X			
3	7016	10OCT2013	1010	W	X			
4	7018	10OCT2013	1015	W	X			
5	7017	10OCT2013	1105	W	X			
6	7025	10OCT2013	1130	W	X			
7	~~7026~~ JTC	JTC ~~10OCT2013~~	JTC ~~1135~~	J	X			
8	7027	10OCT2013	1205	W	X			
9	~~7028~~ JTC							
10								

C13100454

LABORATORY USE ONLY

Custody Record MUST be Signed	Relinquished by (print): Josh Kerns	Date/Time: 10/10/13 1400	Signature:	Received by (print): / Date/Time: / Signature:
	Relinquished by (print):	Date/Time:	Signature:	Received by (print): / Date/Time: / Signature:
	Sample Disposal: Return to Client: _____ Lab Disposal: _____			Received by Laboratory: Date/Time: 10/11/13 9:40 Signature:

In certain circumstances, samples submitted to Energy Laboratories, Inc. may be subcontracted to other certified laboratories in order to complete the analysis requested. This serves as notice of this possibility. All sub-contract data will be clearly noted on your analytical report.
Visit our web site at www.energylab.com for additional information, downloadable fee schedule, forms, and links.

Chain of Custody and Analytical Request Record

PLEASE PRINT- Provide as much information as possible.

Company Name: Rio Algom Mining Corp	Project Name, PWS, Permit, Etc.: Lisbon, UT Facility	Sample Origin State: UT	EPA/State Compliance: Yes ☐ No ☐
Report Mail Address: Montgomery and Associates Results retrieved from Energy Source	Contact Name: John Laney Phone/Fax: (520) 425-2219 Email: jlaney@clmontgomery.com		Sampler: (Please Print) Josh Kerns
Invoice Address: Email invoice to Gail PO Box 218 Grants, NM 87020	Invoice Contact & Phone: Gail Alexander (505) 287-8851	Purchase Order:	Quote/Bottle Order: C3636

Special Report/Formats – ELI must be notified prior to sample submittal for the following:

☐ DW ☐ A2LA
☐ GSA ☐ EDD/EDT (Electronic Data) Format: _____
☐ POTW/WWTP ☐ LEVEL IV
☐ State: _____ ☐ NELAC
☐ Other: _____

Number of Containers
Sample Type: A W S V B O
Air Water Soils/Solids Vegetation Bioassay Other

ANALYSIS REQUESTED

SEE ATTACHED

Normal Turnaround (TAT)

RUSH

Contact ELI prior to **RUSH** sample submittal for charges and scheduling – See Instruction Page

Comments: Metals preserved and filtered in the field —

Shipped by: FedEx Exp
Cooler ID(s): EL3-C
Receipt Temp: 1.1° °C
On Ice: (Yes) No
Custody Seal Intact: Y N
Signature Match: Y N

	SAMPLE IDENTIFICATION (Name, Location, Interval, etc.)	Collection Date	Collection Time	MATRIX	C3636
1	7011	08OCT2013	1245	W	X
2	7012	08OCT2013	1320	W	X
3	7013	08OCT2013	1430	W	X
4	7014	08OCT2013	1515	W	X
5	7015	08OCT2013	1535	W	X
6	7019	09OCT2013	0955 ~~1055~~	W	X
7	7020	09OCT2013	1055	W	X
8	7021	09OCT2013	1110	W	X
9	7022	09OCT2013	1205	W	X
10					

C13100454

LABORATORY USE ONLY

Custody Record MUST be Signed

Relinquished by (print): Josh Kerns	Date/Time: 10/11/13 1410	Signature:	Received by (print):	Date/Time: Signature:
Relinquished by (print):	Date/Time:	Signature:	Received by (print):	Date/Time: Signature:
Sample Disposal: Return to Client: _____ Lab Disposal: _____			Received by Laboratory:	Date/Time: 10-11-13 9:40 Signature:

In certain circumstances, samples submitted to Energy Laboratories, Inc. may be subcontracted to other certified laboratories in order to complete the analysis requested.
This serves as notice of this possibility. All sub-contract data will be clearly notated on your analytical report.
Visit our web site at www.energylab.com for additional information, downloadable fee schedule, forms, and links.

Chain of Custody and Analytical Request Record

PLEASE PRINT- Provide as much information as possible.

Company Name:	Project Name, PWS, Permit, Etc.	Sample Origin	EPA/State Compliance:
Rio Algom Mining Corp	Lisbon, UT Facility	State: UT	Yes ☐ No ☐

Report Mail Address:	Contact Name:	Phone/Fax:	Email:	Sampler: (Please Print)
Montgomery and Associates Results retrieved from Energy Source	John Laney	(520) 425-2219	jlaney@clmontgomery.com	Brandon Myers

Invoice Address:	Invoice Contact & Phone:	Purchase Order:	Quote/Bottle Order:
Email invoice to Gail PO Box 218 Grants, NM 87020	Gail Alexander (505) 287-8851		C3636

Special Report/Formats – ELI must be notified prior to sample submittal for the following:

- ☐ DW
- ☐ GSA
- ☐ POTW/WWTP
- ☐ State: _____
- ☐ Other: _____
- ☐ A2LA
- ☐ EDD/EDT (Electronic Data) Format: _____
- ☐ LEVEL IV
- ☐ NELAC

Number of Containers
Sample Type: A W S V B O
Air Water Soils/Solids Vegetation Bioassay Other

ANALYSIS REQUESTED

RUSH

Contact ELI prior to **RUSH** sample submittal for charges and scheduling – See Instruction Page

Comments: Metals simple filtered + preserved in field

Shipped by: Fed Ex Exp

Cooler ID(s): C-4165

Receipt Temp: .4 °C

On Ice: (Yes) No

Custody Seal Intact: Y N

Signature Match: Y N

SAMPLE IDENTIFICATION (Name, Location, Interval, etc.)	Collection Date	Collection Time	MATRIX	C3636	SEE ATTACHED	Normal Turnaround (TAT)
1 6981	08/08/2013	1240	water	X		
2 6982		1325		X		
3 6983		1405		X		
4 6984		1435		X		
5 6985		1445		X		
6 6986		1520		X		
7 6987		1550		X		
8 6988	09/08/2013	0820		X		
9 6989		0920		X		
10 6990		1000		X		

CB100454

LABORATORY USE ONLY

Custody Record MUST be Signed

	Relinquished by (print):	Date/Time:	Signature:	Received by (print):	Date/Time:	Signature:
1	Brandon Myers	10/10/13 1400				
2	Relinquished by (print):	Date/Time:	Signature:	Received by (print):	Date/Time:	Signature:
				Received by Laboratory:	Date/Time:	Signature:
					10/11/13	9:40

Sample Disposal: Return to Client: _____ Lab Disposal: _____

In certain circumstances, samples submitted to Energy Laboratories, Inc. may be subcontracted to other certified laboratories in order to complete the analysis requested. This serves as notice of this possibility. All sub-contract data will be clearly notated on your analytical report.
Visit our web site at www.energylab.com for additional information, downloadable fee schedule, forms, and links.

Chain of Custody and Analytical Request Record

PLEASE PRINT- Provide as much information as possible.

Company Name:	Project Name, PWS, Permit, Etc.	Sample Origin	EPA/State Compliance:
Rio Algom Mining Corp	Lisbon, UT Facility	State: UT	Yes ☐ No ☐
Report Mail Address: Montgomery and Associates Results retrieved from Energy Source	**Contact Name:** John Laney **Phone/Fax:** (520) 425-2219 **Email:** jlaney@clmontgomery.com		**Sampler: (Please Print)** Brendan Myers
Invoice Address: Email invoice to Gail PO Box 218 Grants, NM 87020	**Invoice Contact & Phone:** Gail Alexander (505) 287-8851	**Purchase Order:**	**Quote/Bottle Order:** C3636

Special Report/Formats – ELI must be notified prior to sample submittal for the following:

- ☐ DW
- ☐ GSA
- ☐ POTW/WWTP
- ☐ State: _____
- ☐ Other: _____
- ☐ A2LA
- ☐ EDD/EDT (Electronic Data) Format: _____
- ☐ LEVEL IV
- ☐ NELAC

Number of Containers
Sample Type: A W S V B O
Air Water Soils/Solids Vegetation Bioassay Other

ANALYSIS REQUESTED

SEE ATTACHED

Normal Turnaround (TAT)

RUSH

Contact ELI prior to **RUSH** sample submittal for charges and scheduling – See Instruction Page

Comments: metals samples filtered & preserved in field

Shipped by: Fed Ex Sat

Cooler ID(s): C-4151-

Receipt Temp: 2.8 °C

On Ice: (Yes) No

Custody Seal Intact Signature Match: (Y) N

	SAMPLE IDENTIFICATION (Name, Location, Interval, etc.)	Collection Date	Collection Time	MATRIX	C3636										
1	6991	09oct2013	1030	water	X										
2	6992	"	1120	"	X										
3	6993	"	1205	"	X										
4	6994	"	1425	"	X										
5	6995	"	1520	"	X										
6															
7															
8															
9															
10															C13100457

LABORATORY USE ONLY

Custody Record MUST be Signed

Relinquished by (print): Brendan Myers	Date/Time: 10/10/13 1400	Signature:	Received by (print):	Date/Time: / Signature:
Relinquished by (print):	Date/Time:	Signature:	Received by (print):	Date/Time: / Signature:
			Received by Laboratory:	Date/Time: 10/11/13 0940 / Signature:

Sample Disposal: Return to Client: _____ Lab Disposal: _____

In certain circumstances, samples submitted to Energy Laboratories, Inc. may be subcontracted to other certified laboratories in order to complete the analysis requested.
This serves as notice of this possibility. All sub-contract data will be clearly notated on your analytical report.
Visit our web site at www.energylab.com for additional information, downloadable fee schedule, forms, and links.

ANALYTICAL SUMMARY REPORT

December 13, 2013

Rio Algom Mining Corporation LLC
Hwy 605 and 509
Grants, NM 87020

Workorder No.: C13100566 Quote ID: C3636 - Groundwater

Project Name: Lisbon, UT Facility

Energy Laboratories, Inc. Casper WY received the following 62 samples for Rio Algom Mining Corporation LLC on 10/15/2013 for analysis.

Sample ID	Client Sample ID	Collect Date	Receive Date	Matrix	Test
C13100566-007	6996	10/11/13 12:30	10/15/13	Aqueous	Metals by ICP/ICPMS, Dissolved Alkalinity QA Calculations Conductivity E300.0 Anions pH Solids, Total Dissolved Solids, Total Dissolved - Calculated
C13100566-008	6998	10/11/13 13:10	10/15/13	Aqueous	Same As Above
C13100566-009	7000	10/11/13 14:05	10/15/13	Aqueous	Same As Above
C13100566-010	7002	10/11/13 14:35	10/15/13	Aqueous	Same As Above
C13100566-011	7003	10/11/13 15:10	10/15/13	Aqueous	Same As Above
C13100566-012	7004	10/11/13 15:15	10/15/13	Aqueous	Same As Above
C13100566-013	7005	10/11/13 15:45	10/15/13	Aqueous	Same As Above
C13100566-014	7006	10/12/13 8:25	10/15/13	Aqueous	Same As Above
C13100566-015	7007	10/12/13 9:10	10/15/13	Aqueous	Same As Above
C13100566-016	7008	10/12/13 10:15	10/15/13	Aqueous	Same As Above
C13100566-017	7009	10/12/13 10:25	10/15/13	Aqueous	Same As Above
C13100566-018	7010	10/12/13 11:00	10/15/13	Aqueous	Same As Above
C13100566-019	7031	10/12/13 11:45	10/15/13	Aqueous	Same As Above
C13100566-020	7032	10/12/13 12:20	10/15/13	Aqueous	Same As Above
C13100566-021	7033	10/12/13 15:05	10/15/13	Aqueous	Metals by ICP/ICPMS, Dissolved Acidity, Total as CaCO3 Alkalinity QA Calculations Conductivity E300.0 Anions pH Solids, Total Dissolved Solids, Total Dissolved - Calculated
C13100566-022	7034	10/12/13 15:55	10/15/13	Aqueous	Same As Above
C13100566-023	7035	10/12/13 17:00	10/15/13	Aqueous	Same As Above

ANALYTICAL SUMMARY REPORT

C13100566-024	7036	10/13/13 8:00	10/15/13	Aqueous	Metals by ICP/ICPMS, Dissolved Alkalinity QA Calculations Conductivity E300.0 Anions pH Solids, Total Dissolved Solids, Total Dissolved - Calculated
C13100566-025	7037	10/13/13 8:40	10/15/13	Aqueous	Same As Above
C13100566-026	7038	10/13/13 9:05	10/15/13	Aqueous	Same As Above
C13100566-027	7039	10/13/13 10:10	10/15/13	Aqueous	Same As Above
C13100566-028	7040	10/13/13 10:20	10/15/13	Aqueous	Same As Above
C13100566-029	7041	10/13/13 10:40	10/15/13	Aqueous	Same As Above
C13100566-030	7042	10/13/13 11:05	10/15/13	Aqueous	Same As Above
C13100566-031	7043	10/13/13 11:35	10/15/13	Aqueous	Same As Above
C13100566-032	7044	10/13/13 11:45	10/15/13	Aqueous	Same As Above
C13100566-033	7045	10/13/13 14:00	10/15/13	Aqueous	Same As Above
C13100566-034	7046	10/13/13 14:30	10/15/13	Aqueous	Same As Above
C13100566-035	7047	10/13/13 15:55	10/15/13	Aqueous	Same As Above
C13100566-036	7048	10/13/13 16:00	10/15/13	Aqueous	Same As Above
C13100566-037	7049	10/14/13 7:55	10/15/13	Aqueous	Same As Above
C13100566-038	7050	10/14/13 8:20	10/15/13	Aqueous	Same As Above
C13100566-039	7051	10/14/13 9:10	10/15/13	Aqueous	Same As Above
C13100566-040	7052	10/14/13 9:50	10/15/13	Aqueous	Same As Above
C13100566-041	7053	10/14/13 10:35	10/15/13	Aqueous	Same As Above
C13100566-042	7054	10/14/13 11:50	10/15/13	Aqueous	Same As Above
C13100566-043	7029	10/11/13 12:30	10/15/13	Aqueous	Same As Above
C13100566-044	7030	10/11/13 13:15	10/15/13	Aqueous	Same As Above
C13100566-045	6951	10/11/13 14:30	10/15/13	Aqueous	Same As Above
C13100566-046	6952	10/11/13 14:35	10/15/13	Aqueous	Same As Above
C13100566-047	6953	10/11/13 15:20	10/15/13	Aqueous	Same As Above
C13100566-048	6954	10/12/13 8:10	10/15/13	Aqueous	Same As Above
C13100566-049	6955	10/12/13 9:15	10/15/13	Aqueous	Same As Above
C13100566-050	6956	10/12/13 9:20	10/15/13	Aqueous	Same As Above
C13100566-051	6957	10/12/13 9:45	10/15/13	Aqueous	Same As Above
C13100566-052	6958	10/12/13 10:30	10/15/13	Aqueous	Same As Above
C13100566-053	6959	10/12/13 10:35	10/15/13	Aqueous	Same As Above
C13100566-054	6960	10/12/13 11:00	10/15/13	Aqueous	Same As Above
C13100566-055	6961	10/12/13 11:30	10/15/13	Aqueous	Same As Above
C13100566-056	6962	10/12/13 15:05	10/15/13	Aqueous	Same As Above

ANALYTICAL SUMMARY REPORT

C13100566-057	6963	10/12/13 15:50	10/15/13	Aqueous	Same As Above
C13100566-059	6966	10/13/13 9:10	10/15/13	Aqueous	Same As Above
C13100566-060	6967	10/13/13 10:05	10/15/13	Aqueous	Same As Above
C13100566-061	6968	10/13/13 10:30	10/15/13	Aqueous	Same As Above
C13100566-062	6969	10/13/13 11:15	10/15/13	Aqueous	Same As Above
C13100566-063	6972	10/13/13 13:55	10/15/13	Aqueous	Same As Above
C13100566-064	6973	10/13/13 15:00	10/15/13	Aqueous	Same As Above
C13100566-065	6974	10/13/13 15:15	10/15/13	Aqueous	Same As Above
C13100566-066	6975	10/13/13 16:30	10/15/13	Aqueous	Same As Above
C13100566-067	6976	10/14/13 8:05	10/15/13	Aqueous	Same As Above
C13100566-068	6977	10/14/13 9:10	10/15/13	Aqueous	Same As Above
C13100566-069	6980	10/14/13 11:35	10/15/13	Aqueous	Same As Above

The results as reported relate only to the item(s) submitted for testing. The analyses presented in this report were performed at Energy Laboratories, Inc., 2393 Salt Creek Hwy., Casper, WY 82601, unless otherwise noted. Radiochemistry analyses were performed at Energy Laboratories, Inc., 2325 Kerzell Lane, Casper, WY 82601, unless otherwise noted. Any exceptions or problems with the analyses are noted in the Laboratory Analytical Report, the QA/QC Summary Report, or the Case Narrative.

If you have any questions regarding these test results, please call.

Report Approved By:

CLIENT: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility
Sample Delivery Group: C13100566

Revised Date: 12/13/13
Report Date: 10/31/13

CASE NARRATIVE

REVISED/SUPPLEMENTAL REPORT (R2)
The attached analytical report has been revised from a previously submitted report due to the request by Leilani Bew on December 12, 2013 to report the original in-hold conductivity results on samples -021, -022, and -023 and the original Iron result on sample -026. The report has been revised and replaces any previously issued report in its entirety.

REVISED/SUPPLEMENTAL REPORT (R1)
The attached analytical report has been revised from a previously submitted report due to the request by Leilani Bew on November 1, 2013 for the correction of the sample time on sample -048 and to put sample -058 on hold per original COC request. The report has been revised and replaces any previously issued report in its entirety.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility
Lab ID: C13100566-007
Client Sample ID: 6996

Revised Date: 12/13/13
Report Date: 10/31/13
Collection Date: 10/11/13 12:30
DateReceived: 10/15/13
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Carbonate as CO3	ND	mg/L		5		A2320 B	10/16/13 09:00 / jba
Bicarbonate as HCO3	221	mg/L		5		A2320 B	10/16/13 09:00 / jba
Calcium	121	mg/L		1		E200.7	10/16/13 20:45 / sf
Chloride	78	mg/L		1		E300.0	10/16/13 21:47 / wc
Magnesium	34	mg/L		1		E200.7	10/16/13 20:45 / sf
Potassium	4	mg/L		1		E200.7	10/16/13 20:45 / sf
Sodium	50	mg/L		1		E200.7	10/16/13 20:45 / sf
Sulfate	219	mg/L	D	4		E300.0	10/16/13 21:47 / wc
PHYSICAL PROPERTIES							
Conductivity @ 25 C	1010	umhos/cm		1		A2510 B	10/16/13 09:34 / alp
pH	7.57	s.u.	H	0.01		A4500-H B	10/16/13 09:34 / alp
Solids, Total Dissolved TDS @ 180 C	673	mg/L		10		A2540 C	10/16/13 14:58 / tmm
METALS - DISSOLVED							
Arsenic	0.019	mg/L		0.001		E200.8	10/16/13 23:16 / clm
Iron	ND	mg/L		0.03		E200.7	10/16/13 20:45 / sf
Molybdenum	ND	mg/L		0.01		E200.8	10/16/13 23:16 / clm
Selenium	0.010	mg/L		0.001		E200.8	10/16/13 23:16 / clm
Uranium	0.0099	mg/L		0.0003		E200.8	10/16/13 23:16 / clm
DATA QUALITY							
A/C Balance (± 5)	2.15	%				A1030 E	10/21/13 15:20 / kbh
Anions	10.7	meq/L				A1030 E	10/21/13 15:20 / kbh
Cations	11.1	meq/L				A1030 E	10/21/13 15:20 / kbh
Solids, Total Dissolved Calculated	650	mg/L				A1030 E	10/21/13 15:20 / kbh
TDS Balance (0.80 - 1.20)	1.04					A1030 E	10/21/13 15:20 / kbh

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
H - Analysis performed past recommended holding time.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility
Lab ID: C13100566-008
Client Sample ID: 6998

Revised Date: 12/13/13
Report Date: 10/31/13
Collection Date: 10/11/13 13:10
DateReceived: 10/15/13
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Carbonate as CO3	ND	mg/L		5		A2320 B	10/16/13 09:15 / jba
Bicarbonate as HCO3	221	mg/L		5		A2320 B	10/16/13 09:15 / jba
Calcium	119	mg/L		1		E200.7	10/16/13 20:49 / sf
Chloride	84	mg/L		1		E300.0	10/16/13 22:06 / wc
Magnesium	33	mg/L		1		E200.7	10/16/13 20:49 / sf
Potassium	4	mg/L		1		E200.7	10/16/13 20:49 / sf
Sodium	50	mg/L		1		E200.7	10/16/13 20:49 / sf
Sulfate	212	mg/L	D	4		E300.0	10/16/13 22:06 / wc
PHYSICAL PROPERTIES							
Conductivity @ 25 C	1020	umhos/cm		1		A2510 B	10/16/13 09:40 / alp
pH	7.58	s.u.	H	0.01		A4500-H B	10/16/13 09:40 / alp
Solids, Total Dissolved TDS @ 180 C	668	mg/L		10		A2540 C	10/16/13 14:59 / tmm
METALS - DISSOLVED							
Arsenic	0.018	mg/L		0.001		E200.8	10/16/13 23:19 / clm
Iron	ND	mg/L		0.03		E200.7	10/16/13 20:49 / sf
Molybdenum	0.01	mg/L		0.01		E200.8	10/16/13 23:19 / clm
Selenium	0.010	mg/L		0.001		E200.8	10/16/13 23:19 / clm
Uranium	0.0095	mg/L		0.0003		E200.8	10/16/13 23:19 / clm
DATA QUALITY							
A/C Balance (± 5)	1.00	%				A1030 E	10/21/13 15:20 / kbh
Anions	10.7	meq/L				A1030 E	10/21/13 15:20 / kbh
Cations	10.9	meq/L				A1030 E	10/21/13 15:20 / kbh
Solids, Total Dissolved Calculated	640	mg/L				A1030 E	10/21/13 15:20 / kbh
TDS Balance (0.80 - 1.20)	1.04					A1030 E	10/21/13 15:20 / kbh

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
H - Analysis performed past recommended holding time.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility
Lab ID: C13100566-009
Client Sample ID: 7000

Revised Date: 12/13/13
Report Date: 10/31/13
Collection Date: 10/11/13 14:05
DateReceived: 10/15/13
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Carbonate as CO3	ND	mg/L		5		A2320 B	10/16/13 09:31 / jba
Bicarbonate as HCO3	224	mg/L		5		A2320 B	10/16/13 09:31 / jba
Calcium	122	mg/L		1		E200.7	10/16/13 20:52 / sf
Chloride	87	mg/L		1		E300.0	10/16/13 22:24 / wc
Magnesium	34	mg/L		1		E200.7	10/16/13 20:52 / sf
Potassium	4	mg/L		1		E200.7	10/16/13 20:52 / sf
Sodium	52	mg/L		1		E200.7	10/16/13 20:52 / sf
Sulfate	246	mg/L	D	4		E300.0	10/16/13 22:24 / wc
PHYSICAL PROPERTIES							
Conductivity @ 25 C	1080	umhos/cm		1		A2510 B	10/16/13 09:43 / alp
pH	7.51	s.u.	H	0.01		A4500-H B	10/16/13 09:43 / alp
Solids, Total Dissolved TDS @ 180 C	722	mg/L		10		A2540 C	10/16/13 14:59 / tmm
METALS - DISSOLVED							
Arsenic	0.021	mg/L		0.001		E200.8	10/16/13 23:23 / clm
Iron	ND	mg/L		0.03		E200.7	10/16/13 20:52 / sf
Molybdenum	ND	mg/L		0.01		E200.8	10/16/13 23:23 / clm
Selenium	0.010	mg/L		0.001		E200.8	10/16/13 23:23 / clm
Uranium	0.0098	mg/L		0.0003		E200.8	10/16/13 23:23 / clm
DATA QUALITY							
A/C Balance (± 5)	-1.13	%				A1030 E	10/21/13 15:20 / kbh
Anions	11.5	meq/L				A1030 E	10/21/13 15:20 / kbh
Cations	11.3	meq/L				A1030 E	10/21/13 15:20 / kbh
Solids, Total Dissolved Calculated	690	mg/L				A1030 E	10/21/13 15:20 / kbh
TDS Balance (0.80 - 1.20)	1.05					A1030 E	10/21/13 15:20 / kbh

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
H - Analysis performed past recommended holding time.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility
Lab ID: C13100566-010
Client Sample ID: 7002

Revised Date: 12/13/13
Report Date: 10/31/13
Collection Date: 10/11/13 14:35
DateReceived: 10/15/13
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Carbonate as CO3	ND	mg/L		5		A2320 B	10/16/13 09:39 / jba
Bicarbonate as HCO3	428	mg/L		5		A2320 B	10/16/13 09:39 / jba
Calcium	214	mg/L		1		E200.7	10/16/13 21:37 / sf
Chloride	412	mg/L	D	2		E300.0	10/16/13 22:42 / wc
Magnesium	55	mg/L		1		E200.7	10/16/13 21:37 / sf
Potassium	6	mg/L		1		E200.7	10/16/13 21:37 / sf
Sodium	439	mg/L		1		E200.7	10/16/13 21:37 / sf
Sulfate	750	mg/L	D	8		E300.0	10/16/13 22:42 / wc
PHYSICAL PROPERTIES							
Conductivity @ 25 C	3110	umhos/cm		1		A2510 B	10/16/13 09:46 / alp
pH	7.32	s.u.	H	0.01		A4500-H B	10/16/13 09:46 / alp
Solids, Total Dissolved TDS @ 180 C	2100	mg/L		20		A2540 C	10/16/13 14:59 / tmm
METALS - DISSOLVED							
Arsenic	0.014	mg/L		0.001		E200.8	10/16/13 23:26 / clm
Iron	ND	mg/L		0.03		E200.7	10/16/13 21:37 / sf
Molybdenum	ND	mg/L		0.01		E200.8	10/16/13 23:26 / clm
Selenium	0.015	mg/L		0.001		E200.8	10/16/13 23:26 / clm
Uranium	1.53	mg/L		0.0003		E200.8	10/16/13 23:26 / clm
DATA QUALITY							
A/C Balance (± 5)	-0.529	%				A1030 E	10/21/13 15:21 / kbh
Anions	34.8	meq/L				A1030 E	10/21/13 15:21 / kbh
Cations	34.5	meq/L				A1030 E	10/21/13 15:21 / kbh
Solids, Total Dissolved Calculated	2100	mg/L				A1030 E	10/21/13 15:21 / kbh
TDS Balance (0.80 - 1.20)	0.980					A1030 E	10/21/13 15:21 / kbh

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
H - Analysis performed past recommended holding time.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility
Lab ID: C13100566-011
Client Sample ID: 7003

Revised Date: 12/13/13
Report Date: 10/31/13
Collection Date: 10/11/13 15:10
DateReceived: 10/15/13
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Carbonate as CO3	ND	mg/L		5		A2320 B	10/16/13 09:46 / jba
Bicarbonate as HCO3	431	mg/L		5		A2320 B	10/16/13 09:46 / jba
Calcium	215	mg/L		1		E200.7	10/16/13 21:41 / sf
Chloride	428	mg/L	D	2		E300.0	10/16/13 23:38 / wc
Magnesium	55	mg/L		1		E200.7	10/16/13 21:41 / sf
Potassium	6	mg/L		1		E200.7	10/16/13 21:41 / sf
Sodium	441	mg/L		1		E200.7	10/16/13 21:41 / sf
Sulfate	785	mg/L	D	8		E300.0	10/16/13 23:38 / wc
PHYSICAL PROPERTIES							
Conductivity @ 25 C	3110	umhos/cm		1		A2510 B	10/16/13 09:49 / alp
pH	7.32	s.u.	H	0.01		A4500-H B	10/16/13 09:49 / alp
Solids, Total Dissolved TDS @ 180 C	2160	mg/L		20		A2540 C	10/16/13 14:59 / tmm
METALS - DISSOLVED							
Arsenic	0.014	mg/L		0.001		E200.8	10/16/13 23:29 / clm
Iron	ND	mg/L		0.03		E200.7	10/16/13 21:41 / sf
Molybdenum	ND	mg/L		0.01		E200.8	10/16/13 23:29 / clm
Selenium	0.016	mg/L		0.001		E200.8	10/16/13 23:29 / clm
Uranium	1.55	mg/L		0.0003		E200.8	10/16/13 23:29 / clm
DATA QUALITY							
A/C Balance (± 5)	-2.08	%				A1030 E	10/21/13 15:21 / kbh
Anions	36.1	meq/L				A1030 E	10/21/13 15:21 / kbh
Cations	34.6	meq/L				A1030 E	10/21/13 15:21 / kbh
Solids, Total Dissolved Calculated	2200	mg/L				A1030 E	10/21/13 15:21 / kbh
TDS Balance (0.80 - 1.20)	0.980					A1030 E	10/21/13 15:21 / kbh

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
H - Analysis performed past recommended holding time.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility
Lab ID: C13100566-012
Client Sample ID: 7004

Revised Date: 12/13/13
Report Date: 10/31/13
Collection Date: 10/11/13 15:15
DateReceived: 10/15/13
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Carbonate as CO3	ND	mg/L		5		A2320 B	10/16/13 09:55 / jba
Bicarbonate as HCO3	442	mg/L		5		A2320 B	10/16/13 09:55 / jba
Calcium	213	mg/L		1		E200.7	10/16/13 21:44 / sf
Chloride	408	mg/L	D	2		E300.0	10/17/13 00:33 / wc
Magnesium	55	mg/L		1		E200.7	10/16/13 21:44 / sf
Potassium	6	mg/L		1		E200.7	10/16/13 21:44 / sf
Sodium	437	mg/L		1		E200.7	10/16/13 21:44 / sf
Sulfate	743	mg/L	D	8		E300.0	10/17/13 00:33 / wc
PHYSICAL PROPERTIES							
Conductivity @ 25 C	3120	umhos/cm		1		A2510 B	10/16/13 09:52 / alp
pH	7.32	s.u.	H	0.01		A4500-H B	10/16/13 09:52 / alp
Solids, Total Dissolved TDS @ 180 C	2180	mg/L		20		A2540 C	10/16/13 15:00 / tmm
METALS - DISSOLVED							
Arsenic	0.013	mg/L		0.001		E200.8	10/16/13 23:55 / clm
Iron	ND	mg/L		0.03		E200.7	10/16/13 21:44 / sf
Molybdenum	ND	mg/L		0.01		E200.8	10/16/13 23:55 / clm
Selenium	0.015	mg/L		0.001		E200.8	10/16/13 23:55 / clm
Uranium	1.54	mg/L		0.0003		E200.8	10/16/13 23:55 / clm
DATA QUALITY							
A/C Balance (± 5)	-0.694	%				A1030 E	10/21/13 15:21 / kbh
Anions	34.8	meq/L				A1030 E	10/21/13 15:21 / kbh
Cations	34.3	meq/L				A1030 E	10/21/13 15:21 / kbh
Solids, Total Dissolved Calculated	2100	mg/L				A1030 E	10/21/13 15:21 / kbh
TDS Balance (0.80 - 1.20)	1.02					A1030 E	10/21/13 15:21 / kbh

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
H - Analysis performed past recommended holding time.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility
Lab ID: C13100566-013
Client Sample ID: 7005

Revised Date: 12/13/13
Report Date: 10/31/13
Collection Date: 10/11/13 15:45
DateReceived: 10/15/13
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Carbonate as CO3	ND	mg/L		5		A2320 B	10/16/13 10:03 / jba
Bicarbonate as HCO3	405	mg/L		5		A2320 B	10/16/13 10:03 / jba
Calcium	212	mg/L		1		E200.7	10/16/13 21:56 / sf
Chloride	406	mg/L	D	2		E300.0	10/17/13 00:51 / wc
Magnesium	54	mg/L		1		E200.7	10/16/13 21:56 / sf
Potassium	6	mg/L		1		E200.7	10/16/13 21:56 / sf
Sodium	423	mg/L		1		E200.7	10/16/13 21:56 / sf
Sulfate	733	mg/L	D	8		E300.0	10/17/13 00:51 / wc
PHYSICAL PROPERTIES							
Conductivity @ 25 C	3090	umhos/cm		1		A2510 B	10/16/13 09:55 / alp
pH	7.29	s.u.	H	0.01		A4500-H B	10/16/13 09:55 / alp
Solids, Total Dissolved TDS @ 180 C	2150	mg/L		20		A2540 C	10/16/13 15:01 / tmm
METALS - DISSOLVED							
Arsenic	0.015	mg/L		0.001		E200.8	10/16/13 23:58 / clm
Iron	ND	mg/L		0.03		E200.7	10/16/13 21:56 / sf
Molybdenum	ND	mg/L		0.01		E200.8	10/16/13 23:58 / clm
Selenium	0.015	mg/L		0.001		E200.8	10/16/13 23:58 / clm
Uranium	1.15	mg/L		0.0003		E200.8	10/16/13 23:58 / clm
DATA QUALITY							
A/C Balance (± 5)	-0.567	%				A1030 E	10/21/13 15:21 / kbh
Anions	33.9	meq/L				A1030 E	10/21/13 15:21 / kbh
Cations	33.5	meq/L				A1030 E	10/21/13 15:21 / kbh
Solids, Total Dissolved Calculated	2100	mg/L				A1030 E	10/21/13 15:21 / kbh
TDS Balance (0.80 - 1.20)	1.03					A1030 E	10/21/13 15:21 / kbh

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
H - Analysis performed past recommended holding time.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility
Lab ID: C13100566-014
Client Sample ID: 7006

Revised Date: 12/13/13
Report Date: 10/31/13
Collection Date: 10/12/13 08:25
DateReceived: 10/15/13
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Carbonate as CO3	ND	mg/L		5		A2320 B	10/16/13 10:10 / jba
Bicarbonate as HCO3	253	mg/L		5		A2320 B	10/16/13 10:10 / jba
Calcium	125	mg/L		1		E200.7	10/16/13 21:59 / sf
Chloride	62	mg/L		1		E300.0	10/17/13 01:10 / wc
Magnesium	36	mg/L		1		E200.7	10/16/13 21:59 / sf
Potassium	4	mg/L		1		E200.7	10/16/13 21:59 / sf
Sodium	57	mg/L		1		E200.7	10/16/13 21:59 / sf
Sulfate	263	mg/L	D	4		E300.0	10/17/13 01:10 / wc
PHYSICAL PROPERTIES							
Conductivity @ 25 C	1070	umhos/cm		1		A2510 B	10/16/13 09:58 / alp
pH	7.42	s.u.	H	0.01		A4500-H B	10/16/13 09:58 / alp
Solids, Total Dissolved TDS @ 180 C	734	mg/L		10		A2540 C	10/16/13 15:02 / tmm
METALS - DISSOLVED							
Arsenic	0.012	mg/L		0.001		E200.8	10/17/13 00:02 / clm
Iron	ND	mg/L		0.03		E200.7	10/16/13 21:59 / sf
Molybdenum	ND	mg/L		0.01		E200.8	10/17/13 00:02 / clm
Selenium	0.006	mg/L		0.001		E200.8	10/17/13 00:02 / clm
Uranium	0.0099	mg/L		0.0003		E200.8	10/17/13 00:02 / clm
DATA QUALITY							
A/C Balance (± 5)	1.18	%				A1030 E	10/21/13 15:21 / kbh
Anions	11.5	meq/L				A1030 E	10/21/13 15:21 / kbh
Cations	11.8	meq/L				A1030 E	10/21/13 15:21 / kbh
Solids, Total Dissolved Calculated	700	mg/L				A1030 E	10/21/13 15:21 / kbh
TDS Balance (0.80 - 1.20)	1.06					A1030 E	10/21/13 15:21 / kbh

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
H - Analysis performed past recommended holding time.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility
Lab ID: C13100566-015
Client Sample ID: 7007

Revised Date: 12/13/13
Report Date: 10/31/13
Collection Date: 10/12/13 09:10
DateReceived: 10/15/13
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Carbonate as CO3	ND	mg/L		5		A2320 B	10/16/13 10:17 / jba
Bicarbonate as HCO3	254	mg/L		5		A2320 B	10/16/13 10:17 / jba
Calcium	124	mg/L		1		E200.7	10/16/13 22:03 / sf
Chloride	63	mg/L		1		E300.0	10/17/13 01:28 / wc
Magnesium	35	mg/L		1		E200.7	10/16/13 22:03 / sf
Potassium	4	mg/L		1		E200.7	10/16/13 22:03 / sf
Sodium	56	mg/L		1		E200.7	10/16/13 22:03 / sf
Sulfate	265	mg/L	D	4		E300.0	10/17/13 01:28 / wc
PHYSICAL PROPERTIES							
Conductivity @ 25 C	1070	umhos/cm		1		A2510 B	10/16/13 10:01 / alp
pH	7.45	s.u.	H	0.01		A4500-H B	10/16/13 10:01 / alp
Solids, Total Dissolved TDS @ 180 C	728	mg/L		10		A2540 C	10/16/13 15:03 / tmm
METALS - DISSOLVED							
Arsenic	0.013	mg/L		0.001		E200.8	10/17/13 00:05 / clm
Iron	ND	mg/L		0.03		E200.7	10/16/13 22:03 / sf
Molybdenum	ND	mg/L		0.01		E200.8	10/17/13 00:05 / clm
Selenium	0.005	mg/L		0.001		E200.8	10/17/13 00:05 / clm
Uranium	0.0105	mg/L		0.0003		E200.8	10/17/13 00:05 / clm
DATA QUALITY							
A/C Balance (± 5)	0.250	%				A1030 E	10/21/13 15:21 / kbh
Anions	11.6	meq/L				A1030 E	10/21/13 15:21 / kbh
Cations	11.7	meq/L				A1030 E	10/21/13 15:21 / kbh
Solids, Total Dissolved Calculated	700	mg/L				A1030 E	10/21/13 15:21 / kbh
TDS Balance (0.80 - 1.20)	1.05					A1030 E	10/21/13 15:21 / kbh

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
H - Analysis performed past recommended holding time.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility
Lab ID: C13100566-016
Client Sample ID: 7008

Revised Date: 12/13/13
Report Date: 10/31/13
Collection Date: 10/12/13 10:15
DateReceived: 10/15/13
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Carbonate as CO3	ND	mg/L		5		A2320 B	10/16/13 10:25 / jba
Bicarbonate as HCO3	256	mg/L		5		A2320 B	10/16/13 10:25 / jba
Calcium	124	mg/L		1		E200.7	10/16/13 22:07 / sf
Chloride	61	mg/L		1		E300.0	10/17/13 01:47 / wc
Magnesium	35	mg/L		1		E200.7	10/16/13 22:07 / sf
Potassium	4	mg/L		1		E200.7	10/16/13 22:07 / sf
Sodium	58	mg/L		1		E200.7	10/16/13 22:07 / sf
Sulfate	267	mg/L	D	4		E300.0	10/17/13 01:47 / wc
PHYSICAL PROPERTIES							
Conductivity @ 25 C	1060	umhos/cm		1		A2510 B	10/16/13 10:04 / alp
pH	7.43	s.u.	H	0.01		A4500-H B	10/16/13 10:04 / alp
Solids, Total Dissolved TDS @ 180 C	729	mg/L		10		A2540 C	10/16/13 15:03 / tmm
METALS - DISSOLVED							
Arsenic	0.012	mg/L		0.001		E200.8	10/17/13 00:08 / clm
Iron	ND	mg/L		0.03		E200.7	10/16/13 22:07 / sf
Molybdenum	ND	mg/L		0.01		E200.8	10/17/13 00:08 / clm
Selenium	0.006	mg/L		0.001		E200.8	10/17/13 00:08 / clm
Uranium	0.0095	mg/L		0.0003		E200.8	10/17/13 00:08 / clm
DATA QUALITY							
A/C Balance (± 5)	0.448	%				A1030 E	10/21/13 15:21 / kbh
Anions	11.6	meq/L				A1030 E	10/21/13 15:21 / kbh
Cations	11.7	meq/L				A1030 E	10/21/13 15:21 / kbh
Solids, Total Dissolved Calculated	700	mg/L				A1030 E	10/21/13 15:21 / kbh
TDS Balance (0.80 - 1.20)	1.04					A1030 E	10/21/13 15:21 / kbh

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
H - Analysis performed past recommended holding time.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility
Lab ID: C13100566-017
Client Sample ID: 7009

Revised Date: 12/13/13
Report Date: 10/31/13
Collection Date: 10/12/13 10:25
DateReceived: 10/15/13
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Carbonate as CO3	ND	mg/L		5		A2320 B	10/16/13 10:33 / jba
Bicarbonate as HCO3	266	mg/L		5		A2320 B	10/16/13 10:33 / jba
Calcium	125	mg/L		1		E200.7	10/16/13 22:25 / sf
Chloride	61	mg/L		1		E300.0	10/17/13 02:05 / wc
Magnesium	35	mg/L		1		E200.7	10/16/13 22:25 / sf
Potassium	4	mg/L		1		E200.7	10/16/13 22:25 / sf
Sodium	58	mg/L		1		E200.7	10/16/13 22:25 / sf
Sulfate	267	mg/L	D	4		E300.0	10/17/13 02:05 / wc
PHYSICAL PROPERTIES							
Conductivity @ 25 C	1060	umhos/cm		1		A2510 B	10/16/13 10:07 / alp
pH	7.44	s.u.	H	0.01		A4500-H B	10/16/13 10:07 / alp
Solids, Total Dissolved TDS @ 180 C	738	mg/L		10		A2540 C	10/16/13 15:03 / tmm
METALS - DISSOLVED							
Arsenic	0.012	mg/L		0.001		E200.8	10/17/13 00:11 / clm
Iron	ND	mg/L		0.03		E200.7	10/16/13 22:25 / sf
Molybdenum	ND	mg/L		0.01		E200.8	10/17/13 00:11 / clm
Selenium	0.005	mg/L		0.001		E200.8	10/17/13 00:11 / clm
Uranium	0.0096	mg/L		0.0003		E200.8	10/17/13 00:11 / clm
DATA QUALITY							
A/C Balance (± 5)	-0.210	%				A1030 E	10/21/13 15:21 / kbh
Anions	11.8	meq/L				A1030 E	10/21/13 15:21 / kbh
Cations	11.7	meq/L				A1030 E	10/21/13 15:21 / kbh
Solids, Total Dissolved Calculated	700	mg/L				A1030 E	10/21/13 15:21 / kbh
TDS Balance (0.80 - 1.20)	1.05					A1030 E	10/21/13 15:21 / kbh

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
H - Analysis performed past recommended holding time.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility
Lab ID: C13100566-018
Client Sample ID: 7010

Revised Date: 12/13/13
Report Date: 10/31/13
Collection Date: 10/12/13 11:00
DateReceived: 10/15/13
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Carbonate as CO3	ND	mg/L		5		A2320 B	10/16/13 10:49 / jba
Bicarbonate as HCO3	242	mg/L		5		A2320 B	10/16/13 10:49 / jba
Calcium	115	mg/L		1		E200.7	10/16/13 22:29 / sf
Chloride	117	mg/L		1		E300.0	10/17/13 02:24 / wc
Magnesium	31	mg/L		1		E200.7	10/16/13 22:29 / sf
Potassium	4	mg/L		1		E200.7	10/16/13 22:29 / sf
Sodium	100	mg/L		1		E200.7	10/16/13 22:29 / sf
Sulfate	218	mg/L	D	4		E300.0	10/17/13 02:24 / wc
PHYSICAL PROPERTIES							
Conductivity @ 25 C	1160	umhos/cm		1		A2510 B	10/16/13 10:22 / alp
pH	7.60	s.u.	H	0.01		A4500-H B	10/16/13 10:22 / alp
Solids, Total Dissolved TDS @ 180 C	758	mg/L		10		A2540 C	10/16/13 15:04 / tmm
METALS - DISSOLVED							
Arsenic	0.017	mg/L		0.001		E200.8	10/17/13 00:15 / clm
Iron	0.63	mg/L		0.03		E200.7	10/16/13 22:29 / sf
Molybdenum	0.10	mg/L		0.01		E200.8	10/17/13 00:15 / clm
Selenium	0.008	mg/L		0.001		E200.8	10/17/13 00:15 / clm
Uranium	0.524	mg/L		0.0003		E200.8	10/17/13 00:15 / clm
DATA QUALITY							
A/C Balance (± 5)	3.03	%				A1030 E	10/21/13 15:21 / kbh
Anions	12.1	meq/L				A1030 E	10/21/13 15:21 / kbh
Cations	12.8	meq/L				A1030 E	10/21/13 15:21 / kbh
Solids, Total Dissolved Calculated	740	mg/L				A1030 E	10/21/13 15:21 / kbh
TDS Balance (0.80 - 1.20)	1.03					A1030 E	10/21/13 15:21 / kbh

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
H - Analysis performed past recommended holding time.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility
Lab ID: C13100566-019
Client Sample ID: 7031

Revised Date: 12/13/13
Report Date: 10/31/13
Collection Date: 10/12/13 11:45
DateReceived: 10/15/13
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Carbonate as CO3	ND	mg/L		5		A2320 B	10/16/13 10:56 / jba
Bicarbonate as HCO3	299	mg/L		5		A2320 B	10/16/13 10:56 / jba
Calcium	101	mg/L		1		E200.7	10/16/13 22:32 / sf
Chloride	132	mg/L		1		E300.0	10/17/13 02:42 / wc
Magnesium	28	mg/L		1		E200.7	10/16/13 22:32 / sf
Potassium	4	mg/L		1		E200.7	10/16/13 22:32 / sf
Sodium	147	mg/L		1		E200.7	10/16/13 22:32 / sf
Sulfate	236	mg/L	D	4		E300.0	10/17/13 02:42 / wc
PHYSICAL PROPERTIES							
Conductivity @ 25 C	1330	umhos/cm		1		A2510 B	10/16/13 10:25 / alp
pH	7.67	s.u.	H	0.01		A4500-H B	10/16/13 10:25 / alp
Solids, Total Dissolved TDS @ 180 C	861	mg/L		10		A2540 C	10/16/13 15:04 / tmm
METALS - DISSOLVED							
Arsenic	0.012	mg/L		0.001		E200.8	10/17/13 00:18 / clm
Iron	ND	mg/L		0.03		E200.7	10/16/13 22:32 / sf
Molybdenum	0.17	mg/L		0.01		E200.8	10/17/13 00:18 / clm
Selenium	0.010	mg/L		0.001		E200.8	10/17/13 00:18 / clm
Uranium	0.882	mg/L		0.0003		E200.8	10/17/13 00:18 / clm
DATA QUALITY							
A/C Balance (± 5)	0.0881	%				A1030 E	10/21/13 15:22 / kbh
Anions	13.8	meq/L				A1030 E	10/21/13 15:22 / kbh
Cations	13.9	meq/L				A1030 E	10/21/13 15:22 / kbh
Solids, Total Dissolved Calculated	830	mg/L				A1030 E	10/21/13 15:22 / kbh
TDS Balance (0.80 - 1.20)	1.04					A1030 E	10/21/13 15:22 / kbh

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
H - Analysis performed past recommended holding time.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility
Lab ID: C13100566-020
Client Sample ID: 7032

Revised Date: 12/13/13
Report Date: 10/31/13
Collection Date: 10/12/13 12:20
DateReceived: 10/15/13
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Carbonate as CO3	ND	mg/L		5		A2320 B	10/16/13 11:04 / jba
Bicarbonate as HCO3	347	mg/L		5		A2320 B	10/16/13 11:04 / jba
Calcium	94	mg/L		1		E200.7	10/16/13 22:36 / sf
Chloride	150	mg/L		1		E300.0	10/17/13 03:01 / wc
Magnesium	26	mg/L		1		E200.7	10/16/13 22:36 / sf
Potassium	4	mg/L		1		E200.7	10/16/13 22:36 / sf
Sodium	191	mg/L		1		E200.7	10/16/13 22:36 / sf
Sulfate	257	mg/L	D	4		E300.0	10/17/13 03:01 / wc
PHYSICAL PROPERTIES							
Conductivity @ 25 C	1480	umhos/cm		1		A2510 B	10/16/13 10:28 / alp
pH	7.69	s.u.	H	0.01		A4500-H B	10/16/13 10:28 / alp
Solids, Total Dissolved TDS @ 180 C	945	mg/L		10		A2540 C	10/16/13 15:04 / tmm
METALS - DISSOLVED							
Arsenic	0.035	mg/L		0.001		E200.8	10/17/13 00:21 / clm
Iron	0.27	mg/L		0.03		E200.7	10/16/13 22:36 / sf
Molybdenum	0.23	mg/L		0.01		E200.8	10/17/13 00:21 / clm
Selenium	0.012	mg/L		0.001		E200.8	10/17/13 00:21 / clm
Uranium	1.24	mg/L		0.0003		E200.8	10/17/13 00:21 / clm
DATA QUALITY							
A/C Balance (± 5)	-1.49	%				A1030 E	10/21/13 15:22 / kbh
Anions	15.7	meq/L				A1030 E	10/21/13 15:22 / kbh
Cations	15.2	meq/L				A1030 E	10/21/13 15:22 / kbh
Solids, Total Dissolved Calculated	930	mg/L				A1030 E	10/21/13 15:22 / kbh
TDS Balance (0.80 - 1.20)	1.01					A1030 E	10/21/13 15:22 / kbh

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
H - Analysis performed past recommended holding time.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility
Lab ID: C13100566-021
Client Sample ID: 7033

Revised Date: 12/13/13
Report Date: 10/31/13
Collection Date: 10/12/13 15:05
DateReceived: 10/15/13
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Acidity, Total as CaCO3	13800	mg/L	D	10		A2310 B	10/17/13 08:02 / jba
Carbonate as CO3	ND	mg/L		5		A2320 B	10/16/13 11:31 / jba
Bicarbonate as HCO3	ND	mg/L		5		A2320 B	10/16/13 11:31 / jba
Calcium	447	mg/L		1		E200.7	10/16/13 22:40 / sf
Chloride	87	mg/L	D	20		E300.0	10/17/13 04:15 / wc
Magnesium	738	mg/L		1		E200.7	10/16/13 22:40 / sf
Potassium	15	mg/L		1		E200.7	10/16/13 22:40 / sf
Sodium	87	mg/L	D	2		E200.7	10/16/13 22:40 / sf
Sulfate	15600	mg/L	D	80		E300.0	10/17/13 04:15 / wc
PHYSICAL PROPERTIES							
Conductivity @ 25 C	11200	umhos/cm		1		A2510 B	10/16/13 10:31 / alp
pH	3.95	s.u.	H	0.01		A4500-H B	10/16/13 10:31 / alp
Solids, Total Dissolved TDS @ 180 C	22900	mg/L		100		A2540 C	10/17/13 14:26 / alp
METALS - DISSOLVED							
Arsenic	0.062	mg/L		0.001		E200.8	10/17/13 00:37 / clm
Iron	262	mg/L		0.03		E200.7	10/16/13 22:40 / sf
Molybdenum	0.42	mg/L		0.01		E200.8	10/17/13 00:37 / clm
Selenium	0.116	mg/L	D	0.003		E200.8	10/17/13 00:37 / clm
Uranium	16.4	mg/L	D	0.001		E200.8	10/17/13 00:37 / clm
DATA QUALITY							
A/C Balance (± 5)	4.20	%				A1030 E	10/21/13 15:22 / kbh
Anions	334	meq/L				A1030 E	10/21/13 15:22 / kbh
Cations	364	meq/L				A1030 E	10/21/13 15:22 / kbh
Solids, Total Dissolved Calculated	17000	mg/L				A1030 E	10/21/13 15:22 / kbh
TDS Balance (0.80 - 1.20)	1.35					A1030 E	10/21/13 15:22 / kbh

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
H - Analysis performed past recommended holding time.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility
Lab ID: C13100566-022
Client Sample ID: 7034

Revised Date: 12/13/13
Report Date: 10/31/13
Collection Date: 10/12/13 15:55
DateReceived: 10/15/13
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Acidity, Total as CaCO3	14000	mg/L	D	10		A2310 B	10/17/13 08:30 / jba
Carbonate as CO3	ND	mg/L		5		A2320 B	10/16/13 11:34 / jba
Bicarbonate as HCO3	ND	mg/L		5		A2320 B	10/16/13 11:34 / jba
Calcium	479	mg/L		1		E200.7	10/25/13 14:45 / sf
Chloride	93	mg/L	D	20		E300.0	10/25/13 14:13 / wc
Magnesium	755	mg/L		1		E200.7	10/25/13 14:45 / sf
Potassium	17	mg/L		1		E200.7	10/25/13 14:45 / sf
Sodium	94	mg/L	D	2		E200.7	10/25/13 14:45 / sf
Sulfate	15700	mg/L	D	80		E300.0	10/25/13 14:13 / wc
PHYSICAL PROPERTIES							
Conductivity @ 25 C	11200	umhos/cm		1		A2510 B	10/16/13 10:34 / alp
pH	3.95	s.u.	H	0.01		A4500-H B	10/16/13 10:34 / alp
Solids, Total Dissolved TDS @ 180 C	22300	mg/L		100		A2540 C	10/17/13 14:26 / alp
METALS - DISSOLVED							
Arsenic	0.070	mg/L		0.001		E200.8	10/17/13 01:35 / clm
Iron	265	mg/L		0.03		E200.7	10/16/13 22:50 / sf
Molybdenum	0.48	mg/L		0.01		E200.8	10/17/13 01:35 / clm
Selenium	0.118	mg/L	D	0.003		E200.8	10/17/13 01:35 / clm
Uranium	16.0	mg/L	D	0.001		E200.8	10/17/13 01:35 / clm
DATA QUALITY							
A/C Balance (± 5)	5.60	%				A1030 E	10/29/13 09:24 / kbh
Anions	331	meq/L				A1030 E	10/29/13 09:24 / kbh
Cations	371	meq/L				A1030 E	10/29/13 09:24 / kbh
Solids, Total Dissolved Calculated	17000	mg/L				A1030 E	10/29/13 09:24 / kbh
TDS Balance (0.80 - 1.20)	1.30					A1030 E	10/29/13 09:24 / kbh

- The Anion / Cation balance was confirmed by re-analysis.

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
H - Analysis performed past recommended holding time.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility
Lab ID: C13100566-023
Client Sample ID: 7035

Revised Date: 12/13/13
Report Date: 10/31/13
Collection Date: 10/12/13 17:00
DateReceived: 10/15/13
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Acidity, Total as CaCO3	17700	mg/L	D	10		A2310 B	10/17/13 08:47 / jba
Carbonate as CO3	ND	mg/L		5		A2320 B	10/16/13 11:37 / jba
Bicarbonate as HCO3	ND	mg/L		5		A2320 B	10/16/13 11:37 / jba
Calcium	432	mg/L		1		E200.7	10/16/13 22:53 / sf
Chloride	96	mg/L	D	20		E300.0	10/17/13 04:51 / wc
Magnesium	758	mg/L		1		E200.7	10/16/13 22:53 / sf
Potassium	7	mg/L		1		E200.7	10/16/13 22:53 / sf
Sodium	88	mg/L	D	2		E200.7	10/16/13 22:53 / sf
Sulfate	18900	mg/L	D	80		E300.0	10/17/13 04:51 / wc
PHYSICAL PROPERTIES							
Conductivity @ 25 C	12600	umhos/cm		1		A2510 B	10/16/13 10:37 / alp
pH	3.76	s.u.	H	0.01		A4500-H B	10/16/13 10:37 / alp
Solids, Total Dissolved TDS @ 180 C	26600	mg/L		100		A2540 C	10/17/13 14:27 / alp
METALS - DISSOLVED							
Arsenic	0.134	mg/L		0.001		E200.8	10/17/13 01:38 / clm
Iron	232	mg/L		0.03		E200.7	10/16/13 22:53 / sf
Molybdenum	1.25	mg/L		0.01		E200.8	10/17/13 01:38 / clm
Selenium	0.130	mg/L	D	0.003		E200.8	10/17/13 01:38 / clm
Uranium	19.1	mg/L	D	0.001		E200.8	10/17/13 01:38 / clm
DATA QUALITY							
A/C Balance (± 5)	5.04	%				A1030 E	10/21/13 15:22 / kbh
Anions	399	meq/L				A1030 E	10/21/13 15:22 / kbh
Cations	442	meq/L				A1030 E	10/21/13 15:22 / kbh
Solids, Total Dissolved Calculated	20000	mg/L				A1030 E	10/21/13 15:22 / kbh
TDS Balance (0.80 - 1.20)	1.31					A1030 E	10/21/13 15:22 / kbh

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
H - Analysis performed past recommended holding time.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility
Lab ID: C13100566-024
Client Sample ID: 7036

Revised Date: 12/13/13
Report Date: 10/31/13
Collection Date: 10/13/13 08:00
DateReceived: 10/15/13
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Carbonate as CO3	ND	mg/L		5		A2320 B	10/16/13 11:45 / jba
Bicarbonate as HCO3	31	mg/L		5		A2320 B	10/16/13 11:45 / jba
Calcium	ND	mg/L		1		E200.7	10/16/13 23:11 / sf
Chloride	10	mg/L		1		E300.0	10/17/13 05:10 / wc
Magnesium	ND	mg/L		1		E200.7	10/16/13 23:11 / sf
Potassium	ND	mg/L		1		E200.7	10/16/13 23:11 / sf
Sodium	18	mg/L		1		E200.7	10/16/13 23:11 / sf
Sulfate	ND	mg/L		1		E300.0	10/17/13 05:10 / wc
PHYSICAL PROPERTIES							
Conductivity @ 25 C	90	umhos/cm		1		A2510 B	10/16/13 10:40 / alp
pH	7.14	s.u.	H	0.01		A4500-H B	10/16/13 10:40 / alp
Solids, Total Dissolved TDS @ 180 C	68	mg/L		10		A2540 C	10/16/13 15:06 / tmm
METALS - DISSOLVED							
Arsenic	ND	mg/L		0.001		E200.8	10/17/13 01:41 / clm
Iron	ND	mg/L		0.03		E200.7	10/16/13 23:11 / sf
Molybdenum	ND	mg/L		0.01		E200.8	10/17/13 01:41 / clm
Selenium	ND	mg/L		0.001		E200.8	10/17/13 01:41 / clm
Uranium	ND	mg/L		0.0003		E200.8	10/17/13 01:41 / clm
DATA QUALITY							
A/C Balance (± 5)	0.483	%				A1030 E	10/21/13 15:22 / kbh
Anions	0.840	meq/L				A1030 E	10/21/13 15:22 / kbh
Cations	0.848	meq/L				A1030 E	10/21/13 15:22 / kbh
Solids, Total Dissolved Calculated	80	mg/L				A1030 E	10/21/13 15:22 / kbh
TDS Balance (0.80 - 1.20)	0.850					A1030 E	10/21/13 15:22 / kbh

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
H - Analysis performed past recommended holding time.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility
Lab ID: C13100566-025
Client Sample ID: 7037

Revised Date: 12/13/13
Report Date: 10/31/13
Collection Date: 10/13/13 08:40
DateReceived: 10/15/13
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Carbonate as CO3	ND	mg/L		5		A2320 B	10/16/13 12:01 / jba
Bicarbonate as HCO3	211	mg/L		5		A2320 B	10/16/13 12:01 / jba
Calcium	86	mg/L		1		E200.7	10/16/13 23:15 / sf
Chloride	48	mg/L		1		E300.0	10/17/13 06:05 / wc
Magnesium	26	mg/L		1		E200.7	10/16/13 23:15 / sf
Potassium	3	mg/L		1		E200.7	10/16/13 23:15 / sf
Sodium	33	mg/L		1		E200.7	10/16/13 23:15 / sf
Sulfate	144	mg/L	D	2		E300.0	10/17/13 06:05 / wc
PHYSICAL PROPERTIES							
Conductivity @ 25 C	760	umhos/cm		1		A2510 B	10/16/13 10:43 / alp
pH	7.55	s.u.	H	0.01		A4500-H B	10/16/13 10:43 / alp
Solids, Total Dissolved TDS @ 180 C	489	mg/L		10		A2540 C	10/16/13 15:06 / tmm
METALS - DISSOLVED							
Arsenic	0.018	mg/L		0.001		E200.8	10/17/13 01:44 / clm
Iron	ND	mg/L		0.03		E200.7	10/16/13 23:15 / sf
Molybdenum	ND	mg/L		0.01		E200.8	10/17/13 01:44 / clm
Selenium	0.009	mg/L		0.001		E200.8	10/17/13 01:44 / clm
Uranium	0.0076	mg/L		0.0003		E200.8	10/17/13 01:44 / clm
DATA QUALITY							
A/C Balance (± 5)	-0.423	%				A1030 E	10/21/13 15:22 / kbh
Anions	8.02	meq/L				A1030 E	10/21/13 15:22 / kbh
Cations	7.95	meq/L				A1030 E	10/21/13 15:22 / kbh
Solids, Total Dissolved Calculated	470	mg/L				A1030 E	10/21/13 15:22 / kbh
TDS Balance (0.80 - 1.20)	1.04					A1030 E	10/21/13 15:22 / kbh

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
H - Analysis performed past recommended holding time.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility
Lab ID: C13100566-026
Client Sample ID: 7038

Revised Date: 12/13/13
Report Date: 10/31/13
Collection Date: 10/13/13 09:05
DateReceived: 10/15/13
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Carbonate as CO3	ND	mg/L		5		A2320 B	10/16/13 12:16 / jba
Bicarbonate as HCO3	201	mg/L		5		A2320 B	10/16/13 12:16 / jba
Calcium	88	mg/L		1		E200.7	10/17/13 15:23 / sf
Chloride	47	mg/L		1		E300.0	10/17/13 06:24 / wc
Magnesium	27	mg/L		1		E200.7	10/17/13 15:23 / sf
Potassium	3	mg/L		1		E200.7	10/17/13 15:23 / sf
Sodium	34	mg/L		1		E200.7	10/17/13 15:23 / sf
Sulfate	155	mg/L	D	2		E300.0	10/17/13 06:24 / wc
PHYSICAL PROPERTIES							
Conductivity @ 25 C	766	umhos/cm		1		A2510 B	10/16/13 10:46 / alp
pH	7.31	s.u.	H	0.01		A4500-H B	10/16/13 10:46 / alp
Solids, Total Dissolved TDS @ 180 C	500	mg/L		10		A2540 C	10/16/13 15:08 / tmm
METALS - DISSOLVED							
Arsenic	0.001	mg/L		0.001		E200.8	10/17/13 01:47 / clm
Iron	0.32	mg/L		0.03		E200.7	10/17/13 15:23 / sf
Molybdenum	0.01	mg/L		0.01		E200.8	10/17/13 01:47 / clm
Selenium	0.009	mg/L		0.001		E200.8	10/17/13 01:47 / clm
Uranium	0.0139	mg/L		0.0003		E200.8	10/17/13 01:47 / clm
DATA QUALITY							
A/C Balance (± 5)	0.529	%				A1030 E	10/21/13 15:22 / kbh
Anions	8.07	meq/L				A1030 E	10/21/13 15:22 / kbh
Cations	8.16	meq/L				A1030 E	10/21/13 15:22 / kbh
Solids, Total Dissolved Calculated	480	mg/L				A1030 E	10/21/13 15:22 / kbh
TDS Balance (0.80 - 1.20)	1.04					A1030 E	10/21/13 15:22 / kbh

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
H - Analysis performed past recommended holding time.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility
Lab ID: C13100566-027
Client Sample ID: 7039

Revised Date: 12/13/13
Report Date: 10/31/13
Collection Date: 10/13/13 10:10
DateReceived: 10/15/13
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Carbonate as CO3	ND	mg/L		5		A2320 B	10/16/13 12:24 / jba
Bicarbonate as HCO3	210	mg/L		5		A2320 B	10/16/13 12:24 / jba
Calcium	82	mg/L		1		E200.7	10/17/13 15:34 / sf
Chloride	45	mg/L		1		E300.0	10/17/13 06:42 / wc
Magnesium	25	mg/L		1		E200.7	10/17/13 15:34 / sf
Potassium	3	mg/L		1		E200.7	10/17/13 15:34 / sf
Sodium	34	mg/L		1		E200.7	10/17/13 15:34 / sf
Sulfate	139	mg/L	D	2		E300.0	10/17/13 06:42 / wc
PHYSICAL PROPERTIES							
Conductivity @ 25 C	736	umhos/cm		1		A2510 B	10/16/13 10:49 / alp
pH	7.54	s.u.	H	0.01		A4500-H B	10/16/13 10:49 / alp
Solids, Total Dissolved TDS @ 180 C	471	mg/L		10		A2540 C	10/16/13 15:08 / tmm
METALS - DISSOLVED							
Arsenic	0.021	mg/L		0.001		E200.8	10/17/13 01:50 / clm
Iron	ND	mg/L		0.03		E200.7	10/17/13 15:34 / sf
Molybdenum	0.01	mg/L		0.01		E200.8	10/17/13 01:50 / clm
Selenium	0.008	mg/L		0.001		E200.8	10/17/13 01:50 / clm
Uranium	0.0077	mg/L		0.0003		E200.8	10/17/13 01:50 / clm
DATA QUALITY							
A/C Balance (± 5)	-0.791	%				A1030 E	10/21/13 15:22 / kbh
Anions	7.80	meq/L				A1030 E	10/21/13 15:22 / kbh
Cations	7.68	meq/L				A1030 E	10/21/13 15:22 / kbh
Solids, Total Dissolved Calculated	460	mg/L				A1030 E	10/21/13 15:22 / kbh
TDS Balance (0.80 - 1.20)	1.03					A1030 E	10/21/13 15:22 / kbh

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
H - Analysis performed past recommended holding time.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility
Lab ID: C13100566-028
Client Sample ID: 7040

Revised Date: 12/13/13
Report Date: 10/31/13
Collection Date: 10/13/13 10:20
DateReceived: 10/15/13
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Carbonate as CO3	ND	mg/L		5		A2320 B	10/16/13 12:33 / jba
Bicarbonate as HCO3	220	mg/L		5		A2320 B	10/16/13 12:33 / jba
Calcium	79	mg/L		1		E200.7	10/17/13 15:37 / sf
Chloride	45	mg/L		1		E300.0	10/17/13 07:00 / wc
Magnesium	24	mg/L		1		E200.7	10/17/13 15:37 / sf
Potassium	3	mg/L		1		E200.7	10/17/13 15:37 / sf
Sodium	34	mg/L		1		E200.7	10/17/13 15:37 / sf
Sulfate	141	mg/L	D	2		E300.0	10/17/13 07:00 / wc
PHYSICAL PROPERTIES							
Conductivity @ 25 C	739	umhos/cm		1		A2510 B	10/16/13 10:55 / alp
pH	7.53	s.u.	H	0.01		A4500-H B	10/16/13 10:55 / alp
Solids, Total Dissolved TDS @ 180 C	474	mg/L		10		A2540 C	10/16/13 15:09 / tmm
METALS - DISSOLVED							
Arsenic	0.022	mg/L		0.001		E200.8	10/17/13 01:54 / clm
Iron	ND	mg/L		0.03		E200.7	10/17/13 15:37 / sf
Molybdenum	0.01	mg/L		0.01		E200.8	10/17/13 01:54 / clm
Selenium	0.009	mg/L		0.001		E200.8	10/17/13 01:54 / clm
Uranium	0.0075	mg/L		0.0003		E200.8	10/17/13 01:54 / clm
DATA QUALITY							
A/C Balance (± 5)	-3.79	%				A1030 E	10/21/13 15:23 / kbh
Anions	8.01	meq/L				A1030 E	10/21/13 15:23 / kbh
Cations	7.43	meq/L				A1030 E	10/21/13 15:23 / kbh
Solids, Total Dissolved Calculated	460	mg/L				A1030 E	10/21/13 15:23 / kbh
TDS Balance (0.80 - 1.20)	1.03					A1030 E	10/21/13 15:23 / kbh

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
H - Analysis performed past recommended holding time.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility
Lab ID: C13100566-029
Client Sample ID: 7041

Revised Date: 12/13/13
Report Date: 10/31/13
Collection Date: 10/13/13 10:40
DateReceived: 10/15/13
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Carbonate as CO3	ND	mg/L		5		A2320 B	10/16/13 12:41 / jba
Bicarbonate as HCO3	212	mg/L		5		A2320 B	10/16/13 12:41 / jba
Calcium	116	mg/L		1		E200.7	10/17/13 15:41 / sf
Chloride	153	mg/L		1		E300.0	10/17/13 07:19 / wc
Magnesium	37	mg/L		1		E200.7	10/17/13 15:41 / sf
Potassium	3	mg/L		1		E200.7	10/17/13 15:41 / sf
Sodium	66	mg/L		1		E200.7	10/17/13 15:41 / sf
Sulfate	180	mg/L	D	4		E300.0	10/17/13 07:19 / wc
PHYSICAL PROPERTIES							
Conductivity @ 25 C	1150	umhos/cm		1		A2510 B	10/16/13 10:58 / alp
pH	7.58	s.u.	H	0.01		A4500-H B	10/16/13 10:58 / alp
Solids, Total Dissolved TDS @ 180 C	724	mg/L		10		A2540 C	10/16/13 15:09 / tmm
METALS - DISSOLVED							
Arsenic	0.022	mg/L		0.001		E200.8	10/17/13 01:57 / clm
Iron	ND	mg/L		0.03		E200.7	10/17/13 15:41 / sf
Molybdenum	ND	mg/L		0.01		E200.8	10/17/13 01:57 / clm
Selenium	0.008	mg/L		0.001		E200.8	10/17/13 01:57 / clm
Uranium	0.0167	mg/L		0.0003		E200.8	10/17/13 01:57 / clm
DATA QUALITY							
A/C Balance (± 5)	-0.772	%				A1030 E	10/21/13 15:23 / kbh
Anions	11.9	meq/L				A1030 E	10/21/13 15:23 / kbh
Cations	11.7	meq/L				A1030 E	10/21/13 15:23 / kbh
Solids, Total Dissolved Calculated	700	mg/L				A1030 E	10/21/13 15:23 / kbh
TDS Balance (0.80 - 1.20)	1.04					A1030 E	10/21/13 15:23 / kbh

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
H - Analysis performed past recommended holding time.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility
Lab ID: C13100566-030
Client Sample ID: 7042

Revised Date: 12/13/13
Report Date: 10/31/13
Collection Date: 10/13/13 11:05
DateReceived: 10/15/13
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Carbonate as CO3	ND	mg/L		5		A2320 B	10/16/13 12:48 / jba
Bicarbonate as HCO3	212	mg/L		5		A2320 B	10/16/13 12:48 / jba
Calcium	116	mg/L		1		E200.7	10/17/13 15:45 / sf
Chloride	151	mg/L		1		E300.0	10/17/13 07:37 / wc
Magnesium	37	mg/L		1		E200.7	10/17/13 15:45 / sf
Potassium	3	mg/L		1		E200.7	10/17/13 15:45 / sf
Sodium	66	mg/L		1		E200.7	10/17/13 15:45 / sf
Sulfate	177	mg/L	D	4		E300.0	10/17/13 07:37 / wc
PHYSICAL PROPERTIES							
Conductivity @ 25 C	1150	umhos/cm		1		A2510 B	10/16/13 11:01 / alp
pH	7.64	s.u.	H	0.01		A4500-H B	10/16/13 11:01 / alp
Solids, Total Dissolved TDS @ 180 C	725	mg/L		10		A2540 C	10/16/13 15:09 / tmm
METALS - DISSOLVED							
Arsenic	0.015	mg/L		0.001		E200.8	10/17/13 02:00 / clm
Iron	ND	mg/L		0.03		E200.7	10/17/13 15:45 / sf
Molybdenum	0.02	mg/L		0.01		E200.8	10/17/13 02:00 / clm
Selenium	0.009	mg/L		0.001		E200.8	10/17/13 02:00 / clm
Uranium	0.0176	mg/L		0.0003		E200.8	10/17/13 02:00 / clm
DATA QUALITY							
A/C Balance (± 5)	0.0231	%				A1030 E	10/21/13 15:23 / kbh
Anions	11.8	meq/L				A1030 E	10/21/13 15:23 / kbh
Cations	11.8	meq/L				A1030 E	10/21/13 15:23 / kbh
Solids, Total Dissolved Calculated	690	mg/L				A1030 E	10/21/13 15:23 / kbh
TDS Balance (0.80 - 1.20)	1.05					A1030 E	10/21/13 15:23 / kbh

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
H - Analysis performed past recommended holding time.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility
Lab ID: C13100566-031
Client Sample ID: 7043

Revised Date: 12/13/13
Report Date: 10/31/13
Collection Date: 10/13/13 11:35
DateReceived: 10/15/13
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Carbonate as CO3	ND	mg/L		5		A2320 B	10/16/13 12:56 / jba
Bicarbonate as HCO3	214	mg/L		5		A2320 B	10/16/13 12:56 / jba
Calcium	120	mg/L		1		E200.7	10/17/13 15:49 / sf
Chloride	150	mg/L		1		E300.0	10/17/13 08:33 / wc
Magnesium	37	mg/L		1		E200.7	10/17/13 15:49 / sf
Potassium	3	mg/L		1		E200.7	10/17/13 15:49 / sf
Sodium	60	mg/L		1		E200.7	10/17/13 15:49 / sf
Sulfate	178	mg/L	D	4		E300.0	10/17/13 08:33 / wc
PHYSICAL PROPERTIES							
Conductivity @ 25 C	1150	umhos/cm		1		A2510 B	10/16/13 11:04 / alp
pH	7.64	s.u.	H	0.01		A4500-H B	10/16/13 11:04 / alp
Solids, Total Dissolved TDS @ 180 C	740	mg/L		10		A2540 C	10/16/13 15:10 / tmm
METALS - DISSOLVED							
Arsenic	0.026	mg/L		0.001		E200.8	10/17/13 02:16 / clm
Iron	ND	mg/L		0.03		E200.7	10/17/13 15:49 / sf
Molybdenum	0.01	mg/L		0.01		E200.8	10/17/13 02:16 / clm
Selenium	0.008	mg/L		0.001		E200.8	10/17/13 02:16 / clm
Uranium	0.0163	mg/L		0.0003		E200.8	10/17/13 02:16 / clm
DATA QUALITY							
A/C Balance (± 5)	-0.207	%				A1030 E	10/21/13 15:23 / kbh
Anions	11.8	meq/L				A1030 E	10/21/13 15:23 / kbh
Cations	11.7	meq/L				A1030 E	10/21/13 15:23 / kbh
Solids, Total Dissolved Calculated	690	mg/L				A1030 E	10/21/13 15:23 / kbh
TDS Balance (0.80 - 1.20)	1.07					A1030 E	10/21/13 15:23 / kbh

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
H - Analysis performed past recommended holding time.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility
Lab ID: C13100566-032
Client Sample ID: 7044

Revised Date: 12/13/13
Report Date: 10/31/13
Collection Date: 10/13/13 11:45
DateReceived: 10/15/13
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Carbonate as CO3	ND	mg/L		5		A2320 B	10/16/13 13:11 / jba
Bicarbonate as HCO3	214	mg/L		5		A2320 B	10/16/13 13:11 / jba
Calcium	119	mg/L		1		E200.7	10/17/13 15:52 / sf
Chloride	150	mg/L		1		E300.0	10/17/13 09:28 / wc
Magnesium	37	mg/L		1		E200.7	10/17/13 15:52 / sf
Potassium	3	mg/L		1		E200.7	10/17/13 15:52 / sf
Sodium	59	mg/L		1		E200.7	10/17/13 15:52 / sf
Sulfate	177	mg/L	D	4		E300.0	10/17/13 09:28 / wc
PHYSICAL PROPERTIES							
Conductivity @ 25 C	1150	umhos/cm		1		A2510 B	10/16/13 11:07 / alp
pH	7.61	s.u.	H	0.01		A4500-H B	10/16/13 11:07 / alp
Solids, Total Dissolved TDS @ 180 C	751	mg/L		10		A2540 C	10/16/13 15:10 / tmm
METALS - DISSOLVED							
Arsenic	0.026	mg/L		0.001		E200.8	10/17/13 02:29 / clm
Iron	ND	mg/L		0.03		E200.7	10/17/13 15:52 / sf
Molybdenum	0.01	mg/L		0.01		E200.8	10/17/13 02:29 / clm
Selenium	0.008	mg/L		0.001		E200.8	10/17/13 02:29 / clm
Uranium	0.0162	mg/L		0.0003		E200.8	10/17/13 02:29 / clm
DATA QUALITY							
A/C Balance (± 5)	-0.467	%				A1030 E	10/21/13 15:23 / kbh
Anions	11.8	meq/L				A1030 E	10/21/13 15:23 / kbh
Cations	11.6	meq/L				A1030 E	10/21/13 15:23 / kbh
Solids, Total Dissolved Calculated	690	mg/L				A1030 E	10/21/13 15:23 / kbh
TDS Balance (0.80 - 1.20)	1.09					A1030 E	10/21/13 15:23 / kbh

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
H - Analysis performed past recommended holding time.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility
Lab ID: C13100566-033
Client Sample ID: 7045

Revised Date: 12/13/13
Report Date: 10/31/13
Collection Date: 10/13/13 14:00
DateReceived: 10/15/13
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Carbonate as CO3	ND	mg/L		5		A2320 B	10/16/13 13:19 / jba
Bicarbonate as HCO3	224	mg/L		5		A2320 B	10/16/13 13:19 / jba
Calcium	92	mg/L		1		E200.7	10/17/13 16:11 / sf
Chloride	73	mg/L		1		E300.0	10/17/13 09:47 / wc
Magnesium	23	mg/L		1		E200.7	10/17/13 16:11 / sf
Potassium	4	mg/L		1		E200.7	10/17/13 16:11 / sf
Sodium	43	mg/L		1		E200.7	10/17/13 16:11 / sf
Sulfate	129	mg/L	D	2		E300.0	10/17/13 09:47 / wc
PHYSICAL PROPERTIES							
Conductivity @ 25 C	814	umhos/cm		1		A2510 B	10/16/13 11:10 / alp
pH	7.55	s.u.	H	0.01		A4500-H B	10/16/13 11:10 / alp
Solids, Total Dissolved TDS @ 180 C	521	mg/L		10		A2540 C	10/16/13 15:12 / tmm
METALS - DISSOLVED							
Arsenic	0.013	mg/L		0.001		E200.8	10/17/13 02:33 / clm
Iron	ND	mg/L		0.03		E200.7	10/17/13 16:11 / sf
Molybdenum	ND	mg/L		0.01		E200.8	10/17/13 02:33 / clm
Selenium	0.011	mg/L		0.001		E200.8	10/17/13 02:33 / clm
Uranium	0.0106	mg/L		0.0003		E200.8	10/17/13 02:33 / clm
DATA QUALITY							
A/C Balance (± 5)	-0.172	%				A1030 E	10/21/13 15:23 / kbh
Anions	8.54	meq/L				A1030 E	10/21/13 15:23 / kbh
Cations	8.51	meq/L				A1030 E	10/21/13 15:23 / kbh
Solids, Total Dissolved Calculated	500	mg/L				A1030 E	10/21/13 15:23 / kbh
TDS Balance (0.80 - 1.20)	1.05					A1030 E	10/21/13 15:23 / kbh

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
H - Analysis performed past recommended holding time.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility
Lab ID: C13100566-034
Client Sample ID: 7046

Revised Date: 12/13/13
Report Date: 10/31/13
Collection Date: 10/13/13 14:30
DateReceived: 10/15/13
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Carbonate as CO3	ND	mg/L		5		A2320 B	10/16/13 13:27 / jba
Bicarbonate as HCO3	237	mg/L		5		A2320 B	10/16/13 13:27 / jba
Calcium	89	mg/L		1		E200.7	10/17/13 16:14 / sf
Chloride	67	mg/L		1		E300.0	10/17/13 10:05 / wc
Magnesium	23	mg/L		1		E200.7	10/17/13 16:14 / sf
Potassium	3	mg/L		1		E200.7	10/17/13 16:14 / sf
Sodium	45	mg/L		1		E200.7	10/17/13 16:14 / sf
Sulfate	127	mg/L	D	2		E300.0	10/17/13 10:05 / wc
PHYSICAL PROPERTIES							
Conductivity @ 25 C	795	umhos/cm		1		A2510 B	10/16/13 11:13 / alp
pH	7.53	s.u.	H	0.01		A4500-H B	10/16/13 11:13 / alp
Solids, Total Dissolved TDS @ 180 C	509	mg/L		10		A2540 C	10/16/13 15:15 / tmm
METALS - DISSOLVED							
Arsenic	0.012	mg/L		0.001		E200.8	10/17/13 02:36 / clm
Iron	ND	mg/L		0.03		E200.7	10/17/13 16:14 / sf
Molybdenum	ND	mg/L		0.01		E200.8	10/17/13 02:36 / clm
Selenium	0.011	mg/L		0.001		E200.8	10/17/13 02:36 / clm
Uranium	0.0094	mg/L		0.0003		E200.8	10/17/13 02:36 / clm
DATA QUALITY							
A/C Balance (± 5)	-1.09	%				A1030 E	10/21/13 15:23 / kbh
Anions	8.54	meq/L				A1030 E	10/21/13 15:23 / kbh
Cations	8.35	meq/L				A1030 E	10/21/13 15:23 / kbh
Solids, Total Dissolved Calculated	490	mg/L				A1030 E	10/21/13 15:23 / kbh
TDS Balance (0.80 - 1.20)	1.03					A1030 E	10/21/13 15:23 / kbh

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
H - Analysis performed past recommended holding time.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility
Lab ID: C13100566-035
Client Sample ID: 7047

Revised Date: 12/13/13
Report Date: 10/31/13
Collection Date: 10/13/13 15:55
DateReceived: 10/15/13
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Carbonate as CO3	ND	mg/L		5		A2320 B	10/16/13 13:34 / jba
Bicarbonate as HCO3	227	mg/L		5		A2320 B	10/16/13 13:34 / jba
Calcium	79	mg/L		1		E200.7	10/17/13 16:18 / sf
Chloride	42	mg/L		1		E300.0	10/17/13 10:23 / wc
Magnesium	22	mg/L		1		E200.7	10/17/13 16:18 / sf
Potassium	3	mg/L		1		E200.7	10/17/13 16:18 / sf
Sodium	48	mg/L		1		E200.7	10/17/13 16:18 / sf
Sulfate	140	mg/L	D	2		E300.0	10/17/13 10:23 / wc
PHYSICAL PROPERTIES							
Conductivity @ 25 C	744	umhos/cm		1		A2510 B	10/16/13 11:16 / alp
pH	7.52	s.u.	H	0.01		A4500-H B	10/16/13 11:16 / alp
Solids, Total Dissolved TDS @ 180 C	481	mg/L		10		A2540 C	10/16/13 15:15 / tmm
METALS - DISSOLVED							
Arsenic	0.030	mg/L		0.001		E200.8	10/17/13 02:39 / clm
Iron	ND	mg/L		0.03		E200.7	10/17/13 16:18 / sf
Molybdenum	ND	mg/L		0.01		E200.8	10/17/13 02:39 / clm
Selenium	0.010	mg/L		0.001		E200.8	10/17/13 02:39 / clm
Uranium	0.0079	mg/L		0.0003		E200.8	10/17/13 02:39 / clm
DATA QUALITY							
A/C Balance (± 5)	-0.339	%				A1030 E	10/21/13 15:23 / kbh
Anions	7.95	meq/L				A1030 E	10/21/13 15:23 / kbh
Cations	7.89	meq/L				A1030 E	10/21/13 15:23 / kbh
Solids, Total Dissolved Calculated	470	mg/L				A1030 E	10/21/13 15:23 / kbh
TDS Balance (0.80 - 1.20)	1.03					A1030 E	10/21/13 15:23 / kbh

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
H - Analysis performed past recommended holding time.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility
Lab ID: C13100566-036
Client Sample ID: 7048

Revised Date: 12/13/13
Report Date: 10/31/13
Collection Date: 10/13/13 16:00
DateReceived: 10/15/13
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Carbonate as CO3	ND	mg/L		5		A2320 B	10/16/13 13:42 / jba
Bicarbonate as HCO3	227	mg/L		5		A2320 B	10/16/13 13:42 / jba
Calcium	78	mg/L		1		E200.7	10/17/13 16:29 / sf
Chloride	43	mg/L		1		E300.0	10/17/13 10:42 / wc
Magnesium	21	mg/L		1		E200.7	10/17/13 16:29 / sf
Potassium	3	mg/L		1		E200.7	10/17/13 16:29 / sf
Sodium	47	mg/L		1		E200.7	10/17/13 16:29 / sf
Sulfate	143	mg/L	D	2		E300.0	10/17/13 10:42 / wc
PHYSICAL PROPERTIES							
Conductivity @ 25 C	743	umhos/cm		1		A2510 B	10/16/13 11:19 / alp
pH	7.53	s.u.	H	0.01		A4500-H B	10/16/13 11:19 / alp
Solids, Total Dissolved TDS @ 180 C	474	mg/L		10		A2540 C	10/16/13 15:15 / tmm
METALS - DISSOLVED							
Arsenic	0.030	mg/L		0.001		E200.8	10/17/13 02:43 / clm
Iron	ND	mg/L		0.03		E200.7	10/17/13 16:29 / sf
Molybdenum	ND	mg/L		0.01		E200.8	10/17/13 02:43 / clm
Selenium	0.009	mg/L		0.001		E200.8	10/17/13 02:43 / clm
Uranium	0.0076	mg/L		0.0003		E200.8	10/17/13 02:43 / clm
DATA QUALITY							
A/C Balance (± 5)	-1.81	%				A1030 E	10/21/13 15:23 / kbh
Anions	8.04	meq/L				A1030 E	10/21/13 15:23 / kbh
Cations	7.75	meq/L				A1030 E	10/21/13 15:23 / kbh
Solids, Total Dissolved Calculated	470	mg/L				A1030 E	10/21/13 15:23 / kbh
TDS Balance (0.80 - 1.20)	1.01					A1030 E	10/21/13 15:23 / kbh

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
H - Analysis performed past recommended holding time.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility
Lab ID: C13100566-037
Client Sample ID: 7049

Revised Date: 12/13/13
Report Date: 10/31/13
Collection Date: 10/14/13 07:55
DateReceived: 10/15/13
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Carbonate as CO3	122	mg/L		5		A2320 B	10/16/13 13:52 / jba
Bicarbonate as HCO3	ND	mg/L		5		A2320 B	10/16/13 13:52 / jba
Calcium	25	mg/L		1		E200.7	10/17/13 16:32 / sf
Chloride	344	mg/L	D	2		E300.0	10/17/13 11:00 / wc
Magnesium	2	mg/L		1		E200.7	10/17/13 16:32 / sf
Potassium	23	mg/L		1		E200.7	10/17/13 16:32 / sf
Sodium	582	mg/L		1		E200.7	10/17/13 16:32 / sf
Sulfate	462	mg/L	D	8		E300.0	10/17/13 11:00 / wc
PHYSICAL PROPERTIES							
Conductivity @ 25 C	3260	umhos/cm		1		A2510 B	10/16/13 11:22 / alp
pH	11.6	s.u.	H	0.01		A4500-H B	10/16/13 11:22 / alp
Solids, Total Dissolved TDS @ 180 C	1650	mg/L		20		A2540 C	10/17/13 14:27 / alp
METALS - DISSOLVED							
Arsenic	0.013	mg/L		0.001		E200.8	10/17/13 02:59 / clm
Iron	ND	mg/L		0.03		E200.7	10/17/13 16:32 / sf
Molybdenum	1.18	mg/L		0.01		E200.8	10/17/13 02:59 / clm
Selenium	0.033	mg/L		0.001		E200.8	10/17/13 02:59 / clm
Uranium	3.24	mg/L		0.0003		E200.8	10/17/13 02:59 / clm
DATA QUALITY							
A/C Balance (± 5)	1.81	%				A1030 E	10/21/13 15:24 / kbh
Anions	26.4	meq/L				A1030 E	10/21/13 15:24 / kbh
Cations	27.3	meq/L				A1030 E	10/21/13 15:24 / kbh
Solids, Total Dissolved Calculated	1700	mg/L				A1030 E	10/21/13 15:24 / kbh
TDS Balance (0.80 - 1.20)	0.990					A1030 E	10/21/13 15:24 / kbh

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
H - Analysis performed past recommended holding time.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility
Lab ID: C13100566-038
Client Sample ID: 7050

Revised Date: 12/13/13
Report Date: 10/31/13
Collection Date: 10/14/13 08:20
DateReceived: 10/15/13
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Carbonate as CO3	129	mg/L		5		A2320 B	10/16/13 14:06 / jba
Bicarbonate as HCO3	ND	mg/L		5		A2320 B	10/16/13 14:06 / jba
Calcium	17	mg/L		1		E200.7	10/17/13 16:36 / sf
Chloride	346	mg/L	D	2		E300.0	10/17/13 11:19 / wc
Magnesium	2	mg/L		1		E200.7	10/17/13 16:36 / sf
Potassium	22	mg/L		1		E200.7	10/17/13 16:36 / sf
Sodium	586	mg/L		1		E200.7	10/17/13 16:36 / sf
Sulfate	465	mg/L	D	8		E300.0	10/17/13 11:19 / wc
PHYSICAL PROPERTIES							
Conductivity @ 25 C	3210	umhos/cm		1		A2510 B	10/16/13 12:17 / alp
pH	11.6	s.u.	H	0.01		A4500-H B	10/16/13 12:17 / alp
Solids, Total Dissolved TDS @ 180 C	1630	mg/L		20		A2540 C	10/17/13 14:27 / alp
METALS - DISSOLVED							
Arsenic	0.006	mg/L		0.001		E200.8	10/17/13 03:02 / clm
Iron	ND	mg/L		0.03		E200.7	10/17/13 16:36 / sf
Molybdenum	0.59	mg/L		0.01		E200.8	10/17/13 03:02 / clm
Selenium	0.016	mg/L		0.001		E200.8	10/17/13 03:02 / clm
Uranium	1.39	mg/L		0.0003		E200.8	10/17/13 03:02 / clm
DATA QUALITY							
A/C Balance (± 5)	1.47	%				A1030 E	10/21/13 15:24 / kbh
Anions	26.3	meq/L				A1030 E	10/21/13 15:24 / kbh
Cations	27.1	meq/L				A1030 E	10/21/13 15:24 / kbh
Solids, Total Dissolved Calculated	1700	mg/L				A1030 E	10/21/13 15:24 / kbh
TDS Balance (0.80 - 1.20)	0.980					A1030 E	10/21/13 15:24 / kbh

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
H - Analysis performed past recommended holding time.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility
Lab ID: C13100566-039
Client Sample ID: 7051

Revised Date: 12/13/13
Report Date: 10/31/13
Collection Date: 10/14/13 09:10
DateReceived: 10/15/13
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Carbonate as CO3	144	mg/L		5		A2320 B	10/16/13 14:14 / jba
Bicarbonate as HCO3	70	mg/L		5		A2320 B	10/16/13 14:14 / jba
Calcium	63	mg/L		1		E200.7	10/25/13 14:49 / sf
Chloride	333	mg/L	D	2		E300.0	10/25/13 14:31 / wc
Magnesium	18	mg/L		1		E200.7	10/25/13 14:49 / sf
Potassium	16	mg/L		1		E200.7	10/25/13 14:49 / sf
Sodium	563	mg/L		1		E200.7	10/25/13 14:49 / sf
Sulfate	512	mg/L	D	8		E300.0	10/25/13 14:31 / wc
PHYSICAL PROPERTIES							
Conductivity @ 25 C	2650	umhos/cm		1		A2510 B	10/16/13 12:20 / alp
pH	10.3	s.u.	H	0.01		A4500-H B	10/16/13 12:20 / alp
Solids, Total Dissolved TDS @ 180 C	1670	mg/L		20		A2540 C	10/16/13 15:16 / tmm
METALS - DISSOLVED							
Arsenic	0.245	mg/L		0.001		E200.8	10/17/13 03:05 / clm
Iron	ND	mg/L		0.03		E200.7	10/17/13 16:40 / sf
Molybdenum	0.70	mg/L		0.01		E200.8	10/17/13 03:05 / clm
Selenium	0.017	mg/L		0.001		E200.8	10/17/13 03:05 / clm
Uranium	3.08	mg/L		0.0003		E200.8	10/17/13 03:05 / clm
DATA QUALITY							
A/C Balance (± 5)	5.84	%				A1030 E	10/29/13 09:25 / kbh
Anions	26.3	meq/L				A1030 E	10/29/13 09:25 / kbh
Cations	29.5	meq/L				A1030 E	10/29/13 09:25 / kbh
Solids, Total Dissolved Calculated	1700	mg/L				A1030 E	10/29/13 09:25 / kbh
TDS Balance (0.80 - 1.20)	0.970					A1030 E	10/29/13 09:25 / kbh

- The Anion / Cation balance was confirmed by re-analysis.

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
H - Analysis performed past recommended holding time.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility
Lab ID: C13100566-040
Client Sample ID: 7052

Revised Date: 12/13/13
Report Date: 10/31/13
Collection Date: 10/14/13 09:50
DateReceived: 10/15/13
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Carbonate as CO3	ND	mg/L		5		A2320 B	10/16/13 14:22 / jba
Bicarbonate as HCO3	252	mg/L		5		A2320 B	10/16/13 14:22 / jba
Calcium	140	mg/L		1		E200.7	10/17/13 17:25 / sf
Chloride	153	mg/L		1		E300.0	10/17/13 11:56 / wc
Magnesium	39	mg/L		1		E200.7	10/17/13 17:25 / sf
Potassium	5	mg/L		1		E200.7	10/17/13 17:25 / sf
Sodium	80	mg/L		1		E200.7	10/17/13 17:25 / sf
Sulfate	248	mg/L	D	4		E300.0	10/17/13 11:56 / wc
PHYSICAL PROPERTIES							
Conductivity @ 25 C	1300	umhos/cm		1		A2510 B	10/16/13 12:23 / alp
pH	7.39	s.u.	H	0.01		A4500-H B	10/16/13 12:23 / alp
Solids, Total Dissolved TDS @ 180 C	859	mg/L		10		A2540 C	10/16/13 15:16 / tmm
METALS - DISSOLVED							
Arsenic	0.003	mg/L		0.001		E200.8	10/17/13 03:09 / clm
Iron	ND	mg/L		0.03		E200.7	10/17/13 17:25 / sf
Molybdenum	0.02	mg/L		0.01		E200.8	10/17/13 03:09 / clm
Selenium	0.009	mg/L		0.001		E200.8	10/17/13 03:09 / clm
Uranium	0.0953	mg/L		0.0003		E200.8	10/17/13 03:09 / clm
DATA QUALITY							
A/C Balance (± 5)	-0.311	%				A1030 E	10/21/13 15:24 / kbh
Anions	13.9	meq/L				A1030 E	10/21/13 15:24 / kbh
Cations	13.8	meq/L				A1030 E	10/21/13 15:24 / kbh
Solids, Total Dissolved Calculated	820	mg/L				A1030 E	10/21/13 15:24 / kbh
TDS Balance (0.80 - 1.20)	1.05					A1030 E	10/21/13 15:24 / kbh

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
H - Analysis performed past recommended holding time.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility
Lab ID: C13100566-041
Client Sample ID: 7053

Revised Date: 12/13/13
Report Date: 10/31/13
Collection Date: 10/14/13 10:35
DateReceived: 10/15/13
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Carbonate as CO3	ND	mg/L		5		A2320 B	10/16/13 14:56 / jba
Bicarbonate as HCO3	225	mg/L		5		A2320 B	10/16/13 14:56 / jba
Calcium	131	mg/L		1		E200.7	10/17/13 17:29 / sf
Chloride	147	mg/L		1		E300.0	10/17/13 12:51 / wc
Magnesium	38	mg/L		1		E200.7	10/17/13 17:29 / sf
Potassium	4	mg/L		1		E200.7	10/17/13 17:29 / sf
Sodium	67	mg/L		1		E200.7	10/17/13 17:29 / sf
Sulfate	208	mg/L	D	4		E300.0	10/17/13 12:51 / wc
PHYSICAL PROPERTIES							
Conductivity @ 25 C	1190	umhos/cm		1		A2510 B	10/16/13 12:26 / alp
pH	7.55	s.u.	H	0.01		A4500-H B	10/16/13 12:26 / alp
Solids, Total Dissolved TDS @ 180 C	783	mg/L		10		A2540 C	10/16/13 15:16 / tmm
METALS - DISSOLVED							
Arsenic	0.006	mg/L		0.001		E200.8	10/17/13 03:12 / clm
Iron	ND	mg/L		0.03		E200.7	10/17/13 17:29 / sf
Molybdenum	0.02	mg/L		0.01		E200.8	10/17/13 03:12 / clm
Selenium	0.009	mg/L		0.001		E200.8	10/17/13 03:12 / clm
Uranium	0.0489	mg/L		0.0003		E200.8	10/17/13 03:12 / clm
DATA QUALITY							
A/C Balance (± 5)	0.740	%				A1030 E	10/21/13 15:24 / kbh
Anions	12.5	meq/L				A1030 E	10/21/13 15:24 / kbh
Cations	12.7	meq/L				A1030 E	10/21/13 15:24 / kbh
Solids, Total Dissolved Calculated	740	mg/L				A1030 E	10/21/13 15:24 / kbh
TDS Balance (0.80 - 1.20)	1.06					A1030 E	10/21/13 15:24 / kbh

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
H - Analysis performed past recommended holding time.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility
Lab ID: C13100566-042
Client Sample ID: 7054

Revised Date: 12/13/13
Report Date: 10/31/13
Collection Date: 10/14/13 11:50
DateReceived: 10/15/13
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Carbonate as CO3	ND	mg/L		5		A2320 B	10/16/13 15:11 / jba
Bicarbonate as HCO3	317	mg/L		5		A2320 B	10/16/13 15:11 / jba
Calcium	173	mg/L		1		E200.7	10/17/13 17:32 / sf
Chloride	182	mg/L		1		E300.0	10/17/13 13:46 / wc
Magnesium	45	mg/L		1		E200.7	10/17/13 17:32 / sf
Potassium	5	mg/L		1		E200.7	10/17/13 17:32 / sf
Sodium	128	mg/L		1		E200.7	10/17/13 17:32 / sf
Sulfate	332	mg/L	D	4		E300.0	10/17/13 13:46 / wc
PHYSICAL PROPERTIES							
Conductivity @ 25 C	1600	umhos/cm		1		A2510 B	10/16/13 12:29 / alp
pH	7.45	s.u.	H	0.01		A4500-H B	10/16/13 12:29 / alp
Solids, Total Dissolved TDS @ 180 C	1080	mg/L		10		A2540 C	10/16/13 15:17 / tmm
METALS - DISSOLVED							
Arsenic	0.009	mg/L		0.001		E200.8	10/17/13 03:25 / clm
Iron	ND	mg/L		0.03		E200.7	10/17/13 17:32 / sf
Molybdenum	0.02	mg/L		0.01		E200.8	10/17/13 03:25 / clm
Selenium	0.011	mg/L		0.001		E200.8	10/17/13 03:25 / clm
Uranium	0.315	mg/L		0.0003		E200.8	10/17/13 03:25 / clm
DATA QUALITY							
A/C Balance (± 5)	1.29	%				A1030 E	10/21/13 15:24 / kbh
Anions	17.6	meq/L				A1030 E	10/21/13 15:24 / kbh
Cations	18.1	meq/L				A1030 E	10/21/13 15:24 / kbh
Solids, Total Dissolved Calculated	1100	mg/L				A1030 E	10/21/13 15:24 / kbh
TDS Balance (0.80 - 1.20)	1.02					A1030 E	10/21/13 15:24 / kbh

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
H - Analysis performed past recommended holding time.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility
Lab ID: C13100566-043
Client Sample ID: 7029

Revised Date: 12/13/13
Report Date: 10/31/13
Collection Date: 10/11/13 12:30
DateReceived: 10/15/13
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Carbonate as CO3	ND	mg/L		5		A2320 B	10/16/13 15:27 / jba
Bicarbonate as HCO3	242	mg/L		5		A2320 B	10/16/13 15:27 / jba
Calcium	145	mg/L		1		E200.7	10/17/13 17:36 / sf
Chloride	144	mg/L		1		E300.0	10/17/13 14:05 / wc
Magnesium	40	mg/L		1		E200.7	10/17/13 17:36 / sf
Potassium	6	mg/L		1		E200.7	10/17/13 17:36 / sf
Sodium	91	mg/L		1		E200.7	10/17/13 17:36 / sf
Sulfate	302	mg/L	D	4		E300.0	10/17/13 14:05 / wc
PHYSICAL PROPERTIES							
Conductivity @ 25 C	1350	umhos/cm		1		A2510 B	10/16/13 12:32 / alp
pH	7.42	s.u.	H	0.01		A4500-H B	10/16/13 12:32 / alp
Solids, Total Dissolved TDS @ 180 C	911	mg/L		10		A2540 C	10/16/13 15:17 / tmm
METALS - DISSOLVED							
Arsenic	0.007	mg/L		0.001		E200.8	10/17/13 03:41 / clm
Iron	ND	mg/L		0.03		E200.7	10/17/13 17:36 / sf
Molybdenum	ND	mg/L		0.01		E200.8	10/17/13 03:41 / clm
Selenium	0.009	mg/L		0.001		E200.8	10/17/13 03:41 / clm
Uranium	0.0155	mg/L		0.0003		E200.8	10/17/13 03:41 / clm
DATA QUALITY							
A/C Balance (± 5)	-0.0538	%				A1030 E	10/21/13 15:24 / kbh
Anions	14.7	meq/L				A1030 E	10/21/13 15:24 / kbh
Cations	14.7	meq/L				A1030 E	10/21/13 15:24 / kbh
Solids, Total Dissolved Calculated	880	mg/L				A1030 E	10/21/13 15:24 / kbh
TDS Balance (0.80 - 1.20)	1.03					A1030 E	10/21/13 15:24 / kbh

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
H - Analysis performed past recommended holding time.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility
Lab ID: C13100566-044
Client Sample ID: 7030

Revised Date: 12/13/13
Report Date: 10/31/13
Collection Date: 10/11/13 13:15
DateReceived: 10/15/13
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Carbonate as CO3	ND	mg/L		5		A2320 B	10/16/13 15:35 / jba
Bicarbonate as HCO3	241	mg/L		5		A2320 B	10/16/13 15:35 / jba
Calcium	148	mg/L		1		E200.7	10/17/13 17:40 / sf
Chloride	140	mg/L		1		E300.0	10/17/13 14:23 / wc
Magnesium	41	mg/L		1		E200.7	10/17/13 17:40 / sf
Potassium	6	mg/L		1		E200.7	10/17/13 17:40 / sf
Sodium	94	mg/L		1		E200.7	10/17/13 17:40 / sf
Sulfate	294	mg/L	D	4		E300.0	10/17/13 14:23 / wc
PHYSICAL PROPERTIES							
Conductivity @ 25 C	1350	umhos/cm		1		A2510 B	10/16/13 12:35 / alp
pH	7.49	s.u.	H	0.01		A4500-H B	10/16/13 12:35 / alp
Solids, Total Dissolved TDS @ 180 C	895	mg/L		10		A2540 C	10/16/13 15:18 / tmm
METALS - DISSOLVED							
Arsenic	0.007	mg/L		0.001		E200.8	10/17/13 03:44 / clm
Iron	ND	mg/L		0.03		E200.7	10/17/13 17:40 / sf
Molybdenum	ND	mg/L		0.01		E200.8	10/17/13 03:44 / clm
Selenium	0.010	mg/L		0.001		E200.8	10/17/13 03:44 / clm
Uranium	0.0163	mg/L		0.0003		E200.8	10/17/13 03:44 / clm
DATA QUALITY							
A/C Balance (± 5)	2.34	%				A1030 E	10/21/13 15:24 / kbh
Anions	14.4	meq/L				A1030 E	10/21/13 15:24 / kbh
Cations	15.1	meq/L				A1030 E	10/21/13 15:24 / kbh
Solids, Total Dissolved Calculated	880	mg/L				A1030 E	10/21/13 15:24 / kbh
TDS Balance (0.80 - 1.20)	1.02					A1030 E	10/21/13 15:24 / kbh

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
H - Analysis performed past recommended holding time.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility
Lab ID: C13100566-045
Client Sample ID: 6951

Revised Date: 12/13/13
Report Date: 10/31/13
Collection Date: 10/11/13 14:30
DateReceived: 10/15/13
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Carbonate as CO3	ND	mg/L		5		A2320 B	10/16/13 15:44 / jba
Bicarbonate as HCO3	505	mg/L		5		A2320 B	10/16/13 15:44 / jba
Calcium	204	mg/L		1		E200.7	10/17/13 17:50 / sf
Chloride	400	mg/L	D	2		E300.0	10/17/13 14:42 / wc
Magnesium	53	mg/L		1		E200.7	10/17/13 17:50 / sf
Potassium	6	mg/L		1		E200.7	10/17/13 17:50 / sf
Sodium	464	mg/L		1		E200.7	10/17/13 17:50 / sf
Sulfate	783	mg/L	D	8		E300.0	10/17/13 14:42 / wc
PHYSICAL PROPERTIES							
Conductivity @ 25 C	3200	umhos/cm		1		A2510 B	10/16/13 12:38 / alp
pH	7.23	s.u.	H	0.01		A4500-H B	10/16/13 12:38 / alp
Solids, Total Dissolved TDS @ 180 C	2210	mg/L		20		A2540 C	10/16/13 15:18 / tmm
METALS - DISSOLVED							
Arsenic	0.015	mg/L		0.001		E200.8	10/17/13 03:48 / clm
Iron	ND	mg/L		0.03		E200.7	10/17/13 17:50 / sf
Molybdenum	ND	mg/L		0.01		E200.8	10/17/13 03:48 / clm
Selenium	0.016	mg/L		0.001		E200.8	10/17/13 03:48 / clm
Uranium	2.19	mg/L		0.0003		E200.8	10/17/13 03:48 / clm
DATA QUALITY							
A/C Balance (± 5)	-2.05	%				A1030 E	10/21/13 15:24 / kbh
Anions	36.4	meq/L				A1030 E	10/21/13 15:24 / kbh
Cations	34.9	meq/L				A1030 E	10/21/13 15:24 / kbh
Solids, Total Dissolved Calculated	2200	mg/L				A1030 E	10/21/13 15:24 / kbh
TDS Balance (0.80 - 1.20)	1.00					A1030 E	10/21/13 15:24 / kbh

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
H - Analysis performed past recommended holding time.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility
Lab ID: C13100566-046
Client Sample ID: 6952

Revised Date: 12/13/13
Report Date: 10/31/13
Collection Date: 10/11/13 14:35
DateReceived: 10/15/13
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Carbonate as CO3	ND	mg/L		5		A2320 B	10/16/13 15:55 / jba
Bicarbonate as HCO3	491	mg/L		5		A2320 B	10/16/13 15:55 / jba
Calcium	207	mg/L		1		E200.7	10/17/13 17:54 / sf
Chloride	394	mg/L	D	2		E300.0	10/17/13 15:00 / wc
Magnesium	54	mg/L		1		E200.7	10/17/13 17:54 / sf
Potassium	6	mg/L		1		E200.7	10/17/13 17:54 / sf
Sodium	472	mg/L		1		E200.7	10/17/13 17:54 / sf
Sulfate	772	mg/L	D	8		E300.0	10/17/13 15:00 / wc
PHYSICAL PROPERTIES							
Conductivity @ 25 C	3180	umhos/cm		1		A2510 B	10/16/13 12:41 / alp
pH	7.22	s.u.	H	0.01		A4500-H B	10/16/13 12:41 / alp
Solids, Total Dissolved TDS @ 180 C	2230	mg/L		20		A2540 C	10/16/13 15:18 / tmm
METALS - DISSOLVED							
Arsenic	0.014	mg/L		0.001		E200.8	10/17/13 03:51 / clm
Iron	ND	mg/L		0.03		E200.7	10/17/13 17:54 / sf
Molybdenum	ND	mg/L		0.01		E200.8	10/17/13 03:51 / clm
Selenium	0.016	mg/L		0.001		E200.8	10/17/13 03:51 / clm
Uranium	2.15	mg/L		0.0003		E200.8	10/17/13 03:51 / clm
DATA QUALITY							
A/C Balance (± 5)	-0.446	%				A1030 E	10/21/13 15:24 / kbh
Anions	35.8	meq/L				A1030 E	10/21/13 15:24 / kbh
Cations	35.4	meq/L				A1030 E	10/21/13 15:24 / kbh
Solids, Total Dissolved Calculated	2200	mg/L				A1030 E	10/21/13 15:24 / kbh
TDS Balance (0.80 - 1.20)	1.01					A1030 E	10/21/13 15:24 / kbh

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
H - Analysis performed past recommended holding time.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility
Lab ID: C13100566-047
Client Sample ID: 6953

Revised Date: 12/13/13
Report Date: 10/31/13
Collection Date: 10/11/13 15:20
DateReceived: 10/15/13
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Carbonate as CO3	ND	mg/L		5		A2320 B	10/16/13 16:03 / jba
Bicarbonate as HCO3	494	mg/L		5		A2320 B	10/16/13 16:03 / jba
Calcium	211	mg/L		1		E200.7	10/17/13 18:12 / sf
Chloride	393	mg/L	D	2		E300.0	10/17/13 15:18 / wc
Magnesium	54	mg/L		1		E200.7	10/17/13 18:12 / sf
Potassium	6	mg/L		1		E200.7	10/17/13 18:12 / sf
Sodium	484	mg/L		1		E200.7	10/17/13 18:12 / sf
Sulfate	778	mg/L	D	8		E300.0	10/17/13 15:18 / wc
PHYSICAL PROPERTIES							
Conductivity @ 25 C	3190	umhos/cm		1		A2510 B	10/16/13 12:44 / alp
pH	7.29	s.u.	H	0.01		A4500-H B	10/16/13 12:44 / alp
Solids, Total Dissolved TDS @ 180 C	2240	mg/L		20		A2540 C	10/16/13 15:18 / tmm
METALS - DISSOLVED							
Arsenic	0.015	mg/L		0.001		E200.8	10/17/13 03:54 / clm
Iron	ND	mg/L		0.03		E200.7	10/17/13 18:12 / sf
Molybdenum	ND	mg/L		0.01		E200.8	10/17/13 03:54 / clm
Selenium	0.016	mg/L		0.001		E200.8	10/17/13 03:54 / clm
Uranium	2.13	mg/L		0.0003		E200.8	10/17/13 03:54 / clm
DATA QUALITY							
A/C Balance (± 5)	0.383	%				A1030 E	10/21/13 15:25 / kbh
Anions	35.9	meq/L				A1030 E	10/21/13 15:25 / kbh
Cations	36.2	meq/L				A1030 E	10/21/13 15:25 / kbh
Solids, Total Dissolved Calculated	2200	mg/L				A1030 E	10/21/13 15:25 / kbh
TDS Balance (0.80 - 1.20)	1.01					A1030 E	10/21/13 15:25 / kbh

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
H - Analysis performed past recommended holding time.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility
Lab ID: C13100566-048
Client Sample ID: 6954

Revised Date: 12/13/13
Report Date: 10/31/13
Collection Date: 10/12/13 08:10
DateReceived: 10/15/13
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Carbonate as CO3	ND	mg/L		5		A2320 B	10/16/13 16:13 / jba
Bicarbonate as HCO3	251	mg/L		5		A2320 B	10/16/13 16:13 / jba
Calcium	34	mg/L		1		E200.7	10/17/13 18:16 / sf
Chloride	67	mg/L		1		E300.0	10/17/13 15:37 / wc
Magnesium	7	mg/L		1		E200.7	10/17/13 18:16 / sf
Potassium	3	mg/L		1		E200.7	10/17/13 18:16 / sf
Sodium	179	mg/L		1		E200.7	10/17/13 18:16 / sf
Sulfate	184	mg/L	D	2		E300.0	10/17/13 15:37 / wc
PHYSICAL PROPERTIES							
Conductivity @ 25 C	970	umhos/cm		1		A2510 B	10/16/13 12:50 / alp
pH	8.09	s.u.	H	0.01		A4500-H B	10/16/13 12:50 / alp
Solids, Total Dissolved TDS @ 180 C	605	mg/L		10		A2540 C	10/17/13 14:28 / alp
METALS - DISSOLVED							
Arsenic	0.046	mg/L		0.001		E200.8	10/17/13 03:58 / clm
Iron	ND	mg/L		0.03		E200.7	10/17/13 18:16 / sf
Molybdenum	ND	mg/L		0.01		E200.8	10/17/13 03:58 / clm
Selenium	0.008	mg/L		0.001		E200.8	10/17/13 03:58 / clm
Uranium	0.0105	mg/L		0.0003		E200.8	10/17/13 03:58 / clm
DATA QUALITY							
A/C Balance (± 5)	0.849	%				A1030 E	10/21/13 15:25 / kbh
Anions	9.97	meq/L				A1030 E	10/21/13 15:25 / kbh
Cations	10.1	meq/L				A1030 E	10/21/13 15:25 / kbh
Solids, Total Dissolved Calculated	630	mg/L				A1030 E	10/21/13 15:25 / kbh
TDS Balance (0.80 - 1.20)	0.960					A1030 E	10/21/13 15:25 / kbh

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
H - Analysis performed past recommended holding time.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility
Lab ID: C13100566-049
Client Sample ID: 6955

Revised Date: 12/13/13
Report Date: 10/31/13
Collection Date: 10/12/13 09:15
DateReceived: 10/15/13
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Carbonate as CO3	ND	mg/L		5		A2320 B	10/16/13 16:23 / jba
Bicarbonate as HCO3	260	mg/L		5		A2320 B	10/16/13 16:23 / jba
Calcium	36	mg/L		1		E200.7	10/17/13 18:20 / sf
Chloride	65	mg/L		1		E300.0	10/17/13 15:55 / wc
Magnesium	7	mg/L		1		E200.7	10/17/13 18:20 / sf
Potassium	3	mg/L		1		E200.7	10/17/13 18:20 / sf
Sodium	175	mg/L		1		E200.7	10/17/13 18:20 / sf
Sulfate	180	mg/L	D	2		E300.0	10/17/13 15:55 / wc
PHYSICAL PROPERTIES							
Conductivity @ 25 C	968	umhos/cm		1		A2510 B	10/16/13 12:53 / alp
pH	8.09	s.u.	H	0.01		A4500-H B	10/16/13 12:53 / alp
Solids, Total Dissolved TDS @ 180 C	610	mg/L		10		A2540 C	10/17/13 14:28 / alp
METALS - DISSOLVED							
Arsenic	0.044	mg/L		0.001		E200.8	10/17/13 04:01 / clm
Iron	ND	mg/L		0.03		E200.7	10/17/13 18:20 / sf
Molybdenum	ND	mg/L		0.01		E200.8	10/17/13 04:01 / clm
Selenium	0.008	mg/L		0.001		E200.8	10/17/13 04:01 / clm
Uranium	0.0113	mg/L		0.0003		E200.8	10/17/13 04:01 / clm
DATA QUALITY							
A/C Balance (± 5)	0.484	%				A1030 E	10/21/13 15:25 / kbh
Anions	9.96	meq/L				A1030 E	10/21/13 15:25 / kbh
Cations	10.1	meq/L				A1030 E	10/21/13 15:25 / kbh
Solids, Total Dissolved Calculated	620	mg/L				A1030 E	10/21/13 15:25 / kbh
TDS Balance (0.80 - 1.20)	0.980					A1030 E	10/21/13 15:25 / kbh

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
H - Analysis performed past recommended holding time.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility
Lab ID: C13100566-050
Client Sample ID: 6956

Revised Date: 12/13/13
Report Date: 10/31/13
Collection Date: 10/12/13 09:20
DateReceived: 10/15/13
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Carbonate as CO3	ND	mg/L		5		A2320 B	10/16/13 16:31 / jba
Bicarbonate as HCO3	250	mg/L		5		A2320 B	10/16/13 16:31 / jba
Calcium	36	mg/L		1		E200.7	10/17/13 18:23 / sf
Chloride	66	mg/L		1		E300.0	10/17/13 16:14 / wc
Magnesium	7	mg/L		1		E200.7	10/17/13 18:23 / sf
Potassium	3	mg/L		1		E200.7	10/17/13 18:23 / sf
Sodium	178	mg/L		1		E200.7	10/17/13 18:23 / sf
Sulfate	182	mg/L	D	2		E300.0	10/17/13 16:14 / wc
PHYSICAL PROPERTIES							
Conductivity @ 25 C	966	umhos/cm		1		A2510 B	10/16/13 12:56 / alp
pH	8.08	s.u.	H	0.01		A4500-H B	10/16/13 12:56 / alp
Solids, Total Dissolved TDS @ 180 C	606	mg/L		10		A2540 C	10/17/13 14:28 / alp
METALS - DISSOLVED							
Arsenic	0.044	mg/L		0.001		E200.8	10/17/13 04:04 / clm
Iron	ND	mg/L		0.03		E200.7	10/17/13 18:23 / sf
Molybdenum	ND	mg/L		0.01		E200.8	10/17/13 04:04 / clm
Selenium	0.008	mg/L		0.001		E200.8	10/17/13 04:04 / clm
Uranium	0.0113	mg/L		0.0003		E200.8	10/17/13 04:04 / clm
DATA QUALITY							
A/C Balance (± 5)	1.87	%				A1030 E	10/21/13 15:25 / kbh
Anions	9.87	meq/L				A1030 E	10/21/13 15:25 / kbh
Cations	10.2	meq/L				A1030 E	10/21/13 15:25 / kbh
Solids, Total Dissolved Calculated	630	mg/L				A1030 E	10/21/13 15:25 / kbh
TDS Balance (0.80 - 1.20)	0.970					A1030 E	10/21/13 15:25 / kbh

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
H - Analysis performed past recommended holding time.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility
Lab ID: C13100566-051
Client Sample ID: 6957

Revised Date: 12/13/13
Report Date: 10/31/13
Collection Date: 10/12/13 09:45
DateReceived: 10/15/13
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Carbonate as CO3	ND	mg/L		5		A2320 B	10/16/13 16:39 / jba
Bicarbonate as HCO3	242	mg/L		5		A2320 B	10/16/13 16:39 / jba
Calcium	114	mg/L		1		E200.7	10/17/13 18:27 / sf
Chloride	88	mg/L		1		E300.0	10/17/13 17:27 / wc
Magnesium	30	mg/L		1		E200.7	10/17/13 18:27 / sf
Potassium	4	mg/L		1		E200.7	10/17/13 18:27 / sf
Sodium	72	mg/L		1		E200.7	10/17/13 18:27 / sf
Sulfate	171	mg/L	D	4		E300.0	10/17/13 17:27 / wc
PHYSICAL PROPERTIES							
Conductivity @ 25 C	1000	umhos/cm		1		A2510 B	10/16/13 12:59 / alp
pH	7.43	s.u.	H	0.01		A4500-H B	10/16/13 12:59 / alp
Solids, Total Dissolved TDS @ 180 C	649	mg/L		10		A2540 C	10/17/13 14:28 / alp
METALS - DISSOLVED							
Arsenic	0.010	mg/L		0.001		E200.8	10/17/13 04:07 / clm
Iron	ND	mg/L		0.03		E200.7	10/17/13 18:27 / sf
Molybdenum	ND	mg/L		0.01		E200.8	10/17/13 04:07 / clm
Selenium	0.012	mg/L		0.001		E200.8	10/17/13 04:07 / clm
Uranium	0.0131	mg/L		0.0003		E200.8	10/17/13 04:07 / clm
DATA QUALITY							
A/C Balance (± 5)	3.65	%				A1030 E	10/21/13 15:25 / kbh
Anions	10.5	meq/L				A1030 E	10/21/13 15:25 / kbh
Cations	11.3	meq/L				A1030 E	10/21/13 15:25 / kbh
Solids, Total Dissolved Calculated	650	mg/L				A1030 E	10/21/13 15:25 / kbh
TDS Balance (0.80 - 1.20)	1.00					A1030 E	10/21/13 15:25 / kbh

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
H - Analysis performed past recommended holding time.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility
Lab ID: C13100566-052
Client Sample ID: 6958

Revised Date: 12/13/13
Report Date: 10/31/13
Collection Date: 10/12/13 10:30
DateReceived: 10/15/13
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Carbonate as CO3	ND	mg/L		5		A2320 B	10/16/13 16:54 / jba
Bicarbonate as HCO3	234	mg/L		5		A2320 B	10/16/13 16:54 / jba
Calcium	175	mg/L		1		E200.7	10/17/13 18:31 / sf
Chloride	157	mg/L		1		E300.0	10/17/13 18:23 / wc
Magnesium	44	mg/L		1		E200.7	10/17/13 18:31 / sf
Potassium	5	mg/L		1		E200.7	10/17/13 18:31 / sf
Sodium	103	mg/L		1		E200.7	10/17/13 18:31 / sf
Sulfate	209	mg/L	D	4		E300.0	10/17/13 18:23 / wc
PHYSICAL PROPERTIES							
Conductivity @ 25 C	1590	umhos/cm		1		A2510 B	10/16/13 13:02 / alp
pH	7.38	s.u.	H	0.01		A4500-H B	10/16/13 13:02 / alp
Solids, Total Dissolved TDS @ 180 C	1070	mg/L		10		A2540 C	10/17/13 14:28 / alp
METALS - DISSOLVED							
Arsenic	0.017	mg/L		0.001		E200.8	10/17/13 05:19 / clm
Iron	ND	mg/L		0.03		E200.7	10/17/13 18:31 / sf
Molybdenum	ND	mg/L		0.01		E200.8	10/17/13 05:19 / clm
Selenium	0.016	mg/L		0.001		E200.8	10/17/13 05:19 / clm
Uranium	0.0218	mg/L		0.0003		E200.8	10/17/13 05:19 / clm
DATA QUALITY							
A/C Balance (± 5)	2.15	%				A1030 E	10/21/13 15:25 / kbh
Anions	16.2	meq/L				A1030 E	10/21/13 15:25 / kbh
Cations	16.9	meq/L				A1030 E	10/21/13 15:25 / kbh
Solids, Total Dissolved Calculated	1000	mg/L				A1030 E	10/21/13 15:25 / kbh
TDS Balance (0.80 - 1.20)	1.02					A1030 E	10/21/13 15:25 / kbh

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
H - Analysis performed past recommended holding time.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility
Lab ID: C13100566-053
Client Sample ID: 6959

Revised Date: 12/13/13
Report Date: 10/31/13
Collection Date: 10/12/13 10:35
DateReceived: 10/15/13
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Carbonate as CO3	ND	mg/L		5		A2320 B	10/16/13 17:02 / jba
Bicarbonate as HCO3	235	mg/L		5		A2320 B	10/16/13 17:02 / jba
Calcium	170	mg/L		1		E200.7	10/17/13 18:35 / sf
Chloride	155	mg/L		1		E300.0	10/17/13 18:41 / wc
Magnesium	43	mg/L		1		E200.7	10/17/13 18:35 / sf
Potassium	4	mg/L		1		E200.7	10/17/13 18:35 / sf
Sodium	99	mg/L		1		E200.7	10/17/13 18:35 / sf
Sulfate	205	mg/L	D	4		E300.0	10/17/13 18:41 / wc
PHYSICAL PROPERTIES							
Conductivity @ 25 C	1580	umhos/cm		1		A2510 B	10/16/13 13:05 / alp
pH	7.35	s.u.	H	0.01		A4500-H B	10/16/13 13:05 / alp
Solids, Total Dissolved TDS @ 180 C	1060	mg/L		10		A2540 C	10/17/13 14:29 / alp
METALS - DISSOLVED							
Arsenic	0.017	mg/L		0.001		E200.8	10/17/13 05:23 / clm
Iron	ND	mg/L		0.03		E200.7	10/17/13 18:35 / sf
Molybdenum	ND	mg/L		0.01		E200.8	10/17/13 05:23 / clm
Selenium	0.015	mg/L		0.001		E200.8	10/17/13 05:23 / clm
Uranium	0.0184	mg/L		0.0003		E200.8	10/17/13 05:23 / clm
DATA QUALITY							
A/C Balance (± 5)	1.15	%				A1030 E	10/21/13 15:25 / kbh
Anions	16.1	meq/L				A1030 E	10/21/13 15:25 / kbh
Cations	16.4	meq/L				A1030 E	10/21/13 15:25 / kbh
Solids, Total Dissolved Calculated	1000	mg/L				A1030 E	10/21/13 15:25 / kbh
TDS Balance (0.80 - 1.20)	1.03					A1030 E	10/21/13 15:25 / kbh

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
H - Analysis performed past recommended holding time.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility
Lab ID: C13100566-054
Client Sample ID: 6960

Revised Date: 12/13/13
Report Date: 10/31/13
Collection Date: 10/12/13 11:00
DateReceived: 10/15/13
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Carbonate as CO3	ND	mg/L		5		A2320 B	10/16/13 17:10 / jba
Bicarbonate as HCO3	257	mg/L		5		A2320 B	10/16/13 17:10 / jba
Calcium	81	mg/L		1		E200.7	10/17/13 19:00 / sf
Chloride	42	mg/L		1		E300.0	10/17/13 18:59 / wc
Magnesium	31	mg/L		1		E200.7	10/17/13 19:00 / sf
Potassium	4	mg/L		1		E200.7	10/17/13 19:00 / sf
Sodium	48	mg/L		1		E200.7	10/17/13 19:00 / sf
Sulfate	159	mg/L	D	2		E300.0	10/17/13 18:59 / wc
PHYSICAL PROPERTIES							
Conductivity @ 25 C	787	umhos/cm		1		A2510 B	10/16/13 13:08 / alp
pH	7.54	s.u.	H	0.01		A4500-H B	10/16/13 13:08 / alp
Solids, Total Dissolved TDS @ 180 C	509	mg/L		10		A2540 C	10/17/13 14:29 / alp
METALS - DISSOLVED							
Arsenic	0.028	mg/L		0.001		E200.8	10/17/13 05:26 / clm
Iron	ND	mg/L		0.03		E200.7	10/17/13 19:00 / sf
Molybdenum	0.02	mg/L		0.01		E200.8	10/17/13 05:26 / clm
Selenium	0.010	mg/L		0.001		E200.8	10/17/13 05:26 / clm
Uranium	0.0153	mg/L		0.0003		E200.8	10/17/13 05:26 / clm
DATA QUALITY							
A/C Balance (± 5)	-0.374	%				A1030 E	10/21/13 15:25 / kbh
Anions	8.80	meq/L				A1030 E	10/21/13 15:25 / kbh
Cations	8.73	meq/L				A1030 E	10/21/13 15:25 / kbh
Solids, Total Dissolved Calculated	510	mg/L				A1030 E	10/21/13 15:25 / kbh
TDS Balance (0.80 - 1.20)	1.00					A1030 E	10/21/13 15:25 / kbh

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
H - Analysis performed past recommended holding time.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility
Lab ID: C13100566-055
Client Sample ID: 6961

Revised Date: 12/13/13
Report Date: 10/31/13
Collection Date: 10/12/13 11:30
DateReceived: 10/15/13
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Carbonate as CO3	ND	mg/L		5		A2320 B	10/16/13 17:18 / jba
Bicarbonate as HCO3	243	mg/L		5		A2320 B	10/16/13 17:18 / jba
Calcium	84	mg/L		1		E200.7	10/17/13 19:04 / sf
Chloride	60	mg/L		1		E300.0	10/17/13 19:18 / wc
Magnesium	30	mg/L		1		E200.7	10/17/13 19:04 / sf
Potassium	4	mg/L		1		E200.7	10/17/13 19:04 / sf
Sodium	62	mg/L		1		E200.7	10/17/13 19:04 / sf
Sulfate	167	mg/L	D	2		E300.0	10/17/13 19:18 / wc
PHYSICAL PROPERTIES							
Conductivity @ 25 C	864	umhos/cm		1		A2510 B	10/16/13 13:11 / alp
pH	7.47	s.u.	H	0.01		A4500-H B	10/16/13 13:11 / alp
Solids, Total Dissolved TDS @ 180 C	549	mg/L		10		A2540 C	10/17/13 14:30 / alp
METALS - DISSOLVED							
Arsenic	0.028	mg/L		0.001		E200.8	10/17/13 05:29 / clm
Iron	ND	mg/L		0.03		E200.7	10/17/13 19:04 / sf
Molybdenum	0.01	mg/L		0.01		E200.8	10/17/13 05:29 / clm
Selenium	0.011	mg/L		0.001		E200.8	10/17/13 05:29 / clm
Uranium	0.0115	mg/L		0.0003		E200.8	10/17/13 05:29 / clm
DATA QUALITY							
A/C Balance (± 5)	1.24	%				A1030 E	10/21/13 15:26 / kbh
Anions	9.29	meq/L				A1030 E	10/21/13 15:26 / kbh
Cations	9.52	meq/L				A1030 E	10/21/13 15:26 / kbh
Solids, Total Dissolved Calculated	550	mg/L				A1030 E	10/21/13 15:26 / kbh
TDS Balance (0.80 - 1.20)	1.00					A1030 E	10/21/13 15:26 / kbh

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
H - Analysis performed past recommended holding time.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility
Lab ID: C13100566-056
Client Sample ID: 6962

Revised Date: 12/13/13
Report Date: 10/31/13
Collection Date: 10/12/13 15:05
DateReceived: 10/15/13
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Carbonate as CO3	ND	mg/L		5		A2320 B	10/16/13 17:26 / jba
Bicarbonate as HCO3	386	mg/L		5		A2320 B	10/16/13 17:26 / jba
Calcium	109	mg/L		1		E200.7	10/17/13 19:07 / sf
Chloride	20	mg/L		1		E300.0	10/17/13 19:36 / wc
Magnesium	62	mg/L		1		E200.7	10/17/13 19:07 / sf
Potassium	4	mg/L		1		E200.7	10/17/13 19:07 / sf
Sodium	31	mg/L		1		E200.7	10/17/13 19:07 / sf
Sulfate	240	mg/L	D	4		E300.0	10/17/13 19:36 / wc
PHYSICAL PROPERTIES							
Conductivity @ 25 C	1010	umhos/cm		1		A2510 B	10/16/13 13:14 / alp
pH	7.33	s.u.	H	0.01		A4500-H B	10/16/13 13:14 / alp
Solids, Total Dissolved TDS @ 180 C	699	mg/L		10		A2540 C	10/17/13 14:30 / alp
METALS - DISSOLVED							
Arsenic	0.002	mg/L		0.001		E200.8	10/17/13 05:32 / clm
Iron	ND	mg/L		0.03		E200.7	10/17/13 19:07 / sf
Molybdenum	ND	mg/L		0.01		E200.8	10/17/13 05:32 / clm
Selenium	0.010	mg/L		0.001		E200.8	10/17/13 05:32 / clm
Uranium	0.0220	mg/L		0.0003		E200.8	10/17/13 05:32 / clm
DATA QUALITY							
A/C Balance (± 5)	-0.0425	%				A1030 E	10/21/13 15:26 / kbh
Anions	12.0	meq/L				A1030 E	10/21/13 15:26 / kbh
Cations	12.0	meq/L				A1030 E	10/21/13 15:26 / kbh
Solids, Total Dissolved Calculated	680	mg/L				A1030 E	10/21/13 15:26 / kbh
TDS Balance (0.80 - 1.20)	1.03					A1030 E	10/21/13 15:26 / kbh

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
H - Analysis performed past recommended holding time.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility
Lab ID: C13100566-057
Client Sample ID: 6963

Revised Date: 12/13/13
Report Date: 10/31/13
Collection Date: 10/12/13 15:50
DateReceived: 10/15/13
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Carbonate as CO3	ND	mg/L		5		A2320 B	10/16/13 17:34 / jba
Bicarbonate as HCO3	387	mg/L		5		A2320 B	10/16/13 17:34 / jba
Calcium	112	mg/L		1		E200.7	10/17/13 19:11 / sf
Chloride	20	mg/L		1		E300.0	10/17/13 19:55 / wc
Magnesium	60	mg/L		1		E200.7	10/17/13 19:11 / sf
Potassium	4	mg/L		1		E200.7	10/17/13 19:11 / sf
Sodium	31	mg/L		1		E200.7	10/17/13 19:11 / sf
Sulfate	238	mg/L	D	4		E300.0	10/17/13 19:55 / wc
PHYSICAL PROPERTIES							
Conductivity @ 25 C	1010	umhos/cm		1		A2510 B	10/16/13 13:17 / alp
pH	7.35	s.u.	H	0.01		A4500-H B	10/16/13 13:17 / alp
Solids, Total Dissolved TDS @ 180 C	700	mg/L		10		A2540 C	10/17/13 14:30 / alp
METALS - DISSOLVED							
Arsenic	0.002	mg/L		0.001		E200.8	10/17/13 05:36 / clm
Iron	ND	mg/L		0.03		E200.7	10/17/13 19:11 / sf
Molybdenum	ND	mg/L		0.01		E200.8	10/17/13 05:36 / clm
Selenium	0.011	mg/L		0.001		E200.8	10/17/13 05:36 / clm
Uranium	0.0228	mg/L		0.0003		E200.8	10/17/13 05:36 / clm
DATA QUALITY							
A/C Balance (± 5)	0.255	%				A1030 E	10/21/13 15:26 / kbh
Anions	12.0	meq/L				A1030 E	10/21/13 15:26 / kbh
Cations	12.0	meq/L				A1030 E	10/21/13 15:26 / kbh
Solids, Total Dissolved Calculated	680	mg/L				A1030 E	10/21/13 15:26 / kbh
TDS Balance (0.80 - 1.20)	1.03					A1030 E	10/21/13 15:26 / kbh

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
H - Analysis performed past recommended holding time.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility
Lab ID: C13100566-059
Client Sample ID: 6966

Revised Date: 12/13/13
Report Date: 10/31/13
Collection Date: 10/13/13 09:10
DateReceived: 10/15/13
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Carbonate as CO3	ND	mg/L		5		A2320 B	10/16/13 17:51 / jba
Bicarbonate as HCO3	1090	mg/L		5		A2320 B	10/16/13 17:51 / jba
Calcium	194	mg/L		1		E200.7	10/25/13 14:53 / sf
Chloride	621	mg/L	D	4		E300.0	10/25/13 14:49 / wc
Magnesium	102	mg/L		1		E200.7	10/25/13 14:53 / sf
Potassium	11	mg/L		1		E200.7	10/25/13 14:53 / sf
Sodium	1510	mg/L		1		E200.7	10/25/13 14:53 / sf
Sulfate	1730	mg/L	D	20		E300.0	10/25/13 14:49 / wc
PHYSICAL PROPERTIES							
Conductivity @ 25 C	6160	umhos/cm		1		A2510 B	10/16/13 13:35 / alp
pH	7.53	s.u.	H	0.01		A4500-H B	10/16/13 13:35 / alp
Solids, Total Dissolved TDS @ 180 C	4280	mg/L		100		A2540 C	10/17/13 14:31 / alp
METALS - DISSOLVED							
Arsenic	0.185	mg/L		0.001		E200.8	10/17/13 05:42 / clm
Iron	ND	mg/L		0.03		E200.7	10/17/13 19:18 / sf
Molybdenum	2.54	mg/L		0.01		E200.8	10/17/13 05:42 / clm
Selenium	0.036	mg/L		0.001		E200.8	10/17/13 05:42 / clm
Uranium	21.3	mg/L	D	0.0005		E200.8	10/17/13 05:42 / clm
DATA QUALITY							
A/C Balance (± 5)	8.01	%				A1030 E	10/29/13 09:27 / kbh
Anions	71.4	meq/L				A1030 E	10/29/13 09:27 / kbh
Cations	83.9	meq/L				A1030 E	10/29/13 09:27 / kbh
Solids, Total Dissolved Calculated	4700	mg/L				A1030 E	10/29/13 09:27 / kbh
TDS Balance (0.80 - 1.20)	0.910					A1030 E	10/29/13 09:27 / kbh

- The Anion / Cation balance was confirmed by re-analysis.

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
H - Analysis performed past recommended holding time.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility
Lab ID: C13100566-060
Client Sample ID: 6967

Revised Date: 12/13/13
Report Date: 10/31/13
Collection Date: 10/13/13 10:05
DateReceived: 10/15/13
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Carbonate as CO3	ND	mg/L		5		A2320 B	10/16/13 18:01 / jba
Bicarbonate as HCO3	1240	mg/L		5		A2320 B	10/16/13 18:01 / jba
Calcium	313	mg/L		1		E200.7	10/17/13 19:22 / sf
Chloride	853	mg/L	D	10		E300.0	10/17/13 20:50 / wc
Magnesium	155	mg/L		1		E200.7	10/17/13 19:22 / sf
Potassium	14	mg/L		1		E200.7	10/17/13 19:22 / sf
Sodium	1530	mg/L	D	2		E200.7	10/17/13 19:22 / sf
Sulfate	2560	mg/L	D	40		E300.0	10/17/13 20:50 / wc
PHYSICAL PROPERTIES							
Conductivity @ 25 C	7930	umhos/cm		1		A2510 B	10/16/13 13:38 / alp
pH	7.17	s.u.	H	0.01		A4500-H B	10/16/13 13:38 / alp
Solids, Total Dissolved TDS @ 180 C	5900	mg/L		100		A2540 C	10/17/13 14:31 / alp
METALS - DISSOLVED							
Arsenic	0.088	mg/L		0.001		E200.8	10/17/13 05:59 / clm
Iron	0.04	mg/L		0.03		E200.7	10/17/13 19:22 / sf
Molybdenum	1.93	mg/L		0.01		E200.8	10/17/13 05:59 / clm
Selenium	0.042	mg/L		0.001		E200.8	10/17/13 05:59 / clm
Uranium	25.6	mg/L	D	0.0005		E200.8	10/17/13 05:59 / clm
DATA QUALITY							
A/C Balance (± 5)	-1.11	%				A1030 E	10/21/13 15:26 / kbh
Anions	97.7	meq/L				A1030 E	10/21/13 15:26 / kbh
Cations	95.5	meq/L				A1030 E	10/21/13 15:26 / kbh
Solids, Total Dissolved Calculated	6000	mg/L				A1030 E	10/21/13 15:26 / kbh
TDS Balance (0.80 - 1.20)	0.980					A1030 E	10/21/13 15:26 / kbh

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
H - Analysis performed past recommended holding time.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility
Lab ID: C13100566-061
Client Sample ID: 6968

Revised Date: 12/13/13
Report Date: 10/31/13
Collection Date: 10/13/13 10:30
DateReceived: 10/15/13
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Carbonate as CO3	ND	mg/L		5		A2320 B	10/16/13 18:34 / jba
Bicarbonate as HCO3	467	mg/L		5		A2320 B	10/16/13 18:34 / jba
Calcium	567	mg/L		1		E200.7	10/17/13 19:26 / sf
Chloride	1240	mg/L	D	4		E300.0	10/17/13 21:45 / wc
Magnesium	182	mg/L		1		E200.7	10/17/13 19:26 / sf
Potassium	17	mg/L		1		E200.7	10/17/13 19:26 / sf
Sodium	641	mg/L		1		E200.7	10/17/13 19:26 / sf
Sulfate	1410	mg/L	D	20		E300.0	10/17/13 21:45 / wc
PHYSICAL PROPERTIES							
Conductivity @ 25 C	6120	umhos/cm		1		A2510 B	10/16/13 13:41 / alp
pH	7.13	s.u.	H	0.01		A4500-H B	10/16/13 13:41 / alp
Solids, Total Dissolved TDS @ 180 C	4190	mg/L		100		A2540 C	10/17/13 14:31 / alp
METALS - DISSOLVED							
Arsenic	0.003	mg/L		0.001		E200.8	10/17/13 06:02 / clm
Iron	ND	mg/L		0.03		E200.7	10/17/13 19:26 / sf
Molybdenum	0.01	mg/L		0.01		E200.8	10/17/13 06:02 / clm
Selenium	0.014	mg/L		0.001		E200.8	10/17/13 06:02 / clm
Uranium	8.31	mg/L	D	0.0005		E200.8	10/17/13 06:02 / clm
DATA QUALITY							
A/C Balance (± 5)	-0.248	%				A1030 E	10/21/13 15:26 / kbh
Anions	72.0	meq/L				A1030 E	10/21/13 15:26 / kbh
Cations	71.6	meq/L				A1030 E	10/21/13 15:26 / kbh
Solids, Total Dissolved Calculated	4300	mg/L				A1030 E	10/21/13 15:26 / kbh
TDS Balance (0.80 - 1.20)	0.970					A1030 E	10/21/13 15:26 / kbh

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
H - Analysis performed past recommended holding time.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility
Lab ID: C13100566-062
Client Sample ID: 6969

Revised Date: 12/13/13
Report Date: 10/31/13
Collection Date: 10/13/13 11:15
DateReceived: 10/15/13
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Carbonate as CO3	ND	mg/L		5		A2320 B	10/16/13 18:49 / jba
Bicarbonate as HCO3	476	mg/L		5		A2320 B	10/16/13 18:49 / jba
Calcium	549	mg/L		1		E200.7	10/17/13 19:30 / sf
Chloride	1270	mg/L	D	4		E300.0	10/17/13 22:41 / wc
Magnesium	185	mg/L		1		E200.7	10/17/13 19:30 / sf
Potassium	19	mg/L		1		E200.7	10/17/13 19:30 / sf
Sodium	704	mg/L		1		E200.7	10/17/13 19:30 / sf
Sulfate	1430	mg/L	D	20		E300.0	10/17/13 22:41 / wc
PHYSICAL PROPERTIES							
Conductivity @ 25 C	6330	umhos/cm		1		A2510 B	10/16/13 13:44 / alp
pH	7.17	s.u.	H	0.01		A4500-H B	10/16/13 13:44 / alp
Solids, Total Dissolved TDS @ 180 C	4540	mg/L		100		A2540 C	10/17/13 14:32 / alp
METALS - DISSOLVED							
Arsenic	0.003	mg/L		0.001		E200.8	10/17/13 06:15 / clm
Iron	0.07	mg/L		0.03		E200.7	10/17/13 19:30 / sf
Molybdenum	0.02	mg/L		0.01		E200.8	10/17/13 06:15 / clm
Selenium	0.015	mg/L		0.001		E200.8	10/17/13 06:15 / clm
Uranium	8.82	mg/L	D	0.0005		E200.8	10/17/13 06:15 / clm
DATA QUALITY							
A/C Balance (± 5)	0.190	%				A1030 E	10/21/13 15:26 / kbh
Anions	73.4	meq/L				A1030 E	10/21/13 15:26 / kbh
Cations	73.7	meq/L				A1030 E	10/21/13 15:26 / kbh
Solids, Total Dissolved Calculated	4400	mg/L				A1030 E	10/21/13 15:26 / kbh
TDS Balance (0.80 - 1.20)	1.03					A1030 E	10/21/13 15:26 / kbh

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
H - Analysis performed past recommended holding time.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility
Lab ID: C13100566-063
Client Sample ID: 6972

Revised Date: 12/13/13
Report Date: 10/31/13
Collection Date: 10/13/13 13:55
DateReceived: 10/15/13
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Carbonate as CO3	ND	mg/L		5		A2320 B	10/16/13 19:13 / jba
Bicarbonate as HCO3	2960	mg/L		5		A2320 B	10/16/13 19:13 / jba
Calcium	387	mg/L		1		E200.7	10/17/13 20:22 / sf
Chloride	1170	mg/L	D	20		E300.0	10/17/13 22:59 / wc
Magnesium	144	mg/L		1		E200.7	10/17/13 20:22 / sf
Potassium	11	mg/L		1		E200.7	10/17/13 20:22 / sf
Sodium	4120	mg/L	D	4		E200.7	10/17/13 20:22 / sf
Sulfate	6940	mg/L	D	80		E300.0	10/17/13 22:59 / wc
PHYSICAL PROPERTIES							
Conductivity @ 25 C	16100	umhos/cm		1		A2510 B	10/16/13 13:47 / alp
pH	7.22	s.u.	H	0.01		A4500-H B	10/16/13 13:47 / alp
Solids, Total Dissolved TDS @ 180 C	14000	mg/L		100		A2540 C	10/17/13 14:35 / alp
METALS - DISSOLVED							
Arsenic	0.007	mg/L		0.001		E200.8	10/17/13 06:18 / clm
Iron	0.15	mg/L	D	0.06		E200.8	10/18/13 23:16 / cp
Molybdenum	24.8	mg/L		0.01		E200.8	10/17/13 06:18 / clm
Selenium	0.082	mg/L	D	0.003		E200.8	10/17/13 06:18 / clm
Uranium	72.6	mg/L	D	0.001		E200.8	10/17/13 06:18 / clm
DATA QUALITY							
A/C Balance (± 5)	-4.17	%				A1030 E	10/21/13 15:26 / kbh
Anions	229	meq/L				A1030 E	10/21/13 15:26 / kbh
Cations	210	meq/L				A1030 E	10/21/13 15:26 / kbh
Solids, Total Dissolved Calculated	14000	mg/L				A1030 E	10/21/13 15:26 / kbh
TDS Balance (0.80 - 1.20)	0.970					A1030 E	10/21/13 15:26 / kbh

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
H - Analysis performed past recommended holding time.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility
Lab ID: C13100566-064
Client Sample ID: 6973

Revised Date: 12/13/13
Report Date: 10/31/13
Collection Date: 10/13/13 15:00
DateReceived: 10/15/13
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Carbonate as CO3	ND	mg/L		5		A2320 B	10/16/13 19:28 / jba
Bicarbonate as HCO3	2940	mg/L		5		A2320 B	10/16/13 19:28 / jba
Calcium	383	mg/L		1		E200.7	10/17/13 20:26 / sf
Chloride	1180	mg/L	D	20		E300.0	10/17/13 23:17 / wc
Magnesium	143	mg/L		1		E200.7	10/17/13 20:26 / sf
Potassium	11	mg/L		1		E200.7	10/17/13 20:26 / sf
Sodium	4120	mg/L	D	4		E200.7	10/17/13 20:26 / sf
Sulfate	7020	mg/L	D	80		E300.0	10/17/13 23:17 / wc
PHYSICAL PROPERTIES							
Conductivity @ 25 C	16100	umhos/cm		1		A2510 B	10/16/13 13:50 / alp
pH	7.24	s.u.	H	0.01		A4500-H B	10/16/13 13:50 / alp
Solids, Total Dissolved TDS @ 180 C	13900	mg/L		100		A2540 C	10/17/13 14:35 / alp
METALS - DISSOLVED							
Arsenic	0.007	mg/L		0.001		E200.8	10/17/13 06:21 / clm
Iron	0.18	mg/L	D	0.06		E200.8	10/18/13 23:20 / cp
Molybdenum	25.3	mg/L		0.01		E200.8	10/17/13 06:21 / clm
Selenium	0.082	mg/L	D	0.003		E200.8	10/17/13 06:21 / clm
Uranium	74.8	mg/L	D	0.001		E200.8	10/17/13 06:21 / clm
DATA QUALITY							
A/C Balance (± 5)	-4.52	%				A1030 E	10/21/13 15:27 / kbh
Anions	230	meq/L				A1030 E	10/21/13 15:27 / kbh
Cations	210	meq/L				A1030 E	10/21/13 15:27 / kbh
Solids, Total Dissolved Calculated	14000	mg/L				A1030 E	10/21/13 15:27 / kbh
TDS Balance (0.80 - 1.20)	0.960					A1030 E	10/21/13 15:27 / kbh

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
H - Analysis performed past recommended holding time.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility
Lab ID: C13100566-065
Client Sample ID: 6974

Revised Date: 12/13/13
Report Date: 10/31/13
Collection Date: 10/13/13 15:15
DateReceived: 10/15/13
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Carbonate as CO3	ND	mg/L		5		A2320 B	10/16/13 19:36 / jba
Bicarbonate as HCO3	36	mg/L		5		A2320 B	10/16/13 19:36 / jba
Calcium	ND	mg/L		1		E200.7	10/17/13 20:30 / sf
Chloride	10	mg/L		1		E300.0	10/17/13 23:36 / wc
Magnesium	ND	mg/L		1		E200.7	10/17/13 20:30 / sf
Potassium	ND	mg/L		1		E200.7	10/17/13 20:30 / sf
Sodium	18	mg/L		1		E200.7	10/17/13 20:30 / sf
Sulfate	ND	mg/L		1		E300.0	10/17/13 23:36 / wc
PHYSICAL PROPERTIES							
Conductivity @ 25 C	87	umhos/cm		1		A2510 B	10/16/13 13:53 / alp
pH	7.75	s.u.	H	0.01		A4500-H B	10/16/13 13:53 / alp
Solids, Total Dissolved TDS @ 180 C	57	mg/L		10		A2540 C	10/17/13 14:35 / alp
METALS - DISSOLVED							
Arsenic	ND	mg/L		0.001		E200.8	10/17/13 06:25 / clm
Iron	ND	mg/L		0.03		E200.7	10/17/13 20:30 / sf
Molybdenum	ND	mg/L		0.01		E200.8	10/17/13 06:25 / clm
Selenium	ND	mg/L		0.001		E200.8	10/17/13 06:25 / clm
Uranium	0.0008	mg/L		0.0003		E200.8	10/17/13 06:25 / clm
DATA QUALITY							
A/C Balance (± 5)	-3.67	%				A1030 E	10/21/13 15:27 / kbh
Anions	0.911	meq/L				A1030 E	10/21/13 15:27 / kbh
Cations	0.846	meq/L				A1030 E	10/21/13 15:27 / kbh
Solids, Total Dissolved Calculated	83	mg/L				A1030 E	10/21/13 15:27 / kbh
TDS Balance (0.80 - 1.20)	0.690					A1030 E	10/21/13 15:27 / kbh

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
H - Analysis performed past recommended holding time.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility
Lab ID: C13100566-066
Client Sample ID: 6975

Revised Date: 12/13/13
Report Date: 10/31/13
Collection Date: 10/13/13 16:30
DateReceived: 10/15/13
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Carbonate as CO3	ND	mg/L		5		A2320 B	10/16/13 19:44 / jba
Bicarbonate as HCO3	405	mg/L		5		A2320 B	10/16/13 19:44 / jba
Calcium	570	mg/L		1		E200.7	10/17/13 20:34 / sf
Chloride	443	mg/L	D	4		E300.0	10/17/13 23:54 / wc
Magnesium	163	mg/L		1		E200.7	10/17/13 20:34 / sf
Potassium	8	mg/L		1		E200.7	10/17/13 20:34 / sf
Sodium	439	mg/L		1		E200.7	10/17/13 20:34 / sf
Sulfate	2250	mg/L	D	20		E300.0	10/17/13 23:54 / wc
PHYSICAL PROPERTIES							
Conductivity @ 25 C	4700	umhos/cm		1		A2510 B	10/16/13 13:56 / alp
pH	7.40	s.u.	H	0.01		A4500-H B	10/16/13 13:56 / alp
Solids, Total Dissolved TDS @ 180 C	4110	mg/L		40		A2540 C	10/17/13 14:36 / alp
METALS - DISSOLVED							
Arsenic	0.002	mg/L		0.001		E200.8	10/17/13 06:41 / clm
Iron	ND	mg/L		0.03		E200.7	10/17/13 20:34 / sf
Molybdenum	ND	mg/L		0.01		E200.8	10/17/13 06:41 / clm
Selenium	0.050	mg/L		0.001		E200.8	10/17/13 06:41 / clm
Uranium	6.12	mg/L	D	0.0005		E200.8	10/17/13 06:41 / clm
DATA QUALITY							
A/C Balance (± 5)	-4.79	%				A1030 E	10/21/13 15:27 / kbh
Anions	67.3	meq/L				A1030 E	10/21/13 15:27 / kbh
Cations	61.1	meq/L				A1030 E	10/21/13 15:27 / kbh
Solids, Total Dissolved Calculated	4200	mg/L				A1030 E	10/21/13 15:27 / kbh
TDS Balance (0.80 - 1.20)	0.990					A1030 E	10/21/13 15:27 / kbh

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
H - Analysis performed past recommended holding time.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility
Lab ID: C13100566-067
Client Sample ID: 6976

Revised Date: 12/13/13
Report Date: 10/31/13
Collection Date: 10/14/13 08:05
DateReceived: 10/15/13
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Carbonate as CO3	ND	mg/L		5		A2320 B	10/16/13 19:54 / jba
Bicarbonate as HCO3	1150	mg/L		5		A2320 B	10/16/13 19:54 / jba
Calcium	487	mg/L		1		E200.7	10/25/13 14:56 / sf
Chloride	620	mg/L	D	10		E300.0	10/25/13 15:08 / wc
Magnesium	209	mg/L		1		E200.7	10/25/13 14:56 / sf
Potassium	17	mg/L		1		E200.7	10/25/13 14:56 / sf
Sodium	1560	mg/L	D	2		E200.7	10/25/13 14:56 / sf
Sulfate	3480	mg/L	D	40		E300.0	10/25/13 15:08 / wc
PHYSICAL PROPERTIES							
Conductivity @ 25 C	8560	umhos/cm		1		A2510 B	10/16/13 13:59 / alp
pH	7.25	s.u.	H	0.01		A4500-H B	10/16/13 13:59 / alp
Solids, Total Dissolved TDS @ 180 C	7320	mg/L		100		A2540 C	10/17/13 14:36 / alp
METALS - DISSOLVED							
Arsenic	0.005	mg/L		0.001		E200.8	10/17/13 06:44 / clm
Iron	0.03	mg/L		0.03		E200.7	10/17/13 20:38 / sf
Molybdenum	3.92	mg/L		0.01		E200.8	10/17/13 06:44 / clm
Selenium	0.066	mg/L	D	0.003		E200.8	10/17/13 06:44 / clm
Uranium	26.1	mg/L	D	0.001		E200.8	10/17/13 06:44 / clm
DATA QUALITY							
A/C Balance (± 5)	-0.584	%				A1030 E	10/29/13 09:27 / kbh
Anions	111	meq/L				A1030 E	10/29/13 09:27 / kbh
Cations	110	meq/L				A1030 E	10/29/13 09:27 / kbh
Solids, Total Dissolved Calculated	7100	mg/L				A1030 E	10/29/13 09:27 / kbh
TDS Balance (0.80 - 1.20)	1.03					A1030 E	10/29/13 09:27 / kbh

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
H - Analysis performed past recommended holding time.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility
Lab ID: C13100566-068
Client Sample ID: 6977

Revised Date: 12/13/13
Report Date: 10/31/13
Collection Date: 10/14/13 09:10
DateReceived: 10/15/13
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Carbonate as CO3	ND	mg/L		5		A2320 B	10/16/13 20:04 / jba
Bicarbonate as HCO3	1340	mg/L		5		A2320 B	10/16/13 20:04 / jba
Calcium	504	mg/L		1		E200.7	10/25/13 15:00 / sf
Chloride	683	mg/L	D	10		E300.0	10/25/13 15:26 / wc
Magnesium	221	mg/L		1		E200.7	10/25/13 15:00 / sf
Potassium	17	mg/L		1		E200.7	10/25/13 15:00 / sf
Sodium	1910	mg/L	D	2		E200.7	10/25/13 15:00 / sf
Sulfate	4000	mg/L	D	40		E300.0	10/25/13 15:26 / wc
PHYSICAL PROPERTIES							
Conductivity @ 25 C	9680	umhos/cm		1		A2510 B	10/16/13 14:05 / alp
pH	7.22	s.u.	H	0.01		A4500-H B	10/16/13 14:05 / alp
Solids, Total Dissolved TDS @ 180 C	8310	mg/L		100		A2540 C	10/17/13 14:36 / alp
METALS - DISSOLVED							
Arsenic	0.004	mg/L		0.001		E200.8	10/17/13 06:48 / clm
Iron	0.03	mg/L		0.03		E200.7	10/17/13 20:42 / sf
Molybdenum	5.56	mg/L		0.01		E200.8	10/17/13 06:48 / clm
Selenium	0.065	mg/L	D	0.003		E200.8	10/17/13 06:48 / clm
Uranium	28.9	mg/L	D	0.001		E200.8	10/17/13 06:48 / clm
DATA QUALITY							
A/C Balance (± 5)	0.0814	%				A1030 E	10/29/13 09:28 / kbh
Anions	127	meq/L				A1030 E	10/29/13 09:28 / kbh
Cations	127	meq/L				A1030 E	10/29/13 09:28 / kbh
Solids, Total Dissolved Calculated	8100	mg/L				A1030 E	10/29/13 09:28 / kbh
TDS Balance (0.80 - 1.20)	1.02					A1030 E	10/29/13 09:28 / kbh

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
H - Analysis performed past recommended holding time.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility
Lab ID: C13100566-069
Client Sample ID: 6980

Revised Date: 12/13/13
Report Date: 10/31/13
Collection Date: 10/14/13 11:35
DateReceived: 10/15/13
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Carbonate as CO3	ND	mg/L		5		A2320 B	10/16/13 20:12 / jba
Bicarbonate as HCO3	35	mg/L		5		A2320 B	10/16/13 20:12 / jba
Calcium	ND	mg/L		1		E200.7	10/17/13 20:45 / sf
Chloride	10	mg/L		1		E300.0	10/18/13 00:49 / wc
Magnesium	ND	mg/L		1		E200.7	10/17/13 20:45 / sf
Potassium	ND	mg/L		1		E200.7	10/17/13 20:45 / sf
Sodium	18	mg/L		1		E200.7	10/17/13 20:45 / sf
Sulfate	ND	mg/L		1		E300.0	10/18/13 00:49 / wc
PHYSICAL PROPERTIES							
Conductivity @ 25 C	87	umhos/cm		1		A2510 B	10/16/13 14:08 / alp
pH	7.74	s.u.	H	0.01		A4500-H B	10/16/13 14:08 / alp
Solids, Total Dissolved TDS @ 180 C	65	mg/L		10		A2540 C	10/17/13 14:40 / alp
METALS - DISSOLVED							
Arsenic	ND	mg/L		0.001		E200.8	10/17/13 06:51 / clm
Iron	ND	mg/L		0.03		E200.7	10/17/13 20:45 / sf
Molybdenum	ND	mg/L		0.01		E200.8	10/17/13 06:51 / clm
Selenium	ND	mg/L		0.001		E200.8	10/17/13 06:51 / clm
Uranium	ND	mg/L		0.0003		E200.8	10/17/13 06:51 / clm
DATA QUALITY							
A/C Balance (± 5)	-3.43	%				A1030 E	10/21/13 15:27 / kbh
Anions	0.900	meq/L				A1030 E	10/21/13 15:27 / kbh
Cations	0.840	meq/L				A1030 E	10/21/13 15:27 / kbh
Solids, Total Dissolved Calculated	82	mg/L				A1030 E	10/21/13 15:27 / kbh
TDS Balance (0.80 - 1.20)	0.790					A1030 E	10/21/13 15:27 / kbh

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
H - Analysis performed past recommended holding time.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.

QA/QC Summary Report

Prepared by Casper, WY Branch

Revised Date: 12/13/13

Client: Rio Algom Mining Corporation LLC **Report Date:** 10/31/13

Project: Lisbon, UT Facility **Work Order:** C13100566

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: A2310 B										Batch: R179653
Sample ID: MBLK		Method Blank				Run: MANTECH_131017A				10/17/13 07:05
Acidity, Total as CaCO3		2	mg/L	1						
Sample ID: LCS_131014		Laboratory Control Sample				Run: MANTECH_131017A				10/17/13 07:23
Acidity, Total as CaCO3		932	mg/L	5.0	109	80	120			
Sample ID: C13100566-021ADUP		Sample Duplicate				Run: MANTECH_131017A				10/17/13 08:16
Acidity, Total as CaCO3		13800	mg/L	10				0.1	20	

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

QA/QC Summary Report

Prepared by Casper, WY Branch

Revised Date: 12/13/13
Report Date: 10/31/13
Work Order: C13100566

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: A2320 B										Batch: R179630
Sample ID: MBLK	3	Method Blank				Run: MANTECH_131016A				10/16/13 07:30
Alkalinity, Total as CaCO3		ND	mg/L	2						
Carbonate as CO3		ND	mg/L	1						
Bicarbonate as HCO3		1	mg/L	1						
Sample ID: LCS_130917		Laboratory Control Sample				Run: MANTECH_131016A				10/16/13 07:45
Alkalinity, Total as CaCO3		257	mg/L	5.0	103	90	110			
Sample ID: C13100566-007ADUP	3	Sample Duplicate				Run: MANTECH_131016A				10/16/13 09:07
Alkalinity, Total as CaCO3		181	mg/L	5.0				0.1	10	
Carbonate as CO3		ND	mg/L	5.0					10	
Bicarbonate as HCO3		221	mg/L	5.0				0.1	10	
Sample ID: C13100566-008AMS		Sample Matrix Spike				Run: MANTECH_131016A				10/16/13 09:24
Alkalinity, Total as CaCO3		435	mg/L	5.0	101	80	120			
Sample ID: C13100566-017ADUP	3	Sample Duplicate				Run: MANTECH_131016A				10/16/13 10:41
Alkalinity, Total as CaCO3		210	mg/L	5.0				3.9	10	
Carbonate as CO3		ND	mg/L	5.0					10	
Bicarbonate as HCO3		256	mg/L	5.0				3.9	10	
Sample ID: C13100566-024ADUP	3	Sample Duplicate				Run: MANTECH_131016A				10/16/13 11:53
Alkalinity, Total as CaCO3		27.0	mg/L	5.0				7.4	10	
Carbonate as CO3		ND	mg/L	5.0					10	
Bicarbonate as HCO3		32.9	mg/L	5.0				7.4	10	
Sample ID: C13100566-025AMS		Sample Matrix Spike				Run: MANTECH_131016A				10/16/13 12:09
Alkalinity, Total as CaCO3		429	mg/L	5.0	102	80	120			
Sample ID: C13100566-031ADUP	3	Sample Duplicate				Run: MANTECH_131016A				10/16/13 13:03
Alkalinity, Total as CaCO3		176	mg/L	5.0				0.4	10	
Carbonate as CO3		ND	mg/L	5.0					10	
Bicarbonate as HCO3		215	mg/L	5.0				0.4	10	
Sample ID: C13100566-041ADUP	3	Sample Duplicate				Run: MANTECH_131016A				10/16/13 15:03
Alkalinity, Total as CaCO3		186	mg/L	5.0				0.9	10	
Carbonate as CO3		ND	mg/L	5.0					10	
Bicarbonate as HCO3		227	mg/L	5.0				0.9	10	
Sample ID: C13100566-042AMS		Sample Matrix Spike				Run: MANTECH_131016A				10/16/13 15:20
Alkalinity, Total as CaCO3		507	mg/L	5.0	99	80	120			
Sample ID: C13100566-051ADUP	3	Sample Duplicate				Run: MANTECH_131016A				10/16/13 16:46
Alkalinity, Total as CaCO3		199	mg/L	5.0				0.1	10	
Carbonate as CO3		ND	mg/L	5.0					10	
Bicarbonate as HCO3		243	mg/L	5.0				0.1	10	
Sample ID: C13100566-061ADUP	3	Sample Duplicate				Run: MANTECH_131016A				10/16/13 18:42
Alkalinity, Total as CaCO3		378	mg/L	5.0				1.2	10	

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

QA/QC Summary Report

Prepared by Casper, WY Branch

Revised Date: 12/13/13
Report Date: 10/31/13
Work Order: C13100566

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: A2320 B										Batch: R179630
Sample ID: C13100566-061ADUP	3	Sample Duplicate				Run: MANTECH_131016A				10/16/13 18:42
Carbonate as CO3		ND	mg/L	5.0					10	
Bicarbonate as HCO3		461	mg/L	5.0				1.2	10	
Sample ID: C13100566-062AMS		Sample Matrix Spike				Run: MANTECH_131016A				10/16/13 18:59
Alkalinity, Total as CaCO3		653	mg/L	5.0	105	80	120			

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

QA/QC Summary Report

Prepared by Casper, WY Branch

Revised Date: 12/13/13
Report Date: 10/31/13
Work Order: C13100566

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: A2510 B									Analytical Run: PHSC_101-C_131016A	
Sample ID: CCV - SC 1413		Continuing Calibration Verification Standard							10/16/13 10:16	
Conductivity @ 25 C		1390	umhos/cm	5.0	99	90	110			
Sample ID: CCV - SC 1413		Continuing Calibration Verification Standard							10/16/13 11:31	
Conductivity @ 25 C		1390	umhos/cm	5.0	99	90	110			
Sample ID: CCV - SC 1413		Continuing Calibration Verification Standard							10/16/13 13:26	
Conductivity @ 25 C		1390	umhos/cm	5.0	98	90	110			
Method: A2510 B									Batch: R179573	
Sample ID: SC 2ND 1413		Laboratory Control Sample				Run: PHSC_101-C_131016A			10/16/13 08:47	
Conductivity @ 25 C		1410	umhos/cm	5.0	100	90	110			
Sample ID: MBLK		Method Blank				Run: PHSC_101-C_131016A			10/16/13 09:04	
Conductivity @ 25 C		2	umhos/cm	0.7						
Sample ID: C13100566-007ADUP		Sample Duplicate				Run: PHSC_101-C_131016A			10/16/13 09:37	
Conductivity @ 25 C		1010	umhos/cm	5.0				0.4	10	
Sample ID: C13100566-017ADUP		Sample Duplicate				Run: PHSC_101-C_131016A			10/16/13 10:10	
Conductivity @ 25 C		1060	umhos/cm	5.0				0.1	10	
Sample ID: C13100566-027ADUP		Sample Duplicate				Run: PHSC_101-C_131016A			10/16/13 10:52	
Conductivity @ 25 C		736	umhos/cm	5.0				0.0	10	
Sample ID: C13100566-037ADUP		Sample Duplicate				Run: PHSC_101-C_131016A			10/16/13 11:25	
Conductivity @ 25 C		3260	umhos/cm	5.0				0.0	10	
Sample ID: C13100566-047ADUP		Sample Duplicate				Run: PHSC_101-C_131016A			10/16/13 12:47	
Conductivity @ 25 C		3170	umhos/cm	5.0				0.4	10	
Sample ID: C13100566-057ADUP		Sample Duplicate				Run: PHSC_101-C_131016A			10/16/13 13:20	
Conductivity @ 25 C		1010	umhos/cm	5.0				0.2	10	
Sample ID: C13100566-067ADUP		Sample Duplicate				Run: PHSC_101-C_131016A			10/16/13 14:02	
Conductivity @ 25 C		8570	umhos/cm	5.0				0.1	10	

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

QA/QC Summary Report

Prepared by Casper, WY Branch

Revised Date: 12/13/13
Report Date: 10/31/13
Work Order: C13100566

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: A2540 C										Batch: TDS131016A
Sample ID: MB-1_131016A		Method Blank				Run: BAL-19_131016A				10/16/13 14:52
Solids, Total Dissolved TDS @ 180 C		ND	mg/L	10						
Sample ID: LCS-2_131016A		Laboratory Control Sample				Run: BAL-19_131016A				10/16/13 14:53
Solids, Total Dissolved TDS @ 180 C		1990	mg/L	20	100	90	110			
Sample ID: C13100477-001A MS		Sample Matrix Spike				Run: BAL-19_131016A				10/16/13 14:55
Solids, Total Dissolved TDS @ 180 C		1300	mg/L	10	98	90	110			
Sample ID: C13101102-003A DUP		Sample Duplicate				Run: BAL-19_131016A				10/16/13 14:58
Solids, Total Dissolved TDS @ 180 C		1440	mg/L	20				0.7	5	
Sample ID: C13100566-013A DUP		Sample Duplicate				Run: BAL-19_131016A				10/16/13 15:02
Solids, Total Dissolved TDS @ 180 C		2130	mg/L	20				1.1	5	
Sample ID: C13100566-014A MS		Sample Matrix Spike				Run: BAL-19_131016A				10/16/13 15:02
Solids, Total Dissolved TDS @ 180 C		1640	mg/L	10	90	90	110			
Sample ID: C13100566-023A DUP		Sample Duplicate				Run: BAL-19_131016A				10/16/13 15:05
Solids, Total Dissolved TDS @ 180 C		26200	mg/L	100				0.8	5	
Sample ID: C13100566-033A DUP		Sample Duplicate				Run: BAL-19_131016A				10/16/13 15:12
Solids, Total Dissolved TDS @ 180 C		528	mg/L	10				1.3	5	
Sample ID: C13100566-034A MS		Sample Matrix Spike				Run: BAL-19_131016A				10/16/13 15:15
Solids, Total Dissolved TDS @ 180 C		1500	mg/L	10	99	90	110			
Sample ID: C13100566-043A DUP		Sample Duplicate				Run: BAL-19_131016A				10/16/13 15:17
Solids, Total Dissolved TDS @ 180 C		910	mg/L	10				0.1	5	

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

QA/QC Summary Report

Prepared by Casper, WY Branch

Revised Date: 12/13/13
Report Date: 10/31/13
Work Order: C13100566

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: A2540 C										Batch: TDS131017A
Sample ID: MB-1_131017A		Method Blank				Run: BAL-19_131017B				10/17/13 14:25
Solids, Total Dissolved TDS @ 180 C		ND	mg/L	10						
Sample ID: LCS-2_131017A		Laboratory Control Sample				Run: BAL-19_131017B				10/17/13 14:26
Solids, Total Dissolved TDS @ 180 C		1970	mg/L	20	99	90	110			
Sample ID: C13100566-021A DUP		Sample Duplicate				Run: BAL-19_131017B				10/17/13 14:26
Solids, Total Dissolved TDS @ 180 C		22700	mg/L	100				0.7	5	
Sample ID: C13100566-022A MS		Sample Matrix Spike				Run: BAL-19_131017B				10/17/13 14:27
Solids, Total Dissolved TDS @ 180 C		31600	mg/L	100	93	90	110			
Sample ID: C13100566-053A DUP		Sample Duplicate				Run: BAL-19_131017B				10/17/13 14:29
Solids, Total Dissolved TDS @ 180 C		1050	mg/L	10				0.1	5	
Sample ID: C13100566-063A DUP		Sample Duplicate				Run: BAL-19_131017B				10/17/13 14:35
Solids, Total Dissolved TDS @ 180 C		13800	mg/L	100				1.2	5	
Sample ID: C13100566-064A MS		Sample Matrix Spike				Run: BAL-19_131017B				10/17/13 14:35
Solids, Total Dissolved TDS @ 180 C		24700	mg/L	100	109	90	110			

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

QA/QC Summary Report

Prepared by Casper, WY Branch

Revised Date: 12/13/13
Report Date: 10/31/13
Work Order: C13100566

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: A4500-H B									Analytical Run: PHSC_101-C_131016A	
Sample ID: pH 6.86	Initial Calibration Verification Standard								10/16/13 08:32	
pH		6.83	s.u.	0.010	100	98	102			
Sample ID: CCV - pH 7	Continuing Calibration Verification Standard								10/16/13 10:13	
pH		6.98	s.u.	0.010	100	98	102			
Sample ID: CCV - pH 7	Continuing Calibration Verification Standard								10/16/13 11:28	
pH		6.98	s.u.	0.010	100	98	102			
Sample ID: pH 6.86	Initial Calibration Verification Standard								10/16/13 12:08	
pH		6.85	s.u.	0.010	100	98	102			
Sample ID: CCV - pH 7	Continuing Calibration Verification Standard								10/16/13 13:23	
pH		6.98	s.u.	0.010	100	98	102			
Method: A4500-H B									Batch: R179573	
Sample ID: C13100566-007ADUP	Sample Duplicate					Run: PHSC_101-C_131016A			10/16/13 09:37	
pH		7.56	s.u.	0.010				0.1	3	
Sample ID: C13100566-017ADUP	Sample Duplicate					Run: PHSC_101-C_131016A			10/16/13 10:10	
pH		7.42	s.u.	0.010				0.3	3	
Sample ID: C13100566-027ADUP	Sample Duplicate					Run: PHSC_101-C_131016A			10/16/13 10:52	
pH		7.54	s.u.	0.010				0.0	3	
Sample ID: C13100566-037ADUP	Sample Duplicate					Run: PHSC_101-C_131016A			10/16/13 11:25	
pH		11.6	s.u.	0.010				0.0	3	
Sample ID: C13100566-047ADUP	Sample Duplicate					Run: PHSC_101-C_131016A			10/16/13 12:47	
pH		7.28	s.u.	0.010				0.1	3	
Sample ID: C13100566-057ADUP	Sample Duplicate					Run: PHSC_101-C_131016A			10/16/13 13:20	
pH		7.34	s.u.	0.010				0.1	3	
Sample ID: C13100566-067ADUP	Sample Duplicate					Run: PHSC_101-C_131016A			10/16/13 14:02	
pH		7.23	s.u.	0.010				0.3	3	

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

QA/QC Summary Report

Prepared by Casper, WY Branch

Revised Date: 12/13/13
Report Date: 10/31/13
Work Order: C13100566

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E200.7									Analytical Run: ICP4-C_131016A	
Sample ID: ICV	5	Initial Calibration Verification Standard							10/16/13 15:17	
Calcium		50.8	mg/L	0.50	102	95	105			
Iron		5.09	mg/L	0.030	102	95	105			
Magnesium		50.1	mg/L	0.50	100	95	105			
Potassium		50.4	mg/L	0.50	101	95	105			
Sodium		50.8	mg/L	0.50	102	95	105			
Sample ID: ICSA	5	Interference Check Sample A							10/16/13 15:32	
Calcium		471	mg/L	0.50	94	80	120			
Iron		180	mg/L	0.030	90	80	120			
Magnesium		506	mg/L	0.50	101	80	120			
Potassium		0.0296	mg/L	0.50						
Sodium		-0.299	mg/L	0.50						
Sample ID: ICSAB	5	Interference Check Sample AB							10/16/13 15:36	
Calcium		469	mg/L	0.50	94	80	120			
Iron		180	mg/L	0.030	90	80	120			
Magnesium		507	mg/L	0.50	101	80	120			
Potassium		-0.00287	mg/L	0.50						
Sodium		-0.342	mg/L	0.50						
Method: E200.7									Batch: R179658	
Sample ID: MB-131016A	5	Method Blank				Run: ICP4-C_131016A			10/16/13 15:55	
Calcium		ND	mg/L	0.02						
Iron		ND	mg/L	0.002						
Magnesium		0.04	mg/L	0.01						
Potassium		ND	mg/L	0.04						
Sodium		ND	mg/L	0.2						
Sample ID: LFB-131016A	5	Laboratory Fortified Blank				Run: ICP4-C_131016A			10/16/13 15:58	
Calcium		47.0	mg/L	0.50	94	85	115			
Iron		0.929	mg/L	0.030	93	85	115			
Magnesium		46.6	mg/L	0.50	93	85	115			
Potassium		47.1	mg/L	0.50	94	85	115			
Sodium		47.4	mg/L	0.50	95	85	115			
Sample ID: C13101102-003BMS2	5	Sample Matrix Spike				Run: ICP4-C_131016A			10/16/13 20:26	
Calcium		298	mg/L	1.0	90	70	130			
Iron		1.96	mg/L	0.030	96	70	130			
Magnesium		150	mg/L	1.0	94	70	130			
Potassium		102	mg/L	1.0	95	70	130			
Sodium		254	mg/L	1.0	94	70	130			
Sample ID: C13101102-003BMSD2	5	Sample Matrix Spike Duplicate				Run: ICP4-C_131016A			10/16/13 20:30	
Calcium		297	mg/L	1.0	90	70	130	0.2	20	
Iron		1.96	mg/L	0.030	96	70	130	0.1	20	
Magnesium		151	mg/L	1.0	95	70	130	0.6	20	

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

QA/QC Summary Report

Prepared by Casper, WY Branch

Revised Date: 12/13/13
Report Date: 10/31/13
Work Order: C13100566

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E200.7									Batch: R179658	
Sample ID: C13101102-003BMSD2	5	Sample Matrix Spike Duplicate				Run: ICP4-C_131016A			10/16/13 20:30	
Potassium		101	mg/L	1.0	94	70	130	0.3	20	
Sodium		253	mg/L	1.0	92	70	130	0.6	20	
Sample ID: C13100566-012BMS2	5	Sample Matrix Spike				Run: ICP4-C_131016A			10/16/13 21:48	
Calcium		453	mg/L	1.0	94	70	130			
Iron		4.80	mg/L	0.030	94	70	130			
Magnesium		297	mg/L	1.0	95	70	130			
Potassium		246	mg/L	1.0	94	70	130			
Sodium		672	mg/L	1.0	92	70	130			
Sample ID: C13100566-012BMSD2	5	Sample Matrix Spike Duplicate				Run: ICP4-C_131016A			10/16/13 21:52	
Calcium		452	mg/L	1.0	94	70	130	0.1	20	
Iron		4.83	mg/L	0.030	94	70	130	0.7	20	
Magnesium		297	mg/L	1.0	95	70	130	0.3	20	
Potassium		247	mg/L	1.0	95	70	130	0.7	20	
Sodium		672	mg/L	1.0	92	70	130	0.1	20	
Sample ID: C13100566-021BMS2	5	Sample Matrix Spike				Run: ICP4-C_131016A			10/16/13 22:43	
Calcium		890	mg/L	1.0	87	70	130			
Iron		263	mg/L	0.030		70	130			A
Magnesium		1200	mg/L	1.0	90	70	130			
Potassium		461	mg/L	1.0	87	70	130			
Sodium		545	mg/L	2.1	90	70	130			
Sample ID: C13100566-021BMSD2	5	Sample Matrix Spike Duplicate				Run: ICP4-C_131016A			10/16/13 22:46	
Calcium		912	mg/L	1.0	91	70	130	2.5	20	
Iron		272	mg/L	0.030		70	130	3.2	20	A
Magnesium		1210	mg/L	1.0	93	70	130	1.6	20	
Potassium		477	mg/L	1.0	91	70	130	3.5	20	
Sodium		561	mg/L	2.1	93	70	130	3.0	20	

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

A - The analyte level was greater than four times the spike level. In accordance with the method % recovery is not calculated.

QA/QC Summary Report

Prepared by Casper, WY Branch

Revised Date: 12/13/13
Report Date: 10/31/13
Work Order: C13100566

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E200.7									Analytical Run: ICP4-C_131017A	
Sample ID: ICV	5	Initial Calibration Verification Standard							10/17/13 13:58	
Calcium		50.7	mg/L	0.50	101	95	105			
Iron		4.98	mg/L	0.030	100	95	105			
Magnesium		50.6	mg/L	0.50	101	95	105			
Potassium		49.4	mg/L	0.50	99	95	105			
Sodium		50.2	mg/L	0.50	100	95	105			
Sample ID: ICSA	5	Interference Check Sample A							10/17/13 14:13	
Calcium		456	mg/L	0.50	91	80	120			
Iron		172	mg/L	0.030	86	80	120			
Magnesium		502	mg/L	0.50	100	80	120			
Potassium		0.00920	mg/L	0.50						
Sodium		-0.237	mg/L	0.50						
Sample ID: ICSAB	5	Interference Check Sample AB							10/17/13 14:17	
Calcium		458	mg/L	0.50	92	80	120			
Iron		172	mg/L	0.030	86	80	120			
Magnesium		507	mg/L	0.50	101	80	120			
Potassium		0.00595	mg/L	0.50						
Sodium		0.00785	mg/L	0.50						
Method: E200.7									Batch: R179717	
Sample ID: MB-131017A	5	Method Blank				Run: ICP4-C_131017A			10/17/13 14:35	
Calcium		ND	mg/L	0.02						
Iron		ND	mg/L	0.002						
Magnesium		ND	mg/L	0.01						
Potassium		ND	mg/L	0.04						
Sodium		ND	mg/L	0.2						
Sample ID: LFB-131017A	5	Laboratory Fortified Blank				Run: ICP4-C_131017A			10/17/13 14:39	
Calcium		47.8	mg/L	0.50	96	85	115			
Iron		0.945	mg/L	0.030	95	85	115			
Magnesium		47.3	mg/L	0.50	95	85	115			
Potassium		47.4	mg/L	0.50	95	85	115			
Sodium		47.6	mg/L	0.50	95	85	115			
Sample ID: C13100566-026BMS2	5	Sample Matrix Spike				Run: ICP4-C_131017A			10/17/13 15:27	
Calcium		183	mg/L	1.0	93	70	130			
Iron		2.24	mg/L	0.030	94	70	130			
Magnesium		124	mg/L	1.0	95	70	130			
Potassium		99.4	mg/L	1.0	94	70	130			
Sodium		130	mg/L	1.0	95	70	130			
Sample ID: C13100566-026BMSD2	5	Sample Matrix Spike Duplicate				Run: ICP4-C_131017A			10/17/13 15:30	
Calcium		185	mg/L	1.0	95	70	130	1.2	20	
Iron		2.27	mg/L	0.030	95	70	130	1.2	20	
Magnesium		125	mg/L	1.0	96	70	130	1.0	20	

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

QA/QC Summary Report

Prepared by Casper, WY Branch

Revised Date: 12/13/13
Report Date: 10/31/13
Work Order: C13100566

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E200.7										Batch: R179717
Sample ID: C13100566-026BMSD2	5	Sample Matrix Spike Duplicate				Run: ICP4-C_131017A				10/17/13 15:30
Potassium		102	mg/L	1.0	96	70	130	2.2	20	
Sodium		132	mg/L	1.0	96	70	130	1.2	20	
Sample ID: C13100566-035BMS2	5	Sample Matrix Spike				Run: ICP4-C_131017A				10/17/13 16:22
Calcium		173	mg/L	1.0	92	70	130			
Iron		1.91	mg/L	0.030	94	70	130			
Magnesium		119	mg/L	1.0	95	70	130			
Potassium		99.7	mg/L	1.0	95	70	130			
Sodium		143	mg/L	1.0	94	70	130			
Sample ID: C13100566-035BMSD2	5	Sample Matrix Spike Duplicate				Run: ICP4-C_131017A				10/17/13 16:25
Calcium		173	mg/L	1.0	92	70	130	0.2	20	
Iron		1.90	mg/L	0.030	93	70	130	0.8	20	
Magnesium		119	mg/L	1.0	95	70	130	0.3	20	
Potassium		98.4	mg/L	1.0	93	70	130	1.4	20	
Sodium		142	mg/L	1.0	93	70	130	0.8	20	
Sample ID: C13100566-044BMS2	5	Sample Matrix Spike				Run: ICP4-C_131017A				10/17/13 17:43
Calcium		236	mg/L	1.0	86	70	130			
Iron		1.95	mg/L	0.030	95	70	130			
Magnesium		136	mg/L	1.0	93	70	130			
Potassium		102	mg/L	1.0	94	70	130			
Sodium		184	mg/L	1.0	88	70	130			
Sample ID: C13100566-044BMSD2	5	Sample Matrix Spike Duplicate				Run: ICP4-C_131017A				10/17/13 17:47
Calcium		235	mg/L	1.0	85	70	130	0.6	20	
Iron		1.93	mg/L	0.030	94	70	130	1.0	20	
Magnesium		135	mg/L	1.0	92	70	130	0.3	20	
Potassium		101	mg/L	1.0	92	70	130	1.1	20	
Sodium		182	mg/L	1.0	85	70	130	1.1	20	
Sample ID: C13100566-053BMS2	5	Sample Matrix Spike				Run: ICP4-C_131017A				10/17/13 18:38
Calcium		265	mg/L	1.0	94	70	130			
Iron		1.98	mg/L	0.030	97	70	130			
Magnesium		141	mg/L	1.0	96	70	130			
Potassium		106	mg/L	1.0	99	70	130			
Sodium		198	mg/L	1.0	97	70	130			
Sample ID: C13100566-053BMSD2	5	Sample Matrix Spike Duplicate				Run: ICP4-C_131017A				10/17/13 18:42
Calcium		264	mg/L	1.0	93	70	130	0.3	20	
Iron		1.98	mg/L	0.030	97	70	130	0.2	20	
Magnesium		139	mg/L	1.0	95	70	130	1.3	20	
Potassium		105	mg/L	1.0	98	70	130	0.7	20	
Sodium		197	mg/L	1.0	96	70	130	0.2	20	

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

QA/QC Summary Report

Prepared by Casper, WY Branch

Revised Date: 12/13/13

Client: Rio Algom Mining Corporation LLC **Report Date:** 10/31/13

Project: Lisbon, UT Facility **Work Order:** C13100566

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E200.7										Batch: R179717
Sample ID: C13100566-062BMS2	5	Sample Matrix Spike				Run: ICP4-C_131017A				10/17/13 20:15
Calcium		764	mg/L	1.0	84	70	130			
Iron		4.80	mg/L	0.030	93	70	130			
Magnesium		423	mg/L	1.0	93	70	130			
Potassium		257	mg/L	1.0	93	70	130			
Sodium		928	mg/L	1.0	88	70	130			
Sample ID: C13100566-062BMSD2	5	Sample Matrix Spike Duplicate				Run: ICP4-C_131017A				10/17/13 20:19
Calcium		756	mg/L	1.0	81	70	130	1.1	20	
Iron		4.75	mg/L	0.030	92	70	130	1.0	20	
Magnesium		418	mg/L	1.0	91	70	130	1.3	20	
Potassium		252	mg/L	1.0	91	70	130	2.0	20	
Sodium		912	mg/L	1.0	82	70	130	1.7	20	

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

QA/QC Summary Report

Prepared by Casper, WY Branch

Revised Date: 12/13/13
Report Date: 10/31/13
Work Order: C13100566

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E200.7									Analytical Run: ICP4-C_131025A	
Sample ID: ICV	4	Initial Calibration Verification Standard							10/25/13 13:20	
Calcium		49.3	mg/L	0.50	99	95	105			
Magnesium		48.9	mg/L	0.50	98	95	105			
Potassium		48.6	mg/L	0.50	97	95	105			
Sodium		48.9	mg/L	0.50	98	95	105			
Sample ID: ICSA	4	Interference Check Sample A							10/25/13 13:34	
Calcium		466	mg/L	0.50	93	80	120			
Magnesium		503	mg/L	0.50	101	80	120			
Potassium		-0.0246	mg/L	0.50						
Sodium		-0.272	mg/L	0.50						
Sample ID: ICSAB	4	Interference Check Sample AB							10/25/13 13:38	
Calcium		455	mg/L	0.50	91	80	120			
Magnesium		493	mg/L	0.50	99	80	120			
Potassium		-0.0262	mg/L	0.50						
Sodium		-0.226	mg/L	0.50						
Method: E200.7									Batch: R180051	
Sample ID: MB-131025A	4	Method Blank				Run: ICP4-C_131025A			10/25/13 13:57	
Calcium		ND	mg/L	0.02						
Magnesium		0.04	mg/L	0.01						
Potassium		ND	mg/L	0.04						
Sodium		ND	mg/L	0.2						
Sample ID: LFB-131025A	4	Laboratory Fortified Blank				Run: ICP4-C_131025A			10/25/13 14:01	
Calcium		46.6	mg/L	0.50	93	85	115			
Magnesium		46.1	mg/L	0.50	92	85	115			
Potassium		46.1	mg/L	0.50	92	85	115			
Sodium		46.3	mg/L	0.50	93	85	115			
Sample ID: C13100108-003BMS2	4	Sample Matrix Spike				Run: ICP4-C_131025A			10/25/13 15:12	
Calcium		403	mg/L	1.0	89	70	130			
Magnesium		356	mg/L	1.0	92	70	130			
Potassium		240	mg/L	1.0	92	70	130			
Sodium		1630	mg/L	1.0		70	130			A
Sample ID: C13100108-003BMSD2	4	Sample Matrix Spike Duplicate				Run: ICP4-C_131025A			10/25/13 15:16	
Calcium		401	mg/L	1.0	89	70	130	0.5	20	
Magnesium		355	mg/L	1.0	91	70	130	0.5	20	
Potassium		235	mg/L	1.0	90	70	130	2.3	20	
Sodium		1610	mg/L	1.0		70	130	1.2	20	A

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

A - The analyte level was greater than four times the spike level. In accordance with the method % recovery is not calculated.

QA/QC Summary Report

Prepared by Casper, WY Branch

Revised Date: 12/13/13
Report Date: 10/31/13
Work Order: C13100566

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E200.8									Analytical Run: ICPMS2-C_131016B	
Sample ID: ICV	4	Initial Calibration Verification Standard							10/16/13 15:53	
Arsenic		0.0496	mg/L	0.0010	99	90	110			
Molybdenum		0.0496	mg/L	0.0010	99	90	110			
Selenium		0.0493	mg/L	0.0010	99	90	110			
Uranium		0.0498	mg/L	0.00030	100	90	110			
Method: E200.8									Batch: R179640	
Sample ID: LRB	4	Method Blank				Run: ICPMS2-C_131016B			10/16/13 16:19	
Arsenic		ND	mg/L	0.00010						
Molybdenum		ND	mg/L	4E-05						
Selenium		ND	mg/L	0.0002						
Uranium		ND	mg/L	1E-05						
Sample ID: LFB	4	Laboratory Fortified Blank				Run: ICPMS2-C_131016B			10/16/13 16:22	
Arsenic		0.0511	mg/L	0.0010	102	85	115			
Molybdenum		0.0507	mg/L	0.0010	101	85	115			
Selenium		0.0508	mg/L	0.0010	102	85	115			
Uranium		0.0502	mg/L	0.00030	100	85	115			
Sample ID: C13101102-001BMS4	4	Sample Matrix Spike				Run: ICPMS2-C_131016B			10/16/13 22:34	
Arsenic		2.20	mg/L	0.0029	100	70	130			
Molybdenum		45.6	mg/L	0.0010		70	130			A
Selenium		1.26	mg/L	0.0065	98	70	130			
Uranium		6.51	mg/L	0.0025		70	130			A
Sample ID: C13101102-001BMSD4	4	Sample Matrix Spike Duplicate				Run: ICPMS2-C_131016B			10/16/13 22:37	
Arsenic		2.19	mg/L	0.0029	100	70	130	0.1	20	
Molybdenum		45.6	mg/L	0.0010		70	130	0.0	20	A
Selenium		1.25	mg/L	0.0065	98	70	130	0.2	20	
Uranium		6.42	mg/L	0.0025		70	130	1.4	20	A
Sample ID: C13100566-011BMS4	4	Sample Matrix Spike				Run: ICPMS2-C_131016B			10/16/13 23:32	
Arsenic		0.123	mg/L	0.0010	109	70	130			
Molybdenum		0.114	mg/L	0.0010	111	70	130			
Selenium		0.123	mg/L	0.0010	106	70	130			
Uranium		1.64	mg/L	0.00030		70	130			A
Sample ID: C13100566-011BMSD4	4	Sample Matrix Spike Duplicate				Run: ICPMS2-C_131016B			10/16/13 23:36	
Arsenic		0.122	mg/L	0.0010	108	70	130	1.0	20	
Molybdenum		0.113	mg/L	0.0010	109	70	130	1.6	20	
Selenium		0.121	mg/L	0.0010	105	70	130	1.3	20	
Uranium		1.63	mg/L	0.00030		70	130	0.4	20	A
Sample ID: C13100566-021BMS4	4	Sample Matrix Spike				Run: ICPMS2-C_131016B			10/17/13 00:40	
Arsenic		0.570	mg/L	0.0012	102	70	130			
Molybdenum		0.935	mg/L	0.0010	103	70	130			
Selenium		0.638	mg/L	0.0026	104	70	130			

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

A - The analyte level was greater than four times the spike level. In accordance with the method % recovery is not calculated.

QA/QC Summary Report

Prepared by Casper, WY Branch

Revised Date: 12/13/13
Report Date: 10/31/13
Work Order: C13100566

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E200.8										Batch: R179640
Sample ID: C13100566-021BMS4	4	Sample Matrix Spike				Run: ICPMS2-C_131016B				10/17/13 00:40
Uranium		16.7	mg/L	0.0010		70	130			A
Sample ID: C13100566-021BMSD4	4	Sample Matrix Spike Duplicate				Run: ICPMS2-C_131016B				10/17/13 00:43
Arsenic		0.573	mg/L	0.0012	102	70	130	0.7	20	
Molybdenum		0.941	mg/L	0.0010	104	70	130	0.6	20	
Selenium		0.644	mg/L	0.0026	106	70	130	0.9	20	
Uranium		16.7	mg/L	0.0010		70	130	0.2	20	A
Sample ID: C13100566-031BMS4	4	Sample Matrix Spike				Run: ICPMS2-C_131016B				10/17/13 02:20
Arsenic		0.0786	mg/L	0.0010	105	70	130			
Molybdenum		0.0617	mg/L	0.0010	103	70	130			
Selenium		0.0617	mg/L	0.0010	107	70	130			
Uranium		0.0717	mg/L	0.00030	111	70	130			
Sample ID: C13100566-031BMSD4	4	Sample Matrix Spike Duplicate				Run: ICPMS2-C_131016B				10/17/13 02:23
Arsenic		0.0796	mg/L	0.0010	107	70	130	1.3	20	
Molybdenum		0.0617	mg/L	0.0010	103	70	130	0.1	20	
Selenium		0.0627	mg/L	0.0010	109	70	130	1.6	20	
Uranium		0.0721	mg/L	0.00030	112	70	130	0.5	20	
Sample ID: C13100566-041BMS4	4	Sample Matrix Spike				Run: ICPMS2-C_131016B				10/17/13 03:15
Arsenic		0.0582	mg/L	0.0010	104	70	130			
Molybdenum		0.0672	mg/L	0.0010	99	70	130			
Selenium		0.0603	mg/L	0.0010	103	70	130			
Uranium		0.102	mg/L	0.00030	106	70	130			
Sample ID: C13100566-041BMSD4	4	Sample Matrix Spike Duplicate				Run: ICPMS2-C_131016B				10/17/13 03:18
Arsenic		0.0586	mg/L	0.0010	105	70	130	0.8	20	
Molybdenum		0.0676	mg/L	0.0010	100	70	130	0.5	20	
Selenium		0.0604	mg/L	0.0010	103	70	130	0.0	20	
Uranium		0.103	mg/L	0.00030	108	70	130	0.9	20	
Sample ID: C13100566-051BMS4	4	Sample Matrix Spike				Run: ICPMS2-C_131016B				10/17/13 04:24
Arsenic		0.0640	mg/L	0.0010	107	70	130			
Molybdenum		0.0552	mg/L	0.0010	102	70	130			
Selenium		0.0653	mg/L	0.0010	107	70	130			
Uranium		0.0689	mg/L	0.00030	112	70	130			
Sample ID: C13100566-051BMSD4	4	Sample Matrix Spike Duplicate				Run: ICPMS2-C_131016B				10/17/13 04:27
Arsenic		0.0644	mg/L	0.0010	108	70	130	0.5	20	
Molybdenum		0.0546	mg/L	0.0010	101	70	130	1.1	20	
Selenium		0.0654	mg/L	0.0010	107	70	130	0.2	20	
Uranium		0.0685	mg/L	0.00030	111	70	130	0.6	20	
Sample ID: C13100566-061BMS4	4	Sample Matrix Spike				Run: ICPMS2-C_131016B				10/17/13 06:05
Arsenic		0.263	mg/L	0.0010	104	70	130			
Molybdenum		0.277	mg/L	0.0010	107	70	130			

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

A - The analyte level was greater than four times the spike level. In accordance with the method % recovery is not calculated.

QA/QC Summary Report

Prepared by Casper, WY Branch

Revised Date: 12/13/13
Report Date: 10/31/13
Work Order: C13100566

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E200.8										Batch: R179640
Sample ID: C13100566-061BMS4	4	Sample Matrix Spike				Run: ICPMS2-C_131016B				10/17/13 06:05
Selenium		0.260	mg/L	0.0013	98	70	130			
Uranium		8.49	mg/L	0.00050		70	130			A
Sample ID: C13100566-061BMSD4	4	Sample Matrix Spike Duplicate				Run: ICPMS2-C_131016B				10/17/13 06:08
Arsenic		0.262	mg/L	0.0010	104	70	130	0.7	20	
Molybdenum		0.274	mg/L	0.0010	106	70	130	1.0	20	
Selenium		0.259	mg/L	0.0013	98	70	130	0.6	20	
Uranium		8.42	mg/L	0.00050		70	130	0.8	20	A
Sample ID: C13100566-069BMS4	4	Sample Matrix Spike				Run: ICPMS2-C_131016B				10/17/13 06:54
Arsenic		0.0531	mg/L	0.0010	106	70	130			
Molybdenum		0.0503	mg/L	0.0010	99	70	130			
Selenium		0.0538	mg/L	0.0010	107	70	130			
Uranium		0.0516	mg/L	0.00030	103	70	130			
Sample ID: C13100566-069BMSD4	4	Sample Matrix Spike Duplicate				Run: ICPMS2-C_131016B				10/17/13 06:57
Arsenic		0.0531	mg/L	0.0010	106	70	130	0.0	20	
Molybdenum		0.0500	mg/L	0.0010	99	70	130	0.7	20	
Selenium		0.0542	mg/L	0.0010	107	70	130	0.6	20	
Uranium		0.0516	mg/L	0.00030	103	70	130	0.0	20	
Method: E200.8										Analytical Run: ICPMS4-C_131018A
Sample ID: ICV	2	Initial Calibration Verification Standard								10/18/13 15:37
Iron		0.978	mg/L	0.0010	98	90	110			
Uranium		0.0502	mg/L	0.00030	100	90	110			
Method: E200.8										Batch: R179766
Sample ID: LRB	2	Method Blank				Run: ICPMS4-C_131018A				10/18/13 16:33
Iron		0.0009	mg/L	0.0006						
Uranium		ND	mg/L	9E-06						
Sample ID: LFB	2	Laboratory Fortified Blank				Run: ICPMS4-C_131018A				10/18/13 16:37
Iron		1.26	mg/L	0.0010	101	85	115			
Uranium		0.0517	mg/L	0.00030	103	85	115			
Sample ID: C13100672-001AMS4	2	Sample Matrix Spike				Run: ICPMS4-C_131018A				10/18/13 18:59
Iron		6.26	mg/L	0.030	99	70	130			
Uranium		0.265	mg/L	0.00030	105	70	130			
Sample ID: C13100672-001AMSD4	2	Sample Matrix Spike Duplicate				Run: ICPMS4-C_131018A				10/18/13 19:03
Iron		6.34	mg/L	0.030	100	70	130	1.3	20	
Uranium		0.265	mg/L	0.00030	105	70	130	0.1	20	

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

A - The analyte level was greater than four times the spike level. In accordance with the method % recovery is not calculated.

QA/QC Summary Report

Prepared by Casper, WY Branch

Revised Date: 12/13/13
Report Date: 10/31/13
Work Order: C13100566

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E300.0									Analytical Run: IC2-C_131016A	
Sample ID: CCV-101613-02	2	Continuing Calibration Verification Standard							10/16/13 18:43	
Chloride		9.80	mg/L	1.0	98	90	110			
Sulfate		38.9	mg/L	1.0	97	90	110			
Sample ID: CCV-101613-03	2	Continuing Calibration Verification Standard							10/16/13 23:01	
Chloride		9.79	mg/L	1.0	98	90	110			
Sulfate		39.0	mg/L	1.0	97	90	110			
Sample ID: CCV-101613-04	2	Continuing Calibration Verification Standard							10/17/13 03:19	
Chloride		9.87	mg/L	1.0	99	90	110			
Sulfate		39.1	mg/L	1.0	98	90	110			
Sample ID: CCV-101613-05	2	Continuing Calibration Verification Standard							10/17/13 07:56	
Chloride		9.85	mg/L	1.0	99	90	110			
Sulfate		39.1	mg/L	1.0	98	90	110			
Sample ID: CCV-101613-06	2	Continuing Calibration Verification Standard							10/17/13 12:14	
Chloride		9.81	mg/L	1.0	98	90	110			
Sulfate		39.4	mg/L	1.0	99	90	110			
Sample ID: CCV-101613-07	2	Continuing Calibration Verification Standard							10/17/13 16:32	
Chloride		9.93	mg/L	1.0	99	90	110			
Sulfate		39.6	mg/L	1.0	99	90	110			
Sample ID: CCV-101613-08	2	Continuing Calibration Verification Standard							10/17/13 21:08	
Chloride		9.90	mg/L	1.0	99	90	110			
Sulfate		39.8	mg/L	1.0	99	90	110			
Method: E300.0									Batch: R179703	
Sample ID: ICB-101613	2	Method Blank				Run: IC2-C_131016A			10/16/13 13:28	
Chloride		ND	mg/L	0.03						
Sulfate		0.1	mg/L	0.07						
Sample ID: LFB-101613-01	2	Laboratory Fortified Blank				Run: IC2-C_131016A			10/16/13 14:06	
Chloride		9.60	mg/L	1.0	96	90	110			
Sulfate		38.4	mg/L	1.0	96	90	110			
Sample ID: LFBD-101613-02	2	Laboratory Fortified Blank Duplicate				Run: IC2-C_131016A			10/16/13 14:24	
Chloride		9.81	mg/L	1.0	98	90	110	2.1	20	
Sulfate		39.2	mg/L	1.0	98	90	110	1.9	20	
Sample ID: C13101102-003AMS	2	Sample Matrix Spike				Run: IC2-C_131016A			10/16/13 20:15	
Chloride		267	mg/L	1.0		90	110			A
Sulfate		672	mg/L	4.2	99	90	110			
Sample ID: C13101102-003AMSD	2	Sample Matrix Spike Duplicate				Run: IC2-C_131016A			10/16/13 20:33	
Chloride		268	mg/L	1.0		90	110	0.3	20	A
Sulfate		675	mg/L	4.2	100	90	110	0.3	20	

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

A - The analyte level was greater than four times the spike level. In accordance with the method % recovery is not calculated.

QA/QC Summary Report

Prepared by Casper, WY Branch

Revised Date: 12/13/13
Report Date: 10/31/13
Work Order: C13100566

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E300.0										Batch: R179703
Sample ID: C13100566-011AMS	2	Sample Matrix Spike				Run: IC2-C_131016A				10/16/13 23:56
Chloride		501	mg/L	2.1		90	110			A
Sulfate		1130	mg/L	8.3	86	90	110			S
- Matrix spike recoveries outside the acceptance range are considered matrix-related.										
Sample ID: C13100566-011AMSD	2	Sample Matrix Spike Duplicate				Run: IC2-C_131016A				10/17/13 00:15
Chloride		508	mg/L	2.1		90	110	1.4	20	A
Sulfate		1150	mg/L	8.3	91	90	110	1.8	20	
Sample ID: C13100566-024AMS	2	Sample Matrix Spike				Run: IC2-C_131016A				10/17/13 05:28
Chloride		20.8	mg/L	1.0	104	90	110			
Sulfate		38.7	mg/L	1.0	96	90	110			
Sample ID: C13100566-024AMSD	2	Sample Matrix Spike Duplicate				Run: IC2-C_131016A				10/17/13 05:47
Chloride		20.8	mg/L	1.0	104	90	110	0.1	20	
Sulfate		39.0	mg/L	1.0	96	90	110	0.6	20	
Sample ID: C13100566-031AMS	2	Sample Matrix Spike				Run: IC2-C_131016A				10/17/13 08:51
Chloride		203	mg/L	1.0	106	90	110			
Sulfate		383	mg/L	4.2	102	90	110			
Sample ID: C13100566-031AMSD	2	Sample Matrix Spike Duplicate				Run: IC2-C_131016A				10/17/13 09:10
Chloride		201	mg/L	1.0	103	90	110	0.8	20	
Sulfate		380	mg/L	4.2	101	90	110	0.7	20	
Sample ID: C13100566-041AMS	2	Sample Matrix Spike				Run: IC2-C_131016A				10/17/13 13:09
Chloride		197	mg/L	1.0	100	90	110			
Sulfate		408	mg/L	4.2	100	90	110			
Sample ID: C13100566-041AMSD	2	Sample Matrix Spike Duplicate				Run: IC2-C_131016A				10/17/13 13:28
Chloride		198	mg/L	1.0	101	90	110	0.3	20	
Sulfate		410	mg/L	4.2	101	90	110	0.7	20	
Sample ID: C13100566-051AMS	2	Sample Matrix Spike				Run: IC2-C_131016A				10/17/13 17:46
Chloride		138	mg/L	1.0	100	90	110			
Sulfate		371	mg/L	4.2	100	90	110			
Sample ID: C13100566-051AMSD	2	Sample Matrix Spike Duplicate				Run: IC2-C_131016A				10/17/13 18:04
Chloride		136	mg/L	1.0	98	90	110	1.0	20	
Sulfate		367	mg/L	4.2	98	90	110	1.1	20	
Sample ID: C13100566-061AMS	2	Sample Matrix Spike				Run: IC2-C_131016A				10/17/13 22:04
Chloride		1460	mg/L	4.2		90	110			A
Sulfate		2250	mg/L	17	105	90	110			
Sample ID: C13100566-061AMSD	2	Sample Matrix Spike Duplicate				Run: IC2-C_131016A				10/17/13 22:22
Chloride		1440	mg/L	4.2		90	110	1.5	20	A
Sulfate		2220	mg/L	17	102	90	110	1.2	20	

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

A - The analyte level was greater than four times the spike level. In accordance with the method % recovery is not calculated.

S - Spike recovery outside of advisory limits.

QA/QC Summary Report

Prepared by Casper, WY Branch

Revised Date: 12/13/13
Report Date: 10/31/13
Work Order: C13100566

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E300.0									Analytical Run: IC2-C_131025A	
Sample ID: CCV-102513-01	2	Continuing Calibration Verification Standard							10/25/13 12:40	
Chloride		9.73	mg/L	1.0	97	90	110			
Sulfate		38.8	mg/L	1.0	97	90	110			
Method: E300.0									Batch: R180050	
Sample ID: ICB-102513	2	Method Blank				Run: IC2-C_131025A			10/25/13 12:04	
Chloride		ND	mg/L	0.03						
Sulfate		0.1	mg/L	0.07						
Sample ID: LFB-102513-01	2	Laboratory Fortified Blank				Run: IC2-C_131025A			10/25/13 12:22	
Chloride		9.71	mg/L	1.0	97	90	110			
Sulfate		38.5	mg/L	1.0	96	90	110			
Sample ID: C13100885-001AMS	2	Sample Matrix Spike				Run: IC2-C_131025A			10/25/13 13:17	
Chloride		17.4	mg/L	1.0	105	90	110			
Sulfate		60.6	mg/L	1.0	101	90	110			
Sample ID: C13100885-001AMSD	2	Sample Matrix Spike Duplicate				Run: IC2-C_131025A			10/25/13 13:36	
Chloride		17.4	mg/L	1.0	105	90	110	0.1	20	
Sulfate		61.0	mg/L	1.0	102	90	110	0.7	20	
Sample ID: C13100887-001AMS	2	Sample Matrix Spike				Run: IC2-C_131025A			10/25/13 17:35	
Chloride		58.2	mg/L	1.0	99	90	110			
Sulfate		485	mg/L	4.2	99	90	110			
Sample ID: C13100887-001AMSD	2	Sample Matrix Spike Duplicate				Run: IC2-C_131025A			10/25/13 17:54	
Chloride		58.0	mg/L	1.0	99	90	110	0.3	20	
Sulfate		486	mg/L	4.2	99	90	110	0.1	20	

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

Workorder Receipt Checklist

Rio Algom Mining Corporation LLC C13100566

Login completed by: Cori A. Velasquez
Date Received: 10/15/2013
Reviewed by: BL2000\khelm
Received by: dw
Reviewed Date: 10/16/2013
Carrier name: FedEx

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on all shipping container(s)/cooler(s)?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on all sample bottles?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time? (Exclude analyses that are considered field parameters such as pH, DO, Res Cl, Sulfite, Ferrous Iron, etc.)	Yes ☑	No ☐	
Temp Blank received in all shipping container(s)/cooler(s)?	Yes ☐	No ☑	Not Applicable ☐
Container/Temp Blank temperature:	1.1°C On Ice		
Water - VOA vials have zero headspace?	Yes ☐	No ☐	No VOA vials submitted ☑
Water - pH acceptable upon receipt?	Yes ☐	No ☑	Not Applicable ☐

Standard Reporting Procedures:

Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH, Dissolved Oxygen and Residual Chlorine, are qualified as being analyzed outside of recommended holding time.

Solid/soil samples are reported on a wet weight basis (as received) unless specifically indicated. If moisture corrected, data units are typically noted as –dry. For agricultural and mining soil parameters/characteristics, all samples are dried and ground prior to sample analysis.

Contact and Corrective Action Comments:

Added 1 mL of nitric acid to sample 7042 for a final pH of <2.

Chain of Custody and Analytical Request Record

Page 1 of 1

PLEASE PRINT- Provide as much information as possible.

Company Name: Rio Algom Mining Corp	Project Name, PWS, Permit, Etc.: Lisbon, UT Facility	Sample Origin State: UT	EPA/State Compliance: Yes ☐ No ☐
Report Mail Address: Montgomery and Associates; Results retrieved from Energy Source	Contact Name: John Laney; Phone/Fax: (520) 425-2219; Email: jlaney@clmontgomery.com		Sampler: (Please Print) J. Kerns
Invoice Address: Email invoice to Gail, PO Box 218, Grants, NM 87020	Invoice Contact & Phone: Gail Alexander (505) 287-8851	Purchase Order:	Quote/Bottle Order: C3636

Special Report/Formats – ELI must be notified prior to sample submittal for the following:

☐ DW ☐ A2LA
☐ GSA ☐ EDD/EDT (Electronic Data) Format: _____
☐ POTW/WWTP ☐ LEVEL IV
☐ State: _____ ☐ NELAC
☐ Other: _____

Number of Containers; Sample Type: A W S V B O; Air Water Soils/Solids Vegetation Bioassay Other

ANALYSIS REQUESTED

SEE ATTACHED

Normal Turnaround (TAT)

RUSH

Contact ELI prior to RUSH sample submittal for charges and scheduling – See Instruction Page

Comments: Metals filtered and preserved in the field

Shipped by: Fedex E

Cooler ID(s): Cam

Receipt Temp: .4 °C

On Ice: Yes No

Custody Seal: Y N; Intact: Y N; Signature Match: Y N

	SAMPLE IDENTIFICATION (Name, Location, Interval, etc.)	Collection Date	Collection Time	MATRIX	C3636										
1	6970	13OCT2013	1145	W	X										
2	6971	13OCT2013	1235	W	X										
3	6978	14OCT2013	0940	W	X										
4	6979	14OCT2013	1130	W	X										
5	6941	14OCT2013	1200	W	X										
6	6942	14OCT2013	1240	W	X										
7															
8															
9															
10															

C1310056

LABORATORY USE ONLY

Custody Record MUST be Signed

	Relinquished by (print):	Date/Time:	Signature:	Received by (print):	Date/Time:	Signature:
	Josh Kerns	14OCT2013/1500				
	Relinquished by (print):	Date/Time:	Signature:	Received by (print):	Date/Time:	Signature:
				Received by Laboratory:	Date/Time: 10-15-13	Signature: 1010

Sample Disposal: Return to Client: _____ Lab Disposal: _____

In certain circumstances, samples submitted to Energy Laboratories, Inc. may be subcontracted to other certified laboratories in order to complete the analysis requested. This serves as notice of this possibility. All sub-contract data will be clearly notated on your analytical report.
Visit our web site at www.energylab.com for additional information, downloadable fee schedule, forms, and links.

Chain of Custody and Analytical Request Record

ENERGY LABORATORIES

Page 1 of 3 (or 7)

PLEASE PRINT- Provide as much information as possible.

Company Name: Rio Algom Mining Corp	Project Name, PWS, Permit, Etc.: Lisbon, UT Facility	Sample Origin State: UT	EPA/State Compliance: Yes ☐ No ☐
Report Mail Address: Montgomery and Associates; Results retrieved from Energy Source	Contact Name: John Laney; Phone/Fax: (520) 425-2219; Email: jlaney@clmontgomery.com		Sampler: (Please Print) Brandon Myers
Invoice Address: Email invoice to Gail, PO Box 218, Grants, NM 87020	Invoice Contact & Phone: Gail Alexander (505) 287-8851	Purchase Order:	Quote/Bottle Order: C3636

Special Report/Formats – ELI must be notified prior to sample submittal for the following:

☐ DW ☐ A2LA
☐ GSA ☐ EDD/EDT (Electronic Data) Format: _____
☐ POTW/WWTP ☐ LEVEL IV
☐ State: _____ ☐ NELAC
☐ Other: _____

Number of Containers; Sample Type: A W S V B O; Air Water Soils/Solids Vegetation Bioassay Other

ANALYSIS REQUESTED

	SAMPLE IDENTIFICATION (Name, Location, Interval, etc.)	Collection Date	Collection Time	MATRIX	C3636	SEE ATTACHED	Normal Turnaround (TAT)
1	U998	11/04/2013	1230	Water	X		
2	U998		1310		X		
3	7000		1405		X		
4	7002		1435		X		
5	7003		1510		X		
6	7004		1515		X		
7	7005		1545		X		
8	7006	12/04/2013	825		X		
9	7007		910		X		
10	7008		1015		X		

RUSH

Contact ELI prior to RUSH sample submittal for charges and scheduling – See Instruction Page

Comments: Metals simple filtered + preserved in field

C13005d6

Shipped by: Fedex E

Cooler ID(s): 1.1 (4165) Ice 1.0 (4175)

Receipt Temp: 4 (4106) 1 4 °C (3690)

On Ice: Yes No 2.6 (4165)

Custody Seal Intact Signature Match: Y N

LABORATORY USE ONLY

Custody Record MUST be Signed					
Relinquished by (print): Brandon Myers	Date/Time: 14/OCT/2013/1500	Signature:	Received by (print):	Date/Time:	Signature:
Relinquished by (print):	Date/Time:	Signature:	Received by (print):	Date/Time:	Signature:
Sample Disposal: Return to Client: _____ Lab Disposal: _____			Received by Laboratory:	Date/Time: 10-15-13	Signature: 1010

In certain circumstances, samples submitted to Energy Laboratories, Inc. may be subcontracted to other certified laboratories in order to complete the analysis requested.
This serves as notice of this possibility. All sub-contract data will be clearly notated on your analytical report.
Visit our web site at www.energylab.com for additional information, downloadable fee schedule, forms, and links.

Chain of Custody and Analytical Request Record

PLEASE PRINT- Provide as much information as possible.

Company Name: Rio Algom Mining Corp	Project Name, PWS, Permit, Etc.: Lisbon, UT Facility	Sample Origin State: UT	EPA/State Compliance: Yes ☐ No ☐
Report Mail Address: Montgomery and Associates; Results retrieved from Energy Source	Contact Name: John Laney; Phone/Fax: (520) 425-2219; Email: jlaney@clmontgomery.com		Sampler: (Please Print) Brandon Myers
Invoice Address: Email invoice to Gail, PO Box 218, Grants, NM 87020	Invoice Contact & Phone: Gail Alexander (505) 287-8851	Purchase Order:	Quote/Bottle Order: C3636

Special Report/Formats – ELI must be notified prior to sample submittal for the following:

☐ DW ☐ A2LA
☐ GSA ☐ EDD/EDT (Electronic Data) Format:_____
☐ POTW/WWTP ☐ LEVEL IV
☐ State:_____ ☐ NELAC
☐ Other:_____

RUSH

Contact ELI prior to **RUSH** sample submittal for charges and scheduling – See Instruction Page

Comments: metals samples preserved + filtered in field

Shipped by: Fedex E

Cooler ID(s): Ucarrier

Receipt Temp: 4 °C

On Ice: (Yes) No

Custody Seal: (Y) N; Intact: (Y) N; Signature Match: (Y) N

	SAMPLE IDENTIFICATION (Name, Location, Interval, etc.)	Collection Date	Collection Time	MATRIX	ANALYSIS REQUESTED: Number of Containers / Sample Type: A W S V B O / Air Water Soils/Solids Vegetation Bioassay Other — C3636	SEE ATTACHED	Normal Turnaround (TAT)
1	7009	12OCT2013	1025	water	X		
2	~~7031~~ 7010		1110		X		
3	7031		1145		X		
4	7032		1220		X		
5	7033		1505		X		
6	7034		1555		X		
7	7035		1700		X		
8	7036	13OCT2013	800		X		
9	7037		840		X		
10	7038		905		X		

0131005566

LABORATORY USE ONLY

Custody Record MUST be Signed

Relinquished by (print): Brandon Myers	Date/Time: 14OCT2013/1500	Signature:	Received by (print): / Date/Time: / Signature:
Relinquished by (print):	Date/Time:	Signature:	Received by (print): / Date/Time: / Signature:
Sample Disposal: Return to Client:_____ Lab Disposal:_____			Received by Laboratory: J Williams; Date/Time: 10-15-13 1010; Signature:

In certain circumstances, samples submitted to Energy Laboratories, Inc. may be subcontracted to other certified laboratories in order to complete the analysis requested.
This serves as notice of this possibility. All sub-contract data will be clearly notated on your analytical report.
Visit our web site at www.energylab.com for additional information, downloadable fee schedule, forms, and links.

Chain of Custody and Analytical Request Record

PLEASE PRINT- Provide as much information as possible.

Company Name: Rio Algom Mining Corp	Project Name, PWS, Permit, Etc.: Lisbon, UT Facility	Sample Origin State: UT	EPA/State Compliance: Yes ☐ No ☐
Report Mail Address: Montgomery and Associates; Results retrieved from Energy Source	Contact Name: John Laney; Phone/Fax: (520) 425-2219; Email: jlaney@clmontgomery.com		Sampler: (Please Print) Brandon Myers
Invoice Address: Email invoice to Gail, PO Box 218, Grants, NM 87020	Invoice Contact & Phone: Gail Alexander (505) 287-8851	Purchase Order:	Quote/Bottle Order: C3636

Special Report/Formats – ELI must be notified prior to sample submittal for the following:

☐ DW ☐ A2LA
☐ GSA ☐ EDD/EDT (Electronic Data) Format:_____
☐ POTW/WWTP ☐ LEVEL IV
☐ State: _____ ☐ NELAC
☐ Other: _____

Number of Containers; Sample Type: A W S V B O; Air Water Soils/Solids Vegetation Bioassay Other

ANALYSIS REQUESTED

SAMPLE IDENTIFICATION (Name, Location, Interval, etc.)	Collection Date	Collection Time	MATRIX	C3636	SEE ATTACHED	Normal Turnaround (TAT)
1 7039	13OCT2013	1010	water	x		
2 7040		1020		x		
3 7041		1040		x		
4 7042		1105		x		
5 7043		1135		x		
6 7044		1145		x		
7 7045		1400		x		
8 7046		1430		x		
9 7047		1555		x		
10 7048		1600		x		

RUSH

Contact ELI prior to **RUSH** sample submittal for charges and scheduling – See Instruction Page

Comments: Metals samples filtered in field

Shipped by: Fedex

Cooler ID(s): Various

Receipt Temp: .4 °C

On Ice: (Yes) No

Custody Seal: Y N
Intact: Y N
Signature Match: Y N

C1310056

LABORATORY USE ONLY

Custody Record MUST be Signed

Relinquished by (print): Brandon Myers	Date/Time: 14OCT2013/1500	Signature:	Received by (print):	Date/Time:	Signature:
Relinquished by (print):	Date/Time:	Signature:	Received by (print):	Date/Time:	Signature:
			Received by Laboratory:	Date/Time: 10-15-13 1010	Signature:

Sample Disposal: Return to Client: _____ Lab Disposal: _____

In certain circumstances, samples submitted to Energy Laboratories, Inc. may be subcontracted to other certified laboratories in order to complete the analysis requested.
This serves as notice of this possibility. All sub-contract data will be clearly notated on your analytical report.
Visit our web site at www.energylab.com for additional information, downloadable fee schedule, forms, and links.

Chain of Custody and Analytical Request Record

PLEASE PRINT- Provide as much information as possible.

Company Name: Rio Algom Mining Corp	Project Name, PWS, Permit, Etc.: Lisbon, UT Facility	Sample Origin State: UT	EPA/State Compliance: Yes ☐ No ☐
Report Mail Address: Montgomery and Associates; Results retrieved from Energy Source	Contact Name: John Laney; Phone/Fax: (520) 425-2219; Email: jlaney@clmontgomery.com		Sampler: (Please Print) Brandon Myers
Invoice Address: Email invoice to Gail, PO Box 218, Grants, NM 87020	Invoice Contact & Phone: Gail Alexander (505) 287-8851	Purchase Order:	Quote/Bottle Order: C3636

Special Report/Formats – ELI must be notified prior to sample submittal for the following:

☐ DW ☐ GSA ☐ POTW/WWTP ☐ State: _____ ☐ Other: _____
☐ A2LA ☐ EDD/EDT(Electronic Data) Format: _____ ☐ LEVEL IV ☐ NELAC

Number of Containers; Sample Type: A W S V B O; Air Water Soils/Solids Vegetation Bioassay Other

ANALYSIS REQUESTED

SEE ATTACHED

Normal Turnaround (TAT)

RUSH

Contact ELI prior to **RUSH** sample submittal for charges and scheduling – See Instruction Page

Comments: Metals samples preserved + filtered in field

Shipped by: FedEx

Cooler ID(s): Cooler

Receipt Temp: 4 °C

On Ice: (Yes) No

Custody Seal Intact Signature Match: Y N

	SAMPLE IDENTIFICATION (Name, Location, Interval, etc.)	Collection Date	Collection Time	MATRIX	C3636
1	7049	14OCT2013	755	Water	X
2	7050		820		X
3	7051		910		X
4	7052		950		X
5	7053		1035		X
6	7054		1150		X
7					
8					
9					
10					

C1310056

LABORATORY USE ONLY

Custody Record MUST be Signed

	Relinquished by (print)	Date/Time	Signature
Relinquished by:	Brandon Myers	14OCT2013/1500	
Relinquished by:			

	Received by (print)	Date/Time	Signature
Received by:			
Received by Laboratory:		10-15-13	10:10

Sample Disposal: Return to Client: _____ Lab Disposal: _____

In certain circumstances, samples submitted to Energy Laboratories, Inc. may be subcontracted to other certified laboratories in order to complete the analysis requested. This serves as notice of this possibility. All sub-contract data will be clearly notated on your analytical report.
Visit our web site at www.energylab.com for additional information, downloadable fee schedule, forms, and links.

Chain of Custody and Analytical Request Record

PLEASE PRINT- Provide as much information as possible.

Company Name: Rio Algom Mining Corp	Project Name, PWS, Permit, Etc.: Lisbon, UT Facility	Sample Origin State: UT	EPA/State Compliance: Yes ☐ No ☐
Report Mail Address: Montgomery and Associates; Results retrieved from Energy Source	Contact Name: John Laney; Phone/Fax: (520) 425-2219; Email: jlaney@clmontgomery.com		Sampler: (Please Print) J. Kerns
Invoice Address: Email invoice to Gail, PO Box 218, Grants, NM 87020	Invoice Contact & Phone: Gail Alexander (505) 287-8851	Purchase Order:	Quote/Bottle Order: C3636

Special Report/Formats – ELI must be notified prior to sample submittal for the following:

☐ DW ☐ GSA ☐ POTW/WWTP ☐ State: _____ ☐ Other: _____

☐ A2LA ☐ EDD/EDT (Electronic Data) Format: _____ ☐ LEVEL IV ☐ NELAC

Number of Containers; Sample Type: A Air, W Water, S Soils/Solids, V Vegetation, B Bioassay, O Other

ANALYSIS REQUESTED

SEE ATTACHED

Normal Turnaround (TAT)

RUSH

Contact ELI prior to **RUSH** sample submittal for charges and scheduling – See Instruction Page

Comments: Metals preserved and filtered in field.

Shipped by: Fedex E

Cooler ID(s): Ucarrier

Receipt Temp: .4 °C

On Ice: (Yes) No

Custody Seal Intact: N / (Y) N

Signature Match: N / (Y) N

	SAMPLE IDENTIFICATION (Name, Location, Interval, etc.)	Collection Date	Collection Time	MATRIX	C3636										
1	7029	11OCT2013	1230	W	X										
2	7030	11OCT2013	1315	W	X										
3	6951	11OCT2013	1430	W	X										
4	6952	11OCT2013	1435	W	X										
5	6953	11OCT2013	1520	W	X										
6	6954	12OCT2013	0810	W	X										
7	6955	12OCT2013	0915	W	X										
8	6956	12OCT2013	0920	W	X										
9	6957	12OCT2013	0945	W	X										
10	6958	12OCT2013	1030	W	X										

C1310056

LABORATORY USE ONLY

Custody Record MUST be Signed

	Relinquished by (print)	Date/Time	Signature	Received by (print)	Date/Time	Signature
1	Josh Kerns	14OCT2013/1500				
2						
Laboratory						

Received by Laboratory: Date/Time: 10-15-13 10:10

Sample Disposal: Return to Client: _____ Lab Disposal: _____

In certain circumstances, samples submitted to Energy Laboratories, Inc. may be subcontracted to other certified laboratories in order to complete the analysis requested. This serves as notice of this possibility. All sub-contract data will be clearly notated on your analytical report.

Visit our web site at www.energylab.com for additional information, downloadable fee schedule, forms, and links.

Chain of Custody and Analytical Request Record

PLEASE PRINT- Provide as much information as possible.

Company Name:	Project Name, PWS, Permit, Etc.	Sample Origin	EPA/State Compliance:
Rio Algom Mining Corp	Lisbon, UT Facility	State: UT	Yes ☐ No ☐
Report Mail Address: Montgomery and Associates Results retrieved from Energy Source	**Contact Name:** John Laney **Phone/Fax:** (520) 425-2219 **Email:** jlaney@clmontgomery.com		**Sampler: (Please Print)** J. Kerns
Invoice Address: Email invoice to Gail PO Box 218 Grants, NM 87020	**Invoice Contact & Phone:** Gail Alexander (505) 287-8851	**Purchase Order:**	**Quote/Bottle Order:** C3636

Special Report/Formats – ELI must be notified prior to sample submittal for the following:

☐ DW ☐ A2LA
☐ GSA ☐ EDD/EDT(Electronic Data)
☐ POTW/WWTP Format:_____
☐ State: _____ ☐ LEVEL IV
☐ Other: _____ ☐ NELAC

Number of Containers
Sample Type: A W S V B O
Air Water Soils/Solids Vegetation Bioassay Other

ANALYSIS REQUESTED

SAMPLE IDENTIFICATION (Name, Location, Interval, etc.)	Collection Date	Collection Time	MATRIX	C3636	SEE ATTACHED	Normal Turnaround (TAT)	RUSH	Comments
1 6959	12OCT2013	1035	W	X				
2 6960	12OCT2013	1100	W	X				
3 6961	12OCT2013	1130	W	X				
4 6962	12OCT2013	1505	W	X				
5 6963	12OCT2013	1550	W	X				
6 6964	12OCT2013	1720	W	X				ON HOLD
7 6966	13OCT2013	0910	W	X				
8 6967	13OCT2013	1005	W	X				
9 6968	13OCT2013	1030	W	X				
10 6969	13OCT2013	1115	W	X				C1310056

Contact ELI prior to **RUSH** sample submittal for charges and scheduling – See Instruction Page

Shipped by: Fedex

Cooler ID(s): Various

Receipt Temp 4 °C

On Ice: (Yes) No

Custody Seal (Y) N
Intact (Y) N
Signature Match (Y) N

LABORATORY USE ONLY

Custody Record MUST be Signed

	Relinquished by (print):	Date/Time:	Signature:	Received by (print):	Date/Time:	Signature:
1	Josh Kerns	14OCT2013/1500				
2						
3				Received by Laboratory:	10.15.13	10:10

Sample Disposal: Return to Client: _____ Lab Disposal: _____

In certain circumstances, samples submitted to Energy Laboratories, Inc. may be subcontracted to other certified laboratories in order to complete the analysis requested.
This serves as notice of this possibility. All sub-contract data will be clearly notated on your analytical report.
Visit our web site at www.energylab.com for additional information, downloadable fee schedule, forms, and links.

Chain of Custody and Analytical Request Record

PLEASE PRINT- Provide as much information as possible.

Company Name: Rio Algom Mining Corp	Project Name, PWS, Permit, Etc.: Lisbon, UT Facility	Sample Origin State: UT	EPA/State Compliance: Yes ☐ No ☐
Report Mail Address: Montgomery and Associates Results retrieved from Energy Source	Contact Name: John Laney Phone/Fax: (520) 425-2219 Email: jlaney@clmontgomery.com		Sampler: (Please Print) J. Kerns
Invoice Address: Email invoice to Gail PO Box 218 Grants, NM 87020	Invoice Contact & Phone: Gail Alexander (505) 287-8851	Purchase Order:	Quote/Bottle Order: C3636

Special Report/Formats – ELI must be notified prior to sample submittal for the following:

☐ DW ☐ A2LA
☐ GSA ☐ EDD/EDT (Electronic Data)
☐ POTW/WWTP Format: _____
☐ State: _____ ☐ LEVEL IV
☐ Other: _____ ☐ NELAC

Number of Containers
Sample Type: A Air W Water S Soils/Solids V Vegetation B Bioassay O Other

ANALYSIS REQUESTED

SEE ATTACHED

Normal Turnaround (TAT)

RUSH

Contact ELI prior to **RUSH** sample submittal for charges and scheduling – See Instruction Page

Comments: Metals filtered and preserved in field.

Shipped by: Fedex E

Cooler ID(s): Various

Receipt Temp: 4 °C

On Ice: (Yes) No

Custody Seal (Y) N
Intact (Y) N
Signature Match (Y) N

	SAMPLE IDENTIFICATION (Name, Location, Interval, etc.)	Collection Date	Collection Time	MATRIX	C3636
1	6972	13OCT2013	1355	W	X
2	6973	13OCT2013	1500	W	X
3	6974	13OCT2013	1515	W	X
4	6975	13OCT2013	1630	W	X
5	6976	14OCT2013	0805	W	X
6	6977	14OCT2013	0910	W	X
7	~~6978~~ (JK)	~~14OCT2013~~ (JK)	~~0915~~ (JK)	~~W~~ (JK)	~~X~~ JK
8	~~6979~~ (JK)	~~14OCT2013~~ (JK)	~~JK~~ (JK)	~~W~~ (JK)	~~X~~ JK
9	6980	14OCT2013	1135	W	X
10	~~6981~~ (JK)	~~14OCT2013~~ (JK)	1200 (JK)	~~W~~ (JK)	~~X~~ (JK)

C3100566

LABORATORY USE ONLY

Custody Record MUST be Signed

	Relinquished by (print)	Date/Time	Signature	Received by (print)	Date/Time	Signature
1	Josh Kerns	14OCT2013/1500				
2						
Received by Laboratory:						

Sample Disposal: Return to Client: _____ Lab Disposal: _____

Date/Time: 10-15-13 1010

In certain circumstances, samples submitted to Energy Laboratories, Inc. may be subcontracted to other certified laboratories in order to complete the analysis requested.
This serves as notice of this possibility. All sub-contract data will be clearly notated on your analytical report.
Visit our web site at www.energylab.com for additional information, downloadable fee schedule, forms, and links.

ANALYTICAL SUMMARY REPORT

October 25, 2013

Rio Algom Mining Corporation LLC
Hwy 605 and 509
Grants, NM 87020

Workorder No.: C13100663 Quote ID: C3636 - Groundwater

Project Name: Lisbon, UT Facility

Energy Laboratories, Inc. Casper WY received the following 2 samples for Rio Algom Mining Corporation LLC on 10/17/2013 for analysis.

Sample ID	Client Sample ID	Collect Date	Receive Date	Matrix	Test
C13100663-001	6943	10/14/13 16:30	10/17/13	Aqueous	Metals by ICP/ICPMS, Dissolved Alkalinity QA Calculations Conductivity E300.0 Anions pH Solids, Total Dissolved Solids, Total Dissolved - Calculated
C13100663-002	6944	10/14/13 17:00	10/17/13	Aqueous	Same As Above

The results as reported relate only to the item(s) submitted for testing. The analyses presented in this report were performed at Energy Laboratories, Inc., 2393 Salt Creek Hwy., Casper, WY 82601, unless otherwise noted. Radiochemistry analyses were performed at Energy Laboratories, Inc., 2325 Kerzell Lane, Casper, WY 82601, unless otherwise noted. Any exceptions or problems with the analyses are noted in the Laboratory Analytical Report, the QA/QC Summary Report, or the Case Narrative.

If you have any questions regarding these test results, please call.

Report Approved By:

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility
Lab ID: C13100663-001
Client Sample ID 6943

Report Date: 10/25/13
Collection Date: 10/14/13 16:30
DateReceived: 10/17/13
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Carbonate as CO3	ND	mg/L		5		A2320 B	10/17/13 17:26 / jba
Bicarbonate as HCO3	254	mg/L		5		A2320 B	10/17/13 17:26 / jba
Calcium	130	mg/L		1		E200.7	10/18/13 15:51 / sf
Chloride	77	mg/L	D	2		E300.0	10/18/13 14:38 / wc
Magnesium	63	mg/L		1		E200.7	10/18/13 15:51 / sf
Potassium	16	mg/L		1		E200.7	10/18/13 15:51 / sf
Sodium	471	mg/L		1		E200.7	10/18/13 15:51 / sf
Sulfate	1320	mg/L	D	8		E300.0	10/18/13 14:38 / wc
PHYSICAL PROPERTIES							
Conductivity @ 25 C	2900	umhos/cm		1		A2510 B	10/17/13 16:16 / tmm
pH	7.64	s.u.	H	0.01		A4500-H B	10/17/13 16:16 / tmm
Solids, Total Dissolved TDS @ 180 C	2220	mg/L		20		A2540 C	10/18/13 15:40 / tmm
METALS - DISSOLVED							
Arsenic	0.002	mg/L		0.001		E200.8	10/19/13 00:29 / cp
Iron	ND	mg/L		0.03		E200.8	10/19/13 00:29 / cp
Molybdenum	ND	mg/L		0.01		E200.8	10/19/13 00:29 / cp
Selenium	ND	mg/L		0.001		E200.8	10/19/13 00:29 / cp
Uranium	0.0024	mg/L		0.0003		E200.8	10/19/13 00:29 / cp
DATA QUALITY							
A/C Balance (± 5)	-1.96	%				A1030 E	10/24/13 13:02 / kbh
Anions	33.8	meq/L				A1030 E	10/24/13 13:02 / kbh
Cations	32.5	meq/L				A1030 E	10/24/13 13:02 / kbh
Solids, Total Dissolved Calculated	2200	mg/L				A1030 E	10/24/13 13:02 / kbh
TDS Balance (0.80 - 1.20)	1.00					A1030 E	10/24/13 13:02 / kbh

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
H - Analysis performed past recommended holding time.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility
Lab ID: C13100663-002
Client Sample ID 6944

Report Date: 10/25/13
Collection Date: 10/14/13 17:00
DateReceived: 10/17/13
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Carbonate as CO3	ND	mg/L		5		A2320 B	10/17/13 17:34 / jba
Bicarbonate as HCO3	418	mg/L		5		A2320 B	10/17/13 17:34 / jba
Calcium	109	mg/L		1		E200.8	10/19/13 00:33 / cp
Chloride	101	mg/L		1		E300.0	10/18/13 14:56 / wc
Magnesium	21	mg/L		1		E200.8	10/19/13 00:33 / cp
Potassium	4	mg/L		1		E200.8	10/19/13 00:33 / cp
Sodium	136	mg/L		1		E200.8	10/19/13 00:33 / cp
Sulfate	181	mg/L	D	4		E300.0	10/18/13 14:56 / wc
PHYSICAL PROPERTIES							
Conductivity @ 25 C	1250	umhos/cm		1		A2510 B	10/17/13 16:19 / tmm
pH	7.63	s.u.	H	0.01		A4500-H B	10/17/13 16:19 / tmm
Solids, Total Dissolved TDS @ 180 C	795	mg/L		10		A2540 C	10/18/13 15:40 / tmm
METALS - DISSOLVED							
Arsenic	0.005	mg/L		0.001		E200.8	10/19/13 00:33 / cp
Iron	ND	mg/L		0.03		E200.8	10/19/13 00:33 / cp
Molybdenum	0.08	mg/L		0.01		E200.8	10/19/13 00:33 / cp
Selenium	0.002	mg/L		0.001		E200.8	10/19/13 00:33 / cp
Uranium	0.118	mg/L		0.0003		E200.8	10/19/13 00:33 / cp
DATA QUALITY							
A/C Balance (± 5)	-1.41	%				A1030 E	10/21/13 15:28 / kbh
Anions	13.6	meq/L				A1030 E	10/21/13 15:28 / kbh
Cations	13.2	meq/L				A1030 E	10/21/13 15:28 / kbh
Solids, Total Dissolved Calculated	780	mg/L				A1030 E	10/21/13 15:28 / kbh
TDS Balance (0.80 - 1.20)	1.02					A1030 E	10/21/13 15:28 / kbh

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
H - Analysis performed past recommended holding time.

QA/QC Summary Report

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC **Report Date:** 10/25/13

Project: Lisbon, UT Facility **Work Order:** C13100663

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: A2320 B										Batch: R179690
Sample ID: MBLK	3	Method Blank				Run: MANTECH_131017B				10/17/13 15:02
Alkalinity, Total as CaCO3		ND	mg/L	2						
Carbonate as CO3		ND	mg/L	1						
Bicarbonate as HCO3		ND	mg/L	1						
Sample ID: LCS_130917		Laboratory Control Sample				Run: MANTECH_131017B				10/17/13 15:16
Alkalinity, Total as CaCO3		260	mg/L	5.0	104	90	110			
Sample ID: C13100640-001AMS		Sample Matrix Spike				Run: MANTECH_131017B				10/17/13 15:40
Alkalinity, Total as CaCO3		374	mg/L	5.0	104	80	120			
Sample ID: C13100650-001ADUP	3	Sample Duplicate				Run: MANTECH_131017B				10/17/13 17:08
Alkalinity, Total as CaCO3		82.5	mg/L	5.0				2.0	10	
Carbonate as CO3		ND	mg/L	5.0					10	
Bicarbonate as HCO3		101	mg/L	5.0				2.0	10	

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

QA/QC Summary Report

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC **Report Date:** 10/25/13

Project: Lisbon, UT Facility **Work Order:** C13100663

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: A2510 B										Batch: R179637
Sample ID: SC 100		Initial Calibration Verification Standard				Run: PHSC_101-C_131017A				10/17/13 08:38
Conductivity @ 25 C		96.6	umhos/cm	5.0	97	90	110			
Sample ID: SC 2ND 1413		Laboratory Control Sample				Run: PHSC_101-C_131017A				10/17/13 08:50
Conductivity @ 25 C		1400	umhos/cm	5.0	99	90	110			
Sample ID: MBLK		Method Blank				Run: PHSC_101-C_131017A				10/17/13 09:15
Conductivity @ 25 C		2	umhos/cm	0.7						
Sample ID: C13100622-002ADUP		Sample Duplicate				Run: PHSC_101-C_131017A				10/17/13 09:47
Conductivity @ 25 C		1520	umhos/cm	5.0				0.0	10	

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

QA/QC Summary Report

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC **Report Date:** 10/25/13

Project: Lisbon, UT Facility **Work Order:** C13100663

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: **A2540 C**									Batch: TDS131018A	
Sample ID: **MB-1_131018A**	Method Blank					Run: BAL-19_131018A			10/18/13 15:38	
Solids, Total Dissolved TDS @ 180 C		ND	mg/L	10						
Sample ID: **LCS-2_131018A**	Laboratory Control Sample					Run: BAL-19_131018A			10/18/13 15:38	
Solids, Total Dissolved TDS @ 180 C		2020	mg/L	20	101	90	110			
Sample ID: **C13100649-001B DUP**	Sample Duplicate					Run: BAL-19_131018A			10/18/13 15:39	
Solids, Total Dissolved TDS @ 180 C		96.0	mg/L	10				6.5	5	R
- RPD greater than method limit. Difference < PQL - RPD not applicable.										
Sample ID: **C13100653-001A MS**	Sample Matrix Spike					Run: BAL-19_131018A			10/18/13 15:40	
Solids, Total Dissolved TDS @ 180 C		38200	mg/L	200	107	90	110			

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

R - RPD exceeds advisory limit.

QA/QC Summary Report

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC **Report Date:** 10/25/13

Project: Lisbon, UT Facility **Work Order:** C13100663

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: A4500-H B									Analytical Run: PHSC_101-C_131017A	
Sample ID: pH 6.86		Initial Calibration Verification Standard							10/17/13 08:35	
pH		6.85	s.u.	0.010	100	98	102			
Method: A4500-H B									Batch: R179637	
Sample ID: C13100622-002ADUP		Sample Duplicate				Run: PHSC_101-C_131017A			10/17/13 09:47	
pH		7.68	s.u.	0.010				0.0	3	

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

QA/QC Summary Report

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC **Report Date:** 10/25/13

Project: Lisbon, UT Facility **Work Order:** C13100663

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E200.7									Analytical Run: ICP4-C_131018A	
Sample ID: ICV	4	Initial Calibration Verification Standard							10/18/13 14:48	
Calcium		48.8	mg/L	0.50	98	95	105			
Magnesium		49.0	mg/L	0.50	98	95	105			
Potassium		48.2	mg/L	0.50	96	95	105			
Sodium		48.8	mg/L	0.50	98	95	105			
Sample ID: ICSA	4	Interference Check Sample A							10/18/13 15:03	
Calcium		458	mg/L	0.50	92	80	120			
Magnesium		495	mg/L	0.50	99	80	120			
Potassium		-0.0164	mg/L	0.50						
Sodium		-0.218	mg/L	0.50						
Sample ID: ICSAB	4	Interference Check Sample AB							10/18/13 15:07	
Calcium		459	mg/L	0.50	92	80	120			
Magnesium		499	mg/L	0.50	100	80	120			
Potassium		0.00295	mg/L	0.50						
Sodium		-0.0994	mg/L	0.50						
Method: E200.7										Batch: R179778
Sample ID: MB-131018A	4	Method Blank				Run: ICP4-C_131018A			10/18/13 15:25	
Calcium		ND	mg/L	0.02						
Magnesium		0.03	mg/L	0.01						
Potassium		ND	mg/L	0.04						
Sodium		ND	mg/L	0.2						
Sample ID: LFB-131018A	4	Laboratory Fortified Blank				Run: ICP4-C_131018A			10/18/13 15:29	
Calcium		45.8	mg/L	0.50	92	85	115			
Magnesium		45.8	mg/L	0.50	91	85	115			
Potassium		44.6	mg/L	0.50	89	85	115			
Sodium		45.3	mg/L	0.50	91	85	115			
Sample ID: C13100239-009CMS2	4	Sample Matrix Spike				Run: ICP4-C_131018A			10/18/13 15:40	
Calcium		122	mg/L	1.0	95	70	130			
Magnesium		101	mg/L	1.0	94	70	130			
Potassium		97.3	mg/L	1.0	94	70	130			
Sodium		105	mg/L	1.0	95	70	130			
Sample ID: C13100239-009CMSD2	4	Sample Matrix Spike Duplicate				Run: ICP4-C_131018A			10/18/13 15:44	
Calcium		122	mg/L	1.0	96	70	130	0.3	20	
Magnesium		102	mg/L	1.0	95	70	130	0.6	20	
Potassium		98.1	mg/L	1.0	95	70	130	0.8	20	
Sodium		106	mg/L	1.0	96	70	130	0.7	20	

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

QA/QC Summary Report

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC **Report Date:** 10/25/13

Project: Lisbon, UT Facility **Work Order:** C13100663

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E200.8									Analytical Run: ICPMS4-C_131018A	
Sample ID: ICV	9	Initial Calibration Verification Standard							10/18/13 15:37	
Arsenic		0.0505	mg/L	0.0010	101	90	110			
Calcium		9.84	mg/L	0.0066	98	90	110			
Iron		0.978	mg/L	0.0010	98	90	110			
Magnesium		9.88	mg/L	0.0027	99	90	110			
Molybdenum		0.0490	mg/L	0.0010	98	90	110			
Potassium		9.76	mg/L	0.0041	98	90	110			
Selenium		0.0497	mg/L	0.0010	99	90	110			
Sodium		9.80	mg/L	0.0043	98	90	110			
Uranium		0.0502	mg/L	0.00030	100	90	110			
Method: E200.8									Batch: R179766	
Sample ID: LRB	9	Method Blank				Run: ICPMS4-C_131018A			10/18/13 16:33	
Arsenic		ND	mg/L	5E-05						
Calcium		ND	mg/L	0.007						
Iron		0.0009	mg/L	0.0006						
Magnesium		ND	mg/L	0.003						
Molybdenum		5E-05	mg/L	3E-05						
Potassium		ND	mg/L	0.004						
Selenium		ND	mg/L	7E-05						
Sodium		ND	mg/L	0.004						
Uranium		ND	mg/L	9E-06						
Sample ID: LFB	9	Laboratory Fortified Blank				Run: ICPMS4-C_131018A			10/18/13 16:37	
Arsenic		0.0505	mg/L	0.0010	101	85	115			
Calcium		12.5	mg/L	0.0066	100	85	115			
Iron		1.26	mg/L	0.0010	101	85	115			
Magnesium		12.5	mg/L	0.0027	100	85	115			
Molybdenum		0.0505	mg/L	0.0010	101	85	115			
Potassium		12.3	mg/L	0.0041	98	85	115			
Selenium		0.0510	mg/L	0.0010	102	85	115			
Sodium		12.5	mg/L	0.0043	100	85	115			
Uranium		0.0517	mg/L	0.00030	103	85	115			
Sample ID: C13100672-001AMS4	9	Sample Matrix Spike				Run: ICPMS4-C_131018A			10/18/13 18:59	
Arsenic		0.259	mg/L	0.0010	103	70	130			
Calcium		86.2	mg/L	1.0	95	70	130			
Iron		6.26	mg/L	0.030	99	70	130			
Magnesium		68.3	mg/L	1.0	97	70	130			
Molybdenum		0.255	mg/L	0.0010	102	70	130			
Potassium		62.5	mg/L	1.0	97	70	130			
Selenium		0.261	mg/L	0.0010	104	70	130			
Sodium		72.3	mg/L	1.0	97	70	130			
Uranium		0.265	mg/L	0.00030	105	70	130			

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

QA/QC Summary Report

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC **Report Date:** 10/25/13

Project: Lisbon, UT Facility **Work Order:** C13100663

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: **E200.8**										Batch: R179766
Sample ID: **C13100672-001AMSD4**	9	Sample Matrix Spike Duplicate				Run: ICPMS4-C_131018A				10/18/13 19:03
Arsenic		0.263	mg/L	0.0010	105	70	130	1.6	20	
Calcium		87.2	mg/L	1.0	97	70	130	1.2	20	
Iron		6.34	mg/L	0.030	100	70	130	1.3	20	
Magnesium		69.1	mg/L	1.0	98	70	130	1.1	20	
Molybdenum		0.257	mg/L	0.0010	102	70	130	0.5	20	
Potassium		63.6	mg/L	1.0	99	70	130	1.7	20	
Selenium		0.263	mg/L	0.0010	105	70	130	0.7	20	
Sodium		73.0	mg/L	1.0	98	70	130	1.0	20	
Uranium		0.265	mg/L	0.00030	105	70	130	0.1	20	

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

QA/QC Summary Report

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC **Report Date:** 10/25/13

Project: Lisbon, UT Facility **Work Order:** C13100663

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E300.0									Analytical Run: IC2-C_131018A	
Sample ID: CCV-101813-01	2	Continuing Calibration Verification Standard							10/18/13 12:47	
Chloride		9.91	mg/L	1.0	99	90	110			
Sulfate		39.6	mg/L	1.0	99	90	110			
Method: E300.0									Batch: R179772	
Sample ID: ICB-101813	2	Method Blank				Run: IC2-C_131018A			10/18/13 12:10	
Chloride		ND	mg/L	0.03						
Sulfate		0.1	mg/L	0.07						
Sample ID: LFB-101813	2	Laboratory Fortified Blank				Run: IC2-C_131018A			10/18/13 12:29	
Chloride		9.56	mg/L	1.0	96	90	110			
Sulfate		38.4	mg/L	1.0	96	90	110			
Sample ID: C13100577-001AMS	2	Sample Matrix Spike				Run: IC2-C_131018A			10/18/13 13:24	
Chloride		53.9	mg/L	1.0	100	90	110			
Sulfate		750	mg/L	4.2	102	90	110			
Sample ID: C13100577-001AMSD	2	Sample Matrix Spike Duplicate				Run: IC2-C_131018A			10/18/13 13:43	
Chloride		54.3	mg/L	1.0	101	90	110	0.8	20	
Sulfate		749	mg/L	4.2	101	90	110	0.1	20	

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

Workorder Receipt Checklist

Rio Algom Mining Corporation LLC C13100663

Login completed by: Jillian Anderson
Date Received: 10/17/2013
Reviewed by: BL2000\khelm
Received by: cav
Reviewed Date: 10/18/2013
Carrier name: FedEx

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on all shipping container(s)/cooler(s)?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on all sample bottles?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time? (Exclude analyses that are considered field parameters such as pH, DO, Res Cl, Sulfite, Ferrous Iron, etc.)	Yes ☑	No ☐	
Temp Blank received in all shipping container(s)/cooler(s)?	Yes ☐	No ☑	Not Applicable ☐
Container/Temp Blank temperature:	3.2°C On Ice		
Water - VOA vials have zero headspace?	Yes ☐	No ☐	No VOA vials submitted ☑
Water - pH acceptable upon receipt?	Yes ☑	No ☐	Not Applicable ☐

Standard Reporting Procedures:

Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH, Dissolved Oxygen and Residual Chlorine, are qualified as being analyzed outside of recommended holding time.

Solid/soil samples are reported on a wet weight basis (as received) unless specifically indicated. If moisture corrected, data units are typically noted as –dry. For agricultural and mining soil parameters/characteristics, all samples are dried and ground prior to sample analysis.

Contact and Corrective Action Comments:

None

Chain of Custody and Analytical Request Record

Page 1 of 1

PLEASE PRINT- Provide as much information as possible.

Company Name: Rio Algom Mining Corp	Project Name, PWS, Permit, Etc.: Lisbon, UT Facility	Sample Origin State: UT	EPA/State Compliance: Yes ☐ No ☐
Report Mail Address: Montgomery and Associates Results retrieved from Energy Source	Contact Name: John Laney Phone/Fax: (520) 425-2219 Email: jlaney@clmontgomery.com		Sampler: (Please Print) J. Kerns
Invoice Address: Email invoice to Gail PO Box 218 Grants, NM 87020	Invoice Contact & Phone: Gail Alexander (505) 287-8851	Purchase Order:	Quote/Bottle Order: C3636

Special Report/Formats – ELI must be notified prior to sample submittal for the following:

☐ DW ☐ A2LA
☐ GSA ☐ EDD/EDT (Electronic Data)
☐ POTW/WWTP Format: _____
☐ State: _____ ☐ LEVEL IV
☐ Other: _____ ☐ NELAC

Number of Containers
Sample Type: A Air W Water S Soils/Solids V Vegetation B Bioassay O Other

ANALYSIS REQUESTED

SEE ATTACHED

Normal Turnaround (TAT)

RUSH

Contact ELI prior to RUSH sample submittal for charges and scheduling – See Instruction Page

Comments: Metals filtered and preserved in field —

Shipped by: FedEx Exp
Cooler ID(s): Client
Receipt Temp: 3.2 °C
On Ice: (Yes) No
Custody Seal Intact: Y N
Signature Match: Y N

	SAMPLE IDENTIFICATION (Name, Location, Interval, etc.)	Collection Date	Collection Time	MATRIX	C3636										
1	6943	10/7/2013	1630	W	X										
2	6944	10/7/2013	1700	W	X										
3															
4															
5															
6															
7															
8															
9															
10															

C3100Lab3

LABORATORY USE ONLY

Custody Record MUST be Signed

Relinquished by (print): Josh Kerns	Date/Time: 10/16/13 1630	Signature:	Received by (print):	Date/Time:	Signature:
Relinquished by (print):	Date/Time:	Signature:	Received by (print):	Date/Time:	Signature:
			Received by (Laboratory):	Date/Time: 10/17/13	Signature: 9:40

Sample Disposal: Return to Client: _____ Lab Disposal: _____

In certain circumstances, samples submitted to Energy Laboratories, Inc. may be subcontracted to other certified laboratories in order to complete the analysis requested.
This serves as notice of this possibility. All sub-contract data will be clearly notated on your analytical report.
Visit our web site at www.energylab.com for additional information, downloadable fee schedule, forms, and links.

ANALYTICAL SUMMARY REPORT

November 20, 2013

Rio Algom Mining Corporation LLC
Hwy 605 and 509
Grants, NM 87020

Workorder No.: C13101102 Quote ID: C3636 - Groundwater

Project Name: Lisbon, UT Facility

Energy Laboratories, Inc. Casper WY received the following 6 samples for Rio Algom Mining Corporation LLC on 10/30/2013 for analysis.

Sample ID	Client Sample ID	Collect Date	Receive Date	Matrix	Test
C13101102-001	6970	10/13/13 11:45	10/15/13	Aqueous	Metals by ICP/ICPMS, Dissolved Alkalinity QA Calculations Conductivity E300.0 Anions pH Solids, Total Dissolved Solids, Total Dissolved - Calculated
C13101102-002	6971	10/13/13 12:35	10/15/13	Aqueous	Same As Above
C13101102-003	6978	10/14/13 9:40	10/15/13	Aqueous	Same As Above
C13101102-004	6979	10/14/13 11:30	10/15/13	Aqueous	Same As Above
C13101102-005	6941	10/14/13 12:00	10/15/13	Aqueous	Same As Above
C13101102-006	6942	10/14/13 12:40	10/15/13	Aqueous	Same As Above

The results as reported relate only to the item(s) submitted for testing. The analyses presented in this report were performed at Energy Laboratories, Inc., 2393 Salt Creek Hwy., Casper, WY 82601, unless otherwise noted. Radiochemistry analyses were performed at Energy Laboratories, Inc., 2325 Kerzell Lane, Casper, WY 82601, unless otherwise noted. Any exceptions or problems with the analyses are noted in the Laboratory Analytical Report, the QA/QC Summary Report, or the Case Narrative.

If you have any questions regarding these test results, please call.

Report Approved By:

CLIENT: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility
Sample Delivery Group: C13101102

Revised Date: 11/20/13
Report Date: 10/31/13

CASE NARRATIVE

REVISED/SUPPLEMENTAL REPORT
The attached analytical report has been revised from a previously submitted report due to the request by Leilani Bew on November 6, 2013 for the reanalysis of Arsenic, Iron, and Uranium on sample -001. The data presented here is from that recheck analysis. The report has been revised and replaces any previously issued report in its entirety.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility
Lab ID: C13101102-001
Client Sample ID: 6970

Revised Date: 11/20/13
Report Date: 10/31/13
Collection Date: 10/13/13 11:45
DateReceived: 10/15/13
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Carbonate as CO3	6000	mg/L		5		A2320 B	10/17/13 08:24 / jba
Bicarbonate as HCO3	8530	mg/L		5		A2320 B	10/17/13 08:24 / jba
Calcium	4	mg/L		1		E200.7	10/25/13 14:27 / sf
Chloride	1390	mg/L	D	100		E300.0	10/25/13 13:54 / wc
Magnesium	24	mg/L		1		E200.7	10/25/13 14:27 / sf
Potassium	15	mg/L	D	2		E200.7	10/25/13 14:27 / sf
Sodium	13000	mg/L	D	10		E200.7	10/25/13 14:27 / sf
Sulfate	9970	mg/L	D	400		E300.0	10/25/13 13:54 / wc
PHYSICAL PROPERTIES							
Conductivity @ 25 C	37600	umhos/cm		1		A2510 B	10/16/13 09:16 / alp
pH	9.48	s.u.	H	0.01		A4500-H B	10/16/13 09:16 / alp
Solids, Total Dissolved TDS @ 180 C	35300	mg/L		500		A2540 C	10/16/13 14:57 / tmm
METALS - DISSOLVED							
Arsenic	0.809	mg/L		0.001		E200.8	11/08/13 15:58 / cp
Iron	0.05	mg/L		0.03		E200.8	11/08/13 15:58 / cp
Molybdenum	44.4	mg/L		0.01		E200.8	10/16/13 22:31 / clm
Selenium	0.033	mg/L	D	0.007		E200.8	10/16/13 22:31 / clm
Uranium	6.10	mg/L		0.0003		E200.8	11/08/13 15:58 / cp
DATA QUALITY							
A/C Balance (± 5)	-1.77	%				A1030 E	10/29/13 09:23 / kbh
Anions	587	meq/L				A1030 E	10/29/13 09:23 / kbh
Cations	566	meq/L				A1030 E	10/29/13 09:23 / kbh
Solids, Total Dissolved Calculated	35000	mg/L				A1030 E	10/29/13 09:23 / kbh
TDS Balance (0.80 - 1.20)	1.02					A1030 E	10/29/13 09:23 / kbh

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
H - Analysis performed past recommended holding time.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility
Lab ID: C13101102-002
Client Sample ID: 6971

Revised Date: 11/20/13
Report Date: 10/31/13
Collection Date: 10/13/13 12:35
DateReceived: 10/15/13
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Carbonate as CO3	6000	mg/L		5		A2320 B	10/17/13 08:46 / jba
Bicarbonate as HCO3	9140	mg/L		5		A2320 B	10/17/13 08:46 / jba
Calcium	4	mg/L	D	2		E200.7	10/16/13 20:04 / sf
Chloride	1440	mg/L	D	100		E300.0	10/16/13 19:38 / wc
Magnesium	23	mg/L		1		E200.7	10/16/13 20:04 / sf
Potassium	15	mg/L	D	4		E200.7	10/16/13 20:04 / sf
Sodium	13200	mg/L	D	20		E200.7	10/16/13 20:04 / sf
Sulfate	10500	mg/L	D	400		E300.0	10/16/13 19:38 / wc
PHYSICAL PROPERTIES							
Conductivity @ 25 C	38400	umhos/cm		1		A2510 B	10/16/13 09:19 / alp
pH	9.49	s.u.	H	0.01		A4500-H B	10/16/13 09:19 / alp
Solids, Total Dissolved TDS @ 180 C	37100	mg/L		500		A2540 C	10/16/13 14:57 / tmm
METALS - DISSOLVED							
Arsenic	2.74	mg/L	D	0.003		E200.8	10/16/13 22:44 / clm
Iron	0.13	mg/L		0.03		E200.7	10/17/13 14:37 / sf
Molybdenum	47.3	mg/L		0.01		E200.8	10/16/13 22:44 / clm
Selenium	0.037	mg/L	D	0.007		E200.8	10/16/13 22:44 / clm
Uranium	87.4	mg/L	D	0.003		E200.8	10/16/13 22:44 / clm
DATA QUALITY							
A/C Balance (± 5)	-2.90	%				A1030 E	10/21/13 15:20 / kbh
Anions	609	meq/L				A1030 E	10/21/13 15:20 / kbh
Cations	575	meq/L				A1030 E	10/21/13 15:20 / kbh
Solids, Total Dissolved Calculated	36000	mg/L				A1030 E	10/21/13 15:20 / kbh
TDS Balance (0.80 - 1.20)	1.04					A1030 E	10/21/13 15:20 / kbh

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
H - Analysis performed past recommended holding time.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility
Lab ID: C13101102-003
Client Sample ID: 6978

Revised Date: 11/20/13
Report Date: 10/31/13
Collection Date: 10/14/13 09:40
DateReceived: 10/15/13
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Carbonate as CO3	ND	mg/L		5		A2320 B	10/16/13 08:26 / jba
Bicarbonate as HCO3	401	mg/L		5		A2320 B	10/16/13 08:26 / jba
Calcium	205	mg/L		1		E200.7	10/16/13 20:23 / sf
Chloride	219	mg/L		1		E300.0	10/16/13 19:57 / wc
Magnesium	55	mg/L		1		E200.7	10/16/13 20:23 / sf
Potassium	5	mg/L		1		E200.7	10/16/13 20:23 / sf
Sodium	159	mg/L		1		E200.7	10/16/13 20:23 / sf
Sulfate	475	mg/L	D	4		E300.0	10/16/13 19:57 / wc
PHYSICAL PROPERTIES							
Conductivity @ 25 C	2070	umhos/cm		1		A2510 B	10/16/13 09:22 / alp
pH	7.62	s.u.	H	0.01		A4500-H B	10/16/13 09:22 / alp
Solids, Total Dissolved TDS @ 180 C	1430	mg/L		20		A2540 C	10/16/13 14:57 / tmm
METALS - DISSOLVED							
Arsenic	0.011	mg/L		0.001		E200.8	10/16/13 22:50 / clm
Iron	ND	mg/L		0.03		E200.7	10/16/13 20:23 / sf
Molybdenum	0.05	mg/L		0.01		E200.8	10/16/13 22:50 / clm
Selenium	0.015	mg/L		0.001		E200.8	10/16/13 22:50 / clm
Uranium	0.655	mg/L		0.0003		E200.8	10/16/13 22:50 / clm
DATA QUALITY							
A/C Balance (± 5)	-2.90	%				A1030 E	10/21/13 15:20 / kbh
Anions	23.1	meq/L				A1030 E	10/21/13 15:20 / kbh
Cations	21.8	meq/L				A1030 E	10/21/13 15:20 / kbh
Solids, Total Dissolved Calculated	1400	mg/L				A1030 E	10/21/13 15:20 / kbh
TDS Balance (0.80 - 1.20)	1.05					A1030 E	10/21/13 15:20 / kbh

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
H - Analysis performed past recommended holding time.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility
Lab ID: C13101102-004
Client Sample ID: 6979

Revised Date: 11/20/13
Report Date: 10/31/13
Collection Date: 10/14/13 11:30
DateReceived: 10/15/13
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Carbonate as CO3	ND	mg/L		5		A2320 B	10/16/13 08:34 / jba
Bicarbonate as HCO3	420	mg/L		5		A2320 B	10/16/13 08:34 / jba
Calcium	225	mg/L		1		E200.7	10/16/13 20:34 / sf
Chloride	225	mg/L		1		E300.0	10/16/13 20:52 / wc
Magnesium	59	mg/L		1		E200.7	10/16/13 20:34 / sf
Potassium	5	mg/L		1		E200.7	10/16/13 20:34 / sf
Sodium	179	mg/L		1		E200.7	10/16/13 20:34 / sf
Sulfate	499	mg/L	D	4		E300.0	10/16/13 20:52 / wc
PHYSICAL PROPERTIES							
Conductivity @ 25 C	2130	umhos/cm		1		A2510 B	10/16/13 09:25 / alp
pH	7.57	s.u.	H	0.01		A4500-H B	10/16/13 09:25 / alp
Solids, Total Dissolved TDS @ 180 C	1500	mg/L		20		A2540 C	10/16/13 14:58 / tmm
METALS - DISSOLVED							
Arsenic	0.025	mg/L		0.001		E200.8	10/16/13 22:53 / clm
Iron	ND	mg/L		0.03		E200.7	10/16/13 20:34 / sf
Molybdenum	0.01	mg/L		0.01		E200.8	10/16/13 22:53 / clm
Selenium	0.017	mg/L		0.001		E200.8	10/16/13 22:53 / clm
Uranium	0.788	mg/L		0.0003		E200.8	10/16/13 22:53 / clm
DATA QUALITY							
A/C Balance (± 5)	-0.170	%				A1030 E	10/21/13 15:20 / kbh
Anions	24.1	meq/L				A1030 E	10/21/13 15:20 / kbh
Cations	24.0	meq/L				A1030 E	10/21/13 15:20 / kbh
Solids, Total Dissolved Calculated	1400	mg/L				A1030 E	10/21/13 15:20 / kbh
TDS Balance (0.80 - 1.20)	1.04					A1030 E	10/21/13 15:20 / kbh

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
H - Analysis performed past recommended holding time.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility
Lab ID: C13101102-005
Client Sample ID: 6941

Revised Date: 11/20/13
Report Date: 10/31/13
Collection Date: 10/14/13 12:00
DateReceived: 10/15/13
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Carbonate as CO3	ND	mg/L		5		A2320 B	10/16/13 08:43 / jba
Bicarbonate as HCO3	1100	mg/L		5		A2320 B	10/16/13 08:43 / jba
Calcium	512	mg/L		1		E200.7	10/16/13 20:37 / sf
Chloride	660	mg/L	D	10		E300.0	10/16/13 21:10 / wc
Magnesium	178	mg/L		1		E200.7	10/16/13 20:37 / sf
Potassium	18	mg/L		1		E200.7	10/16/13 20:37 / sf
Sodium	1940	mg/L	D	2		E200.7	10/16/13 20:37 / sf
Sulfate	4400	mg/L	D	40		E300.0	10/16/13 21:10 / wc
PHYSICAL PROPERTIES							
Conductivity @ 25 C	9950	umhos/cm		1		A2510 B	10/16/13 09:28 / alp
pH	7.21	s.u.	H	0.01		A4500-H B	10/16/13 09:28 / alp
Solids, Total Dissolved TDS @ 180 C	8250	mg/L		100		A2540 C	10/16/13 14:58 / tmm
METALS - DISSOLVED							
Arsenic	0.004	mg/L		0.001		E200.8	10/16/13 22:57 / clm
Iron	ND	mg/L		0.03		E200.7	10/16/13 20:37 / sf
Molybdenum	11.2	mg/L		0.01		E200.8	10/16/13 22:57 / clm
Selenium	0.079	mg/L	D	0.003		E200.8	10/16/13 22:57 / clm
Uranium	44.8	mg/L	D	0.001		E200.8	10/16/13 22:57 / clm
DATA QUALITY							
A/C Balance (± 5)	-1.94	%				A1030 E	10/21/13 15:20 / kbh
Anions	130	meq/L				A1030 E	10/21/13 15:20 / kbh
Cations	125	meq/L				A1030 E	10/21/13 15:20 / kbh
Solids, Total Dissolved Calculated	8300	mg/L				A1030 E	10/21/13 15:20 / kbh
TDS Balance (0.80 - 1.20)	0.990					A1030 E	10/21/13 15:20 / kbh

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
H - Analysis performed past recommended holding time.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility
Lab ID: C13101102-006
Client Sample ID: 6942

Revised Date: 11/20/13
Report Date: 10/31/13
Collection Date: 10/14/13 12:40
DateReceived: 10/15/13
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Carbonate as CO3	ND	mg/L		5		A2320 B	10/16/13 08:52 / jba
Bicarbonate as HCO3	1210	mg/L		5		A2320 B	10/16/13 08:52 / jba
Calcium	547	mg/L		1		E200.7	10/16/13 20:41 / sf
Chloride	668	mg/L	D	10		E300.0	10/16/13 21:29 / wc
Magnesium	189	mg/L		1		E200.7	10/16/13 20:41 / sf
Potassium	19	mg/L		1		E200.7	10/16/13 20:41 / sf
Sodium	2050	mg/L	D	2		E200.7	10/16/13 20:41 / sf
Sulfate	4550	mg/L	D	40		E300.0	10/16/13 21:29 / wc
PHYSICAL PROPERTIES							
Conductivity @ 25 C	10400	umhos/cm		1		A2510 B	10/16/13 09:31 / alp
pH	7.15	s.u.	H	0.01		A4500-H B	10/16/13 09:31 / alp
Solids, Total Dissolved TDS @ 180 C	8720	mg/L		100		A2540 C	10/16/13 14:58 / tmm
METALS - DISSOLVED							
Arsenic	0.004	mg/L		0.001		E200.8	10/16/13 23:13 / clm
Iron	ND	mg/L		0.03		E200.7	10/16/13 20:41 / sf
Molybdenum	11.6	mg/L		0.01		E200.8	10/16/13 23:13 / clm
Selenium	0.079	mg/L	D	0.003		E200.8	10/16/13 23:13 / clm
Uranium	46.4	mg/L	D	0.001		E200.8	10/16/13 23:13 / clm
DATA QUALITY							
A/C Balance (± 5)	-0.949	%				A1030 E	10/21/13 15:20 / kbh
Anions	135	meq/L				A1030 E	10/21/13 15:20 / kbh
Cations	133	meq/L				A1030 E	10/21/13 15:20 / kbh
Solids, Total Dissolved Calculated	8700	mg/L				A1030 E	10/21/13 15:20 / kbh
TDS Balance (0.80 - 1.20)	1.00					A1030 E	10/21/13 15:20 / kbh

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
H - Analysis performed past recommended holding time.

QA/QC Summary Report

Prepared by Casper, WY Branch

Revised Date: 11/20/13
Report Date: 10/31/13
Work Order: C13101102

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: A2320 B										Batch: R179630
Sample ID: MBLK	3	Method Blank				Run: MANTECH_131016A				10/16/13 07:30
Alkalinity, Total as CaCO3		ND	mg/L	2						
Carbonate as CO3		ND	mg/L	1						
Bicarbonate as HCO3		1	mg/L	1						
Sample ID: LCS_130917		Laboratory Control Sample				Run: MANTECH_131016A				10/16/13 07:45
Alkalinity, Total as CaCO3		257	mg/L	5.0	103	90	110			
Sample ID: C13100566-007ADUP	3	Sample Duplicate				Run: MANTECH_131016A				10/16/13 09:07
Alkalinity, Total as CaCO3		181	mg/L	5.0				0.1	10	
Carbonate as CO3		ND	mg/L	5.0					10	
Bicarbonate as HCO3		221	mg/L	5.0				0.1	10	
Sample ID: C13100566-008AMS		Sample Matrix Spike				Run: MANTECH_131016A				10/16/13 09:24
Alkalinity, Total as CaCO3		435	mg/L	5.0	101	80	120			
Method: A2320 B										Batch: 131017_1_ALK-W
Sample ID: MBLK1_131017_	3	Method Blank				Run: TTR-ALK_131017A				10/17/13 08:11
Alkalinity, Total as CaCO3		1	mg/L	1						
Carbonate as CO3		ND	mg/L	1						
Bicarbonate as HCO3		2	mg/L	1						
Sample ID: LCS_130618		Laboratory Control Sample				Run: TTR-ALK_131017A				10/17/13 08:19
Alkalinity, Total as CaCO3		1250	mg/L	5.0	100	90	110			
Sample ID: C13101102-001ADUP	3	Sample Duplicate				Run: TTR-ALK_131017A				10/17/13 08:29
Alkalinity, Total as CaCO3		17000	mg/L	5.0				0.1	10	
Carbonate as CO3		6000	mg/L	5.0				0.0	10	
Bicarbonate as HCO3		8500	mg/L	5.0				0.4	10	
Sample ID: C13101102-001AMS		Sample Matrix Spike				Run: TTR-ALK_131017A				10/17/13 08:37
Alkalinity, Total as CaCO3		19700	mg/L	5.0	108	80	120			

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

QA/QC Summary Report

Prepared by Casper, WY Branch

Revised Date: 11/20/13
Report Date: 10/31/13
Work Order: C13101102

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: A2510 B										Batch: R179573
Sample ID: SC 2ND 1413		Laboratory Control Sample				Run: PHSC_101-C_131016A				10/16/13 08:47
Conductivity @ 25 C		1410	umhos/cm	5.0	100	90	110			
Sample ID: MBLK		Method Blank				Run: PHSC_101-C_131016A				10/16/13 09:04
Conductivity @ 25 C		2	umhos/cm	0.7						
Sample ID: C13100566-007ADUP		Sample Duplicate				Run: PHSC_101-C_131016A				10/16/13 09:37
Conductivity @ 25 C		1010	umhos/cm	5.0				0.4	10	

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

QA/QC Summary Report

Prepared by Casper, WY Branch

Revised Date: 11/20/13

Client: Rio Algom Mining Corporation LLC **Report Date:** 10/31/13

Project: Lisbon, UT Facility **Work Order:** C13101102

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: A2540 C										Batch: TDS131016A
Sample ID: MB-1_131016A		Method Blank				Run: BAL-19_131016A				10/16/13 14:52
Solids, Total Dissolved TDS @ 180 C		ND	mg/L	10						
Sample ID: LCS-2_131016A		Laboratory Control Sample				Run: BAL-19_131016A				10/16/13 14:53
Solids, Total Dissolved TDS @ 180 C		1990	mg/L	20	100	90	110			
Sample ID: C13100477-001A MS		Sample Matrix Spike				Run: BAL-19_131016A				10/16/13 14:55
Solids, Total Dissolved TDS @ 180 C		1300	mg/L	10	98	90	110			
Sample ID: C13101102-003A DUP		Sample Duplicate				Run: BAL-19_131016A				10/16/13 14:58
Solids, Total Dissolved TDS @ 180 C		1440	mg/L	20				0.7	5	

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

QA/QC Summary Report

Prepared by Casper, WY Branch

Revised Date: 11/20/13
Report Date: 10/31/13
Work Order: C13101102

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: **A4500-H B**									Analytical Run: PHSC_101-C_131016A	
Sample ID: **pH 6.86**	Initial Calibration Verification Standard								10/16/13 08:32	
pH		6.83	s.u.	0.010	100	98	102			
Sample ID: **pH 6.86**	Initial Calibration Verification Standard								10/16/13 12:08	
pH		6.85	s.u.	0.010	100	98	102			
Method: **A4500-H B**									Batch: R179573	
Sample ID: **C13100566-007ADUP**	Sample Duplicate					Run: PHSC_101-C_131016A			10/16/13 09:37	
pH		7.56	s.u.	0.010				0.1	3	

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

QA/QC Summary Report

Prepared by Casper, WY Branch

Revised Date: 11/20/13
Report Date: 10/31/13
Work Order: C13101102

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: **E200.7**									Analytical Run: ICP2-C_131017A	
Sample ID: **ICV**		Initial Calibration Verification Standard							10/17/13 11:35	
Iron		5.16	mg/L	0.030	103	95	105			
Sample ID: **ICSA**		Interference Check Sample A							10/17/13 12:03	
Iron		191	mg/L	0.030	96	80	120			
Sample ID: **ICSAB**		Interference Check Sample AB							10/17/13 12:07	
Iron		192	mg/L	0.030	96	80	120			
Method: **E200.7**									Batch: R179716	
Sample ID: **MB-131017A**		Method Blank				Run: ICP2-C_131017A			10/17/13 12:32	
Iron		ND	mg/L	0.001						
Sample ID: **LFB-131017A**		Laboratory Fortified Blank				Run: ICP2-C_131017A			10/17/13 12:36	
Iron		0.977	mg/L	0.030	98	85	115			
Sample ID: **C13101102-001BMS2**		Sample Matrix Spike				Run: ICP2-C_131017A			10/17/13 14:24	
Iron		20.0	mg/L	0.030	95	70	130			
Sample ID: **C13101102-001BMSD2**		Sample Matrix Spike Duplicate				Run: ICP2-C_131017A			10/17/13 14:28	
Iron		19.7	mg/L	0.030	94	70	130	1.3	20	

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

QA/QC Summary Report

Prepared by Casper, WY Branch

Revised Date: 11/20/13
Report Date: 10/31/13
Work Order: C13101102

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E200.7									Analytical Run: ICP4-C_131016A	
Sample ID: ICV	5	Initial Calibration Verification Standard							10/16/13 15:17	
Calcium		50.8	mg/L	0.50	102	95	105			
Iron		5.09	mg/L	0.030	102	95	105			
Magnesium		50.1	mg/L	0.50	100	95	105			
Potassium		50.4	mg/L	0.50	101	95	105			
Sodium		50.8	mg/L	0.50	102	95	105			
Sample ID: ICSA	5	Interference Check Sample A							10/16/13 15:32	
Calcium		471	mg/L	0.50	94	80	120			
Iron		180	mg/L	0.030	90	80	120			
Magnesium		506	mg/L	0.50	101	80	120			
Potassium		0.0296	mg/L	0.50						
Sodium		-0.299	mg/L	0.50						
Sample ID: ICSAB	5	Interference Check Sample AB							10/16/13 15:36	
Calcium		469	mg/L	0.50	94	80	120			
Iron		180	mg/L	0.030	90	80	120			
Magnesium		507	mg/L	0.50	101	80	120			
Potassium		-0.00287	mg/L	0.50						
Sodium		-0.342	mg/L	0.50						
Method: E200.7									Batch: R179658	
Sample ID: MB-131016A	5	Method Blank				Run: ICP4-C_131016A			10/16/13 15:55	
Calcium		ND	mg/L	0.02						
Iron		ND	mg/L	0.002						
Magnesium		0.04	mg/L	0.01						
Potassium		ND	mg/L	0.04						
Sodium		ND	mg/L	0.2						
Sample ID: LFB-131016A	5	Laboratory Fortified Blank				Run: ICP4-C_131016A			10/16/13 15:58	
Calcium		47.0	mg/L	0.50	94	85	115			
Iron		0.929	mg/L	0.030	93	85	115			
Magnesium		46.6	mg/L	0.50	93	85	115			
Potassium		47.1	mg/L	0.50	94	85	115			
Sodium		47.4	mg/L	0.50	95	85	115			
Sample ID: C13101102-003BMS2	5	Sample Matrix Spike				Run: ICP4-C_131016A			10/16/13 20:26	
Calcium		298	mg/L	1.0	90	70	130			
Iron		1.96	mg/L	0.030	96	70	130			
Magnesium		150	mg/L	1.0	94	70	130			
Potassium		102	mg/L	1.0	95	70	130			
Sodium		254	mg/L	1.0	94	70	130			
Sample ID: C13101102-003BMSD2	5	Sample Matrix Spike Duplicate				Run: ICP4-C_131016A			10/16/13 20:30	
Calcium		297	mg/L	1.0	90	70	130	0.2	20	
Iron		1.96	mg/L	0.030	96	70	130	0.1	20	
Magnesium		151	mg/L	1.0	95	70	130	0.6	20	

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

QA/QC Summary Report

Prepared by Casper, WY Branch

Revised Date: 11/20/13
Report Date: 10/31/13
Work Order: C13101102

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E200.7										Batch: R179658
Sample ID: C13101102-003BMSD2	5	Sample Matrix Spike Duplicate				Run: ICP4-C_131016A				10/16/13 20:30
Potassium		101	mg/L	1.0	94	70	130	0.3	20	
Sodium		253	mg/L	1.0	92	70	130	0.6	20	
Method: E200.7										Analytical Run: ICP4-C_131025A
Sample ID: ICV	4	Initial Calibration Verification Standard								10/25/13 13:20
Calcium		49.3	mg/L	0.50	99	95	105			
Magnesium		48.9	mg/L	0.50	98	95	105			
Potassium		48.6	mg/L	0.50	97	95	105			
Sodium		48.9	mg/L	0.50	98	95	105			
Sample ID: ICSA	4	Interference Check Sample A								10/25/13 13:34
Calcium		466	mg/L	0.50	93	80	120			
Magnesium		503	mg/L	0.50	101	80	120			
Potassium		-0.0246	mg/L	0.50						
Sodium		-0.272	mg/L	0.50						
Sample ID: ICSAB	4	Interference Check Sample AB								10/25/13 13:38
Calcium		455	mg/L	0.50	91	80	120			
Magnesium		493	mg/L	0.50	99	80	120			
Potassium		-0.0262	mg/L	0.50						
Sodium		-0.226	mg/L	0.50						
Method: E200.7										Batch: R180051
Sample ID: MB-131025A	4	Method Blank				Run: ICP4-C_131025A				10/25/13 13:57
Calcium		ND	mg/L	0.02						
Magnesium		0.04	mg/L	0.01						
Potassium		ND	mg/L	0.04						
Sodium		ND	mg/L	0.2						
Sample ID: LFB-131025A	4	Laboratory Fortified Blank				Run: ICP4-C_131025A				10/25/13 14:01
Calcium		46.6	mg/L	0.50	93	85	115			
Magnesium		46.1	mg/L	0.50	92	85	115			
Potassium		46.1	mg/L	0.50	92	85	115			
Sodium		46.3	mg/L	0.50	93	85	115			
Sample ID: C13091042-001CMS2	4	Sample Matrix Spike				Run: ICP4-C_131025A				10/25/13 14:16
Calcium		131	mg/L	1.0	95	70	130			
Magnesium		99.9	mg/L	1.0	94	70	130			
Potassium		107	mg/L	1.0	96	70	130			
Sodium		294	mg/L	1.0	92	70	130			
Sample ID: C13091042-001CMSD2	4	Sample Matrix Spike Duplicate				Run: ICP4-C_131025A				10/25/13 14:19
Calcium		128	mg/L	1.0	91	70	130	2.7	20	
Magnesium		97.1	mg/L	1.0	92	70	130	2.9	20	
Potassium		102	mg/L	1.0	92	70	130	4.6	20	
Sodium		283	mg/L	1.0	82	70	130	3.7	20	

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

QA/QC Summary Report

Prepared by Casper, WY Branch

Revised Date: 11/20/13
Report Date: 10/31/13
Work Order: C13101102

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E200.8									Analytical Run: ICPMS2-C_131016B	
Sample ID: ICV	4	Initial Calibration Verification Standard							10/16/13 15:53	
Arsenic		0.0496	mg/L	0.0010	99	90	110			
Molybdenum		0.0496	mg/L	0.0010	99	90	110			
Selenium		0.0493	mg/L	0.0010	99	90	110			
Uranium		0.0498	mg/L	0.00030	100	90	110			
Method: E200.8									Batch: R179640	
Sample ID: LRB	4	Method Blank				Run: ICPMS2-C_131016B			10/16/13 16:19	
Arsenic		ND	mg/L	0.00010						
Molybdenum		ND	mg/L	4E-05						
Selenium		ND	mg/L	0.0002						
Uranium		ND	mg/L	1E-05						
Sample ID: LFB	4	Laboratory Fortified Blank				Run: ICPMS2-C_131016B			10/16/13 16:22	
Arsenic		0.0511	mg/L	0.0010	102	85	115			
Molybdenum		0.0507	mg/L	0.0010	101	85	115			
Selenium		0.0508	mg/L	0.0010	102	85	115			
Uranium		0.0502	mg/L	0.00030	100	85	115			
Sample ID: C13101102-001BMS4	4	Sample Matrix Spike				Run: ICPMS2-C_131016B			10/16/13 22:34	
Arsenic		2.20	mg/L	0.0029	100	70	130			
Molybdenum		45.6	mg/L	0.0010		70	130			A
Selenium		1.26	mg/L	0.0065	98	70	130			
Uranium		6.51	mg/L	0.0025		70	130			A
Sample ID: C13101102-001BMSD4	4	Sample Matrix Spike Duplicate				Run: ICPMS2-C_131016B			10/16/13 22:37	
Arsenic		2.19	mg/L	0.0029	100	70	130	0.1	20	
Molybdenum		45.6	mg/L	0.0010		70	130	0.0	20	A
Selenium		1.25	mg/L	0.0065	98	70	130	0.2	20	
Uranium		6.42	mg/L	0.0025		70	130	1.4	20	A
Sample ID: C13100566-011BMS4	4	Sample Matrix Spike				Run: ICPMS2-C_131016B			10/16/13 23:32	
Arsenic		0.123	mg/L	0.0010	109	70	130			
Molybdenum		0.114	mg/L	0.0010	111	70	130			
Selenium		0.123	mg/L	0.0010	106	70	130			
Uranium		1.64	mg/L	0.00030		70	130			A
Sample ID: C13100566-011BMSD4	4	Sample Matrix Spike Duplicate				Run: ICPMS2-C_131016B			10/16/13 23:36	
Arsenic		0.122	mg/L	0.0010	108	70	130	1.0	20	
Molybdenum		0.113	mg/L	0.0010	109	70	130	1.6	20	
Selenium		0.121	mg/L	0.0010	105	70	130	1.3	20	
Uranium		1.63	mg/L	0.00030		70	130	0.4	20	A

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

A - The analyte level was greater than four times the spike level. In accordance with the method % recovery is not calculated.

QA/QC Summary Report

Prepared by Casper, WY Branch

Revised Date: 11/20/13
Report Date: 10/31/13
Work Order: C13101102

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E200.8									Analytical Run: ICPMS4-C_131107A	
Sample ID: ICV	3	Initial Calibration Verification Standard							11/07/13 13:54	
Arsenic		0.0488	mg/L	0.0010	98	90	110			
Iron		0.991	mg/L	0.0010	99	90	110			
Uranium		0.0501	mg/L	0.00030	100	90	110			
Method: E200.8									Batch: R180556	
Sample ID: LRB	3	Method Blank				Run: ICPMS4-C_131107A			11/07/13 14:54	
Arsenic		ND	mg/L	5E-05						
Iron		ND	mg/L	0.0006						
Uranium		ND	mg/L	9E-06						
Sample ID: LFB	3	Laboratory Fortified Blank				Run: ICPMS4-C_131107A			11/07/13 14:59	
Arsenic		0.0481	mg/L	0.0010	96	85	115			
Iron		1.28	mg/L	0.0010	103	85	115			
Uranium		0.0531	mg/L	0.00030	106	85	115			
Sample ID: C13101120-010BMS4	3	Sample Matrix Spike				Run: ICPMS4-C_131107A			11/08/13 05:43	
Arsenic		0.118	mg/L	0.0010	116	70	130			
Iron		2.51	mg/L	0.030	100	70	130			
Uranium		0.458	mg/L	0.00030	118	70	130			
Sample ID: C13101120-010BMSD4	3	Sample Matrix Spike Duplicate				Run: ICPMS4-C_131107A			11/08/13 05:47	
Arsenic		0.118	mg/L	0.0010	116	70	130	0.5	20	
Iron		2.45	mg/L	0.030	98	70	130	2.3	20	
Uranium		0.440	mg/L	0.00030	100	70	130	4.0	20	

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

QA/QC Summary Report

Prepared by Casper, WY Branch

Revised Date: 11/20/13
Report Date: 10/31/13
Work Order: C13101102

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E300.0									Analytical Run: IC2-C_131016A	
Sample ID: CCV-101613-02	2	Continuing Calibration Verification Standard							10/16/13 18:43	
Chloride		9.80	mg/L	1.0	98	90	110			
Sulfate		38.9	mg/L	1.0	97	90	110			
Method: E300.0									Batch: R179703	
Sample ID: ICB-101613	2	Method Blank				Run: IC2-C_131016A			10/16/13 13:28	
Chloride		ND	mg/L	0.03						
Sulfate		0.1	mg/L	0.07						
Sample ID: LFB-101613-01	2	Laboratory Fortified Blank				Run: IC2-C_131016A			10/16/13 14:06	
Chloride		9.60	mg/L	1.0	96	90	110			
Sulfate		38.4	mg/L	1.0	96	90	110			
Sample ID: LFBD-101613-02	2	Laboratory Fortified Blank Duplicate				Run: IC2-C_131016A			10/16/13 14:24	
Chloride		9.81	mg/L	1.0	98	90	110	2.1	20	
Sulfate		39.2	mg/L	1.0	98	90	110	1.9	20	
Sample ID: C13101102-003AMS	2	Sample Matrix Spike				Run: IC2-C_131016A			10/16/13 20:15	
Chloride		267	mg/L	1.0		90	110			A
Sulfate		672	mg/L	4.2	99	90	110			
Sample ID: C13101102-003AMSD	2	Sample Matrix Spike Duplicate				Run: IC2-C_131016A			10/16/13 20:33	
Chloride		268	mg/L	1.0		90	110	0.3	20	A
Sulfate		675	mg/L	4.2	100	90	110	0.3	20	
Method: E300.0									Analytical Run: IC2-C_131025A	
Sample ID: CCV-102513-01	2	Continuing Calibration Verification Standard							10/25/13 12:40	
Chloride		9.73	mg/L	1.0	97	90	110			
Sulfate		38.8	mg/L	1.0	97	90	110			
Method: E300.0									Batch: R180050	
Sample ID: ICB-102513	2	Method Blank				Run: IC2-C_131025A			10/25/13 12:04	
Chloride		ND	mg/L	0.03						
Sulfate		0.1	mg/L	0.07						
Sample ID: LFB-102513-01	2	Laboratory Fortified Blank				Run: IC2-C_131025A			10/25/13 12:22	
Chloride		9.71	mg/L	1.0	97	90	110			
Sulfate		38.5	mg/L	1.0	96	90	110			
Sample ID: C13100885-001AMS	2	Sample Matrix Spike				Run: IC2-C_131025A			10/25/13 13:17	
Chloride		17.4	mg/L	1.0	105	90	110			
Sulfate		60.6	mg/L	1.0	101	90	110			
Sample ID: C13100885-001AMSD	2	Sample Matrix Spike Duplicate				Run: IC2-C_131025A			10/25/13 13:36	
Chloride		17.4	mg/L	1.0	105	90	110	0.1	20	
Sulfate		61.0	mg/L	1.0	102	90	110	0.7	20	

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

A - The analyte level was greater than four times the spike level. In accordance with the method % recovery is not calculated.

Workorder Receipt Checklist

Rio Algom Mining Corporation LLC C13101102

Login completed by: Cori A. Velasquez
Date Received: 10/30/2013
Reviewed by: BL2000\scarlston
Received by: dw
Reviewed Date: 10/30/2013
Carrier name: FedEx

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on all shipping container(s)/cooler(s)?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on all sample bottles?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time? (Exclude analyses that are considered field parameters such as pH, DO, Res Cl, Sulfite, Ferrous Iron, etc.)	Yes ☑	No ☐	
Temp Blank received in all shipping container(s)/cooler(s)?	Yes ☐	No ☑	Not Applicable ☐
Container/Temp Blank temperature:	1.1°C On Ice		
Water - VOA vials have zero headspace?	Yes ☐	No ☐	No VOA vials submitted ☑
Water - pH acceptable upon receipt?	Yes ☐	No ☑	Not Applicable ☐

Standard Reporting Procedures:

Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH, Dissolved Oxygen and Residual Chlorine, are qualified as being analyzed outside of recommended holding time.

Solid/soil samples are reported on a wet weight basis (as received) unless specifically indicated. If moisture corrected, data units are typically noted as –dry. For agricultural and mining soil parameters/characteristics, all samples are dried and ground prior to sample analysis.

Contact and Corrective Action Comments:

Lab tried to lower the pH of samples 6970, and 6971 with nitric acid; the lowest we could achieve was a pH of 7 before samples started reacting.

Chain of Custody and Analytical Request Record

Page 1 of 1

PLEASE PRINT- Provide as much information as possible.

Company Name: Rio Algom Mining Corp	Project Name, PWS, Permit, Etc.: Lisbon, UT Facility	Sample Origin State: UT	EPA/State Compliance: Yes ☐ No ☐
Report Mail Address: Montgomery and Associates Results retrieved from Energy Source	Contact Name: John Laney Phone/Fax: (520) 425-2219 Email: jlaney@clmontgomery.com		Sampler: (Please Print) J. Kerns
Invoice Address: Email invoice to Gail PO Box 218 Grants, NM 87020	Invoice Contact & Phone: Gail Alexander (505) 287-8851	Purchase Order:	Quote/Bottle Order: C3636

Special Report/Formats – ELI must be notified prior to sample submittal for the following:

☐ DW ☐ A2LA
☐ GSA ☐ EDD/EDT (Electronic Data)
☐ POTW/WWTP Format: _____
☐ State: _____ ☐ LEVEL IV
☐ Other: _____ ☐ NELAC

Number of Containers
Sample Type: A W S V B O
Air Water Soils/Solids Vegetation Bioassay Other

ANALYSIS REQUESTED

SAMPLE IDENTIFICATION (Name, Location, Interval, etc.)	Collection Date	Collection Time	MATRIX	C3636	SEE ATTACHED	Normal Turnaround (TAT)
1 6970	13OCT2013	1145	W	X		
2 6971	13OCT2013	1235	W	X		
3 6978	14OCT2013	0940	W	X		
4 6979	14OCT2013	1130	W	X		
5 6941	14OCT2013	1200	W	X		
6 6942	14OCT2013	1240	W	X		
7						
8						
9						
10						

RUSH

Contact ELI prior to **RUSH** sample submittal for charges and scheduling – See Instruction Page

Comments: Metals filtered and preserved in the field

Shipped by: Fedex

Cooler ID(s): Cam

Receipt Temp: 4 °C

On Ice: (Yes) No

Custody Seal Intact: (Y) N

Signature Match: (Y) N

LABORATORY USE ONLY

10/3/13 SW

C13100566 C13101102

Custody Record MUST be Signed

	Relinquished by (print):	Date/Time:	Signature:	Received by (print):	Date/Time:	Signature:
1	Josh Kerns	14OCT2013 1500				
2						

Received by Laboratory: Date/Time: 10-15-13 1010 Signature:

Sample Disposal: Return to Client: _____ Lab Disposal: _____

In certain circumstances, samples submitted to Energy Laboratories, Inc. may be subcontracted to other certified laboratories in order to complete the analysis requested.
This serves as notice of this possibility. All sub-contract data will be clearly notated on your analytical report.
Visit our web site at www.energylab.com for additional information, downloadable fee schedule, forms, and links.

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Analytical Report

October 25, 2013

Report to:
Tim Leo
Montgomery and Associates
1550 E. Prince Rd.
Tuscon, AZ 85719

cc: Leilani Bew

Bill to:
Accounts Payable
Montgomery and Associates
1550 E. Prince Rd.
Tucson, AZ 85719

Project ID: 1350.21
ACZ Project ID: L14977

Tim Leo:

Enclosed are the analytical results for sample(s) submitted to ACZ Laboratories, Inc. (ACZ) on October 12, 2013. This project has been assigned to ACZ's project number, L14977. Please reference this number in all future inquiries.

All analyses were performed according to ACZ's Quality Assurance Plan. The enclosed results relate only to the samples received under L14977. Each section of this report has been reviewed and approved by the appropriate Laboratory Supervisor, or a qualified substitute.

Except as noted, the test results for the methods and parameters listed on ACZ's current NELAC certificate letter (#ACZ) meet all requirements of NELAC.

This report shall be used or copied only in its entirety. ACZ is not responsible for the consequences arising from the use of a partial report.

All samples and sub-samples associated with this project will be disposed of after April 23, 2014. If the samples are determined to be hazardous, additional charges apply for disposal (typically $11/sample). If you would like the samples to be held longer than ACZ's stated policy or to be returned, please contact your Project Manager or Customer Service Representative for further details and associated costs. ACZ retains analytical raw data reports for ten years.

If you have any questions or other needs, please contact your Project Manager.

S. Habermehl

Scott Habermehl has reviewed
and approved this report.

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Analytical Results

Montgomery and Associates
Project ID: 1350.21
Sample ID: 7026

ACZ Sample ID: ***L14977-01***
Date Sampled: *10/10/13 11:35*
Date Received: *10/12/13*
Sample Matrix: *Ground Water*

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Arsenic, dissolved	M200.8 ICP-MS	1		U		mg/L	0.0002	0.001	10/23/13 2:09	pmc
Calcium, dissolved	M200.7 ICP	1	79.1			mg/L	0.2	1	10/15/13 11:28	aeb
Iron, dissolved	M200.7 ICP	1		U		mg/L	0.02	0.05	10/15/13 11:28	aeb
Magnesium, dissolved	M200.7 ICP	1	27			mg/L	0.2	1	10/15/13 11:28	aeb
Molybdenum, dissolved	M200.8 ICP-MS	1	0.0009	B		mg/L	0.0005	0.003	10/23/13 2:09	pmc
Potassium, dissolved	M200.7 ICP	1	3.2			mg/L	0.3	2	10/15/13 11:28	aeb
Selenium, dissolved	M200.8 ICP-MS	1	0.0052			mg/L	0.0001	0.0003	10/23/13 2:09	pmc
Sodium, dissolved	M200.7 ICP	1	48			mg/L	0.3	2	10/15/13 11:28	aeb
Uranium, dissolved	M200.8 ICP-MS	1	0.0029			mg/L	0.0001	0.0005	10/23/13 2:09	pmc

Wet Chemistry

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Alkalinity as CaCO3	SM2320B - Titration									
Bicarbonate as CaCO3		1	172			mg/L	2	20	10/14/13 0:00	dcw
Carbonate as CaCO3		1		U		mg/L	2	20	10/14/13 0:00	dcw
Hydroxide as CaCO3		1		U		mg/L	2	20	10/14/13 0:00	dcw
Total Alkalinity		1	172			mg/L	2	20	10/14/13 0:00	dcw
Cation-Anion Balance	Calculation									
Cation-Anion Balance			-2.3			%			10/25/13 15:31	calc
Sum of Anions			8.8			meq/L	0.1	0.5	10/25/13 15:31	calc
Sum of Cations			8.4			meq/L	0.1	0.5	10/25/13 15:31	calc
Chloride	SM4500Cl-E	1	52		*	mg/L	1	5	10/21/13 16:16	mla
Conductivity @25C	SM2510B	1	822			umhos/cm	1	10	10/14/13 23:39	dcw
pH (lab)	SM4500H+ B									
pH		1	8.2	H		units	0.1	0.1	10/14/13 0:00	dcw
pH measured at		1	23			C	0.1	0.1	10/14/13 0:00	dcw
Residue, Filterable (TDS) @180C	SM2540C	1	534			mg/L	10	20	10/16/13 10:33	khw
Sulfate	D516-02 - Turbidimetric	5	185		*	mg/L	5	25	10/24/13 10:37	mla
TDS (calculated)	Calculation		498			mg/L	10	50	10/25/13 15:31	calc
TDS (ratio - measured/calculated)	Calculation		1.07						10/25/13 15:31	calc

Arizona license number: AZ0102

** Please refer to Qualifier Reports for details.*

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Analytical Results

Montgomery and Associates
Project ID: 1350.21
Sample ID: 7028

ACZ Sample ID: ***L14977-02***
Date Sampled: *10/10/13 12:10*
Date Received: *10/12/13*
Sample Matrix: *Ground Water*

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Arsenic, dissolved	M200.8 ICP-MS	1		U		mg/L	0.0002	0.001	10/23/13 2:13	pmc
Calcium, dissolved	M200.7 ICP	1	76.3			mg/L	0.2	1	10/15/13 11:31	aeb
Iron, dissolved	M200.7 ICP	1		U		mg/L	0.02	0.05	10/15/13 11:31	aeb
Magnesium, dissolved	M200.7 ICP	1	26.2			mg/L	0.2	1	10/15/13 11:31	aeb
Molybdenum, dissolved	M200.8 ICP-MS	1	0.0043			mg/L	0.0005	0.003	10/23/13 2:13	pmc
Potassium, dissolved	M200.7 ICP	1	3.2			mg/L	0.3	2	10/15/13 11:31	aeb
Selenium, dissolved	M200.8 ICP-MS	1	0.0052			mg/L	0.0001	0.0003	10/23/13 2:13	pmc
Sodium, dissolved	M200.7 ICP	1	47.4			mg/L	0.3	2	10/15/13 11:31	aeb
Uranium, dissolved	M200.8 ICP-MS	1	0.0070			mg/L	0.0001	0.0005	10/23/13 2:13	pmc

Wet Chemistry

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Alkalinity as CaCO3	SM2320B - Titration									
Bicarbonate as CaCO3		1	171			mg/L	2	20	10/14/13 0:00	dcw
Carbonate as CaCO3		1		U		mg/L	2	20	10/14/13 0:00	dcw
Hydroxide as CaCO3		1		U		mg/L	2	20	10/14/13 0:00	dcw
Total Alkalinity		1	171			mg/L	2	20	10/14/13 0:00	dcw
Cation-Anion Balance	Calculation									
Cation-Anion Balance			-3.0			%			10/25/13 15:31	calc
Sum of Anions			8.6			meq/L	0.1	0.5	10/25/13 15:31	calc
Sum of Cations			8.1			meq/L	0.1	0.5	10/25/13 15:31	calc
Chloride	SM4500Cl-E	1	52		*	mg/L	1	5	10/21/13 16:16	mla
Conductivity @25C	SM2510B	1	828			umhos/cm	1	10	10/14/13 23:47	dcw
pH (lab)	SM4500H+ B									
pH		1	8.1	H		units	0.1	0.1	10/14/13 0:00	dcw
pH measured at		1	21			C	0.1	0.1	10/14/13 0:00	dcw
Residue, Filterable (TDS) @180C	SM2540C	1	528			mg/L	10	20	10/16/13 10:35	khw
Sulfate	D516-02 - Turbidimetric	5	179		*	mg/L	5	25	10/24/13 10:39	mla
TDS (calculated)	Calculation		487			mg/L	10	50	10/25/13 15:31	calc
TDS (ratio - measured/calculated)	Calculation		1.08						10/25/13 15:31	calc

Arizona license number: AZ0102

** Please refer to Qualifier Reports for details.*

Montgomery and Associates
Project ID: 1350.21
Sample ID: 6997

ACZ Sample ID: ***L14977-03***
Date Sampled: *10/11/13 12:30*
Date Received: *10/12/13*
Sample Matrix: *Ground Water*

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Arsenic, dissolved	M200.8 ICP-MS	1	0.0162			mg/L	0.0002	0.001	10/23/13 2:22	pmc
Calcium, dissolved	M200.7 ICP	1	110			mg/L	0.2	1	10/15/13 11:34	aeb
Iron, dissolved	M200.7 ICP	1		U		mg/L	0.02	0.05	10/15/13 11:34	aeb
Magnesium, dissolved	M200.7 ICP	1	31.3			mg/L	0.2	1	10/15/13 11:34	aeb
Molybdenum, dissolved	M200.8 ICP-MS	1	0.0077			mg/L	0.0005	0.003	10/23/13 2:22	pmc
Potassium, dissolved	M200.7 ICP	1	3.6			mg/L	0.3	2	10/15/13 11:34	aeb
Selenium, dissolved	M200.8 ICP-MS	1	0.0081			mg/L	0.0001	0.0003	10/23/13 2:22	pmc
Sodium, dissolved	M200.7 ICP	1	48.4			mg/L	0.3	2	10/15/13 11:34	aeb
Uranium, dissolved	M200.8 ICP-MS	1	0.0095			mg/L	0.0001	0.0005	10/23/13 2:22	pmc

Wet Chemistry

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Alkalinity as CaCO3	SM2320B - Titration									
Bicarbonate as CaCO3		1	168			mg/L	2	20	10/14/13 0:00	dcw
Carbonate as CaCO3		1		U		mg/L	2	20	10/14/13 0:00	dcw
Hydroxide as CaCO3		1		U		mg/L	2	20	10/14/13 0:00	dcw
Total Alkalinity		1	168			mg/L	2	20	10/14/13 0:00	dcw
Cation-Anion Balance	Calculation									
Cation-Anion Balance			-4.8			%			10/25/13 15:31	calc
Sum of Anions			11			meq/L	0.1	0.5	10/25/13 15:31	calc
Sum of Cations			10			meq/L	0.1	0.5	10/25/13 15:31	calc
Chloride	SM4500Cl-E	1	84		*	mg/L	1	5	10/21/13 16:16	mla
Conductivity @25C	SM2510B	1	1010			umhos/cm	1	10	10/14/13 23:56	dcw
pH (lab)	SM4500H+ B									
pH		1	8.2	H		units	0.1	0.1	10/14/13 0:00	dcw
pH measured at		1	22			C	0.1	0.1	10/14/13 0:00	dcw
Residue, Filterable (TDS) @180C	SM2540C	1	664			mg/L	10	20	10/16/13 10:36	khw
Sulfate	D516-02 - Turbidimetric	20	234		*	mg/L	20	100	10/24/13 10:58	mla
TDS (calculated)	Calculation		612			mg/L	10	50	10/25/13 15:31	calc
TDS (ratio - measured/calculated)	Calculation		1.08						10/25/13 15:31	calc

Arizona license number: AZ0102

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Analytical Results

Montgomery and Associates
Project ID: 1350.21
Sample ID: 6999

ACZ Sample ID: ***L14977-04***
Date Sampled: *10/11/13 13:10*
Date Received: *10/12/13*
Sample Matrix: *Ground Water*

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Arsenic, dissolved	M200.8 ICP-MS	1	0.0157			mg/L	0.0002	0.001	10/23/13 2:25	pmc
Calcium, dissolved	M200.7 ICP	1	109			mg/L	0.2	1	10/15/13 11:37	aeb
Iron, dissolved	M200.7 ICP	1		U		mg/L	0.02	0.05	10/15/13 11:37	aeb
Magnesium, dissolved	M200.7 ICP	1	30.3			mg/L	0.2	1	10/15/13 11:37	aeb
Molybdenum, dissolved	M200.8 ICP-MS	1	0.0109			mg/L	0.0005	0.003	10/23/13 2:25	pmc
Potassium, dissolved	M200.7 ICP	1	3.7			mg/L	0.3	2	10/15/13 11:37	aeb
Selenium, dissolved	M200.8 ICP-MS	1	0.0081			mg/L	0.0001	0.0003	10/23/13 2:25	pmc
Sodium, dissolved	M200.7 ICP	1	48.8			mg/L	0.3	2	10/15/13 11:37	aeb
Uranium, dissolved	M200.8 ICP-MS	1	0.0096			mg/L	0.0001	0.0005	10/23/13 2:25	pmc

Wet Chemistry

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Alkalinity as CaCO3	SM2320B - Titration									
Bicarbonate as CaCO3		1	185			mg/L	2	20	10/15/13 0:00	dcw
Carbonate as CaCO3		1		U		mg/L	2	20	10/15/13 0:00	dcw
Hydroxide as CaCO3		1		U		mg/L	2	20	10/15/13 0:00	dcw
Total Alkalinity		1	185			mg/L	2	20	10/15/13 0:00	dcw
Cation-Anion Balance	Calculation									
Cation-Anion Balance			-4.8			%			10/25/13 15:31	calc
Sum of Anions			11			meq/L	0.1	0.5	10/25/13 15:31	calc
Sum of Cations			10			meq/L	0.1	0.5	10/25/13 15:31	calc
Chloride	SM4500Cl-E	1	88		*	mg/L	1	5	10/21/13 16:16	mla
Conductivity @25C	SM2510B	1	1030			umhos/cm	1	10	10/15/13 0:06	dcw
pH (lab)	SM4500H+ B									
pH		1	8.2	H		units	0.1	0.1	10/15/13 0:00	dcw
pH measured at		1	22			C	0.1	0.1	10/15/13 0:00	dcw
Residue, Filterable (TDS) @180C	SM2540C	1	670			mg/L	10	20	10/16/13 10:39	khw
Sulfate	D516-02 - Turbidimetric	20	233		*	mg/L	20	100	10/24/13 10:58	mla
TDS (calculated)	Calculation		624			mg/L	10	50	10/25/13 15:31	calc
TDS (ratio - measured/calculated)	Calculation		1.07						10/25/13 15:31	calc

Arizona license number: AZ0102

** Please refer to Qualifier Reports for details.*

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Inorganic Analytical Results

Montgomery and Associates
Project ID: 1350.21
Sample ID: 7001

ACZ Sample ID: ***L14977-05***
Date Sampled: *10/11/13 14:05*
Date Received: *10/12/13*
Sample Matrix: *Ground Water*

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Arsenic, dissolved	M200.8 ICP-MS	1	0.0184			mg/L	0.0002	0.001	10/23/13 2:29	pmc
Calcium, dissolved	M200.7 ICP	1	115			mg/L	0.2	1	10/15/13 11:40	aeb
Iron, dissolved	M200.7 ICP	1		U		mg/L	0.02	0.05	10/15/13 11:40	aeb
Magnesium, dissolved	M200.7 ICP	1	32.2			mg/L	0.2	1	10/15/13 11:40	aeb
Molybdenum, dissolved	M200.8 ICP-MS	1	0.0079			mg/L	0.0005	0.003	10/23/13 2:29	pmc
Potassium, dissolved	M200.7 ICP	1	3.8			mg/L	0.3	2	10/15/13 11:40	aeb
Selenium, dissolved	M200.8 ICP-MS	1	0.0084			mg/L	0.0001	0.0003	10/23/13 2:29	pmc
Sodium, dissolved	M200.7 ICP	1	52.3			mg/L	0.3	2	10/15/13 11:40	aeb
Uranium, dissolved	M200.8 ICP-MS	1	0.0099			mg/L	0.0001	0.0005	10/23/13 2:29	pmc

Wet Chemistry

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Alkalinity as CaCO3	SM2320B - Titration									
Bicarbonate as CaCO3		1	171			mg/L	2	20	10/15/13 0:00	dcw
Carbonate as CaCO3		1		U		mg/L	2	20	10/15/13 0:00	dcw
Hydroxide as CaCO3		1		U		mg/L	2	20	10/15/13 0:00	dcw
Total Alkalinity		1	171			mg/L	2	20	10/15/13 0:00	dcw
Cation-Anion Balance	Calculation									
Cation-Anion Balance			0.0			%			10/25/13 15:31	calc
Sum of Anions			11			meq/L	0.1	0.5	10/25/13 15:31	calc
Sum of Cations			11			meq/L	0.1	0.5	10/25/13 15:31	calc
Chloride	SM4500Cl-E	1	88		*	mg/L	1	5	10/21/13 16:16	mla
Conductivity @25C	SM2510B	1	1080			umhos/cm	1	10	10/15/13 0:15	dcw
pH (lab)	SM4500H+ B									
pH		1	8.2	H		units	0.1	0.1	10/15/13 0:00	dcw
pH measured at		1	22			C	0.1	0.1	10/15/13 0:00	dcw
Residue, Filterable (TDS) @180C	SM2540C	1	726			mg/L	10	20	10/16/13 10:41	khw
Sulfate	D516-02 - Turbidimetric	20	253		*	mg/L	20	100	10/24/13 10:58	mla
TDS (calculated)	Calculation		647			mg/L	10	50	10/25/13 15:31	calc
TDS (ratio - measured/calculated)	Calculation		1.12						10/25/13 15:31	calc

Arizona license number: AZ0102

** Please refer to Qualifier Reports for details.*

Report Header Explanations

Batch	A distinct set of samples analyzed at a specific time
Found	Value of the QC Type of interest
Limit	Upper limit for RPD, in %.
Lower	Lower Recovery Limit, in % (except for LCSS, mg/Kg)
MDL	Method Detection Limit. Same as Minimum Reporting Limit. Allows for instrument and annual fluctuations.
PCN/SCN	A number assigned to reagents/standards to trace to the manufacturer's certificate of analysis
PQL	Practical Quantitation Limit, typically 5 times the MDL.
QC	True Value of the Control Sample or the amount added to the Spike
Rec	Recovered amount of the true value or spike added, in % (except for LCSS, mg/Kg)
RPD	Relative Percent Difference, calculation used for Duplicate QC Types
Upper	Upper Recovery Limit, in % (except for LCSS, mg/Kg)
Sample	Value of the Sample of interest

QC Sample Types

AS	Analytical Spike (Post Digestion)	*LCSWD*	Laboratory Control Sample - Water Duplicate
ASD	Analytical Spike (Post Digestion) Duplicate	*LFB*	Laboratory Fortified Blank
CCB	Continuing Calibration Blank	*LFM*	Laboratory Fortified Matrix
CCV	Continuing Calibration Verification standard	*LFMD*	Laboratory Fortified Matrix Duplicate
DUP	Sample Duplicate	*LRB*	Laboratory Reagent Blank
ICB	Initial Calibration Blank	*MS*	Matrix Spike
ICV	Initial Calibration Verification standard	*MSD*	Matrix Spike Duplicate
ICSAB	Inter-element Correction Standard - A plus B solutions	*PBS*	Prep Blank - Soil
LCSS	Laboratory Control Sample - Soil	*PBW*	Prep Blank - Water
LCSSD	Laboratory Control Sample - Soil Duplicate	*PQV*	Practical Quantitation Verification standard
LCSW	Laboratory Control Sample - Water	*SDL*	Serial Dilution

QC Sample Type Explanations

Blanks	Verifies that there is no or minimal contamination in the prep method or calibration procedure.
Control Samples	Verifies the accuracy of the method, including the prep procedure.
Duplicates	Verifies the precision of the instrument and/or method.
Spikes/Fortified Matrix	Determines sample matrix interferences, if any.
Standard	Verifies the validity of the calibration.

ACZ Qualifiers (Qual)

B	Analyte concentration detected at a value between MDL and PQL. The associated value is an estimated quantity.
H	Analysis exceeded method hold time. pH is a field test with an immediate hold time.
L	Target analyte response was below the laboratory defined negative threshold.
U	The material was analyzed for, but was not detected above the level of the associated value. The associated value is either the sample quantitation limit or the sample detection limit.

Method References

(1) EPA 600/4-83-020. Methods for Chemical Analysis of Water and Wastes, March 1983.
(2) EPA 600/R-93-100. Methods for the Determination of Inorganic Substances in Environmental Samples, August 1993.
(3) EPA 600/R-94-111. Methods for the Determination of Metals in Environmental Samples - Supplement I, May 1994.
(4) EPA SW-846. Test Methods for Evaluating Solid Waste.
(5) Standard Methods for the Examination of Water and Wastewater.

Comments

(1) QC results calculated from raw data. Results may vary slightly if the rounded values are used in the calculations.
(2) Soil, Sludge, and Plant matrices for Inorganic analyses are reported on a dry weight basis.
(3) Animal matrices for Inorganic analyses are reported on an "as received" basis.
(4) An asterisk in the "XQ" column indicates there is an extended qualifier and/or certification qualifier associated with the result.
(5) If the MDL equals the PQL or the MDL column is omitted, the PQL is the reporting limit.

For a complete list of ACZ's Extended Qualifiers, please click: http://www.acz.com/public/extquallist.pdf

Montgomery and Associates

ACZ Project ID: ***L14977***

Alkalinity as CaCO3 SM2320B - Titration

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG352869													
WG352869PBW1	PBW	10/14/13 12:17				4.3	mg/L		-20	20			
WG352869LCSW2	LCSW	10/14/13 12:31	WC131008-	820.0001		776.6	mg/L	94.7	90	110			
WG352869LCSW5	LCSW	10/14/13 15:30	WC131008-	820.0001		778	mg/L	94.9	90	110			
WG352869PBW2	PBW	10/14/13 15:38				U	mg/L		-20	20			
WG352869LCSW8	LCSW	10/14/13 18:42	WC131008-	820.0001		768.8	mg/L	93.8	90	110			
WG352869PBW3	PBW	10/14/13 18:51				U	mg/L		-20	20			
WG352869LCSW11	LCSW	10/14/13 22:51	WC131008-	820.0001		771	mg/L	94	90	110			
WG352869PBW4	PBW	10/14/13 22:59				2.3	mg/L		-20	20			
L14977-05DUP	DUP	10/15/13 0:24			171	170.9	mg/L				0.1	20	
WG352869LCSW14	LCSW	10/15/13 1:17	WC131008-	820.0001		798.3	mg/L	97.4	90	110			

Arsenic, dissolved M200.8 ICP-MS

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG353408													
WG353408ICV	ICV	10/23/13 1:18	MS131018-2	.05		.05023	mg/L	100.5	90	110			
WG353408ICB	ICB	10/23/13 1:21				U	mg/L		-0.0006	0.0006			
WG353408LFB	LFB	10/23/13 1:24	MS130927-2	.05005		.04734	mg/L	94.6	85	115			
L14974-01AS	AS	10/23/13 1:47	MS130927-2	.05005	U	.05333	mg/L	106.6	70	130			
L14974-01ASD	ASD	10/23/13 1:50	MS130927-2	.05005	U	.05376	mg/L	107.4	70	130	0.8	20	
L14977-02AS	AS	10/23/13 2:16	MS130927-2	.05005	U	.05375	mg/L	107.4	70	130			
L14977-02ASD	ASD	10/23/13 2:19	MS130927-2	.05005	U	.05396	mg/L	107.8	70	130	0.39	20	

Calcium, dissolved M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG352933													
WG352933ICV	ICV	10/15/13 9:56	II130916-1	100		98.1	mg/L	98.1	95	105			
WG352933ICB	ICB	10/15/13 10:01				U	mg/L		-0.6	0.6			
WG352933LFB	LFB	10/15/13 10:14	II131010-2	68.00225		69.07	mg/L	101.6	85	115			
L14974-01AS	AS	10/15/13 11:07	II131010-2	68.00225	4.2	69.73	mg/L	96.4	85	115			
L14974-01ASD	ASD	10/15/13 11:10	II131010-2	68.00225	4.2	70.35	mg/L	97.3	85	115	0.89	20	

Chloride SM4500Cl-E

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG353314													
WG353314ICB	ICB	10/21/13 14:50				U	mg/L		-3	3			
WG353314ICV	ICV	10/21/13 14:50	WI130722-5	54.945		57.9	mg/L	105.4	90	110			
WG353314LFB1	LFB	10/21/13 16:06	WI131010-1	30		32.4	mg/L	108	90	110			
WG353314LFB2	LFB	10/21/13 16:10	WI131010-1	30		32.6	mg/L	108.7	90	110			
L14974-03AS	AS	10/21/13 16:10	WI131010-1	30	2	35.8	mg/L	112.7	90	110			M1
L14974-04DUP	DUP	10/21/13 16:10			11	12.1	mg/L				9.5	20	

Montgomery and Associates

ACZ Project ID: ***L14977***

Conductivity @25C SM2510B

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG352869													
WG352869LCSW1	LCSW	10/14/13 12:18	PCN42819	1408.8		1401.9	umhos/cm	99.5	90	110			
WG352869LCSW4	LCSW	10/14/13 15:18	PCN42819	1408.8		1378.6	umhos/cm	97.9	90	110			
WG352869LCSW7	LCSW	10/14/13 18:31	PCN42819	1408.8		1359.4	umhos/cm	96.5	90	110			
WG352869LCSW10	LCSW	10/14/13 22:39	PCN42819	1408.8		1357.3	umhos/cm	96.3	90	110			
L14977-05DUP	DUP	10/15/13 0:24			1080	1079	umhos/cm				0.1	20	
WG352869LCSW13	LCSW	10/15/13 1:05	PCN42819	1408.8		1332	umhos/cm	94.5	90	110			

Iron, dissolved M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG352933													
WG352933ICV	ICV	10/15/13 9:56	II130916-1	2		2.016	mg/L	100.8	95	105			
WG352933ICB	ICB	10/15/13 10:01				U	mg/L		-0.06	0.06			
WG352933LFB	LFB	10/15/13 10:14	II131010-2	1.0014		1.007	mg/L	100.6	85	115			
L14974-01AS	AS	10/15/13 11:07	II131010-2	1.0014	.11	1.031	mg/L	93	85	115			
L14974-01ASD	ASD	10/15/13 11:10	II131010-2	1.0014	.11	1.04	mg/L	93.9	85	115	0.87	20	

Magnesium, dissolved M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG352933													
WG352933ICV	ICV	10/15/13 9:56	II130916-1	100		97.14	mg/L	97.1	95	105			
WG352933ICB	ICB	10/15/13 10:01				U	mg/L		-0.6	0.6			
WG352933LFB	LFB	10/15/13 10:14	II131010-2	49.99695		48.69	mg/L	97.4	85	115			
L14974-01AS	AS	10/15/13 11:07	II131010-2	49.99695	1.5	48.46	mg/L	93.9	85	115			
L14974-01ASD	ASD	10/15/13 11:10	II131010-2	49.99695	1.5	48.93	mg/L	94.9	85	115	0.97	20	

Molybdenum, dissolved M200.8 ICP-MS

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG353408													
WG353408ICV	ICV	10/23/13 1:18	MS131018-2	.02006		.01951	mg/L	97.3	90	110			
WG353408ICB	ICB	10/23/13 1:21				U	mg/L		-0.0015	0.0015			
WG353408LFB	LFB	10/23/13 1:24	MS130927-2	.05		.04907	mg/L	98.1	85	115			
L14974-01AS	AS	10/23/13 1:47	MS130927-2	.05	.0005	.0485	mg/L	96	70	130			
L14974-01ASD	ASD	10/23/13 1:50	MS130927-2	.05	.0005	.04896	mg/L	96.9	70	130	0.94	20	
L14977-02AS	AS	10/23/13 2:16	MS130927-2	.05	.0043	.05406	mg/L	99.5	70	130			
L14977-02ASD	ASD	10/23/13 2:19	MS130927-2	.05	.0043	.05438	mg/L	100.2	70	130	0.59	20	

pH (lab) SM4500H+ B

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG352869													
WG352869LCSW3	LCSW	10/14/13 12:34	PCN41777	6		6.02	units	100.3	98	102			
WG352869LCSW6	LCSW	10/14/13 15:33	PCN41777	6		6.02	units	100.3	98	102			
WG352869LCSW9	LCSW	10/14/13 18:46	PCN41777	6		6.03	units	100.5	98	102			
WG352869LCSW12	LCSW	10/14/13 22:55	PCN41777	6		6	units	100	98	102			
L14977-05DUP	DUP	10/15/13 0:24			8.2	8.15	units				0.6	20	
WG352869LCSW15	LCSW	10/15/13 1:20	PCN41777	6		6.01	units	100.2	98	102			

Montgomery and Associates

ACZ Project ID: ***L14977***

Potassium, dissolved M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG352933													
WG352933ICV	ICV	10/15/13 9:56	II130916-1	20		19.88	mg/L	99.4	95	105			
WG352933ICB	ICB	10/15/13 10:01				U	mg/L		-0.9	0.9			
WG352933LFB	LFB	10/15/13 10:14	II131010-2	99.94539		100.1	mg/L	100.2	85	115			
L14974-01AS	AS	10/15/13 11:07	II131010-2	99.94539	1.5	101.3	mg/L	99.9	85	115			
L14974-01ASD	ASD	10/15/13 11:10	II131010-2	99.94539	1.5	102.2	mg/L	100.8	85	115	0.88	20	

Residue, Filterable (TDS) @180C SM2540C

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG353024													
WG353024PBW	PBW	10/16/13 10:20				U	mg/L		-20	20			
WG353024LCSW	LCSW	10/16/13 10:21	PCN43789	260		256	mg/L	98.5	80	120			
L14977-03DUP	DUP	10/16/13 10:38			664	666	mg/L				0.3	10	
L14981-04DUP	DUP	10/16/13 10:54			342	356	mg/L				4	10	

Selenium, dissolved M200.8 ICP-MS

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG353408													
WG353408ICV	ICV	10/23/13 1:18	MS131018-2	.05		.05188	mg/L	103.8	90	110			
WG353408ICB	ICB	10/23/13 1:21				U	mg/L		-0.0003	0.0003			
WG353408LFB	LFB	10/23/13 1:24	MS130927-2	.05005		.05037	mg/L	100.6	85	115			
L14974-01AS	AS	10/23/13 1:47	MS130927-2	.05005	U	.0556	mg/L	111.1	70	130			
L14974-01ASD	ASD	10/23/13 1:50	MS130927-2	.05005	U	.05638	mg/L	112.6	70	130	1.39	20	
L14977-02AS	AS	10/23/13 2:16	MS130927-2	.05005	.0052	.06017	mg/L	109.8	70	130			
L14977-02ASD	ASD	10/23/13 2:19	MS130927-2	.05005	.0052	.06125	mg/L	112	70	130	1.78	20	

Sodium, dissolved M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG352933													
WG352933ICV	ICV	10/15/13 9:56	II130916-1	100		100.11	mg/L	100.1	95	105			
WG352933ICB	ICB	10/15/13 10:01				U	mg/L		-0.9	0.9			
WG352933LFB	LFB	10/15/13 10:14	II131010-2	100.0204		99.79	mg/L	99.8	85	115			
L14974-01AS	AS	10/15/13 11:07	II131010-2	100.0204	3.8	103.4	mg/L	99.6	85	115			
L14974-01ASD	ASD	10/15/13 11:10	II131010-2	100.0204	3.8	104.9	mg/L	101.1	85	115	1.44	20	

Sulfate D516-02 - Turbidimetric

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG353548													
WG353548ICB	ICB	10/24/13 9:06				U	mg/L		-3	3			
WG353548ICV	ICV	10/24/13 9:06	WI131010-4	20		21.4	mg/L	107	90	110			
WG353548LFB	LFB	10/24/13 10:30	WI131010-2	9.99		10.5	mg/L	105.1	90	110			
L14974-01AS	AS	10/24/13 10:30	WI131010-2	9.99	5.8	19.9	mg/L	141.1	90	110			M1
L14981-01AS	AS	10/24/13 10:41	SO4TURB5	10	164	177	mg/L	130	90	110			M3
L14972-02DUP	DUP	10/24/13 10:56			3350	3350	mg/L				0	20	
L14977-05DUP	DUP	10/24/13 10:59			253	254	mg/L				0.4	20	

Montgomery and Associates

ACZ Project ID: ***L14977***

Uranium, dissolved M200.8 ICP-MS

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG353408													
WG353408ICV	ICV	10/23/13 1:18	MS131018-2	.05		.05139	mg/L	102.8	90	110			
WG353408ICB	ICB	10/23/13 1:21				U	mg/L		-0.0003	0.0003			
WG353408LFB	LFB	10/23/13 1:24	MS130927-2	.05		.05178	mg/L	103.6	85	115			
L14974-01AS	AS	10/23/13 1:47	MS130927-2	.05	U	.05152	mg/L	103	70	130			
L14974-01ASD	ASD	10/23/13 1:50	MS130927-2	.05	U	.05233	mg/L	104.7	70	130	1.56	20	
L14977-02AS	AS	10/23/13 2:16	MS130927-2	.05	.007	.06144	mg/L	108.9	70	130			
L14977-02ASD	ASD	10/23/13 2:19	MS130927-2	.05	.007	.06195	mg/L	109.9	70	130	0.83	20	

Inorganic Extended Qualifier Report

Montgomery and Associates

ACZ Project ID: ***L14977***

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L14977-01	WG353314	Chloride	SM4500Cl-E	M1	Matrix spike recovery was high, the recovery of the associated control sample (LCS or LFB) was acceptable.
	WG353548	Sulfate	D516-02 - Turbidimetric	M1	Matrix spike recovery was high, the recovery of the associated control sample (LCS or LFB) was acceptable.
L14977-02	WG353314	Chloride	SM4500Cl-E	M1	Matrix spike recovery was high, the recovery of the associated control sample (LCS or LFB) was acceptable.
	WG353548	Sulfate	D516-02 - Turbidimetric	M1	Matrix spike recovery was high, the recovery of the associated control sample (LCS or LFB) was acceptable.
L14977-03	WG353314	Chloride	SM4500Cl-E	M1	Matrix spike recovery was high, the recovery of the associated control sample (LCS or LFB) was acceptable.
	WG353548	Sulfate	D516-02 - Turbidimetric	M1	Matrix spike recovery was high, the recovery of the associated control sample (LCS or LFB) was acceptable.
L14977-04	WG353314	Chloride	SM4500Cl-E	M1	Matrix spike recovery was high, the recovery of the associated control sample (LCS or LFB) was acceptable.
	WG353548	Sulfate	D516-02 - Turbidimetric	M1	Matrix spike recovery was high, the recovery of the associated control sample (LCS or LFB) was acceptable.
L14977-05	WG353314	Chloride	SM4500Cl-E	M1	Matrix spike recovery was high, the recovery of the associated control sample (LCS or LFB) was acceptable.
	WG353548	Sulfate	D516-02 - Turbidimetric	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.

Certification Qualifiers

Montgomery and Associates ACZ Project ID: ***L14977***

No certification qualifiers associated with this analysis

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Sample Receipt

Montgomery and Associates
1350.21

ACZ Project ID: L14977
Date Received: 10/12/2013 10:52
Received By: mtb
Date Printed: 10/14/2013

Receipt Verification

	YES	NO	NA
1) Is a foreign soil permit included for applicable samples?			X
2) Is the Chain of Custody or other directive shipping papers present?	X		
3) Does this project require special handling procedures such as CLP protocol?			X
4) Are any samples NRC licensable material?			X
5) If samples are received past hold time, proceed with requested short hold time analyses?	X		
6) Is the Chain of Custody complete and accurate?	X		
7) Were any changes made to the Chain of Custody prior to ACZ receiving the samples?	X		

A change was made in the ID Line 3 section prior to ACZ custody.

Samples/Containers

	YES	NO	NA
8) Are all containers intact and with no leaks?	X		
9) Are all labels on containers and are they intact and legible?	X		
10) Do the sample labels and Chain of Custody match for Sample ID, Date, and Time?	X		
11) For preserved bottle types, was the pH checked and within limits?	X		
12) Is there sufficient sample volume to perform all requested work?	X		
13) Is the custody seal intact on all containers?			X
14) Are samples that require zero headspace acceptable?			X
15) Are all sample containers appropriate for analytical requirements?	X		
16) Is there an Hg-1631 trip blank present?			X
17) Is there a VOA trip blank present?			X
18) Were all samples received within hold time?	X		

Chain of Custody Related Remarks

Client Contact Remarks

Shipping Containers

Cooler Id	Temp (°C)	Rad (µR/Hr)	Custody Seal Intact?
NA18547	2	13	Yes

Was ice present in the shipment container(s)?

Yes - Wet ice was present in the shipment container(s).

Client must contact an ACZ Project Manager if analysis should not proceed for samples received outside of their thermal preservation acceptance criteria.

ACZ Laboratories, Inc. L14977

2773 Downhill Drive · Steamboat Springs, CO 80487 (800) 334-5493

CHAIN of CUSTODY

Report to:

Name: Tim Leo	Address: 1550 E Prince Rd
Company: Montgomery & Assoc.	Tucson AZ 85719
E-mail: tleo@elmontgomery.com	Telephone: 520-881-4912

Copy of Report to:

Name: lbew@elmontgomery.com	E-mail:
Company: M&A	Telephone:

Invoice to:

Name: Tim Leo	Address:
Company: Montgomery & Assoc.	
E-mail:	Telephone:

If sample(s) received past holding time (HT), or if insufficient HT remains to complete analysis before expiration, shall ACZ proceed with requested short HT analyses? YES ☐ NO ☐

If "NO" then ACZ will contact client for further instruction. If neither "YES" nor "NO" is indicated, ACZ will proceed with the requested analyses, even if HT is expired, and data will be qualified

Are samples for SDWA Compliance Monitoring? Yes ☐ No ☒

If yes, please include state forms. Results will be reported to PQL for Colorado.

Sampler's Name: B. Myers **Sampler's site Information** **State:** UT **Zip code** _____ **Time Zone** MT

Check box if observe Daylight Savings Time ☐

PROJECT INFORMATION

Quote #: LISBON-GW

PO#:

Reporting state for compliance testing: UT

Check box if samples include NRC licensed material? ☐

ANALYSES REQUESTED *(attach list or use quote number)*

SAMPLE IDENTIFICATION	DATE:TIME	Matrix	# of Containers	LISBON-GW							
7026	10OCT2013/1135	W	3	X							
7028	10OCT2013/1210	W	3	X							
~~6997~~ 6997	11OCT2013/1230	W	3	X							
6999	11OCT2013/1310	W	3	X							
7001	11OCT2013/1405	W	3	X							

Matrix: SW (Surface Water) · GW (Ground Water) · WW (Waste Water) · DW (Drinking Water) · SL (Sludge) · SO (Soil) · OL (Oil) · Other (Specify)

REMARKS

Please refer to ACZ's terms & conditions located on the reverse side of this COC.

RELINQUISHED BY:	DATE:TIME	RECEIVED BY:	DATE:TIME
	10/11/2013 1405		
		10-12-13 10:50	

L14977 Chain of Custody

FRMAD050.12.12.12 White - Return with sample. Yellow - Retain for your records.

Equipment Calibration Log

Equipment make/ model	Equipment ID/ serial number	Date	Time	Calibration Standards	Equipment Reading	Equipment Calibrated	Temp (°C) °F)	Tech init.	Comments
YSI Pro Series	11G100621	11-16-13	720	pH 4.0/7.0/10.0	4.0/7.0/10.0	✓ ~~6.0~~	6.0	JK	
YSI Pro Series				Conductivity 1413	1413	✓	6.2	JK	
YSI Pro Series				Dissolved O2 100%	77.4	✓	—	JK	
YSI Pro Series				ORP 250.5	250.5	✓	10.0	JK	
YSI Pro Series				pH 4.0/7.0/10.0					
YSI Pro Series				Conductivity 1413					
YSI Pro Series				Dissolved O2 100%					
YSI Pro Series				ORP					

Purging And Sampling Data Sheet

Job#: 1350.15	**Sampler:** J Kerns B Myers	**Client:** Montgomery & Associates
Well ID: EF-8	**Date** (DDOct2012): 16/NOV 2013	**Site:** Rio Algom Mining, Lisbon, UT
Weather Conditions: Cold - Rain	**Sampler Signature:**	
Well diam: 1/4" 1" 2" 3" (4") 6" Other:	**DTW:** 73.48	**Total Depth:** 244

Purge equip: ES - diam: (Bladder) Peri Waterra Positive Air Displacement Ext. System

disp bailer teflon bailer other: **Tubing:** OD: New (Dedicated) NA

Purge method: 3-5 Case Volume (Micro/Low-Flow) Extraction Other:

Pump depth/ intake: 227 **Multipliers:** 1"= 0.04 2"= 0.16 3"= 0.37 4"= 0.65 5"=1.02 6"= 1.47 Radius² X 0.163

(TD - DTW X Multiplier = 1 Volume | 80% Recovery (TD - DTW X 0.20 + DTW)

1 Volume = ___ X ___ = ___ (Total Purge) 80%= ___

Time	Temp (°C / °F)	pH	SP Cond (mS / uS)	Turbidity (NTU)	Purge Rate (gal or mL / min)	Volume Removed (gal / L)	DO (mg/l)	ORP (mv)	DTW	Notes
1200	10.1	7.4	2107	7	200	1.0	8.05	-183.1	73.60	
1203	10.1	7.4	2136	5	200	1.6	7.30	-191.2	73.60	
1206	10.1	7.5	2143	4	200	2.2	6.61	-188.1	73.60	
1209	10.1	7.4	2144	5	200	2.8	5.45	-196.2	73.60	
1212	10.4	7.4	2109	3	200	3.4	6.94	-192.7	73.60	
1215	10.4	7.4	2109	3	200	4.0	6.99	-195.1	73.60	
1218	10.3	7.4	2109	1	200	4.6	6.91	-188.3	73.60	
1221	10.3	7.4	2110	1	200	5.2	6.95	-191.5	73.60	

Did well dewater? YES (NO) Total volume removed: 5.2 (gal / (L))

Sample method: Disp Bailer Hydrasleeve New Tubing Ext. Port Other: (Dedicated)

Sample date: (16/NOV 2013) Sample time: 1225 DTW at sample: 73.60

Sample ID: 6948 Lab: Energy Labs Number of bottles (2)

Analysis: 500 ml NP poly - Alkalinity, Cl, SO4, TDS, EC, pH 250 ml HNO3 poly *field filtered - Dissolved Metals

Equipment blank ID @	Field blank ID @	
Duplicate ID:	Pre-purge DO:	Post purge DO:
Fe^{2+}:	Pre-purge ORP:	Post purge ORP:
NAPL depth:	Volume of NAPL:	Volume removed: ml

Confluence Environmental, Inc
3308 El Camino Ave, Suite 300 #148, Sacramento, CA 95821, 916-760-7641

Purging And Sampling Data Sheet

Job#: 1350.15	**Sampler:** J Kerns B Myers	**Client:** Montgomery & Associates
Well ID: RL-1	**Date** (DDOct2012): 16NOV2013	**Site:** Rio Algom Mining, Lisbon, UT
Weather Conditions: Cold - Snowy	**Sampler Signature:**	
Well diam: 1/4" 1" 2" 3" 4" 6" Other: (5)	**DTW:** 115.77	**Total Depth:** 124
Purge equip: ES - diam: (Bladder) Peri Waterra Positive Air Displacement Ext. System		
disp bailer teflon bailer other:	**Tubing:** OD: New (Dedicated) NA	
Purge method: 3-5 Case Volume (Micro/Low-Flow) Extraction Other:		
Pump depth/ intake: 120	**Multipliers:** 1"= 0.04 2"= 0.16 3"= 0.37 4"= 0.65 5"=1.02 6"= 1.47 Radius² X 0.163	
(TD - DTW X Multiplier = 1 Volume	80% Recovery (TD - DTW X 0.20 + DTW)	
1 Volume = ___ X ___ = ___ (Total Purge)	80%= ___	

Time	Temp (°C / °F)	pH	SP Cond (mS / µS)	Turbidity (NTU)	Purge Rate (gal or mL/min)	Volume Removed (gal / L)	DO (mg/l)	ORP (mv)	DTW	Notes
1330	11.3	8.6	10028	2	300	1.0	8.52	-152.9	115.89	
1333	10.5	7.3	10260	0.5	300	1.9	7.39	-156.0	115.90	
1336	11.0	7.0	10438	0.7	300	2.8	5.54	-159.9	115.95	
1339	10.9	7.0	10461	1	200	3.4	4.75	-164.5	116.00	
1342	10.8	6.9	10522	1	200	4.0	4.53	-165.9	116.00	
1345	11.0	6.9	10541	0.9	200	4.6	4.36	-167.9	116.00	
1348	10.9	6.9	10539	0.9	200	5.2	4.31	-162.7	116.00	
1351	11.0	6.9	10547	1	200	5.8	4.30	-167.6	116.00	

Did well dewater? YES (NO)	Total volume removed: 5.8 (gal / (L))	
Sample method: Disp Bailer Hydrasleeve New Tubing Ext. Port Other: (Dedicated)		
Sample date: 16NOV2013	Sample time: 1355	DTW at sample: 116.55
Sample ID: 7061	Lab: Energy Labs	Number of bottles: (2)
Analysis: 500 ml NP poly - Alkalinity, Cl, SO4, TDS, EC, pH 250 ml HNO3 poly *field filtered - Dissolved Metals		
Equipment blank ID @	Field blank ID @	
Duplicate ID:	Pre-purge DO:	Post purge DO:
Fe^{2+}:	Pre-purge ORP:	Post purge ORP:
NAPL depth:	Volume of NAPL:	Volume removed: ml

Confluence Environmental, Inc
3308 El Camino Ave, Suite 300 #148, Sacramento, CA 95821, 916-760-7641

Water Level Measurements

Job Number: KL-131116 Date: 11-16-13 Client: Montgomery & Assoc

Site: Rio Algom Mining - Lisbon - UT

Well I.D.	Time	Dia	Depth to NAPL	Thickness of NAPL	Depth to water (DTW)	Total Depth (measured)	Total Depth (historical)	Ref Point (TOC/ TOB)	Screen	Depth top of HS set
EF-3A	1110	6			81.52	—	215	TOC	173-203	
EF-6	1145	4			71.13	—	137	TOC	105-135	
EF-8	1150	4			73.48	—	244	TOC	212-242	
H-63	0940	5			135.67	—	172	TOC	140-170	
LW-1	0730	4			146.02	—	233	TOC	203-233	
UW-1	0925	5			105.13	—	140	TOC	103-140	
ML-1	1130	4			43.28	—	157	TOC	137-157	
MW-13	0930	4			93.69	—	206	TOC	80-125	
MW-5	0820	6			153.37	—	197	TOC	165-195	
OW-UT-9	0954	6			122.69	—	142	TOC	118-138	
RL-1	1100	5			115.77	—	124	TOC	104-124	
RL-3	1045	5			169.92	—	183	TOC	163-183	
RL-4	1035	5			156.19	—	178	TOC	137-177	
RL-5	1040	5			151.55	—	186	TOC	150-186	
RL-6	1007	5			15.38	—	20	TOC	7.7-18	
MW-100	0735	4			146.80	—	203	TOC	138-203	
MW-101	0742	4			150.80	—	159	TOC	139-159	
MW-102	0750	4			125.06	—	136	TOC	116-136	
MW-102DB	0755	4			119.89	—	175	TOC	145-175	
MW-103	0947	4			82.63	—	111.5	TOC	81.5-111.5	

Water Level Measurements

Job Number: 1C1-13116 Date: 11-16-13 Client: Montgomery & Assoc.

Site: Rio Algom Mining - Lisbon - UT

Well I.D.	Time	Dia	Depth to NAPL	Thickness of NAPL	Depth to water (DTW)	Total Depth (measured)	Total Depth (historical)	Ref Point (TOC/ TOB)	Screen	Depth top of HS set
MW-104	0900	4			96.30	—	108	TOC	68-98	
MW-105	0935	4			73.24	—	135	TOC	65-135	
MW-106	0845	4			236.85	—	264.5	TOC	234.5-264.5	
MW-107S	1015	4			50.78	—	61.8	TOC	31.8-61.8	
MW-107D	1018	4			50.90	—	81.7	TOC	61.7-81.7	
MW-108	1025	4			26.98	—	169.6	TOC	89.6-169.6	
MW-109	1050	4			135.94	—	155.7	TOC	125.7-155.7	
MW-110	1055	4			141.82	—	142	TOC	102-142	
MW-111	0800	4			119.15	~~119.15~~	125.85	TOC	75.85-125.85	
MW-112	1125	4			45.35	—	141.8	TOC	36.8-141.8	
MW-113	1140	4			68.01	—	104.45	TOC	59.45-104.45	
MW-114	1135	4			57.63	—	199	TOC	49-199	
MW-115S	1150	4			75.34	—	126.9	TOC	61.9-126.9	
MW-115M	1155	4			75.32	—		TOC		
MW-116	1117	4			84.92	—	124	TOC	104-124	
MW-117S	1113	4			82.55	—	126.7	TOC	71.7-126.7	
MW-117M	1109	4			82.97	—	151.4	TOC	126.4-151.4	
MW-118	1010	4			15.49	—	66.4	TOC	11.4-66.4	
MW-119 (#1)	1030	4			70.19	—	74.5	TOC	54.5-74.5	
MW-120 (#5)	0920	4			125.95	—	246.9	TOC	116.9-246.9	

Water Level Measurements

Job Number: K1-13116 Date: 11-16-13 Client: Montgomery & Assoc

Site: Rio Algom Mining - Lisbon - UT

Well I.D.	Time	Dia	Depth to NAPL	Thickness of NAPL	Depth to water (DTW)	Total Depth (measured)	Total Depth (historical)	Ref Point (TOC/ TOB)	Screen	Depth top of HS set
MW-121 (#3)	1113 ~~0970~~	4			Dry +25.95	202.90	201.85	TOC	171.85-201.85	
MW-122 (#6)	0832	4			197.69	197.77	196.75	TOC	156.75-196.75	
B-2 (#2)	—	—	—	—	—	—	—	TOC	—	

ANALYTICAL SUMMARY REPORT

December 02, 2013

Rio Algom Mining Corporation LLC
Hwy 605 and 509
Grants, NM 87020

Workorder No.: C13110895 Quote ID: C3636 - Groundwater

Project Name: Lisbon, UT Facility

Energy Laboratories, Inc. Casper WY received the following 2 samples for Rio Algom Mining Corporation LLC on 11/20/2013 for analysis.

Sample ID	Client Sample ID	Collect Date	Receive Date	Matrix	Test
C13110895-001	6948	11/16/13 12:25	11/20/13	Aqueous	Metals by ICP/ICPMS, Dissolved Alkalinity QA Calculations Conductivity E300.0 Anions pH Solids, Total Dissolved Solids, Total Dissolved - Calculated
C13110895-002	7061	11/16/13 13:55	11/20/13	Aqueous	Same As Above

The results as reported relate only to the item(s) submitted for testing. The analyses presented in this report were performed at Energy Laboratories, Inc., 2393 Salt Creek Hwy., Casper, WY 82601, unless otherwise noted. Radiochemistry analyses were performed at Energy Laboratories, Inc., 2325 Kerzell Lane, Casper, WY 82601, unless otherwise noted. Any exceptions or problems with the analyses are noted in the Laboratory Analytical Report, the QA/QC Summary Report, or the Case Narrative.

If you have any questions regarding these test results, please call.

Report Approved By:

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility
Lab ID: C13110895-001
Client Sample ID: 6948

Report Date: 12/02/13
Collection Date: 11/16/13 12:25
DateReceived: 11/20/13
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Carbonate as CO3	ND	mg/L		5		A2320 B	11/20/13 19:02 / jba
Bicarbonate as HCO3	408	mg/L		5		A2320 B	11/20/13 19:02 / jba
Calcium	223	mg/L		1		E200.7	11/22/13 23:37 / sf
Chloride	231	mg/L		1		E300.0	11/21/13 20:38 / wc
Magnesium	58	mg/L		1		E200.7	11/22/13 23:37 / sf
Potassium	6	mg/L		1		E200.7	11/22/13 23:37 / sf
Sodium	185	mg/L		1		E200.7	11/22/13 23:37 / sf
Sulfate	491	mg/L	D	4		E300.0	11/21/13 20:38 / wc
PHYSICAL PROPERTIES							
Conductivity @ 25 C	2100	umhos/cm		1		A2510 B	11/20/13 14:29 / tmm
pH	7.62	s.u.	H	0.01		A4500-H B	11/20/13 14:29 / tmm
Solids, Total Dissolved TDS @ 180 C	1460	mg/L		20		A2540 C	11/20/13 15:36 / alp
METALS - DISSOLVED							
Arsenic	0.034	mg/L		0.001		E200.8	11/27/13 16:51 / cp
Iron	ND	mg/L		0.03		E200.7	11/22/13 23:37 / sf
Molybdenum	ND	mg/L		0.01		E200.7	11/22/13 23:37 / sf
Selenium	0.012	mg/L		0.001		E200.8	11/27/13 16:51 / cp
Uranium	0.739	mg/L		0.0003		E200.8	11/27/13 16:51 / cp
DATA QUALITY							
A/C Balance (± 5)	0.487	%				A1030 E	11/26/13 08:14 / kbh
Anions	23.9	meq/L				A1030 E	11/26/13 08:14 / kbh
Cations	24.1	meq/L				A1030 E	11/26/13 08:14 / kbh
Solids, Total Dissolved Calculated	1400	mg/L				A1030 E	11/26/13 08:14 / kbh
TDS Balance (0.80 - 1.20)	1.01					A1030 E	11/26/13 08:14 / kbh

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
H - Analysis performed past recommended holding time.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility
Lab ID: C13110895-002
Client Sample ID: 7061

Report Date: 12/02/13
Collection Date: 11/16/13 13:55
DateReceived: 11/20/13
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Carbonate as CO3	ND	mg/L		5		A2320 B	11/20/13 19:12 / jba
Bicarbonate as HCO3	1270	mg/L		5		A2320 B	11/20/13 19:12 / jba
Calcium	558	mg/L		1		E200.7	11/22/13 23:41 / sf
Chloride	725	mg/L	D	20		E300.0	11/21/13 20:53 / wc
Magnesium	201	mg/L		1		E200.7	11/22/13 23:41 / sf
Potassium	22	mg/L		1		E200.7	11/22/13 23:41 / sf
Sodium	2400	mg/L	D	2		E200.7	11/22/13 23:41 / sf
Sulfate	4860	mg/L	D	80		E300.0	11/21/13 20:53 / wc
PHYSICAL PROPERTIES							
Conductivity @ 25 C	10500	umhos/cm		1		A2510 B	11/20/13 14:32 / tmm
pH	7.22	s.u.	H	0.01		A4500-H B	11/20/13 14:32 / tmm
Solids, Total Dissolved TDS @ 180 C	9160	mg/L		100		A2540 C	11/20/13 15:36 / alp
METALS - DISSOLVED							
Arsenic	0.005	mg/L		0.001		E200.8	11/27/13 16:55 / cp
Iron	ND	mg/L		0.03		E200.7	11/22/13 23:41 / sf
Molybdenum	11.0	mg/L	D	0.02		E200.7	11/22/13 23:41 / sf
Selenium	0.077	mg/L		0.001		E200.8	11/27/13 16:55 / cp
Uranium	45	mg/L	D	1		E200.7	11/22/13 23:41 / sf
DATA QUALITY							
A/C Balance (± 5)	1.80	%				A1030 E	11/26/13 08:14 / kbh
Anions	144	meq/L				A1030 E	11/26/13 08:14 / kbh
Cations	149	meq/L				A1030 E	11/26/13 08:14 / kbh
Solids, Total Dissolved Calculated	9500	mg/L				A1030 E	11/26/13 08:14 / kbh
TDS Balance (0.80 - 1.20)	0.960					A1030 E	11/26/13 08:14 / kbh

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
H - Analysis performed past recommended holding time.

QA/QC Summary Report

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC **Report Date:** 12/02/13

Project: Lisbon, UT Facility **Work Order:** C13110895

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: A2320 B										Batch: R181011
Sample ID: MBLK	3	Method Blank				Run: MANTECH_131120A				11/20/13 13:52
Alkalinity, Total as CaCO3		ND	mg/L	2						
Carbonate as CO3		ND	mg/L	1						
Bicarbonate as HCO3		ND	mg/L	1						
Sample ID: LCS_130917		Laboratory Control Sample				Run: MANTECH_131120A				11/20/13 14:06
Alkalinity, Total as CaCO3		261	mg/L	5.0	104	90	110			
Sample ID: C13110805-001ADUP	3	Sample Duplicate				Run: MANTECH_131120A				11/20/13 14:22
Alkalinity, Total as CaCO3		213	mg/L	5.0				0.3	10	
Carbonate as CO3		2.44	mg/L	5.0					10	
Bicarbonate as HCO3		255	mg/L	5.0				0.2	10	
Sample ID: C13110805-002AMS		Sample Matrix Spike				Run: MANTECH_131120A				11/20/13 14:39
Alkalinity, Total as CaCO3		598	mg/L	5.0	106	80	120			

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

QA/QC Summary Report

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC **Report Date:** 12/02/13

Project: Lisbon, UT Facility **Work Order:** C13110895

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: A2510 B									Analytical Run: PHSC_101-C_131120A	
Sample ID: CCV - SC 1413		Continuing Calibration Verification Standard							11/20/13 10:55	
Conductivity @ 25 C		1370	umhos/cm	5.0	97	90	110			
Method: A2510 B									Batch: R180955	
Sample ID: SC 100		Initial Calibration Verification Standard				Run: PHSC_101-C_131120A			11/20/13 08:34	
Conductivity @ 25 C		97.3	umhos/cm	5.0	97	90	110			
Sample ID: SC 2ND 1413		Laboratory Control Sample				Run: PHSC_101-C_131120A			11/20/13 08:52	
Conductivity @ 25 C		1370	umhos/cm	5.0	97	90	110			
Sample ID: MBLK		Method Blank				Run: PHSC_101-C_131120A			11/20/13 09:39	
Conductivity @ 25 C		2	umhos/cm	0.7						
Sample ID: C13110895-002ADUP		Sample Duplicate				Run: PHSC_101-C_131120A			11/20/13 14:35	
Conductivity @ 25 C		10500	umhos/cm	5.0				0.3	10	

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

QA/QC Summary Report

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC **Report Date:** 12/02/13

Project: Lisbon, UT Facility **Work Order:** C13110895

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: A2540 C										Batch: TDS131120A
Sample ID: MB-1_131120A		Method Blank				Run: BAL-19_131120A				11/20/13 15:21
Solids, Total Dissolved TDS @ 180 C		ND	mg/L	10						
Sample ID: LCS-2_131120A		Laboratory Control Sample				Run: BAL-19_131120A				11/20/13 15:22
Solids, Total Dissolved TDS @ 180 C		1970	mg/L	20	98	90	110			
Sample ID: C13110823-003A MS		Sample Matrix Spike				Run: BAL-19_131120A				11/20/13 15:33
Solids, Total Dissolved TDS @ 180 C		2030	mg/L	11	99	90	110			
Sample ID: C13110838-005A DUP		Sample Duplicate				Run: BAL-19_131120A				11/20/13 15:36
Solids, Total Dissolved TDS @ 180 C		742	mg/L	10				1.9	5	

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

QA/QC Summary Report

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC **Report Date:** 12/02/13

Project: Lisbon, UT Facility **Work Order:** C13110895

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: **A4500-H B**									Analytical Run: PHSC_101-C_131120A	
Sample ID: **pH 6.86**	Initial Calibration Verification Standard								11/20/13 08:31	
pH		6.85	s.u.	0.010	100	98	102			
Sample ID: **CCV - pH 7**	Continuing Calibration Verification Standard								11/20/13 10:52	
pH		6.99	s.u.	0.010	100	98	102			
Method: **A4500-H B**									Batch: R180955	
Sample ID: **C13110895-002ADUP**	Sample Duplicate					Run: PHSC_101-C_131120A			11/20/13 14:35	
pH		7.20	s.u.	0.010				0.3	3	

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

QA/QC Summary Report

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC **Report Date:** 12/02/13

Project: Lisbon, UT Facility **Work Order:** C13110895

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E200.7								Analytical Run: ICP2-C_131122A		
Sample ID: ICV	6	Initial Calibration Verification Standard							11/22/13 13:06	
Calcium		50.4	mg/L	0.50	101	95	105			
Iron		5.13	mg/L	0.030	103	95	105			
Magnesium		50.2	mg/L	0.50	100	95	105			
Molybdenum		1.00	mg/L	0.10	100	95	105			
Sodium		52.2	mg/L	0.50	104	95	105			
Uranium		5.19	mg/L	1.0	104	95	105			
Sample ID: ICV		Initial Calibration Verification Standard							11/22/13 13:19	
Potassium		50.6	mg/L	0.50	101	95	105			
Sample ID: ICSA	7	Interference Check Sample A							11/22/13 13:48	
Calcium		504	mg/L	0.50	101	80	120			
Iron		191	mg/L	0.030	95	80	120			
Magnesium		515	mg/L	0.50	103	80	120			
Molybdenum		-0.0193	mg/L	0.10						
Potassium		-0.00600	mg/L	0.50						
Sodium		0.156	mg/L	0.50						
Uranium		0.0845	mg/L	1.0						
Sample ID: ICSAB	7	Interference Check Sample AB							11/22/13 13:52	
Calcium		515	mg/L	0.50	103	80	120			
Iron		192	mg/L	0.030	96	80	120			
Magnesium		511	mg/L	0.50	102	80	120			
Molybdenum		-0.0222	mg/L	0.10						
Potassium		-0.00720	mg/L	0.50						
Sodium		0.249	mg/L	0.50						
Uranium		0.0910	mg/L	1.0						
Method: E200.7									Batch: R181147	
Sample ID: MB-131122A	7	Method Blank				Run: ICP2-C_131122A			11/22/13 14:16	
Calcium		ND	mg/L	0.06						
Iron		ND	mg/L	0.001						
Magnesium		ND	mg/L	0.03						
Molybdenum		ND	mg/L	0.004						
Potassium		ND	mg/L	0.06						
Sodium		ND	mg/L	0.3						
Uranium		ND	mg/L	0.3						
Sample ID: LFB-131122A	7	Laboratory Fortified Blank				Run: ICP2-C_131122A			11/22/13 14:20	
Calcium		49.1	mg/L	0.50	98	85	115			
Iron		0.985	mg/L	0.030	99	85	115			
Magnesium		49.6	mg/L	0.50	99	85	115			
Molybdenum		0.963	mg/L	0.10	96	85	115			
Potassium		50.0	mg/L	2.7	100	85	115			
Sodium		49.1	mg/L	0.50	98	85	115			
Uranium		4.82	mg/L	1.0	96	85	115			

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

QA/QC Summary Report

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC **Report Date:** 12/02/13

Project: Lisbon, UT Facility **Work Order:** C13110895

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E200.7										Batch: R181147
Sample ID: LFB-131122A	7	Laboratory Fortified Blank				Run: ICP2-C_131122A				11/22/13 14:20
Sample ID: C13110879-011BMS2	7	Sample Matrix Spike				Run: ICP2-C_131122A				11/22/13 23:17
Calcium		122	mg/L	1.0	97	70	130			
Iron		2.09	mg/L	0.030	100	70	130			
Magnesium		104	mg/L	1.0	97	70	130			
Molybdenum		1.89	mg/L	0.0072	93	70	130			
Potassium		95.8	mg/L	1.0	92	70	130			
Sodium		110	mg/L	1.0	101	70	130			
Uranium		10.1	mg/L	0.53	99	70	130			
Sample ID: C13110879-011BMSD2	7	Sample Matrix Spike Duplicate				Run: ICP2-C_131122A				11/22/13 23:21
Calcium		120	mg/L	1.0	96	70	130	1.3	20	
Iron		2.10	mg/L	0.030	100	70	130	0.3	20	
Magnesium		106	mg/L	1.0	99	70	130	1.9	20	
Molybdenum		1.92	mg/L	0.0072	94	70	130	1.7	20	
Potassium		95.4	mg/L	1.0	92	70	130	0.4	20	
Sodium		112	mg/L	1.0	102	70	130	1.1	20	
Uranium		10.0	mg/L	0.53	98	70	130	0.5	20	

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

QA/QC Summary Report

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC **Report Date:** 12/02/13

Project: Lisbon, UT Facility **Work Order:** C13110895

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E200.8									Analytical Run: ICPMS4-C_131127A	
Sample ID: ICV	3	Initial Calibration Verification Standard							11/27/13 13:20	
Arsenic		0.0507	mg/L	0.0010	101	90	110			
Selenium		0.0498	mg/L	0.0010	100	90	110			
Uranium		0.0497	mg/L	0.00030	99	90	110			
Method: E200.8									Batch: R181321	
Sample ID: LRB	3	Method Blank				Run: ICPMS4-C_131127A			11/27/13 14:21	
Arsenic		ND	mg/L	5E-05						
Selenium		ND	mg/L	7E-05						
Uranium		ND	mg/L	9E-06						
Sample ID: LFB	3	Laboratory Fortified Blank				Run: ICPMS4-C_131127A			11/27/13 14:26	
Arsenic		0.0528	mg/L	0.0010	106	85	115			
Selenium		0.0524	mg/L	0.0010	105	85	115			
Uranium		0.0525	mg/L	0.00030	105	85	115			
Sample ID: C13110305-001CMS4	3	Sample Matrix Spike				Run: ICPMS4-C_131127A			11/27/13 17:17	
Arsenic		0.0537	mg/L	0.0010	107	70	130			
Selenium		0.0558	mg/L	0.0010	111	70	130			
Uranium		0.0574	mg/L	0.00030	108	70	130			
Sample ID: C13110305-001CMSD4	3	Sample Matrix Spike Duplicate				Run: ICPMS4-C_131127A			11/27/13 17:21	
Arsenic		0.0534	mg/L	0.0010	106	70	130	0.4	20	
Selenium		0.0554	mg/L	0.0010	110	70	130	0.7	20	
Uranium		0.0576	mg/L	0.00030	108	70	130	0.3	20	

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

QA/QC Summary Report

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC **Report Date:** 12/02/13

Project: Lisbon, UT Facility **Work Order:** C13110895

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E300.0									Analytical Run: IC1-C_131120A	
Sample ID: CCV-112013-04	2	Continuing Calibration Verification Standard							11/21/13 02:37	
Chloride		10.5	mg/L	1.0	105	90	110			
Sulfate		40.1	mg/L	1.0	100	90	110			
Sample ID: CCV-112013-08	2	Continuing Calibration Verification Standard							11/21/13 19:05	
Chloride		10.3	mg/L	1.0	103	90	110			
Sulfate		39.8	mg/L	1.0	99	90	110			
Method: E300.0									Batch: R181077	
Sample ID: ICB-112013	2	Method Blank				Run: IC1-C_131120A			11/20/13 15:03	
Chloride		ND	mg/L	0.07						
Sulfate		0.1	mg/L	0.08						
Sample ID: LFB-112013-01	2	Laboratory Fortified Blank				Run: IC1-C_131120A			11/20/13 15:34	
Chloride		10.6	mg/L	1.0	106	90	110			
Sulfate		41.0	mg/L	1.0	102	90	110			
Sample ID: LFBD-112013-01	2	Laboratory Fortified Blank Duplicate				Run: IC1-C_131120A			11/20/13 15:50	
Chloride		10.6	mg/L	1.0	106	90	110	0.1	20	
Sulfate		41.2	mg/L	1.0	103	90	110	0.5	20	
Sample ID: C13110826-002AMS	2	Sample Matrix Spike				Run: IC1-C_131120A			11/21/13 11:52	
Chloride		66.3	mg/L	1.0	107	90	110			
Sulfate		721	mg/L	4.2	97	90	110			
Sample ID: C13110826-002AMSD	2	Sample Matrix Spike Duplicate				Run: IC1-C_131120A			11/21/13 12:08	
Chloride		65.7	mg/L	1.0	105	90	110	1.0	20	
Sulfate		721	mg/L	4.2	98	90	110	0.0	20	

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

Workorder Receipt Checklist

Rio Algom Mining Corporation LLC C13110895

Login completed by: Kerri Schroeder
Date Received: 11/20/2013
Reviewed by: BL2000\khelm
Received by: dw
Reviewed Date: 11/22/2013
Carrier name: NDA

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on all shipping container(s)/cooler(s)?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on all sample bottles?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time? (Exclude analyses that are considered field parameters such as pH, DO, Res Cl, Sulfite, Ferrous Iron, etc.)	Yes ☑	No ☐	
Temp Blank received in all shipping container(s)/cooler(s)?	Yes ☑	No ☐	Not Applicable ☐
Container/Temp Blank temperature:	1.4°C On Ice		
Water - VOA vials have zero headspace?	Yes ☐	No ☐	No VOA vials submitted ☑
Water - pH acceptable upon receipt?	Yes ☑	No ☐	Not Applicable ☐

Standard Reporting Procedures:

Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH, Dissolved Oxygen and Residual Chlorine, are qualified as being analyzed outside of recommended holding time.

Solid/soil samples are reported on a wet weight basis (as received) unless specifically indicated. If moisture corrected, data units are typically noted as –dry. For agricultural and mining soil parameters/characteristics, all samples are dried and ground prior to sample analysis.

Contact and Corrective Action Comments:

None

Chain of Custody and Analytical Request Record

Page 1 of 1

PLEASE PRINT- Provide as much information as possible.

Company Name: Rio Algom Mining Corp	Project Name, PWS, Permit, Etc.: Lisbon, UT Facility	Sample Origin State: UT	EPA/State Compliance: Yes ☐ No ☐
Report Mail Address: Montgomery and Associates Results retrieved from Energy Source	Contact Name: John Laney Phone/Fax: (520) 425-2219 Email: jlaney@clmontgomery.com		Sampler: (Please Print) J. Kevins
Invoice Address: Email invoice to Gail PO Box 218 Grants, NM 87020	Invoice Contact & Phone: Gail Alexander (505) 287-8851	Purchase Order:	Quote/Bottle Order: C3636

Special Report/Formats – ELI must be notified prior to sample submittal for the following:

- ☐ DW
- ☐ GSA
- ☐ POTW/WWTP
- ☐ State: _____
- ☐ Other: _____
- ☐ A2LA
- ☐ EDD/EDT (Electronic Data) Format: _____
- ☐ LEVEL IV
- ☐ NELAC

Number of Containers
Sample Type: A W S V B O
Air Water Soils/Solids Vegetation Bioassay Other

ANALYSIS REQUESTED

SEE ATTACHED

Normal Turnaround (TAT)

RUSH

Contact ELI prior to **RUSH** sample submittal for charges and scheduling – See Instruction Page

Comments: Metals filtered & preserved in field

Shipped by: Fedex E

Cooler ID(s): 3252

Receipt Temp: 1.4 °C

On Ice: Yes No

Custody Seal: Y N
Intact: Y N
Signature Match: Y N

	SAMPLE IDENTIFICATION (Name, Location, Interval, etc.)	Collection Date	Collection Time	MATRIX	C3636
1	6948	16NOV2013	1225	W	X
2	7061	16NOV2013	1355	W	X
3					
4					
5					
6					
7					
8					
9					
10					

KLS

~~C13110838~~

C13110898

LABORATORY USE ONLY

Custody Record MUST be Signed

Relinquished by (print): J. Kevins	Date/Time: 19NOV 2013	Signature:	Received by (print):	Date/Time:	Signature:
Relinquished by (print):	Date/Time:	Signature:	Received by (print):	Date/Time:	Signature:
			Received by Laboratory:	Date/Time: 11-20-13	Signature: 1200

Sample Disposal: Return to Client: _____ Lab Disposal: _____

In certain circumstances, samples submitted to Energy Laboratories, Inc. may be subcontracted to other certified laboratories in order to complete the analysis requested.
This serves as notice of this possibility. All sub-contract data will be clearly notated on your analytical report.
Visit our web site at www.energylab.com for additional information, downloadable fee schedule, forms, and links.

Site: MBPP - Rio Algom Mining	Client: Montgomery	Date: 12/14/13

Equipment Calibration Log

Equipment make/ model	Equipment ID/ serial number	Date	Time	Calibration Standards	Equipment Reading	Equipment Calibrated	Temp (°C / °F)	Tech init.	Comments
YSI Pro Series	#1	12/14/13		pH 4.0/7.0/10.0	4.0/7.0/10.0	✓	20	JK	
YSI Pro Series	#1	12/14/13		Conductivity 1413	1413	✓	21	JK	
YSI Pro Series	#1	12/14/13		D.O. 100%	98%	✓	—	JK	
YSI Pro Series	#1	12/14/13		ORP 237.5	237.5	✓	20	JK	

Job#: 1350.15	**Sampler:** J Kerns	**Client:** Montgomery & Associates
Well ID: RL-1	**Date** (DDOct2012): 14DEC2013	**Site:** Rio Algom Mining, Lisbon, UT
Weather Conditions: VERY COLD	**Sampler Signature:**	
Well diam: 1/4" 1" 2" 3" 4" 6" Other: 5"	**DTW:** 116.08	**Total Depth:** 125
Purge equip: ES - diam: Bladder Peri Waterra Positive Air Displacement Ext. System		
disp bailer teflon bailer other:	**Tubing:** OD: New Dedicated NA	
Purge method: 3-5 Case Volume Micro/Low-Flow Extraction Other:		
Pump depth/ intake: 120	**Multipliers:** 1"= 0.04 2"= 0.16 3"= 0.37 4"= 0.65 5"=1.02 6"= 1.47 Radius^2 X 0.163	

(TD - DTW X Multiplier = 1 Volume	80% Recovery (TD - DTW X 0.20 + DTW)
1 Volume = ____ X ____ = ____ (Total Purge)	80%= ____

Time	Temp (°C / °F)	pH	SP Cond (mS / µS)	Turbidity (NTU)	Purge Rate (gal or mL/ min)	Volume Removed (gal / L)	DO (mg/l)	ORP (mv)	DTW	Notes
1255	8.5	6.9	10510	3.53	200	1.0	7.61	127	116.22	
1258	8.4	7.2	11390	3.41	200	1.6	6.83	89	116.22	
1301	8.5	7.2	11440	2.99	200	2.2	5.41	76	116.22	
1304	8.6	7.2	11460	3.00	200	2.8	4.80	75	116.22	
1307	8.5	7.2	11460	3.01	200	3.4	4.60	70	116.22	
1310	8.7	7.1	11440	2.86	200	4.0	4.34	65	116.22	

Did well dewater? YES NO	Total volume removed: 4.0 (gal / L)	
Sample method: Disp Bailer Hydrasleeve New Tubing Ext. Port Other: Dedicated TUBING		
Sample date: 14DEC2013	Sample time: 1310	DTW at sample: 116.22
Sample ID: 7067	Lab: Energy Labs	Number of bottles: 2
Analysis: 500 ml NP poly - Alkalinity, Cl, SO4, TDS, EC, pH 250 ml HNO3 poly *field filtered - Dissolved Metals		

Equipment blank ID @	Field blank ID @	
Duplicate ID:	Pre-purge DO:	Post purge DO:
Fe^{2+}:	Pre-purge ORP:	Post purge ORP:
NAPL depth:	Volume of NAPL:	Volume removed: ml

Job#: 1350.15	**Sampler:** J Kerns	**Client:** Montgomery & Associates
Well ID: EF-8	**Date** (DDOct2012): 14DEC2013	**Site:** Rio Algom Mining, Lisbon, UT
Weather Conditions: VERY COLD	**Sampler Signature:**	
Well diam: 1/4" 1" 2" 3" (4") 6" Other:	**DTW:** 74.01	**Total Depth:** 244
Purge equip: ES - diam: (Bladder) Peri Waterra Positive Air Displacement Ext. System		
disp bailer teflon bailer other:	**Tubing:** OD: New (Dedicated) NA	
Purge method: 3-5 Case Volume (Micro/Low-Flow) Extraction Other:		
Pump depth/ intake: 227	**Multipliers:** 1"= 0.04 2"= 0.16 3"= 0.37 4"= 0.65 5"=1.02 6"= 1.47 Radius² X 0.163	

(TD - DTW X Multiplier = 1 Volume	80% Recovery (TD - DTW X 0.20 + DTW)

1 Volume = — X — = — (Total Purge) 80%= —

Time	Temp (°C / °F)	pH	SP Cond (mS / µS)	Turbidity (NTU)	Purge Rate (gal or mL/ min)	Volume Removed (gal / L)	DO (mg/l)	ORP (mv)	DTW	Notes
1045	9.0	7.41	2208	29	200	1.0	8.97	132.5	74.18	
1048	9.0	7.60	2211	26	200	1.6	7.73	132.1	74.18	
1051	9.3	7.55	2190	24.9	200	2.2	6.64	132.7	74.18	
1054	9.2	7.56	2227	22.2	200	2.8	6.96	132.4	74.18	
1057	9.2	7.56	2218	20.3	200	3.4	6.82	132.0	74.18	
1100	9.2	7.50	2224	20.2	200	4.0	6.98	131.6	74.18	

Did well dewater? YES (NO)	Total volume removed: 4.0 (gal / (L))	
Sample method: Disp Bailer Hydrasleeve New Tubing Ext. Port Other: Dedicated Tubing		
Sample date: 14DEC2013	Sample time: 1105 / 1105	DTW at sample: 74.18
Sample ID: 7064 / 7065	Lab: Energy Labs	Number of bottles: 2 +2
Analysis: 500 ml NP poly - Alkalinity, Cl, SO4, TDS, EC, pH 250 ml HNO3 poly *field filtered - Dissolved Metals		

Equipment blank ID @	Field blank ID @	
Duplicate ID:	Pre-purge DO:	Post purge DO:
$Fe2^{+}$:	Pre-purge ORP:	Post purge ORP:
NAPL depth:	Volume of NAPL:	Volume removed: ml

Job#: 1350.15	**Sampler:** J Kerns	**Client:** Montgomery & Associates
Well ID: OW-UT-9	**Date** (DDOct2012): 14DEC2013	**Site:** Rio Algom Mining, Lisbon, UT
Weather Conditions: VERY COLD	**Sampler Signature:**	
Well diam: 1/4" 1" 2" 3" 4" (6") Other:	**DTW:** 122.93	**Total Depth:** 142
Purge equip: ES - diam: (Bladder) Peri Waterra Positive Air Displacement Ext. System		
disp bailer teflon bailer other:	**Tubing:** OD: (New) Dedicated NA	
Purge method: 3-5 Case Volume (Micro/Low-Flow) Extraction Other:		
Pump depth/ intake: 128	**Multipliers:** 1"= 0.04 2"= 0.16 3"= 0.37 4"= 0.65 5"=1.02 6"= 1.47 Radius^2 X 0.163	

(TD - DTW X Multiplier = 1 Volume	80% Recovery (TD - DTW X 0.20 + DTW)
1 Volume = — X — = — (Total Purge)	80%= —

Time	Temp (°C / °F)	pH	SP Cond (mS / µS)	Turbidity (NTU)	Purge Rate (gal or mL / min)	Volume Removed (gal / L)	DO (mg/l)	ORP (mv)	DTW	Notes
1200	6.5	9.8	38049	72	200	1.0	6.67	101.3	122.95	
1203	7.8	9.8	39865	69	200	1.6	3.48	92.6	122.97	
1206	8.3	9.8	40377	65	200	2.2	2.07	88.2	122.97	
1209	7.6	9.8	41109	61	200	2.8	1.75	86.6	122.97	
12112	7.0	9.8	41116	58	200	3.4	1.52	84.0	122.97	
1215	6.9	9.8	40861	57	200	4.0	1.44	82.8	122.97	
	*Additional preservative added to metals sample									

Did well dewater? YES (NO)	Total volume removed: 4.0	(gal / L)
Sample method: Disp Bailer Hydrasleeve (New Tubing) Ext. Port Other:		
Sample date: 14DEC2013	Sample time: 1220	DTW at sample: 122.97
Sample ID: 706p	Lab: Energy Labs	Number of bottles: 2
Analysis: 500 ml NP poly - Alkalinity, Cl, SO4, TDS, EC, pH	250 ml HNO3 poly *field filtered - Dissolved Metals	

Equipment blank ID @	Field blank ID @	
Duplicate ID:	Pre-purge DO:	Post purge DO:
$Fe2^{+}$:	Pre-purge ORP:	Post purge ORP:
NAPL depth:	Volume of NAPL:	Volume removed: ml

ANALYTICAL SUMMARY REPORT

December 30, 2013

Rio Algom Mining Corporation LLC
Hwy 605 and 509
Grants, NM 87020

Workorder No.: C13120630 Quote ID: C3636 - Groundwater

Project Name: Lisbon, UT Facility

Energy Laboratories, Inc. Casper WY received the following 3 samples for Rio Algom Mining Corporation LLC on 12/18/2013 for analysis.

Sample ID	Client Sample ID	Collect Date	Receive Date	Matrix	Test
C13120630-001	7067	12/14/13 13:10	12/18/13	Aqueous	Metals by ICP/ICPMS, Dissolved Alkalinity QA Calculations Conductivity E300.0 Anions pH Solids, Total Dissolved Solids, Total Dissolved - Calculated
C13120630-002	7064	12/14/13 11:05	12/18/13	Aqueous	Same As Above
C13120630-003	7066	12/14/13 12:20	12/18/13	Aqueous	Same As Above

The results as reported relate only to the item(s) submitted for testing. The analyses presented in this report were performed at Energy Laboratories, Inc., 2393 Salt Creek Hwy., Casper, WY 82601, unless otherwise noted. Radiochemistry analyses were performed at Energy Laboratories, Inc., 2325 Kerzell Lane, Casper, WY 82601, unless otherwise noted. Any exceptions or problems with the analyses are noted in the Laboratory Analytical Report, the QA/QC Summary Report, or the Case Narrative.

If you have any questions regarding these test results, please call.

Report Approved By:

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility
Lab ID: C13120630-001
Client Sample ID: 7067

Report Date: 12/30/13
Collection Date: 12/14/13 13:10
DateReceived: 12/18/13
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Carbonate as CO3	ND	mg/L		5		A2320 B	12/18/13 17:36 / jba
Bicarbonate as HCO3	1270	mg/L		5		A2320 B	12/18/13 17:36 / jba
Calcium	586	mg/L		1		E200.8	12/21/13 04:24 / cp
Chloride	674	mg/L	D	10		E300.0	12/19/13 18:35 / wc
Magnesium	201	mg/L		1		E200.8	12/21/13 04:24 / cp
Potassium	21	mg/L		1		E200.8	12/21/13 04:24 / cp
Sodium	2400	mg/L	D	3		E200.7	12/23/13 13:53 / sf
Sulfate	4640	mg/L	D	40		E300.0	12/19/13 18:35 / wc
PHYSICAL PROPERTIES							
Conductivity @ 25 C	10600	umhos/cm		1		A2510 B	12/19/13 09:56 / alp
pH	7.20	s.u.	H	0.01		A4500-H B	12/19/13 09:56 / alp
Solids, Total Dissolved TDS @ 180 C	9430	mg/L		100		A2540 C	12/19/13 15:54 / alp
METALS - DISSOLVED							
Arsenic	0.005	mg/L		0.001		E200.8	12/21/13 04:24 / cp
Iron	ND	mg/L		0.03		E200.8	12/21/13 04:24 / cp
Molybdenum	12.1	mg/L		0.01		E200.8	12/21/13 04:24 / cp
Selenium	0.072	mg/L		0.001		E200.8	12/21/13 04:24 / cp
Uranium	48.5	mg/L		0.0003		E200.8	12/21/13 04:24 / cp
DATA QUALITY							
A/C Balance (± 5)	4.30	%				A1030 E	12/27/13 15:53 / kbh
Anions	138	meq/L				A1030 E	12/27/13 15:53 / kbh
Cations	151	meq/L				A1030 E	12/27/13 15:53 / kbh
Solids, Total Dissolved Calculated	9300	mg/L				A1030 E	12/27/13 15:53 / kbh
TDS Balance (0.80 - 1.20)	1.02					A1030 E	12/27/13 15:53 / kbh

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
H - Analysis performed past recommended holding time.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility
Lab ID: C13120630-002
Client Sample ID: 7064

Report Date: 12/30/13
Collection Date: 12/14/13 11:05
DateReceived: 12/18/13
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Carbonate as CO3	ND	mg/L		5		A2320 B	12/18/13 17:44 / jba
Bicarbonate as HCO3	409	mg/L		5		A2320 B	12/18/13 17:44 / jba
Calcium	228	mg/L		1		E200.8	12/21/13 04:29 / cp
Chloride	218	mg/L		1		E300.0	12/19/13 18:53 / wc
Magnesium	56	mg/L		1		E200.8	12/21/13 04:29 / cp
Potassium	6	mg/L		1		E200.8	12/21/13 04:29 / cp
Sodium	166	mg/L		1		E200.8	12/21/13 04:29 / cp
Sulfate	490	mg/L	D	4		E300.0	12/19/13 18:53 / wc
PHYSICAL PROPERTIES							
Conductivity @ 25 C	2110	umhos/cm		1		A2510 B	12/19/13 09:59 / alp
pH	7.62	s.u.	H	0.01		A4500-H B	12/19/13 09:59 / alp
Solids, Total Dissolved TDS @ 180 C	1470	mg/L		20		A2540 C	12/19/13 15:54 / alp
METALS - DISSOLVED							
Arsenic	0.033	mg/L		0.001		E200.8	12/21/13 04:29 / cp
Iron	ND	mg/L		0.03		E200.8	12/21/13 04:29 / cp
Molybdenum	0.02	mg/L		0.01		E200.8	12/21/13 04:29 / cp
Selenium	0.012	mg/L		0.001		E200.8	12/21/13 04:29 / cp
Uranium	0.762	mg/L		0.0003		E200.8	12/21/13 04:29 / cp
DATA QUALITY							
A/C Balance (± 5)	-0.389	%				A1030 E	12/24/13 07:14 / kbh
Anions	23.5	meq/L				A1030 E	12/24/13 07:14 / kbh
Cations	23.4	meq/L				A1030 E	12/24/13 07:14 / kbh
Solids, Total Dissolved Calculated	1400	mg/L				A1030 E	12/24/13 07:14 / kbh
TDS Balance (0.80 - 1.20)	1.05					A1030 E	12/24/13 07:14 / kbh

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
H - Analysis performed past recommended holding time.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility
Lab ID: C13120630-003
Client Sample ID: 7066

Report Date: 12/30/13
Collection Date: 12/14/13 12:20
DateReceived: 12/18/13
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Carbonate as CO3	6120	mg/L		5		A2320 B	12/19/13 08:23 / jba
Bicarbonate as HCO3	8530	mg/L		5		A2320 B	12/19/13 08:23 / jba
Calcium	4	mg/L		1		E200.8	12/21/13 04:33 / cp
Chloride	1410	mg/L	D	40		E300.0	12/19/13 19:12 / wc
Magnesium	21	mg/L		1		E200.8	12/21/13 04:33 / cp
Potassium	19	mg/L		1		E200.8	12/21/13 04:33 / cp
Sodium	14400	mg/L	D	20		E200.7	12/23/13 13:57 / sf
Sulfate	10700	mg/L	D	200		E300.0	12/19/13 19:12 / wc
PHYSICAL PROPERTIES							
Conductivity @ 25 C	37800	umhos/cm		1		A2510 B	12/19/13 10:02 / alp
pH	9.52	s.u.	H	0.01		A4500-H B	12/19/13 10:02 / alp
Solids, Total Dissolved TDS @ 180 C	37300	mg/L		500		A2540 C	12/19/13 15:55 / alp
METALS - DISSOLVED							
Arsenic	2.82	mg/L		0.001		E200.8	12/21/13 04:33 / cp
Iron	0.05	mg/L		0.03		E200.8	12/21/13 04:33 / cp
Molybdenum	51.8	mg/L		0.01		E200.8	12/21/13 04:33 / cp
Selenium	0.072	mg/L		0.001		E200.8	12/21/13 04:33 / cp
Uranium	98.8	mg/L		0.0003		E200.8	12/21/13 04:33 / cp
DATA QUALITY							
A/C Balance (± 5)	1.70	%				A1030 E	12/27/13 15:53 / kbh
Anions	609	meq/L				A1030 E	12/27/13 15:53 / kbh
Cations	630	meq/L				A1030 E	12/27/13 15:53 / kbh
Solids, Total Dissolved Calculated	37000	mg/L				A1030 E	12/27/13 15:53 / kbh
TDS Balance (0.80 - 1.20)	1.01					A1030 E	12/27/13 15:53 / kbh

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
H - Analysis performed past recommended holding time.

QA/QC Summary Report

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC **Report Date:** 12/30/13

Project: Lisbon, UT Facility **Work Order:** C13120630

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: A2320 B										Batch: R181842
Sample ID: MBLK	3	Method Blank				Run: MANTECH_131218A				12/18/13 14:56
Alkalinity, Total as CaCO3		ND	mg/L	2						
Carbonate as CO3		ND	mg/L	1						
Bicarbonate as HCO3		ND	mg/L	1						
Sample ID: LCS_130917		Laboratory Control Sample				Run: MANTECH_131218A				12/18/13 15:12
Alkalinity, Total as CaCO3		260	mg/L	5.0	104	90	110			
Sample ID: C13120595-001ADUP	3	Sample Duplicate				Run: MANTECH_131218A				12/18/13 15:42
Alkalinity, Total as CaCO3		1430	mg/L	5.0				0.3	10	
Carbonate as CO3		ND	mg/L	5.0					10	
Bicarbonate as HCO3		1740	mg/L	5.0				0.3	10	
Sample ID: C13120596-001AMS		Sample Matrix Spike				Run: MANTECH_131218A				12/18/13 15:56
Alkalinity, Total as CaCO3		281	mg/L	5.0	98	80	120			
Method: A2320 B										Batch: 131219_1_ALK-W
Sample ID: MBLK1_131219_	3	Method Blank				Run: TTR-ALK_131219A				12/19/13 08:12
Alkalinity, Total as CaCO3		1	mg/L	1						
Carbonate as CO3		ND	mg/L	1						
Bicarbonate as HCO3		2	mg/L	1						
Sample ID: LCS_130917		Laboratory Control Sample				Run: TTR-ALK_131219A				12/19/13 08:19
Alkalinity, Total as CaCO3		1220	mg/L	5.0	98	90	110			
Sample ID: C13120630-003ADUP	3	Sample Duplicate				Run: TTR-ALK_131219A				12/19/13 08:27
Alkalinity, Total as CaCO3		17100	mg/L	5.0				0.6	10	
Carbonate as CO3		6180	mg/L	5.0				1.0	10	
Bicarbonate as HCO3		8290	mg/L	5.0				2.9	10	
Sample ID: C13120630-003AMS		Sample Matrix Spike				Run: TTR-ALK_131219A				12/19/13 08:34
Alkalinity, Total as CaCO3		19700	mg/L	5.0	100	80	120			

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

QA/QC Summary Report

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC **Report Date:** 12/30/13

Project: Lisbon, UT Facility **Work Order:** C13120630

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: A2510 B										Batch: R181856
Sample ID: SC 100		Initial Calibration Verification Standard				Run: PHSC_101-C_131219A				12/19/13 08:58
Conductivity @ 25 C		98.5	umhos/cm	5.0	99	90	110			
Sample ID: SC 2ND 1413		Laboratory Control Sample				Run: PHSC_101-C_131219A				12/19/13 09:12
Conductivity @ 25 C		1370	umhos/cm	5.0	97	90	110			
Sample ID: MBLK		Method Blank				Run: PHSC_101-C_131219A				12/19/13 09:50
Conductivity @ 25 C		2	umhos/cm	0.7						
Sample ID: C13120645-004ADUP		Sample Duplicate				Run: PHSC_101-C_131219A				12/19/13 10:23
Conductivity @ 25 C		2630	umhos/cm	5.0				0.1	10	

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

QA/QC Summary Report

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC **Report Date:** 12/30/13

Project: Lisbon, UT Facility **Work Order:** C13120630

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: A2540 C										Batch: TDS131219A
Sample ID: MB-1_131219A	Method Blank					Run: BAL-19_131219A				12/19/13 15:52
Solids, Total Dissolved TDS @ 180 C		ND	mg/L	10						
Sample ID: LCS-2_131219A	Laboratory Control Sample					Run: BAL-19_131219A				12/19/13 15:53
Solids, Total Dissolved TDS @ 180 C		1970	mg/L	20	99	90	110			
Sample ID: C13120624-001A DUP	Sample Duplicate					Run: BAL-19_131219A				12/19/13 15:53
Solids, Total Dissolved TDS @ 180 C		249	mg/L	10				1.2	5	
Sample ID: C13120626-001A MS	Sample Matrix Spike					Run: BAL-19_131219A				12/19/13 15:54
Solids, Total Dissolved TDS @ 180 C		6950	mg/L	40	101	90	110			

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

QA/QC Summary Report

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC **Report Date:** 12/30/13

Project: Lisbon, UT Facility **Work Order:** C13120630

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: **A4500-H B**									Analytical Run: PHSC_101-C_131219A	
Sample ID: **pH 6.86**		Initial Calibration Verification Standard							12/19/13 08:55	
pH		6.85	s.u.	0.010	100	98	102			
Method: **A4500-H B**									Batch: R181856	
Sample ID: **C13120645-004ADUP**		Sample Duplicate				Run: PHSC_101-C_131219A			12/19/13 10:23	
pH		7.09	s.u.	0.010				0.0	3	

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

QA/QC Summary Report

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC **Report Date:** 12/30/13

Project: Lisbon, UT Facility **Work Order:** C13120630

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E200.7									Analytical Run: ICP2-C_131223A	
Sample ID: ICV	Initial Calibration Verification Standard								12/23/13 11:51	
Sodium		51.4	mg/L	0.50	103	95	105			
Sample ID: ICSA	Interference Check Sample A								12/23/13 12:40	
Sodium		0.535	mg/L	0.50						
Sample ID: ICSAB	Interference Check Sample AB								12/23/13 12:44	
Sodium		0.724	mg/L	0.50						
Method: E200.7									Batch: R181984	
Sample ID: MB-131223A	Method Blank					Run: ICP2-C_131223A			12/23/13 13:09	
Sodium		0.6	mg/L	0.3						
Sample ID: LFB-131223A	Laboratory Fortified Blank					Run: ICP2-C_131223A			12/23/13 13:13	
Sodium		48.0	mg/L	0.50	95	85	115			
Sample ID: C13120639-003BMS2	Sample Matrix Spike					Run: ICP2-C_131223A			12/23/13 14:29	
Sodium		1690	mg/L	1.6		70	130			A
Sample ID: C13120639-003BMSD2	Sample Matrix Spike Duplicate					Run: ICP2-C_131223A			12/23/13 14:33	
Sodium		1720	mg/L	1.6		70	130	1.7	20	A

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

A - The analyte level was greater than four times the spike level. In accordance with the method % recovery is not calculated.

QA/QC Summary Report

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC **Report Date:** 12/30/13

Project: Lisbon, UT Facility **Work Order:** C13120630

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E200.8									Analytical Run: ICPMS4-C_131220A	
Sample ID: ICV	9	Initial Calibration Verification Standard							12/20/13 12:35	
Arsenic		0.0504	mg/L	0.0010	101	90	110			
Calcium		9.74	mg/L	0.0066	97	90	110			
Iron		0.988	mg/L	0.0010	99	90	110			
Magnesium		9.73	mg/L	0.0027	97	90	110			
Molybdenum		0.0483	mg/L	0.0010	97	90	110			
Potassium		9.81	mg/L	0.0041	98	90	110			
Selenium		0.0513	mg/L	0.0010	103	90	110			
Sodium		9.74	mg/L	0.0043	97	90	110			
Uranium		0.0496	mg/L	0.00030	99	90	110			
Method: E200.8									Batch: R181937	
Sample ID: LRB	9	Method Blank				Run: ICPMS4-C_131220A			12/20/13 13:35	
Arsenic		ND	mg/L	5E-05						
Calcium		ND	mg/L	0.007						
Iron		ND	mg/L	0.0006						
Magnesium		ND	mg/L	0.003						
Molybdenum		5E-05	mg/L	3E-05						
Potassium		ND	mg/L	0.004						
Selenium		ND	mg/L	7E-05						
Sodium		ND	mg/L	0.004						
Uranium		ND	mg/L	9E-06						
Sample ID: LFB	9	Laboratory Fortified Blank				Run: ICPMS4-C_131220A			12/20/13 13:39	
Arsenic		0.0506	mg/L	0.0010	101	85	115			
Calcium		12.7	mg/L	0.0066	101	85	115			
Iron		1.27	mg/L	0.0010	102	85	115			
Magnesium		13.0	mg/L	0.0027	104	85	115			
Molybdenum		0.0520	mg/L	0.0010	104	85	115			
Potassium		12.5	mg/L	0.0041	100	85	115			
Selenium		0.0516	mg/L	0.0010	103	85	115			
Sodium		12.8	mg/L	0.0043	102	85	115			
Uranium		0.0526	mg/L	0.00030	105	85	115			
Sample ID: C13120626-001BMS4	9	Sample Matrix Spike				Run: ICPMS4-C_131220A			12/21/13 05:12	
Arsenic		0.262	mg/L	0.0010	104	70	130			
Calcium		372	mg/L	1.0		70	130			A
Iron		5.91	mg/L	0.030	94	70	130			
Magnesium		142	mg/L	1.0	91	70	130			
Molybdenum		2.43	mg/L	0.0010		70	130			A
Potassium		69.0	mg/L	1.0	101	70	130			
Selenium		0.365	mg/L	0.0010	92	70	130			
Sodium		510	mg/L	1.0		70	130			A
Uranium		2.58	mg/L	0.00030		70	130			A

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

A - The analyte level was greater than four times the spike level. In accordance with the method % recovery is not calculated.

QA/QC Summary Report

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC **Report Date:** 12/30/13

Project: Lisbon, UT Facility **Work Order:** C13120630

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: **E200.8**									Batch: R181937	
Sample ID: **C13120626-001BMSD4**	9	Sample Matrix Spike Duplicate				Run: ICPMS4-C_131220A			12/21/13 05:16	
Arsenic		0.266	mg/L	0.0010	106	70	130	1.4	20	
Calcium		374	mg/L	1.0		70	130	0.5	20	A
Iron		6.34	mg/L	0.030	101	70	130	7.1	20	
Magnesium		145	mg/L	1.0	96	70	130	2.3	20	
Molybdenum		2.35	mg/L	0.0010		70	130	3.1	20	A
Potassium		69.6	mg/L	1.0	102	70	130	0.9	20	
Selenium		0.392	mg/L	0.0010	103	70	130	7.3	20	
Sodium		520	mg/L	1.0		70	130	1.9	20	A
Uranium		2.51	mg/L	0.00030		70	130	2.6	20	A

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

A - The analyte level was greater than four times the spike level. In accordance with the method % recovery is not calculated.

QA/QC Summary Report

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC **Report Date:** 12/30/13

Project: Lisbon, UT Facility **Work Order:** C13120630

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E300.0									Analytical Run: IC2-C_131219A	
Sample ID: CCV-121913-01	2	Continuing Calibration Verification Standard							12/19/13 17:03	
Chloride		9.85	mg/L	1.0	99	90	110			
Sulfate		39.6	mg/L	1.0	99	90	110			
Method: E300.0									Batch: R181921	
Sample ID: ICB-121913	2	Method Blank				Run: IC2-C_131219A			12/19/13 16:26	
Chloride		ND	mg/L	0.03						
Sulfate		0.09	mg/L	0.07						
Sample ID: LFB-121913-01	2	Laboratory Fortified Blank				Run: IC2-C_131219A			12/19/13 16:44	
Chloride		9.48	mg/L	1.0	95	90	110			
Sulfate		38.0	mg/L	1.0	95	90	110			
Sample ID: C13120474-002AMS	2	Sample Matrix Spike				Run: IC2-C_131219A			12/19/13 17:40	
Chloride		1610	mg/L	10	96	90	110			
Sulfate		2180	mg/L	42	97	90	110			
Sample ID: C13120474-002AMSD	2	Sample Matrix Spike Duplicate				Run: IC2-C_131219A			12/19/13 17:58	
Chloride		1620	mg/L	10	96	90	110	0.3	20	
Sulfate		2200	mg/L	42	98	90	110	1.2	20	

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

Workorder Receipt Checklist

Rio Algom Mining Corporation LLC C13120630

Login completed by: Debra Williams
Date Received: 12/18/2013
Reviewed by: BL2000\khelm
Received by: dw
Reviewed Date: 12/20/2013
Carrier name: FedEx

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on all shipping container(s)/cooler(s)?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on all sample bottles?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time? (Exclude analyses that are considered field parameters such as pH, DO, Res Cl, Sulfite, Ferrous Iron, etc.)	Yes ☑	No ☐	
Temp Blank received in all shipping container(s)/cooler(s)?	Yes ☐	No ☑	Not Applicable ☐
Container/Temp Blank temperature:	7.2°C On Ice		
Water - VOA vials have zero headspace?	Yes ☐	No ☐	No VOA vials submitted ☑
Water - pH acceptable upon receipt?	Yes ☐	No ☑	Not Applicable ☐

Standard Reporting Procedures:

Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH, Dissolved Oxygen and Residual Chlorine, are qualified as being analyzed outside of recommended holding time.

Solid/soil samples are reported on a wet weight basis (as received) unless specifically indicated. If moisture corrected, data units are typically noted as –dry. For agricultural and mining soil parameters/characteristics, all samples are dried and ground prior to sample analysis.

Contact and Corrective Action Comments:

Sample 7066 did not preseve properly even after an additional 2mL of HNO3.

Chain of Custody and Analytical Request Record

PLEASE PRINT- Provide as much information as possible.

Company Name:	Project Name, PWS, Permit, Etc.	Sample Origin	EPA/State Compliance:
Rio Algom Mining Corp	Lisbon, UT Facility	State: UT	Yes ☐ No ☐
Report Mail Address: Montgomery and Associates Results retrieved from Energy Source	**Contact Name:** John Laney **Phone/Fax:** (520) 425-2219 **Email:** jlaney@clmontgomery.com		**Sampler: (Please Print)** J. Kerns
Invoice Address: Email invoice to Gail PO Box 218 Grants, NM 87020	**Invoice Contact & Phone:** Gail Alexander (505) 287-8851	**Purchase Order:**	**Quote/Bottle Order:** C3636

Special Report/Formats – ELI must be notified prior to sample submittal for the following:

☐ DW ☐ A2LA
☐ GSA ☐ EDD/EDT(Electronic Data)
☐ POTW/WWTP **Format:**_____
☐ State: _____ ☐ LEVEL IV
☐ Other: _____ ☐ NELAC

Number of Containers
Sample Type: A Air W Water S Soils/Solids V Vegetation B Bioassay O Other

ANALYSIS REQUESTED

SAMPLE IDENTIFICATION (Name, Location, Interval, etc.)	Collection Date	Collection Time	MATRIX	C3636	SEE ATTACHED	Normal Turnaround (TAT)
1 7067	14DEC2013	1310	W	X		
2 7064	14DEC2013	1105	W	X		
3 7066	14DEC2013	1220	W	X		
4						
5						
6						
7						
8						
9						
10						

RUSH

Contact ELI prior to **RUSH** sample submittal for charges and scheduling – See Instruction Page

Comments:
Metals filtered & preserved in field.

"Report Separately"

Shipped by: Fed Ex
Cooler ID(s): Client
Receipt Temp 2.2 °C
On Ice: (Yes) No
Custody Seal Intact Y N
Signature Match Y N

LABORATORY USE ONLY
C3120630

Custody Record MUST be Signed

Relinquished by (print):	Date/Time:	Signature:	Received by (print):	Date/Time:	Signature:
Josh Kerns	16DEC2014/1300				
Relinquished by (print):	Date/Time:	Signature:	Received by (print):	Date/Time:	Signature:
			Received by Laboratory:	Date/Time:	Signature:
				12-18-13	1030

Sample Disposal: Return to Client: _____ Lab Disposal: _____

In certain circumstances, samples submitted to Energy Laboratories, Inc. may be subcontracted to other certified laboratories in order to complete the analysis requested.
This serves as notice of this possibility. All sub-contract data will be clearly notated on your analytical report.
Visit our web site at www.energylab.com for additional information, downloadable fee schedule, forms, and links.

ENERGY LABORATORIES

Helena • Billings • Casper • Sheridan • Rapid City • College Station

Quote #: C3636
Project Manager: Kerri Schroeder
Expires: 12/31/2014

www.energylab.com

Analytical Quote

Gail Alexander
Rio Algom Mining Corporation LLC
Hwy 605 and 509
Grants, NM 87020

TAT: 10 days
QC Level: STD

Project Name: Groundwater

Schedule: Groundwater

Matrix: Groundwater

Comments: If lab filtration and preservation is required for dissolved metals there will be an additional $20.00 per sample charge.

Analyses	Method	Reporting Limit	Analyte Price
Major Ions			
Alkalinity			$10.00
Bicarbonate as HCO3	A2320 B	5 mg/L	**
Carbonate as CO3	A2320 B	5 mg/L	**
** Included in Alkalinity Price			
E300.0 Anions			$20.00
Chloride	E300.0	1 mg/L	**
Sulfate	E300.0	1 mg/L	**
** Included in E300.0 Anions Price			
Metals by ICP/ICPMS, Dissolved			$90.00
Calcium	E200.7_8	1 mg/L	**
Magnesium	E200.7_8	1 mg/L	**
Potassium	E200.7_8	1 mg/L	**
Sodium	E200.7_8	1 mg/L	**
** Included in Metals by ICP/ICPMS, Dissolved Price			
Physical Properties			
Conductivity			$10.00
Conductivity @ 25 C	A2510 B	umhos/cm	**
** Included in Conductivity Price			
pH	A4500-H B	0.01 s.u.	$10.00

Solids, Total Dissolved			$20.00
Solids, Total Dissolved TDS @ 180 C	A2540 C	10 mg/L	**

** Included in Solids, Total Dissolved Price

Metals - Dissolved

Metals by ICP/ICPMS, Dissolved			$90.00
Arsenic	E200.7_8	0.001 mg/L	**
Iron	E200.7_8	0.03 mg/L	**
Molybdenum	E200.7_8	0.01 mg/L	**
Selenium	E200.7_8	0.001 mg/L	**
Uranium	E200.7_8	0.0003 mg/L	**

** Included in Metals by ICP/ICPMS, Dissolved Price

Schedule Price/Sample:	$250.00
[redacted]	
Groundwater	$250.00
Quote Sub Total:	$250.00
Discount:	0.00%
Misc Charges:	$0.00
Quote Total:	$250.00

Comments: As of January 1st, 2012 ELI will begin charging a $2.00 per sample surcharge for sample management. This fee will be applied to all solid and aqueous samples.

Quoted prices are based on net 30 days payment of invoices. Discounts will not apply if terms are not met.

Quoted prices reflect standard turn around time of ~10 working days. Additional charges may apply for accelerated TAT. Please advise ELI as to your project specific requirements.

ELI can provide EDD. Please contact your Project Manager for additional information required for this service.

ELI has a unique sample return shipping contract with UPS and Fed Ex. If additional information is required please contact your project manager.

ELI appreciates the opportunity to provide you with this analytical services quotation. For additional information and services visit our web page www.energylab.com.

To assure that the quoted analysis and pricing specifications are provided, please include the Quote ID number referenced above on the Chain of Custody or sample submittal documents.

Chain of Custody and Analytical Request Record

ENERGY LABORATORIES

Page 1 of 1

PLEASE PRINT- Provide as much information as possible.

Company Name:	Project Name, PWS, Permit, Etc.	Sample Origin	EPA/State Compliance:
Rio Algom Mining Corp	Lisbon, UT Facility	State: UT	Yes ☐ No ☐

Report Mail Address:	Contact Name:	Phone/Fax:	Email:	Sampler: (Please Print)
Montgomery and Associates Results retrieved from Energy Source	John Laney	(520) 425-2219	jlaney@clmontgomery.com	Josh Kerns

Invoice Address:	Invoice Contact & Phone:	Purchase Order:	Quote/Bottle Order:
Email invoice to Gail PO Box 218 Grants, NM 87020	Gail Alexander (505) 287-8851		C3636

Special Report/Formats – ELI must be notified prior to sample submittal for the following:

- ☐ DW
- ☐ GSA
- ☐ POTW/WWTP
- ☐ State: _____
- ☐ Other: _____
- ☐ A2LA
- ☐ EDD/EDT (Electronic Data) Format: _____
- ☐ LEVEL IV
- ☐ NELAC

Number of Containers
Sample Type: A Air W Water S Soils/Solids V Vegetation B Bioassay O Other

ANALYSIS REQUESTED

SAMPLE IDENTIFICATION (Name, Location, Interval, etc.)	Collection Date	Collection Time	MATRIX	C3636	SEE ATTACHED	Normal Turnaround (TAT)
1 7068	25 JAN 2014	1105	WATER	X		
2 7069	25 JAN 2014	1145	WATER	X		
3						
4						
5						
6						
7						
8						
9						
10						

R U S H

Contact ELI prior to **RUSH** sample submittal for charges and scheduling – See Instruction Page

Comments: Metals sample filtered and preserved in field.

Shipped by: Fed Ex

Cooler ID(s):

Receipt Temp _____ °C

On Ice: Yes No

Custody Seal Y N
Intact Y N
Signature Match Y N

LABORATORY USE ONLY

Custody Record MUST be Signed

Relinquished by (print):	Date/Time:	Signature:	Received by (print):	Date/Time:	Signature:
J. Kerns	1-28-2014 /1600				
Relinquished by (print):	Date/Time:	Signature:	Received by (print):	Date/Time:	Signature:
			Received by Laboratory:	Date/Time:	Signature:

Sample Disposal: Return to Client: _____ Lab Disposal: _____

In certain circumstances, samples submitted to Energy Laboratories, Inc. may be subcontracted to other certified laboratories in order to complete the analysis requested. This serves as notice of this possibility. All sub-contract data will be clearly notated on your analytical report.
Visit our web site at www.energylab.com for additional information, downloadable fee schedule, forms, and links.

Equipment Calibration Log

Equipment make/ model	Equipment ID/ serial number	Date	Time	Calibration Standards	Equipment Reading	Equipment Calibrated	Temp (°C / °F)	Tech init.	Comments
YSI Pro Series	12A100565	1-25-14	0800	pH 4.0/7.0/10.0	4.0/7.0/10.0	✓	25	JK	
YSI Pro Series				Conductivity 1413	1413	✓	27	JK	
YSI Pro Series				Dissolved O2 100%	98%	✓	—	JK	
YSI Pro Series				ORP 231	231	✓	25	JK	
YSI Pro Series				pH 4.0/7.0/10.0					
YSI Pro Series				Conductivity 1413					
YSI Pro Series				Dissolved O2 100%					
YSI Pro Series				ORP					

Sample Log

Job Number: 1350.15	Date: 1/25/14	Client: Montgomery and Associates
Site: Rio Algom Mining, Lisbon UT		Sampler: Josh Kerns

Well ID	Sample ID	Date	Time	Sample Method (HS, LF, P)	QC Sample (dup, split, rinse)	Ship Date/Notes
EF-8	**7068**	**25-Jan-2014**	**1105**	**LF**	**Regulatory**	**28-Jan-14**
RL-1	**7069**	**25-Jan-2014**	**1145**	**LF**	**Regulatory**	**28-Jan-14**

Job Number: 1350.15 | Date: 25-JAN-2014 | Client: Montgomery

Site: Rio Algom Mining

Well I.D.	Time	Dia	Depth to NAPL	Thickness of NAPL	Depth to water (DTW)	Total Depth (measured)	Total Depth (historical)	Ref Point TOC/TOB		
EF-8	1040	4			73.79	—	244	TOC		
RL-1	1120	5			115.99	—	124	TOC		
MW-106	1245	4			230.25	—	264.5	TOC		
MW-110	1200	4			139.74	142.40	142	TOC		
MW-111	1230	4			105.03	126.07	126	TOC		
MW-122	1300	4			197.40	197.77	197	TOC		

Job#: 1350.15	**Sampler:** J Kerns	**Client:** Montgomery & Associates
Well ID: EF-8	**Date** (DDOct2012): 25Jan2014	**Site:** Rio Algom Mining, Lisbon, UT
Weather Conditions: Cold - Sunny	**Sampler Signature:**	
Well diam: 1/4" 1" 2" 3" (4") 6" Other: ~~5~~ 4" (3K)	**DTW:** 73.79	**Total Depth:** 244.00
Purge equip: ES - diam: (Bladder) Peri Waterra Positive Air Displacement Ext. System		
disp bailer teflon bailer other:	**Tubing:** OD: New (Dedicated) NA	
Purge method: 3-5 Case Volume (Micro/Low-Flow) Extraction Other:		
Pump depth/ intake: 227'	**Multipliers:** 1"= 0.04 2"= 0.16 3"= 0.37 4"= 0.65 5"=1.02 6"= 1.47 Radius^2 X 0.163	

(TD - DTW X Multiplier = 1 Volume ——— | 80% Recovery (TD - DTW X 0.20 + DTW)

1 Volume = ——— X ——— = ———(Total Purge) | 80%= ———

Time	Temp (°C) °F	pH	SP Cond (mS / (µS))	Turbidity (NTU)	Purge Rate (gal or mL / min)	Volume Removed (gal / (L))	DO (mg/l)	ORP (mv)	DTW	Notes
1045	10.0	7.3	2095	3.0	200	1.0	10.63	211.2	73.92	
1048	10.2	7.4	2135	1.0	200	1.6	10.39	205.2	73.92	
1051	10.1	7.5	2170	1.2	200	2.2	9.66	199.1	73.92	
1054	10.2	7.4	2177	1.3	200	2.8	7.56	194.1	73.92	
1057	10.1	7.4	2203	1.3	200	3.4	7.42	190.5	73.92	
1100	10.1	7.4	2208	1.3	200	4.0	7.44	186.7	73.92	

Did well dewater? YES (NO) | Total volume removed: (4.0) (gal (L))

Sample method: Disp Bailer Hydrasleeve New Tubing Ext. Port Other: Dedicated Tubing

Sample date: 25 JAN 2014 | Sample time: 1105 | DTW at sample: 73.92

Sample ID: 7068 | Lab: Energy Labs | Number of bottles: (2)

Analysis: 500 ml NP poly - Alkalinity, Cl, SO4, TDS, EC, pH 250 ml HNO3 poly *field filtered - Dissolved Metals

Equipment blank ID @	Field blank ID @	
Duplicate ID:	Pre-purge DO:	Post purge DO:
$Fe2^{+}$:	Pre-purge ORP:	Post purge ORP:
NAPL depth:	Volume of NAPL:	Volume removed: ml

Job#: 1350.15	**Sampler:** J Kerns	**Client:** Montgomery & Associates
Well ID: RL-1	**Date** (DDOct2012): 25 JAN 2014	**Site:** Rio Algom Mining, Lisbon, UT

Weather Conditions: COLD - SUNNY **Sampler Signature:** MKern

Well diam: 1/4" 1" 2" 3" 4" 6" Other: (5") **DTW:** 115.99 **Total Depth:** 125.00

Purge equip: ES - diam: (Bladder) Peri Waterra Positive Air Displacement Ext. System

disp bailer teflon bailer other: **Tubing:** OD: New (Dedicated) NA

Purge method: 3-5 Case Volume (Micro/Low-Flow) Extraction Other:

Pump depth/ intake: 120' **Multipliers:** 1"= 0.04 2"= 0.16 3"= 0.37 4"= 0.65 5"=1.02 6"= 1.47 Radius² X 0.163

(TD - DTW X Multiplier = 1 Volume — | 80% Recovery (TD - DTW X 0.20 + DTW)

1 Volume = — X — = — (Total Purge) 80%= —

Time	Temp (°C) °F	pH	SP Cond (mS) µS	Turbidity (NTU)	Purge Rate (gal or mL/ min)	Volume Removed (gal) L	DO (mg/l)	ORP (mv)	DTW	Notes
1125	11.0	7.2	10988	3.0	200	1.0	4.66	171.1	116.20	
1128	11.0	7.1	10941	2.8	200	1.6	4.02	170.1	116.29	
1131	10.7	7.1	10884	2.8	200	2.2	3.95	169.0	116.32	
1134	10.8	7.1	10853	2.7	200	2.8	3.89	166.8	116.33	
1137	10.8	7.1	10884	2.7	200	3.4	3.82	163.7	116.33	
1140	10.8	7.1	10901	2.7	200	4.0	3.86	161.0	116.33	

Did well dewater? YES (NO) Total volume removed: (4.0) (gal (L)

Sample method: Disp Bailer Hydrasleeve New Tubing Ext. Port Other: DEDICATED TUBING

Sample date: 25 JAN 2014 Sample time: 1145 DTW at sample: 116.33

Sample ID: 7069 Lab: Energy Labs Number of bottles: (2)

Analysis: 500 ml NP poly - Alkalinity, Cl, SO4, TDS, EC, pH 250 ml HNO3 poly *field filtered - Dissolved Metals

Equipment blank ID @	Field blank ID @	
Duplicate ID:	Pre-purge DO:	Post purge DO:
$Fe2^{+}$:	Pre-purge ORP:	Post purge ORP:
NAPL depth:	Volume of NAPL:	Volume removed: ml

ANALYTICAL SUMMARY REPORT

February 07, 2014

Rio Algom Mining Corporation LLC
Hwy 605 and 509
Grants, NM 87020

Workorder No.: C14010835 Quote ID: C3636 - Groundwater

Project Name: Lisbon, UT Facility

Energy Laboratories, Inc. Casper WY received the following 2 samples for Rio Algom Mining Corporation LLC on 1/30/2014 for analysis.

Sample ID	Client Sample ID	Collect Date	Receive Date	Matrix	Test
C14010835-001	7068	01/25/14 11:05	01/30/14	Aqueous	Metals by ICP/ICPMS, Dissolved Alkalinity QA Calculations Conductivity E300.0 Anions pH Solids, Total Dissolved Solids, Total Dissolved - Calculated
C14010835-002	7069	01/25/14 11:45	01/30/14	Aqueous	Same As Above

The results as reported relate only to the item(s) submitted for testing. The analyses presented in this report were performed at Energy Laboratories, Inc., 2393 Salt Creek Hwy., Casper, WY 82601, unless otherwise noted. Radiochemistry analyses were performed at Energy Laboratories, Inc., 2325 Kerzell Lane, Casper, WY 82601, unless otherwise noted. Any exceptions or problems with the analyses are noted in the Laboratory Analytical Report, the QA/QC Summary Report, or the Case Narrative.

If you have any questions regarding these test results, please call.

Report Approved By:

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility
Lab ID: C14010835-001
Client Sample ID: 7068

Report Date: 02/07/14
Collection Date: 01/25/14 11:05
DateReceived: 01/30/14
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Carbonate as CO3	ND	mg/L		5		A2320 B	01/30/14 15:18 / jba
Bicarbonate as HCO3	414	mg/L		5		A2320 B	01/30/14 15:18 / jba
Calcium	220	mg/L		1		E200.7	01/31/14 16:01 / sf
Chloride	221	mg/L		1		E300.0	01/31/14 07:46 / wc
Magnesium	58	mg/L		1		E200.7	01/31/14 16:01 / sf
Potassium	5	mg/L		1		E200.7	01/31/14 16:01 / sf
Sodium	176	mg/L		1		E200.7	01/31/14 16:01 / sf
Sulfate	485	mg/L	D	4		E300.0	01/31/14 07:46 / wc
PHYSICAL PROPERTIES							
Conductivity @ 25 C	2140	umhos/cm		1		A2510 B	01/30/14 12:41 / tmm
pH	7.62	s.u.	H	0.01		A4500-H B	01/30/14 12:41 / tmm
Solids, Total Dissolved TDS @ 180 C	1480	mg/L		20		A2540 C	01/30/14 15:11 / tmm
METALS - DISSOLVED							
Arsenic	0.034	mg/L		0.001		E200.8	02/06/14 02:17 / clm
Iron	ND	mg/L		0.03		E200.7	01/31/14 16:01 / sf
Molybdenum	ND	mg/L		0.01		E200.7	01/31/14 16:01 / sf
Selenium	0.012	mg/L		0.001		E200.8	02/06/14 02:17 / clm
Uranium	0.791	mg/L		0.0003		E200.8	02/06/14 02:17 / clm
DATA QUALITY							
A/C Balance (± 5)	-0.188	%				A1030 E	02/03/14 12:59 / kbh
Anions	23.6	meq/L				A1030 E	02/03/14 12:59 / kbh
Cations	23.5	meq/L				A1030 E	02/03/14 12:59 / kbh
Solids, Total Dissolved Calculated	1400	mg/L				A1030 E	02/03/14 12:59 / kbh
TDS Balance (0.80 - 1.20)	1.05					A1030 E	02/03/14 12:59 / kbh

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
H - Analysis performed past recommended holding time.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility
Lab ID: C14010835-002
Client Sample ID: 7069

Report Date: 02/07/14
Collection Date: 01/25/14 11:45
DateReceived: 01/30/14
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Carbonate as CO3	ND	mg/L		5		A2320 B	01/30/14 15:27 / jba
Bicarbonate as HCO3	1260	mg/L		5		A2320 B	01/30/14 15:27 / jba
Calcium	540	mg/L		1		E200.7	01/31/14 16:26 / sf
Chloride	672	mg/L	D	10		E300.0	01/31/14 08:05 / wc
Magnesium	196	mg/L		1		E200.7	01/31/14 16:26 / sf
Potassium	20	mg/L		1		E200.7	01/31/14 16:26 / sf
Sodium	2090	mg/L	D	2		E200.7	01/31/14 16:26 / sf
Sulfate	4640	mg/L	D	40		E300.0	01/31/14 08:05 / wc
PHYSICAL PROPERTIES							
Conductivity @ 25 C	10600	umhos/cm		1		A2510 B	01/30/14 12:44 / tmm
pH	7.22	s.u.	H	0.01		A4500-H B	01/30/14 12:44 / tmm
Solids, Total Dissolved TDS @ 180 C	9060	mg/L		100		A2540 C	01/30/14 15:11 / tmm
METALS - DISSOLVED							
Arsenic	0.005	mg/L		0.001		E200.8	02/06/14 02:38 / clm
Iron	0.05	mg/L		0.03		E200.7	01/31/14 16:26 / sf
Molybdenum	11.5	mg/L	D	0.03		E200.7	01/31/14 16:26 / sf
Selenium	0.5	mg/L	D	0.1		E200.7	01/31/14 16:26 / sf
Uranium	48.3	mg/L		0.0003		E200.8	02/06/14 02:38 / clm
DATA QUALITY							
A/C Balance (± 5)	-1.29	%				A1030 E	02/03/14 12:59 / kbh
Anions	138	meq/L				A1030 E	02/03/14 12:59 / kbh
Cations	134	meq/L				A1030 E	02/03/14 12:59 / kbh
Solids, Total Dissolved Calculated	8900	mg/L				A1030 E	02/03/14 12:59 / kbh
TDS Balance (0.80 - 1.20)	1.02					A1030 E	02/03/14 12:59 / kbh

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
H - Analysis performed past recommended holding time.

QA/QC Summary Report

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC **Report Date:** 02/07/14

Project: Lisbon, UT Facility **Work Order:** C14010835

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: A2320 B										Batch: R183168
Sample ID: MBLK	3	Method Blank				Run: MANTECH_140130B				01/30/14 13:53
Alkalinity, Total as CaCO3		0.7	mg/L	0.6						
Carbonate as CO3		ND	mg/L	1						
Bicarbonate as HCO3		ND	mg/L	1						
Sample ID: LCS_131219		Laboratory Control Sample				Run: MANTECH_140130B				01/30/14 14:06
Alkalinity, Total as CaCO3		256	mg/L	5.0	102	90	110			
Sample ID: C14010821-001ADUP	3	Sample Duplicate				Run: MANTECH_140130B				01/30/14 14:23
Alkalinity, Total as CaCO3		274	mg/L	5.0				0.2	10	
Carbonate as CO3		ND	mg/L	5.0					10	
Bicarbonate as HCO3		335	mg/L	5.0				0.2	10	
Sample ID: C14010821-002AMS		Sample Matrix Spike				Run: MANTECH_140130B				01/30/14 14:39
Alkalinity, Total as CaCO3		367	mg/L	5.0	103	80	120			

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

QA/QC Summary Report

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC **Report Date:** 02/07/14

Project: Lisbon, UT Facility **Work Order:** C14010835

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: A2510 B										Batch: R183134
Sample ID: SC 100		Initial Calibration Verification Standard				Run: PHSC_101-C_140130A				01/30/14 08:35
Conductivity @ 25 C		103	umhos/cm	5.0	103	90	110			
Sample ID: SC 2ND 1413		Laboratory Control Sample				Run: PHSC_101-C_140130A				01/30/14 08:47
Conductivity @ 25 C		1370	umhos/cm	5.0	97	90	110			
Sample ID: MBLK		Method Blank				Run: PHSC_101-C_140130A				01/30/14 11:44
Conductivity @ 25 C		2	umhos/cm	0.8						
Sample ID: C14010833-004ADUP		Sample Duplicate				Run: PHSC_101-C_140130A				01/30/14 12:17
Conductivity @ 25 C		1530	umhos/cm	5.0				0.0	10	

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

QA/QC Summary Report

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC **Report Date:** 02/07/14

Project: Lisbon, UT Facility **Work Order:** C14010835

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: A2540 C										Batch: TDS140130A
Sample ID: MB-1_140130A		Method Blank				Run: BAL-19_140130A				01/30/14 15:05
Solids, Total Dissolved TDS @ 180 C		ND	mg/L	7						
Sample ID: LCS-2_140130A		Laboratory Control Sample				Run: BAL-19_140130A				01/30/14 15:06
Solids, Total Dissolved TDS @ 180 C		2000	mg/L	20	100	90	110			
Sample ID: C14010838-001A DUP		Sample Duplicate				Run: BAL-19_140130A				01/30/14 15:16
Solids, Total Dissolved TDS @ 180 C		925	mg/L	10				0.5	5	
Sample ID: C14010838-002A MS		Sample Matrix Spike				Run: BAL-19_140130A				01/30/14 15:16
Solids, Total Dissolved TDS @ 180 C		2020	mg/L	11	101	90	110			

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

QA/QC Summary Report

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC **Report Date:** 02/07/14

Project: Lisbon, UT Facility **Work Order:** C14010835

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: A4500-H B									Analytical Run: PHSC_101-C_140130A	
Sample ID: pH 6.86		Initial Calibration Verification Standard							01/30/14 08:32	
pH		6.85	s.u.	0.010	100	98	102			
Method: A4500-H B									Batch: R183134	
Sample ID: C14010833-004ADUP		Sample Duplicate				Run: PHSC_101-C_140130A			01/30/14 12:17	
pH		7.47	s.u.	0.010				0.1	3	

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

QA/QC Summary Report

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC **Report Date:** 02/07/14

Project: Lisbon, UT Facility **Work Order:** C14010835

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E200.7									Analytical Run: ICP4-C_140131A	
Sample ID: ICV	8	Initial Calibration Verification Standard							01/31/14 12:10	
Calcium		48.4	mg/L	0.50	97	95	105			
Iron		4.84	mg/L	0.030	97	95	105			
Magnesium		50.1	mg/L	0.50	100	95	105			
Molybdenum		0.984	mg/L	0.10	98	95	105			
Potassium		48.2	mg/L	0.50	96	95	105			
Selenium		1.02	mg/L	0.10	102	95	105			
Sodium		48.8	mg/L	0.50	98	95	105			
Uranium		4.87	mg/L	1.0	97	95	105			
Sample ID: ICSA	8	Interference Check Sample A							01/31/14 12:25	
Calcium		459	mg/L	0.50	92	80	120			
Iron		174	mg/L	0.030	87	80	120			
Magnesium		506	mg/L	0.50	101	80	120			
Molybdenum		-0.000520	mg/L	0.10						
Potassium		-0.0254	mg/L	0.50						
Selenium		0.0565	mg/L	0.10						
Sodium		-0.301	mg/L	0.50						
Uranium		0.673	mg/L	1.0						
Sample ID: ICSAB	8	Interference Check Sample AB							01/31/14 12:29	
Calcium		444	mg/L	0.50	89	80	120			
Iron		168	mg/L	0.030	84	80	120			
Magnesium		491	mg/L	0.50	98	80	120			
Molybdenum		0.00100	mg/L	0.10						
Potassium		-0.00603	mg/L	0.50						
Selenium		-0.0126	mg/L	0.10						
Sodium		-0.196	mg/L	0.50						
Uranium		0.659	mg/L	1.0						
Method: E200.7									Batch: R183237	
Sample ID: MB-140131A	8	Method Blank				Run: ICP4-C_140131A			01/31/14 12:47	
Calcium		ND	mg/L	0.02						
Iron		ND	mg/L	0.002						
Magnesium		0.05	mg/L	0.01						
Molybdenum		ND	mg/L	0.003						
Potassium		ND	mg/L	0.04						
Selenium		ND	mg/L	0.01						
Sodium		ND	mg/L	0.2						
Uranium		ND	mg/L	0.3						
Sample ID: LFB-140131A	8	Laboratory Fortified Blank				Run: ICP4-C_140131A			01/31/14 12:51	
Calcium		44.9	mg/L	0.50	90	85	115			
Iron		0.896	mg/L	0.030	90	85	115			
Magnesium		46.2	mg/L	0.50	92	85	115			
Molybdenum		0.922	mg/L	0.10	92	85	115			

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

QA/QC Summary Report

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC **Report Date:** 02/07/14

Project: Lisbon, UT Facility **Work Order:** C14010835

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E200.7										Batch: R183237
Sample ID: LFB-140131A	8	Laboratory Fortified Blank				Run: ICP4-C_140131A				01/31/14 12:51
Potassium		43.0	mg/L	0.50	86	85	115			
Selenium		0.939	mg/L	0.10	94	85	115			
Sodium		44.4	mg/L	0.50	89	85	115			
Uranium		4.47	mg/L	1.0	89	85	115			
Sample ID: C14010835-001BMS2	8	Sample Matrix Spike				Run: ICP4-C_140131A				01/31/14 16:05
Calcium		309	mg/L	1.0	88	70	130			
Iron		1.93	mg/L	0.030	94	70	130			
Magnesium		154	mg/L	1.0	94	70	130			
Molybdenum		1.94	mg/L	0.0059	95	70	130			
Potassium		103	mg/L	1.0	95	70	130			
Selenium		2.05	mg/L	0.023	96	70	130			
Sodium		268	mg/L	1.0	91	70	130			
Uranium		10.7	mg/L	0.00030	97	70	130			
Sample ID: C14010835-001BMSD2	8	Sample Matrix Spike Duplicate				Run: ICP4-C_140131A				01/31/14 16:08
Calcium		305	mg/L	1.0	83	70	130	1.6	20	
Iron		1.91	mg/L	0.030	93	70	130	0.6	20	
Magnesium		153	mg/L	1.0	93	70	130	0.7	20	
Molybdenum		1.93	mg/L	0.0059	95	70	130	0.2	20	
Potassium		101	mg/L	1.0	94	70	130	1.5	20	
Selenium		1.99	mg/L	0.023	93	70	130	3.0	20	
Sodium		264	mg/L	1.0	87	70	130	1.4	20	
Uranium		10.6	mg/L	0.00030	95	70	130	1.4	20	

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

QA/QC Summary Report

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC **Report Date:** 02/07/14

Project: Lisbon, UT Facility **Work Order:** C14010835

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E200.8									Analytical Run: ICPMS4-C_140205A	
Sample ID: ICV	3	Initial Calibration Verification Standard							02/05/14 15:01	
Arsenic		0.0488	mg/L	0.0010	98	90	110			
Selenium		0.0509	mg/L	0.0010	102	90	110			
Uranium		0.0500	mg/L	0.00030	100	90	110			
Method: E200.8									Batch: R183382	
Sample ID: LRB	3	Method Blank				Run: ICPMS4-C_140205A			02/05/14 15:52	
Arsenic		ND	mg/L	5E-05						
Selenium		ND	mg/L	0.0005						
Uranium		3E-05	mg/L	9E-06						
Sample ID: LFB	3	Laboratory Fortified Blank				Run: ICPMS4-C_140205A			02/05/14 15:56	
Arsenic		0.0494	mg/L	0.0010	99	85	115			
Selenium		0.0505	mg/L	0.0010	101	85	115			
Uranium		0.0533	mg/L	0.00030	107	85	115			
Sample ID: C14010484-005BMS4	3	Sample Matrix Spike				Run: ICPMS4-C_140205A			02/06/14 02:01	
Arsenic		0.261	mg/L	0.0010	104	70	130			
Selenium		0.257	mg/L	0.0010	102	70	130			
Uranium		0.292	mg/L	0.00030	114	70	130			
Sample ID: C14010484-005BMSD4	3	Sample Matrix Spike Duplicate				Run: ICPMS4-C_140205A			02/06/14 02:05	
Arsenic		0.260	mg/L	0.0010	103	70	130	0.6	20	
Selenium		0.257	mg/L	0.0010	102	70	130	0.1	20	
Uranium		0.289	mg/L	0.00030	113	70	130	1.1	20	

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

QA/QC Summary Report

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC **Report Date:** 02/07/14

Project: Lisbon, UT Facility **Work Order:** C14010835

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E300.0									Analytical Run: IC2-C_140129A	
Sample ID: CCV-012914-09	2	Continuing Calibration Verification Standard							01/31/14 05:56	
Chloride		9.64	mg/L	1.0	96	90	110			
Sulfate		38.8	mg/L	1.0	97	90	110			
Method: E300.0									Batch: R183197	
Sample ID: ICB-012914	2	Method Blank				Run: IC2-C_140129A			01/29/14 11:33	
Chloride		0.03	mg/L	0.01						
Sulfate		0.04	mg/L	0.03						
Sample ID: LFB-012914-01	2	Laboratory Fortified Blank				Run: IC2-C_140129A			01/29/14 12:10	
Chloride		10.2	mg/L	1.0	101	90	110			
Sulfate		39.7	mg/L	1.0	99	90	110			
Sample ID: LFBD-012914-01	2	Laboratory Fortified Blank				Run: IC2-C_140129A			01/29/14 12:28	
Chloride		9.92	mg/L	1.0	99	90	110			
Sulfate		39.5	mg/L	1.0	99	90	110			
Sample ID: C14010833-009AMS	2	Sample Matrix Spike				Run: IC2-C_140129A			01/31/14 07:10	
Chloride		259	mg/L	1.0		90	110			A
Sulfate		889	mg/L	4.2	98	90	110			
Sample ID: C14010833-009AMSD	2	Sample Matrix Spike Duplicate				Run: IC2-C_140129A			01/31/14 07:28	
Chloride		258	mg/L	1.0		90	110	0.6	20	A
Sulfate		885	mg/L	4.2	96	90	110	0.5	20	

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

A - The analyte level was greater than four times the spike level. In accordance with the method % recovery is not calculated.

Workorder Receipt Checklist

Rio Algom Mining Corporation LLC C14010835

Login completed by: Kerri Schroeder
Date Received: 1/30/2014
Reviewed by: BL2000\khelm
Received by: dcq
Reviewed Date: 1/31/2014
Carrier name: NDA

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on all shipping container(s)/cooler(s)?	Yes ☐	No ☐	Not Present ☑
Custody seals intact on all sample bottles?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time? (Exclude analyses that are considered field parameters such as pH, DO, Res Cl, Sulfite, Ferrous Iron, etc.)	Yes ☑	No ☐	
Temp Blank received in all shipping container(s)/cooler(s)?	Yes ☐	No ☑	Not Applicable ☐
Container/Temp Blank temperature:	2.8°C		
Water - VOA vials have zero headspace?	Yes ☐	No ☐	No VOA vials submitted ☑
Water - pH acceptable upon receipt?	Yes ☑	No ☐	Not Applicable ☐

Standard Reporting Procedures:

Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH, Dissolved Oxygen and Residual Chlorine, are qualified as being analyzed outside of recommended holding time.

Solid/soil samples are reported on a wet weight basis (as received) unless specifically indicated. If moisture corrected, data units are typically noted as –dry. For agricultural and mining soil parameters/characteristics, all samples are dried and ground prior to sample analysis.

Contact and Corrective Action Comments:

None

Chain of Custody and Analytical Request Record

PLEASE PRINT- Provide as much information as possible.

Company Name:	Project Name, PWS, Permit, Etc.	Sample Origin	EPA/State Compliance:
Rio Algom Mining Corp	Lisbon, UT Facility	State: UT	Yes ☐ No ☐
Report Mail Address: Montgomery and Associates Results retrieved from Energy Source	**Contact Name:** John Laney **Phone/Fax:** (520) 425-2219 **Email:** jlaney@clmontgomery.com		**Sampler: (Please Print)** Josh Kerns
Invoice Address: Email invoice to Gail PO Box 218 Grants, NM 87020	**Invoice Contact & Phone:** Gail Alexander (505) 287-8851	**Purchase Order:**	**Quote/Bottle Order:** C3636

Special Report/Formats – ELI must be notified prior to sample submittal for the following:

☐ DW ☐ A2LA
☐ GSA ☐ EDD/EDT (Electronic Data) Format: _____
☐ POTW/WWTP ☐ LEVEL IV
☐ State: _____ ☐ NELAC
☐ Other: _____

Number of Containers
Sample Type: A W S V B O
Air Water Soils/Solids Vegetation Bioassay Other

ANALYSIS REQUESTED

SAMPLE IDENTIFICATION (Name, Location, Interval, etc.)	Collection Date	Collection Time	MATRIX	C3636	SEE ATTACHED	Normal Turnaround (TAT)
1 7068	25 JAN 2014	1105	WATER	X		
2 7069	25 JAN 2014	1145	WATER	X		
3						
4						
5						
6						
7						
8						
9						
10						

R U S H

Contact ELI prior to **RUSH** sample submittal for charges and scheduling – See Instruction Page

Comments: Metals sample filtered and preserved in field.

Shipped by: Fed Ex
Cooler ID(s): Client
Receipt Temp 2.8 °C
On Ice: (Yes) No
Custody Seal Y (N)
Intact Y N
Signature Match Y N

C1401O835

LABORATORY USE ONLY

Custody Record MUST be Signed

Relinquished by (print):	Date/Time:	Signature:	Received by (print):	Date/Time:	Signature:
J. Kerns	1-28-2014 1600				
Relinquished by (print):	Date/Time:	Signature:	Received by (print):	Date/Time:	Signature:
			Received by Laboratory:	1/30/14 1015	Signature:

Sample Disposal: Return to Client: _____ Lab Disposal: _____

In certain circumstances, samples submitted to Energy Laboratories, Inc. may be subcontracted to other certified laboratories in order to complete the analysis requested.
This serves as notice of this possibility. All sub-contract data will be clearly notated on your analytical report.
Visit our web site at www.energylab.com for additional information, downloadable fee schedule, forms, and links.

Chain of Custody and Analytical Request Record

Page 1 of 1

PLEASE PRINT- Provide as much information as possible.

Company Name: Rio Algom Mining Corp	Project Name, PWS, Permit, Etc.: Lisbon, UT Facility	Sample Origin State: UT	EPA/State Compliance: Yes ☐ No ☐
Report Mail Address: Montgomery and Associates Results retrieved from Energy Source	Contact Name: John Laney Phone/Fax: (520) 425-2219 Email: jlaney@clmontgomery.com		Sampler: (Please Print) J. Kerns
Invoice Address: Email invoice to Gail PO Box 218 Grants, NM 87020	Invoice Contact & Phone: Gail Alexander (505) 287-8851	Purchase Order:	Quote/Bottle Order: C3636

Special Report/Formats – ELI must be notified prior to sample submittal for the following:

- ☐ DW
- ☐ GSA
- ☐ POTW/WWTP
- ☐ State: _____
- ☐ Other: _____
- ☐ A2LA
- ☐ EDD/EDT (Electronic Data) Format: _____
- ☐ LEVEL IV
- ☐ NELAC

Number of Containers
Sample Type: A Air W Water S Soils/Solids V Vegetation B Bioassay O Other

ANALYSIS REQUESTED

SEE ATTACHED

Normal Turnaround (TAT)

RUSH

Contact ELI prior to **RUSH** sample submittal for charges and scheduling – See Instruction Page

Comments: Metals - filtered and preserved in the field.

Shipped by: Fed Ex

Cooler ID(s):

Receipt Temp

On Ice: Yes No

Custody Seal Y N
Intact Y N
Signature Match Y N

	SAMPLE IDENTIFICATION (Name, Location, Interval, etc.)	Collection Date	Collection Time	MATRIX	C3636
1	7070	22 Feb 2014	1325	Water	X
2	7071	22 Feb 2014	1410	Water	X
3					
4					
5					
6					
7					
8					
9					
10					

LABORATORY USE ONLY

Custody Record MUST be Signed

	Relinquished by (print)	Date/Time	Signature	Received by (print)	Date/Time	Signature
	J. Kerns	2-24-14 / 1500				
				Received by Laboratory:		

Sample Disposal: Return to Client: _____ Lab Disposal: _____

In certain circumstances, samples submitted to Energy Laboratories, Inc. may be subcontracted to other certified laboratories in order to complete the analysis requested. This serves as notice of this possibility. All sub-contract data will be clearly notated on your analytical report.
Visit our web site at www.energylab.com for additional information, downloadable fee schedule, forms, and links.

Sample Log

Job Number: 1350.15 | Date: 22-Feb-2014 | Client: Montgomery and Associates

Site: Rio Algom Mining, Lisbon UT | Sampler: Josh Kerns

Well ID	Sample ID	Date	Time	Sample Method (HS, LF, P)	QC Sample (dup, split, rinse)	Ship Date/Notes
EF-8	**7070**	**22-Feb-2014**	**1325**	**LF**	**Regulatory**	**24-Feb-14**
RL-1	**7071**	**22-Feb-2014**	**1410**	**LF**	**Regulatory**	**24-Feb-14**

Job Number: 1350.15 | Date: 22-Feb-2014 | Client: Montgomery & Associates

Site: Rio Algom Mining

Well I.D.	Time	Dia	Depth to NAPL	Thickness of NAPL	Depth to water (DTW)	Total Depth (measured)	Total Depth (historical)	Ref Point TOC/TOB	
EF-8	1255	4			73.57	—	244	TOC	
RL-1	1345	5			115.88	—	124	TOC	
MW-110	1430	4			138.87	142.35	142	TOC	
MW-111	1515	4			98.76	—	126	TOC	
MW-116	1330	4			84.98	—	124	TOC	

Job#: 1350.15	**Sampler:** J Kerns	**Client:** Montgomery & Associates
Well ID: EF-8	**Date** (DDOct2012): 22 FEB 2014	**Site:** Rio Algom Mining, Lisbon, UT
Weather Conditions: COOL WINDY	**Sampler Signature:** Megan Kerns	
Well diam: 1/4" 1" 2" 3" (4") 6" Other:	**DTW:** 73.42	**Total Depth:** 244.00'
Purge equip: ES - diam: (Bladder) Peri Waterra Positive Air Displacement Ext. System		
disp bailer teflon bailer other:	**Tubing:** OD: New (Dedicated) NA	
Purge method: 3-5 Case Volume (Micro/Low-Flow) Extraction Other:		
Pump depth/ intake: 227'	**Multipliers:** 1"= 0.04 2"= 0.16 3"= 0.37 4"= 0.65 5"=1.02 6"= 1.47 Radius² X 0.163	

(TD - DTW X Multiplier = 1 Volume	80% Recovery (TD - DTW X 0.20 + DTW)

1 Volume = ____ X ____ = ____ (Total Purge) 80%= ____

Time	Temp (°C / °F)	pH	SP Cond (mS / µS)	Turbidity (NTU)	Purge Rate (gal or mL / min)	Volume Removed (gal / L)	DO (mg/l)	ORP (mv)	DTW	Notes
1305	10.8	7.4	2495	3	200	1.0	10.34	109.3	73.57	
1308	10.6	7.5	2532	2	200	1.6	9.61	108.0	73.57	
1311	10.6	7.5	2534	2	200	2.2	8.51	106.8	73.57	
1314	10.6	7.5	2548	1	200	2.8	7.79	105.9	73.58	
1317	10.6	7.4	2558	1	200	3.4	6.95	105.1	73.59	
1320	10.5	7.4	2565	1	200	4.0	7.23	104.4	73.59	
1323	10.6	7.4	2550	1	200	4.6	7.25	102.7	73.59	

Did well dewater? YES (NO)	Total volume removed: (4.6) (gal / L)	
Sample method: Disp Bailer Hydrasleeve New Tubing Ext. Port Other: Dedicated tubing		
Sample date: 22FEB2014	Sample time: 1325	DTW at sample: 73.59
Sample ID: 7070	Lab: Energy Labs	Number of bottles: 2
Analysis: 500 ml NP poly - Alkalinity, Cl, SO4, TDS, EC, pH 250 ml HNO3 poly *field filtered - Dissolved Metals		

Equipment blank ID @	Field blank ID @	
Duplicate ID:	Pre-purge DO:	Post purge DO:
Fe^{2+}:	Pre-purge ORP:	Post purge ORP:
NAPL depth:	Volume of NAPL:	Volume removed: ml

Job#: 1350.15	**Sampler:** J Kerns	**Client:** Montgomery & Associates
Well ID: RL-1	**Date** (DDOct2012): 22 FEB 2014	**Site:** Rio Algom Mining, Lisbon, UT
Weather Conditions: COLD-WINDY	**Sampler Signature:** MeganKerns	
Well diam: 1/4" 1" 2" 3" 4" 6" Other: 5"	**DTW:** 115.88	**Total Depth:** 125.00'
Purge equip: ES - diam: (Bladder) Peri Waterra Positive Air Displacement Ext. System		
disp bailer teflon bailer other:	**Tubing:** OD: New (Dedicated) NA	
Purge method: 3-5 Case Volume (Micro/Low-Flow) Extraction Other:		
Pump depth/ intake: 120'	**Multipliers:** 1"= 0.04 2"= 0.16 3"= 0.37 4"= 0.65 5"=1.02 6"= 1.47 Radius² X 0.163	

(TD - DTW X Multiplier = 1 Volume	80% Recovery (TD - DTW X 0.20 + DTW)

1 Volume = ___ X ___ = ___ (Total Purge) 80%= ___

Time	Temp (°C / °F)	pH	SP Cond (mS / µS)	Turbidity (NTU)	Purge Rate (gal or mL/min)	Volume Removed (gal / L)	DO (mg/l)	ORP (mv)	DTW	Notes
1352	11.5	7.17	12549	3	200	1.0	4.99	89.4	116.05	
1355	11.5	7.05	12626	3	200	1.6	4.18	90.1	116.19	
1358	11.6	7.02	12628	2	200	2.2	4.10	90.5	116.22	
1401	11.6	7.01	12628	1	200	2.8	4.57	90.1	116.22	
1404	11.6	7.01	12648	1	200	3.4	4.43	89.3	116.22	
1407	11.6	7.01	12625	1	200	4.0	4.50	88.8	116.22	

Did well dewater? YES (NO)	Total volume removed: (4.0) (gal / L)
Sample method: Disp Bailer Hydrasleeve New Tubing Ext. Port Other: Dedicated Tubing	
Sample date: 22 FEB 2014 Sample time: 1410	DTW at sample: 116.22
Sample ID: 7071 Lab: Energy Labs	Number of bottles: (2)
Analysis: 500 ml NP poly - Alkalinity, Cl, SO4, TDS, EC, pH 250 ml HNO3 poly *field filtered - Dissolved Metals	

Equipment blank ID @	Field blank ID @	
Duplicate ID:	Pre-purge DO:	Post purge DO:
$Fe2^{+}$:	Pre-purge ORP:	Post purge ORP:
NAPL depth:	Volume of NAPL:	Volume removed: ml

Equipment Calibration Log

Equipment make/ model	Equipment ID/ serial number	Date	Time	Calibration Standards	Equipment Reading	Equipment Calibrated	Temp (°C /)	Tech init.	Comments
YSI Pro Series	#3	2/22/14	1200	pH 4.0/7.0/10.0	4.0/7.0/10.0	✓✓✓	20.1	JK	
YSI Pro Series	#3	2/22/14	1200	Conductivity 1413	1413	✓	20.5	JK	
YSI Pro Series	#3	2/22/14	1200	Dissolved O2 100%	93%	✓	—	JK	
YSI Pro Series	#3	2/22/14	1200	ORP 237.5	238	✓	20.1	JK	
YSI Pro Series				pH 4.0/7.0/10.0					
YSI Pro Series				Conductivity 1413					
YSI Pro Series				Dissolved O2 100%					
YSI Pro Series				ORP					

ANALYTICAL SUMMARY REPORT

February 28, 2014

Rio Algom Mining Corporation LLC
Hwy 605 and 509
Grants, NM 87020

Workorder No.: C14020672 Quote ID: C3636 - Groundwater

Project Name: Lisbon, UT Facility

Energy Laboratories, Inc. Casper WY received the following 2 samples for Rio Algom Mining Corporation LLC on 2/25/2014 for analysis.

Sample ID	Client Sample ID	Collect Date	Receive Date	Matrix	Test
C14020672-001	7070	02/22/14 13:25	02/25/14	Groundwater	Metals by ICP/ICPMS, Dissolved Alkalinity Anion - Cation Balance Conductivity E300.0 Anions pH Solids, Total Dissolved Solids, Total Dissolved - Calculated
C14020672-002	7071	02/22/14 14:10	02/25/14	Groundwater	Same As Above

The results as reported relate only to the item(s) submitted for testing. The analyses presented in this report were performed at Energy Laboratories, Inc., 2393 Salt Creek Hwy., Casper, WY 82601, unless otherwise noted. Radiochemistry analyses were performed at Energy Laboratories, Inc., 2325 Kerzell Lane, Casper, WY 82601, unless otherwise noted. Any exceptions or problems with the analyses are noted in the Laboratory Analytical Report, the QA/QC Summary Report, or the Case Narrative.

If you have any questions regarding these test results, please call.

Report Approved By:

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility
Lab ID: C14020672-001
Client Sample ID: 7070

Report Date: 02/28/14
Collection Date: 02/22/14 13:25
DateReceived: 02/25/14
Matrix: Groundwater

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Carbonate as CO3	ND	mg/L		5		A2320 B	02/26/14 16:24 / jba
Bicarbonate as HCO3	416	mg/L		5		A2320 B	02/26/14 16:24 / jba
Calcium	232	mg/L		1		E200.7	02/26/14 18:19 / sf
Chloride	226	mg/L		1		E300.0	02/26/14 11:42 / wc
Magnesium	60	mg/L		1		E200.7	02/26/14 18:19 / sf
Potassium	6	mg/L		1		E200.7	02/26/14 18:19 / sf
Sodium	196	mg/L		1		E200.7	02/26/14 18:19 / sf
Sulfate	500	mg/L	D	4		E300.0	02/26/14 11:42 / wc
PHYSICAL PROPERTIES							
Conductivity @ 25 C	2170	umhos/cm		1		A2510 B	02/26/14 09:13 / alp
pH	7.76	s.u.	H	0.01		A4500-H B	02/26/14 09:13 / alp
Solids, Total Dissolved TDS @ 180 C	1520	mg/L		20		A2540 C	02/26/14 16:02 / alp
METALS - DISSOLVED							
Arsenic	0.036	mg/L		0.001		E200.8	02/26/14 18:35 / clm
Iron	ND	mg/L		0.03		E200.7	02/26/14 18:19 / sf
Molybdenum	ND	mg/L		0.01		E200.8	02/26/14 18:35 / clm
Selenium	0.014	mg/L		0.001		E200.8	02/26/14 18:35 / clm
Uranium	0.804	mg/L		0.0003		E200.8	02/26/14 18:35 / clm
DATA QUALITY							
A/C Balance (± 5)	2.16	%				A1030 E	02/28/14 14:39 / sdw
Anions	24.1	meq/L				A1030 E	02/28/14 14:39 / sdw
Cations	25.2	meq/L				A1030 E	02/28/14 14:39 / sdw
Solids, Total Dissolved Calculated	1500	mg/L				A1030 E	02/28/14 14:39 / sdw
TDS Balance (0.80 - 1.20)	1.03					A1030 E	02/28/14 14:39 / sdw

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
H - Analysis performed past recommended holding time.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility
Lab ID: C14020672-002
Client Sample ID: 7071

Report Date: 02/28/14
Collection Date: 02/22/14 14:10
DateReceived: 02/25/14
Matrix: Groundwater

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Carbonate as CO3	ND	mg/L		5		A2320 B	02/26/14 16:34 / jba
Bicarbonate as HCO3	1270	mg/L		5		A2320 B	02/26/14 16:34 / jba
Calcium	570	mg/L		1		E200.7	02/26/14 18:27 / sf
Chloride	681	mg/L	D	10		E300.0	02/26/14 12:00 / wc
Magnesium	202	mg/L		1		E200.7	02/26/14 18:27 / sf
Potassium	21	mg/L		1		E200.7	02/26/14 18:27 / sf
Sodium	2430	mg/L	D	3		E200.7	02/26/14 18:27 / sf
Sulfate	4680	mg/L	D	40		E300.0	02/26/14 12:00 / wc
PHYSICAL PROPERTIES							
Conductivity @ 25 C	10700	umhos/cm		1		A2510 B	02/26/14 09:16 / alp
pH	7.27	s.u.	H	0.01		A4500-H B	02/26/14 09:16 / alp
Solids, Total Dissolved TDS @ 180 C	9320	mg/L		100		A2540 C	02/26/14 16:04 / alp
METALS - DISSOLVED							
Arsenic	0.004	mg/L		0.001		E200.8	02/26/14 18:48 / clm
Iron	ND	mg/L		0.03		E200.7	02/26/14 18:27 / sf
Molybdenum	12.3	mg/L		0.01		E200.8	02/26/14 18:48 / clm
Selenium	0.076	mg/L	D	0.003		E200.8	02/26/14 18:48 / clm
Uranium	46.9	mg/L	D	0.001		E200.8	02/26/14 18:48 / clm
DATA QUALITY							
A/C Balance (± 5)	4.13	%				A1030 E	02/28/14 14:40 / sdw
Anions	139	meq/L				A1030 E	02/28/14 14:40 / sdw
Cations	151	meq/L				A1030 E	02/28/14 14:40 / sdw
Solids, Total Dissolved Calculated	9300	mg/L				A1030 E	02/28/14 14:40 / sdw
TDS Balance (0.80 - 1.20)	1.00					A1030 E	02/28/14 14:40 / sdw

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
H - Analysis performed past recommended holding time.

QA/QC Summary Report

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC **Report Date:** 02/28/14

Project: Lisbon, UT Facility **Work Order:** C14020672

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: A2320 B										Batch: R184003
Sample ID: MBLK	3	Method Blank				Run: MANTECH_140226A				02/26/14 14:41
Alkalinity, Total as CaCO3		0.8	mg/L	0.6						
Carbonate as CO3		ND	mg/L	1						
Bicarbonate as HCO3		ND	mg/L	1						
Sample ID: LCS_131219		Laboratory Control Sample				Run: MANTECH_140226A				02/26/14 14:55
Alkalinity, Total as CaCO3		263	mg/L	5.0	105	90	110			
Sample ID: C14020631-001ADUP	3	Sample Duplicate				Run: MANTECH_140226A				02/26/14 15:11
Alkalinity, Total as CaCO3		362	mg/L	5.0				0.4	10	
Carbonate as CO3		ND	mg/L	5.0					10	
Bicarbonate as HCO3		441	mg/L	5.0				0.4	10	
Sample ID: C14020631-002AMS		Sample Matrix Spike				Run: MANTECH_140226A				02/26/14 15:30
Alkalinity, Total as CaCO3		897	mg/L	5.0	99	80	120			

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

QA/QC Summary Report

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC **Report Date:** 02/28/14

Project: Lisbon, UT Facility **Work Order:** C14020672

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: A2510 B									Analytical Run: PHSC_101-C_140226A	
Sample ID: CCV - SC 1413		Continuing Calibration Verification Standard							02/26/14 10:27	
Conductivity @ 25 C		1420	umhos/cm	5.0	100	90	110			
Method: A2510 B									Batch: R183972	
Sample ID: SC 100		Initial Calibration Verification Standard				Run: PHSC_101-C_140226A			02/26/14 08:38	
Conductivity @ 25 C		102	umhos/cm	5.0	102	90	110			
Sample ID: SC 2ND 1413		Laboratory Control Sample				Run: PHSC_101-C_140226A			02/26/14 08:51	
Conductivity @ 25 C		1360	umhos/cm	5.0	97	90	110			
Sample ID: MBLK		Method Blank				Run: PHSC_101-C_140226A			02/26/14 09:10	
Conductivity @ 25 C		2	umhos/cm	0.8						
Sample ID: C14020659-001ADUP		Sample Duplicate				Run: PHSC_101-C_140226A			02/26/14 09:39	
Conductivity @ 25 C		823	umhos/cm	5.0				0.2	10	

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

QA/QC Summary Report

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC **Report Date:** 02/28/14

Project: Lisbon, UT Facility **Work Order:** C14020672

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: A2540 C										Batch: TDS140226A
Sample ID: MB-1_140226A		Method Blank				Run: BAL-19_140226B				02/26/14 16:01
Solids, Total Dissolved TDS @ 180 C		ND	mg/L	7						
Sample ID: LCS-2_140226A		Laboratory Control Sample				Run: BAL-19_140226B				02/26/14 16:02
Solids, Total Dissolved TDS @ 180 C		1980	mg/L	20	99	90	110			
Sample ID: C14020672-001A DUP		Sample Duplicate				Run: BAL-19_140226B				02/26/14 16:02
Solids, Total Dissolved TDS @ 180 C		1520	mg/L	18				0.3	5	
Sample ID: C14020672-002A MS		Sample Matrix Spike				Run: BAL-19_140226B				02/26/14 16:04
Solids, Total Dissolved TDS @ 180 C		19900	mg/L	100	106	90	110			

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

QA/QC Summary Report

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC **Report Date:** 02/28/14

Project: Lisbon, UT Facility **Work Order:** C14020672

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: A4500-H B									Analytical Run: PHSC_101-C_140226A	
Sample ID: pH 6.86	Initial Calibration Verification Standard								02/26/14 08:35	
pH		6.86	s.u.	0.010	100	98	102			
Sample ID: CCV - pH 7	Continuing Calibration Verification Standard								02/26/14 10:24	
pH		6.98	s.u.	0.010	100	98	102			
Method: A4500-H B									Batch: R183972	
Sample ID: C14020659-001ADUP	Sample Duplicate					Run: PHSC_101-C_140226A			02/26/14 09:39	
pH		11.0	s.u.	0.010				0.0	3	

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

QA/QC Summary Report

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC **Report Date:** 02/28/14

Project: Lisbon, UT Facility **Work Order:** C14020672

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E200.7									Analytical Run: ICP2-C_140226A	
Sample ID: ICV	4	Initial Calibration Verification Standard							02/26/14 12:43	
Calcium		52.1	mg/L	0.50	104	95	105			
Iron		5.18	mg/L	0.030	104	95	105			
Magnesium		50.1	mg/L	0.50	100	95	105			
Sodium		52.7	mg/L	0.50	105	95	105			
Sample ID: ICV		Initial Calibration Verification Standard							02/26/14 12:58	
Potassium		48.2	mg/L	0.50	96	95	105			
Sample ID: ICSA	5	Interference Check Sample A							02/26/14 13:28	
Calcium		502	mg/L	0.50	100	80	120			
Iron		189	mg/L	0.030	95	80	120			
Magnesium		498	mg/L	0.50	100	80	120			
Potassium		-0.000800	mg/L	0.50						
Sodium		-0.0145	mg/L	0.50						
Sample ID: ICSAB	5	Interference Check Sample AB							02/26/14 13:32	
Calcium		509	mg/L	0.50	102	80	120			
Iron		190	mg/L	0.030	95	80	120			
Magnesium		514	mg/L	0.50	103	80	120			
Potassium		-0.00110	mg/L	0.50						
Sodium		0.0505	mg/L	0.50						
Method: E200.7										Batch: R184014
Sample ID: MB-140226A	5	Method Blank				Run: ICP2-C_140226A			02/26/14 13:58	
Calcium		ND	mg/L	0.06						
Iron		ND	mg/L	0.001						
Magnesium		ND	mg/L	0.03						
Potassium		ND	mg/L	0.06						
Sodium		ND	mg/L	0.3						
Sample ID: LFB-140226A	5	Laboratory Fortified Blank				Run: ICP2-C_140226A			02/26/14 14:02	
Calcium		50.0	mg/L	0.50	100	85	115			
Iron		0.987	mg/L	0.030	99	85	115			
Magnesium		48.0	mg/L	0.50	96	85	115			
Potassium		50.6	mg/L	2.7	101	85	115			
Sodium		50.0	mg/L	0.50	100	85	115			
Sample ID: C14020571-004CMS2	5	Sample Matrix Spike				Run: ICP2-C_140226A			02/26/14 18:52	
Calcium		225	mg/L	1.0	94	70	130			
Iron		2.03	mg/L	0.030	99	70	130			
Magnesium		109	mg/L	1.0	94	70	130			
Potassium		115	mg/L	1.0	84	70	130			
Sodium		372	mg/L	1.0	100	70	130			
Sample ID: C14020571-004CMSD2	5	Sample Matrix Spike Duplicate				Run: ICP2-C_140226A			02/26/14 18:56	
Calcium		229	mg/L	1.0	97	70	130	1.7	20	

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

QA/QC Summary Report

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC **Report Date:** 02/28/14

Project: Lisbon, UT Facility **Work Order:** C14020672

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: **E200.7**										Batch: R184014
Sample ID: **C14020571-004CMSD2**	5	Sample Matrix Spike Duplicate				Run: ICP2-C_140226A				02/26/14 18:56
Iron		2.03	mg/L	0.030	99	70	130	0.2	20	
Magnesium		109	mg/L	1.0	94	70	130	0.2	20	
Potassium		117	mg/L	1.0	85	70	130	1.1	20	
Sodium		367	mg/L	1.0	96	70	130	1.2	20	

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

QA/QC Summary Report

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC **Report Date:** 02/28/14

Project: Lisbon, UT Facility **Work Order:** C14020672

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E200.8									Analytical Run: ICPMS2-C_140226A	
Sample ID: ICV	4	Initial Calibration Verification Standard							02/26/14 13:41	
Arsenic		0.0494	mg/L	0.0010	99	90	110			
Molybdenum		0.0488	mg/L	0.0010	98	90	110			
Selenium		0.0507	mg/L	0.0010	101	90	110			
Uranium		0.0488	mg/L	0.00030	98	90	110			
Method: E200.8									Batch: R184006	
Sample ID: LRB	4	Method Blank				Run: ICPMS2-C_140226A			02/26/14 14:20	
Arsenic		ND	mg/L	0.00010						
Molybdenum		ND	mg/L	4E-05						
Selenium		ND	mg/L	0.0002						
Uranium		ND	mg/L	1E-05						
Sample ID: LFB	4	Laboratory Fortified Blank				Run: ICPMS2-C_140226A			02/26/14 14:24	
Arsenic		0.0513	mg/L	0.0010	103	85	115			
Molybdenum		0.0518	mg/L	0.0010	103	85	115			
Selenium		0.0506	mg/L	0.0010	101	85	115			
Uranium		0.0526	mg/L	0.00030	105	85	115			
Sample ID: C14020672-001BMS4	4	Sample Matrix Spike				Run: ICPMS2-C_140226A			02/26/14 18:39	
Arsenic		0.0929	mg/L	0.0010	114	70	130			
Molybdenum		0.0619	mg/L	0.0010	107	70	130			
Selenium		0.0700	mg/L	0.0010	112	70	130			
Uranium		0.856	mg/L	0.00030		70	130			A
Sample ID: C14020672-001BMSD4	4	Sample Matrix Spike Duplicate				Run: ICPMS2-C_140226A			02/26/14 18:42	
Arsenic		0.0893	mg/L	0.0010	107	70	130	4.0	20	
Molybdenum		0.0602	mg/L	0.0010	103	70	130	2.9	20	
Selenium		0.0673	mg/L	0.0010	106	70	130	4.0	20	
Uranium		0.834	mg/L	0.00030		70	130	2.6	20	A

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

A - The analyte level was greater than four times the spike level. In accordance with the method % recovery is not calculated.

QA/QC Summary Report

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC **Report Date:** 02/28/14

Project: Lisbon, UT Facility **Work Order:** C14020672

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E300.0									Analytical Run: IC2-C_140226A	
Sample ID: CCV-022614-01	2	Continuing Calibration Verification Standard							02/26/14 09:58	
Chloride		9.70	mg/L	1.0	97	90	110			
Sulfate		39.1	mg/L	1.0	98	90	110			
Method: E300.0									Batch: R184042	
Sample ID: ICB-022614	2	Method Blank				Run: IC2-C_140226A			02/26/14 08:48	
Chloride		ND	mg/L	0.04						
Sulfate		ND	mg/L	0.1						
Sample ID: LFB-022614-01	2	Laboratory Fortified Blank				Run: IC2-C_140226A			02/26/14 09:23	
Chloride		9.84	mg/L	1.0	98	90	110			
Sulfate		39.5	mg/L	1.0	99	90	110			
Sample ID: LFBD-022614-01	2	Laboratory Fortified Blank Duplicate				Run: IC2-C_140226A			02/26/14 09:40	
Chloride		9.99	mg/L	1.0	100	90	110	1.5	20	
Sulfate		39.8	mg/L	1.0	99	90	110	0.7	20	
Sample ID: C14020668-001AMS	2	Sample Matrix Spike				Run: IC2-C_140226A			02/26/14 10:32	
Chloride		3080	mg/L	21	108	90	110			
Sulfate		3990	mg/L	83	99	90	110			
Sample ID: C14020668-001AMSD	2	Sample Matrix Spike Duplicate				Run: IC2-C_140226A			02/26/14 10:50	
Chloride		3090	mg/L	21	109	90	110	0.4	20	
Sulfate		3950	mg/L	83	98	90	110	1.1	20	

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

Workorder Receipt Checklist

Rio Algom Mining Corporation LLC C14020672

Login completed by: Dorian Quis
Date Received: 2/25/2014
Reviewed by: BL2000\khelm
Received by: dcq
Reviewed Date: 2/26/2014
Carrier name: NDA

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on all shipping container(s)/cooler(s)?	Yes ☐	No ☐	Not Present ☑
Custody seals intact on all sample bottles?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time? (Exclude analyses that are considered field parameters such as pH, DO, Res Cl, Sulfite, Ferrous Iron, etc.)	Yes ☑	No ☐	
Temp Blank received in all shipping container(s)/cooler(s)?	Yes ☐	No ☑	Not Applicable ☐
Container/Temp Blank temperature:	3.8°C Blue Ice		
Water - VOA vials have zero headspace?	Yes ☐	No ☐	No VOA vials submitted ☑
Water - pH acceptable upon receipt?	Yes ☑	No ☐	Not Applicable ☐

Standard Reporting Procedures:

Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH, Dissolved Oxygen and Residual Chlorine, are qualified as being analyzed outside of recommended holding time.

Solid/soil samples are reported on a wet weight basis (as received) unless specifically indicated. If moisture corrected, data units are typically noted as –dry. For agricultural and mining soil parameters/characteristics, all samples are dried and ground prior to sample analysis.

Contact and Corrective Action Comments:

None

Chain of Custody and Analytical Request Record

Page 1 of 1

PLEASE PRINT- Provide as much information as possible.

Company Name: Rio Algom Mining Corp	Project Name, PWS, Permit, Etc.: Lisbon, UT Facility	Sample Origin State: UT	EPA/State Compliance: Yes ☐ No ☐
Report Mail Address: Montgomery and Associates Results retrieved from Energy Source	Contact Name: John Laney Phone/Fax: (520) 425-2219 Email: jlaney@clmontgomery.com		Sampler: (Please Print) J. Kerns
Invoice Address: Email invoice to Gail PO Box 218 Grants, NM 87020	Invoice Contact & Phone: Gail Alexander (505) 287-8851	Purchase Order:	Quote/Bottle Order: C3636

Special Report/Formats – ELI must be notified prior to sample submittal for the following:

☐ DW ☐ GSA ☐ POTW/WWTP ☐ State: _____ ☐ Other: _____
☐ A2LA ☐ EDD/EDT (Electronic Data) Format: _____ ☐ LEVEL IV ☐ NELAC

Number of Containers
Sample Type: A Air W Water S Soils/Solids V Vegetation B Bioassay O Other

ANALYSIS REQUESTED

SEE ATTACHED

Normal Turnaround (TAT)

RUSH

Contact ELI prior to **RUSH** sample submittal for charges and scheduling – See Instruction Page

Comments: Metals - filtered and preserved in the field.

Shipped by: Fed Ex- Exp

Cooler ID(s): Client

Receipt Temp: 3.8 °C

On Ice: (Yes) No Blue

Custody Seal Y (N)

Intact Y N

Signature Match Y N

	SAMPLE IDENTIFICATION (Name, Location, Interval, etc.)	Collection Date	Collection Time	MATRIX	C3636	
1	7070	22 Feb 2014	1325	Water	X	
2	7071	22Feb2014	1410	Water	X	
3						
4						C14020672
5						
6						
7						
8						
9						
10						

LABORATORY USE ONLY

Custody Record MUST be Signed

Relinquished by (print): J. Kerns	Date/Time: 2-24-14/1500	Signature:	Received by (print):	Date/Time:	Signature:
Relinquished by (print):	Date/Time:	Signature:	Received by (print):	Date/Time:	Signature:
Sample Disposal: Return to Client: _____ Lab Disposal: _____			Received by Laboratory:	Date/Time: 2/25/14 1030	Signature: Dorian Reis

In certain circumstances, samples submitted to Energy Laboratories, Inc. may be subcontracted to other certified laboratories in order to complete the analysis requested. This serves as notice of this possibility. All sub-contract data will be clearly notated on your analytical report.
Visit our web site at www.energylab.com for additional information, downloadable fee schedule, forms, and links.

Job#: 1350.15	**Sampler:** J Kerns - B Myers	**Client:** Montgomery & Associates
Well ID: EF-8	**Date** (DDOct2012): 31 Mar 2014	**Site:** Rio Algom Mining, Lisbon, UT
Weather Conditions: Sunny - Windy - cool	**Sampler Signature:**	
Well diam: 1/4" 1" 2" 3" (4") 6" Other:	**DTW:** 73.50	**Total Depth:** 244.00
Purge equip: ES - diam: (Bladder) Peri Waterra Positive Air Displacement Ext. System		
disp bailer teflon bailer other:	**Tubing:** OD: New (Dedicated) NA	
Purge method: 3-5 Case Volume (Micro/Low-Flow) Extraction Other:		
Pump depth/ intake: 227'	**Multipliers:** 1"= 0.04 2"= 0.16 3"= 0.37 4"= 0.65 5"=1.02 6"= 1.47 Radius	
(TD - DTW X Multiplier = 1 Volume —	80% Recovery (TD - DTW X 0.20 + DTW)	
1 Volume = ___ X ___ = ___ (Total Purge)	80%=	

Time	Temp (°C)	pH	SP Cond (mS / (µS))	Turbidity (NTU)	Purge Rate (gal or mL / min)	Volume Removed (gal / L)	DO (mg/l)	ORP (mv)	DTW	Notes
1210	11.0	8.75	2173	.80	200	1.0	7.88	172.4	73.65	
1213	11.2	8.59	2222	3.37	200	1.6	8.70	175.0	73.65	
1216	11.1	8.80	2226	6.45	200	2.2	7.43	177.8	73.65	
1219	11.2	8.46	2242	1.50	200	2.8	6.31	178.4	73.65	
1222	11.1	8.42	2254	1.57	200	3.4	5.86	178.8	73.65	
1225	11.1	8.26	2254	.96	200	4.0	5.85	178.1	73.65	

Did well dewater? YES (NO)	Total volume removed: 4.0	(gal / (L))
Sample method: Disp Bailer Hydrasleeve New Tubing Ext. Port Other: Dedicated Tubing		
Sample date: 31mar2014	Sample time: 1230	DTW at sample: 73.65
Sample ID: ~~31 Mar 2014~~ incr 7102	Lab: Energy Labs	Number of bottles: 2
Analysis: 500 ml NP poly - Alkalinity, Cl, SO4, TDS, EC, pH 250 ml HNO3 poly *field filtered - Dissolved Metals		

Equipment blank ID @	Field blank ID @	
Duplicate ID:	Pre-purge DO:	Post purge DO:
Fe2+:	Pre-purge ORP:	Post purge ORP:
NAPL depth:	Volume of NAPL:	Volume removed: ml

Confluence Environmental, Inc.
3308 El Camino Ave., Suite 300 #148, Sacramento, CA 95821

Job#: 1350.15	**Sampler:** J Kerns - B Myers	**Client:** Montgomery & Associates
Well ID: RL-1	**Date** (DDOct2012): 31 MAR 2014	**Site:** Rio Algom Mining, Lisbon, UT
Weather Conditions: Sunny - Cool - windy	**Sampler Signature:** Megan Kerns	
Well diam: 1/4" 1" 2" 3" 4" 6" Other: 5"	**DTW:** 115.96	**Total Depth:** 124.00

Purge equip: ES - diam: (Bladder) Peri Waterra Positive Air Displacement Ext. System

disp bailer teflon bailer other: **Tubing:** OD: New (Dedicated) NA

Purge method: 3-5 Case Volume (Micro/Low-Flow) Extraction Other:

Pump depth/ intake: 120' **Multipliers:** 1"= 0.04 2"= 0.16 3"= 0.37 4"= 0.65 5"=1.02 6"= 1.47 Radius

(TD - DTW X Multiplier = 1 Volume — | 80% Recovery (TD - DTW X 0.20 + DTW)

1 Volume = — X — = — (Total Purge) | 80%= —

Time	Temp (°C)	pH	SP Cond (mS (µS))	Turbidity (NTU)	Purge Rate (gal or mL/ min)	Volume Removed (gal (L))	DO (mg/l)	ORP (mv)	DTW	Notes
1115	13.5	7.9	5641	1.8	200	1.0	4.27	219.0	115.98	
1125	11.5	7.8	11004	1.3	200	1.6	3.86	213.9	116.19	
1128	11.9	7.9	11009	1.3	200	2.2	3.51	210.5	116.2	
1131	12.1	7.9	11044	1.3	200	2.8	3.27	206.5	116.19	
1134	12.2	7.8	11053	.4	200	3.4	3.19	202.5	116.19	
1137	12.5	7.7	11039	.5	200	4.0	3.11	199.6	116.19	

Did well dewater? YES (NO) | Total volume removed: 4.0 (gal (L))

Sample method: Disp Bailer Hydrasleeve New Tubing Ext. Port Other: Dedicated Tubing

Sample date: 31 mar 2014 | Sample time: 1140 | DTW at sample: 116.19

Sample ID: 7101 | Lab: Energy Labs | Number of bottles: 2

Analysis: 500 ml NP poly - Alkalinity, Cl, SO4, TDS, EC, pH 250 ml HNO3 poly *field filtered - Dissolved Metals

Equipment blank ID @	Field blank ID @	
Duplicate ID:	Pre-purge DO:	Post purge DO:
Fe2+:	Pre-purge ORP:	Post purge ORP:
NAPL depth:	Volume of NAPL:	Volume removed: ml

Confluence Environmental, Inc.
3308 El Camino Ave., Suite 300 #148, Sacramento, CA 95821

Job#: 1350.15	**Sampler:** J Kerns - B Myers	**Client:** Montgomery & Associates
Well ID: OW-UT-9	**Date** (DDOct2012): 31 Mar 2014	**Site:** Rio Algom Mining, Lisbon, UT
Weather Conditions: Sunny - Windy - Cool	**Sampler Signature:**	
Well diam: 1/4" 1" 2" 3" 4" (6") Other:	**DTW:** 122.85	**Total Depth:** 142.00
Purge equip: ES - diam: (Bladder) Peri Waterra Positive Air Displacement Ext. System		
disp bailer teflon bailer other:	**Tubing:** OD: New (Dedicated) NA	
Purge method: 3-5 Case Volume (Micro/Low-Flow) Extraction Other:		
Pump depth/ intake: 128	**Multipliers:** 1"= 0.04 2"= 0.16 3"= 0.37 4"= 0.65 5"=1.02 6"= 1.47 Radius	
(TD - DTW X Multiplier = 1 Volume	80% Recovery (TD - DTW X 0.20 + DTW)	
1 Volume = _____ X _____ = _____ (Total Purge)	80%=	

Time	Temp (°C /)	pH	SP Cond (mS / µS)	Turbidity (NTU)	Purge Rate (gal or mL / min)	Volume Removed (gal / L)	DO (mg/l)	ORP (mv)	DTW	Notes
1305	12.1	11.47	39636	5.06	500	1.0	0.32	127.5	123.16	
1308	12.2	11.21	39685	3.06	500	2.5	0.31	118.5	123.16	
1311	12.2	11.26	39676	2.81	500	4.0	0.31	115.5	123.16	
1314	12.1	10.71	39731	2.89	500	5.5	.30 MCK ~~3.2~~	114.7	123.16	
1317	12.2	10.69	39686	2.69	500	7.0	.30	114.2	123.16	

Did well dewater? YES (NO)	Total volume removed: 7.0 (gal) (L)	
Sample method: Disp Bailer Hydrasleeve New Tubing Ext. Port Other: Dedicated Tubing		
Sample date: 31 MAR 2014	Sample time: 1320	DTW at sample: 123.16
Sample ID: 7103	Lab: Energy Labs	Number of bottles: 2
Analysis: 500 ml NP poly - Alkalinity, Cl, SO4, TDS, EC, pH	250 ml HNO3 poly *field filtered - Dissolved Metals	
Equipment blank ID @	Field blank ID @	
Duplicate ID:	Pre-purge DO:	Post purge DO:
Fe^{2+}:	Pre-purge ORP:	Post purge ORP:
NAPL depth:	Volume of NAPL:	Volume removed: ml

Confluence Environmental, Inc.
3308 El Camino Ave., Suite 300 #148, Sacramento, CA 95821

ANALYTICAL SUMMARY REPORT

April 14, 2014

Rio Algom Mining Corporation LLC
Hwy 605 and 509
Grants, NM 87020

Work Order: C14040141 Quote ID: C3636 - Groundwater

Project Name: Lisbon, UT Facility

Energy Laboratories, Inc. Casper WY received the following 3 samples for Rio Algom Mining Corporation LLC on 4/3/2014 for analysis.

Lab ID	Client Sample ID	Collect Date	Receive Date	Matrix	Test
C14040141-001	7101	03/31/14 11:40	04/03/14	Groundwater	Metals by ICP/ICPMS, Dissolved Alkalinity Anion - Cation Balance Conductivity E300.0 Anions pH Solids, Total Dissolved Solids, Total Dissolved - Calculated
C14040141-002	7102	03/31/14 12:30	04/03/14	Groundwater	Same As Above
C14040141-003	7103	03/31/14 13:20	04/03/14	Groundwater	Same As Above

The results as reported relate only to the item(s) submitted for testing. The analyses presented in this report were performed at Energy Laboratories, Inc., 2393 Salt Creek Hwy., Casper, WY 82601, unless otherwise noted. Radiochemistry analyses were performed at Energy Laboratories, Inc., 2325 Kerzell Lane, Casper, WY 82601, unless otherwise noted. Any exceptions or problems with the analyses are noted in the Laboratory Analytical Report, the QA/QC Summary Report, or the Case Narrative.

If you have any questions regarding these test results, please call.

Report Approved By:

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility
Lab ID: C14040141-001
Client Sample ID: 7101

Report Date: 04/14/14
Collection Date: 03/31/14 11:40
DateReceived: 04/03/14
Matrix: Groundwater

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Carbonate as CO3	ND	mg/L		5		A2320 B	04/03/14 23:03 / jba
Bicarbonate as HCO3	1280	mg/L		5		A2320 B	04/03/14 23:03 / jba
Calcium	513	mg/L		1		E200.7	04/07/14 16:54 / sf
Chloride	684	mg/L	D	10		E300.0	04/04/14 23:22 / wc
Magnesium	187	mg/L		1		E200.7	04/07/14 16:54 / sf
Potassium	18	mg/L		1		E200.7	04/07/14 16:54 / sf
Sodium	1980	mg/L	D	2		E200.7	04/07/14 16:54 / sf
Sulfate	4680	mg/L	D	40		E300.0	04/04/14 23:22 / wc
PHYSICAL PROPERTIES							
Conductivity @ 25 C	10800	umhos/cm		1		A2510 B	04/04/14 11:16 / tmm
pH	7.18	s.u.	H	0.01		A4500-H B	04/04/14 11:16 / tmm
Solids, Total Dissolved TDS @ 180 C	9230	mg/L		100		A2540 C	04/04/14 15:41 / tmm
METALS - DISSOLVED							
Arsenic	0.003	mg/L		0.001		E200.8	04/09/14 19:57 / clm
Iron	ND	mg/L		0.03		E200.7	04/07/14 16:54 / sf
Molybdenum	10.9	mg/L	D	0.03		E200.7	04/07/14 16:54 / sf
Selenium	0.081	mg/L	D	0.003		E200.8	04/09/14 19:57 / clm
Uranium	48.0	mg/L	D	0.001		E200.8	04/09/14 19:57 / clm
DATA QUALITY							
A/C Balance (± 5)	-4.42	%				A1030 E	04/08/14 16:01 / kbh
Anions	139	meq/L				A1030 E	04/08/14 16:01 / kbh
Cations	128	meq/L				A1030 E	04/08/14 16:01 / kbh
Solids, Total Dissolved Calculated	8800	mg/L				A1030 E	04/08/14 16:01 / kbh
TDS Balance (0.80 - 1.20)	1.05					A1030 E	04/08/14 16:01 / kbh

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
H - Analysis performed past recommended holding time.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility
Lab ID: C14040141-002
Client Sample ID: 7102

Report Date: 04/14/14
Collection Date: 03/31/14 12:30
DateReceived: 04/03/14
Matrix: Groundwater

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Carbonate as CO3	ND	mg/L		5		A2320 B	04/03/14 23:11 / jba
Bicarbonate as HCO3	424	mg/L		5		A2320 B	04/03/14 23:11 / jba
Calcium	204	mg/L		1		E200.7	04/07/14 16:58 / sf
Chloride	227	mg/L		1		E300.0	04/04/14 23:39 / wc
Magnesium	54	mg/L		1		E200.7	04/07/14 16:58 / sf
Potassium	5	mg/L		1		E200.7	04/07/14 16:58 / sf
Sodium	166	mg/L		1		E200.7	04/07/14 16:58 / sf
Sulfate	509	mg/L	D	2		E300.0	04/04/14 23:39 / wc
PHYSICAL PROPERTIES							
Conductivity @ 25 C	2260	umhos/cm		1		A2510 B	04/04/14 11:19 / tmm
pH	7.71	s.u.	H	0.01		A4500-H B	04/04/14 11:19 / tmm
Solids, Total Dissolved TDS @ 180 C	1520	mg/L		19		A2540 C	04/04/14 15:43 / tmm
METALS - DISSOLVED							
Arsenic	0.034	mg/L		0.001		E200.8	04/09/14 20:00 / clm
Iron	ND	mg/L		0.03		E200.7	04/07/14 16:58 / sf
Molybdenum	ND	mg/L		0.01		E200.7	04/07/14 16:58 / sf
Selenium	0.014	mg/L		0.001		E200.8	04/09/14 20:00 / clm
Uranium	0.841	mg/L		0.0003		E200.8	04/09/14 20:00 / clm
DATA QUALITY							
A/C Balance (± 5)	-5.32	%				A1030 E	04/11/14 15:28 / kbh
Anions	24.5	meq/L				A1030 E	04/11/14 15:28 / kbh
Cations	22.0	meq/L				A1030 E	04/11/14 15:28 / kbh
Solids, Total Dissolved Calculated	1400	mg/L				A1030 E	04/11/14 15:28 / kbh
TDS Balance (0.80 - 1.20)	1.07					A1030 E	04/11/14 15:28 / kbh

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
H - Analysis performed past recommended holding time.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility
Lab ID: C14040141-003
Client Sample ID: 7103

Report Date: 04/14/14
Collection Date: 03/31/14 13:20
DateReceived: 04/03/14
Matrix: Groundwater

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Carbonate as CO3	6360	mg/L		5		A2320 B	04/04/14 08:47 / jba
Bicarbonate as HCO3	8470	mg/L		5		A2320 B	04/04/14 08:47 / jba
Calcium	3	mg/L		1		E200.7	04/08/14 17:15 / sf
Chloride	1590	mg/L	D	50		E300.0	04/04/14 23:57 / wc
Magnesium	20	mg/L		1		E200.7	04/08/14 17:15 / sf
Potassium	14	mg/L	D	2		E200.7	04/07/14 17:16 / sf
Sodium	14700	mg/L	D	6		E200.7	04/08/14 17:15 / sf
Sulfate	11200	mg/L	D	200		E300.0	04/04/14 23:57 / wc
PHYSICAL PROPERTIES							
Conductivity @ 25 C	39500	umhos/cm		1		A2510 B	04/04/14 11:22 / tmm
pH	9.49	s.u.	H	0.01		A4500-H B	04/04/14 11:22 / tmm
Solids, Total Dissolved TDS @ 180 C	37200	mg/L		500		A2540 C	04/04/14 15:43 / tmm
METALS - DISSOLVED							
Arsenic	2.3	mg/L	D	0.4		E200.7	04/07/14 17:16 / sf
Iron	0.13	mg/L		0.03		E200.7	04/08/14 17:15 / sf
Molybdenum	46.5	mg/L	D	0.1		E200.7	04/07/14 17:16 / sf
Selenium	0.036	mg/L	D	0.007		E200.8	04/09/14 20:03 / clm
Uranium	84	mg/L	D	4		E200.7	04/08/14 17:15 / sf
DATA QUALITY							
A/C Balance (± 5)	0.21	%				A1030 E	04/11/14 15:31 / kbh
Anions	638	meq/L				A1030 E	04/11/14 15:31 / kbh
Cations	641	meq/L				A1030 E	04/11/14 15:31 / kbh
Solids, Total Dissolved Calculated	39000	mg/L				A1030 E	04/11/14 15:31 / kbh
TDS Balance (0.80 - 1.20)	0.97					A1030 E	04/11/14 15:31 / kbh

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
H - Analysis performed past recommended holding time.

QA/QC Summary Report

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Report Date: 04/14/14
Project: Lisbon, UT Facility
Work Order: C14040141

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: A2320 B										Batch: R185114
Lab ID: MBLK	3	Method Blank				Run: MANTECH_140403A				04/03/14 16:13
Alkalinity, Total as CaCO3		0.6	mg/L	0.6						
Carbonate as CO3		ND	mg/L	1						
Bicarbonate as HCO3		ND	mg/L	1						
Lab ID: LCS_131219		Laboratory Control Sample				Run: MANTECH_140403A				04/03/14 16:26
Alkalinity, Total as CaCO3		261	mg/L	5.0	104	90	110			
Lab ID: C14040105-001ADUP	3	Sample Duplicate				Run: MANTECH_140403A				04/03/14 16:45
Alkalinity, Total as CaCO3		653	mg/L	5.0				1.8	10	
Carbonate as CO3		ND	mg/L	5.0					10	
Bicarbonate as HCO3		796	mg/L	5.0				1.8	10	
Lab ID: C14040120-001AMS		Sample Matrix Spike				Run: MANTECH_140403A				04/03/14 17:02
Alkalinity, Total as CaCO3		504	mg/L	5.0	101	80	120			
Method: A2320 B										Batch: 140404_1_ALK-W
Lab ID: MBLK1_140404_	3	Method Blank				Run: TTR-ALK_140404A				04/04/14 08:34
Alkalinity, Total as CaCO3		1	mg/L	1						
Carbonate as CO3		ND	mg/L	1						
Bicarbonate as HCO3		2	mg/L	1						
Lab ID: LCS_131219		Laboratory Control Sample				Run: TTR-ALK_140404A				04/04/14 08:42
Alkalinity, Total as CaCO3		1250	mg/L	5.0	100	90	110			
Lab ID: C14040141-003ADUP	3	Sample Duplicate				Run: TTR-ALK_140404A				04/04/14 08:51
Alkalinity, Total as CaCO3		17525	mg/L					.00142552	10	
Carbonate as CO3		6300	mg/L	5.0				0.9	10	
Bicarbonate as HCO3		8560	mg/L	5.0				1.1	10	
Lab ID: C14040141-003AMS		Sample Matrix Spike				Run: TTR-ALK_140404A				04/04/14 08:57
Alkalinity, Total as CaCO3		20000	mg/L	5.0	98	80	120			

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

QA/QC Summary Report

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Report Date: 04/14/14
Project: Lisbon, UT Facility
Work Order: C14040141

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: A2510 B									Analytical Run: PHSC_101-C_140404A	
Lab ID: CCV - SC 1413		Continuing Calibration Verification Standard							04/04/14 12:04	
Conductivity @ 25 C		1410	umhos/cm	5.0	100	90	110			
Method: A2510 B									Batch: R185119	
Lab ID: MBLK		Method Blank				Run: PHSC_101-C_140404A			04/04/14 08:54	
Conductivity @ 25 C		4	umhos/cm	0.8						
Lab ID: SC 100		Initial Calibration Verification Standard				Run: PHSC_101-C_140404A			04/04/14 09:27	
Conductivity @ 25 C		106	umhos/cm	5.0	106	90	110			
Lab ID: SC 2ND 1413		Laboratory Control Sample				Run: PHSC_101-C_140404A			04/04/14 09:39	
Conductivity @ 25 C		1500	umhos/cm	5.0	106	90	110			
Lab ID: C14040148-001ADUP		Sample Duplicate				Run: PHSC_101-C_140404A			04/04/14 11:40	
Conductivity @ 25 C		2420	umhos/cm	5.0				0.1	10	

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

QA/QC Summary Report

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Report Date: 04/14/14
Project: Lisbon, UT Facility
Work Order: C14040141

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: A2540 C									Batch: TDS140404A	
Lab ID: MB-1_140404A	Method Blank					Run: BAL-19_140404B			04/04/14 15:30	
Solids, Total Dissolved TDS @ 180 C		ND	mg/L	7						
Lab ID: LCS-2_140404A	Laboratory Control Sample					Run: BAL-19_140404B			04/04/14 15:30	
Solids, Total Dissolved TDS @ 180 C		2000	mg/L	20	100	90	110			
Lab ID: C14040141-001A DUP	Sample Duplicate					Run: BAL-19_140404B			04/04/14 15:41	
Solids, Total Dissolved TDS @ 180 C		9120	mg/L	100				1.2	5	
Lab ID: C14040141-002A MS	Sample Matrix Spike					Run: BAL-19_140404B			04/04/14 15:43	
Solids, Total Dissolved TDS @ 180 C		3500	mg/L	20	99	90	110			

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

QA/QC Summary Report

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Report Date: 04/14/14
Project: Lisbon, UT Facility
Work Order: C14040141

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: **A4500-H B**									Analytical Run: PHSC_101-C_140404A	
Lab ID: **pH 6.86**	Initial Calibration Verification Standard								04/04/14 09:24	
pH		6.87	s.u.	0.010	100	98	102			
Lab ID: **CCV - pH 7**	Continuing Calibration Verification Standard								04/04/14 12:01	
pH		6.99	s.u.	0.010	100	98	102			
Method: **A4500-H B**									Batch: R185119	
Lab ID: **C14040148-001ADUP**	Sample Duplicate					Run: PHSC_101-C_140404A			04/04/14 11:40	
pH		7.44	s.u.	0.010				0.0	3	

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

QA/QC Summary Report

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC **Report Date:** 04/14/14

Project: Lisbon, UT Facility **Work Order:** C14040141

Analyte		Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method:	**E200.7**									Analytical Run: ICP2-C_140408A	
Lab ID:	**ICV**	2	Initial Calibration Verification Standard							04/08/14 13:13	
Iron			5.08	mg/L	0.030	102	95	105			
Uranium			5.17	mg/L	1.0	103	95	105			
Lab ID:	**ICSA**	2	Interference Check Sample A							04/08/14 13:41	
Iron			187	mg/L	0.030	94	80	120			
Uranium			0.0581	mg/L	1.0						
Lab ID:	**ICSAB**	2	Interference Check Sample AB							04/08/14 13:45	
Iron			190	mg/L	0.030	95	80	120			
Uranium			0.0556	mg/L	1.0						
Method:	**E200.7**									Batch: R185280	
Lab ID:	**MB-140408A**	2	Method Blank				Run: ICP2-C_140408A			04/08/14 14:10	
Iron			0.003	mg/L	0.001						
Uranium			ND	mg/L	0.3						
Lab ID:	**LFB-140408A**	2	Laboratory Fortified Blank				Run: ICP2-C_140408A			04/08/14 14:14	
Iron			0.964	mg/L	0.030	96	85	115			
Uranium			4.69	mg/L	1.0	94	85	115			
Lab ID:	**C14040097-001BMS2**	2	Sample Matrix Spike				Run: ICP2-C_140408A			04/08/14 17:03	
Iron			2.00	mg/L	0.030	97	70	130			
Uranium			9.51	mg/L	0.53	93	70	130			
Lab ID:	**C14040097-001BMSD**	2	Sample Matrix Spike Duplicate				Run: ICP2-C_140408A			04/08/14 17:07	
Iron			1.97	mg/L	0.030	96	70	130	1.5	20	
Uranium			9.44	mg/L	0.53	93	70	130	0.8	20	

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

QA/QC Summary Report

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Report Date: 04/14/14
Project: Lisbon, UT Facility
Work Order: C14040141

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E200.7									Analytical Run: ICP4-C_140407A	
Lab ID: ICSA	7	Interference Check Sample A							04/07/14 13:20	
Arsenic		-0.0114	mg/L	0.10						
Calcium		473	mg/L	0.50	95	80	120			
Iron		183	mg/L	0.030	91	80	120			
Magnesium		500	mg/L	0.50	100	80	120			
Molybdenum		0.000500	mg/L	0.10						
Potassium		-0.0163	mg/L	0.50						
Sodium		-0.413	mg/L	0.50						
Lab ID: ICSAB	7	Interference Check Sample AB							04/07/14 13:24	
Arsenic		0.00486	mg/L	0.10						
Calcium		471	mg/L	0.50	94	80	120			
Iron		181	mg/L	0.030	91	80	120			
Magnesium		498	mg/L	0.50	100	80	120			
Molybdenum		0.000780	mg/L	0.10						
Potassium		-0.0127	mg/L	0.50						
Sodium		-0.249	mg/L	0.50						
Lab ID: ICV	7	Initial Calibration Verification Standard							04/07/14 13:07	
Arsenic		0.998	mg/L	0.10	100	95	105			
Calcium		50.3	mg/L	0.50	101	95	105			
Iron		5.01	mg/L	0.030	100	95	105			
Magnesium		50.1	mg/L	0.50	100	95	105			
Molybdenum		0.989	mg/L	0.10	99	95	105			
Potassium		49.6	mg/L	0.50	99	95	105			
Sodium		50.1	mg/L	0.50	100	95	105			
Method: E200.7									Batch: R185225	
Lab ID: MB-140407A	7	Method Blank				Run: ICP4-C_140407A			04/07/14 13:42	
Arsenic		ND	mg/L	0.008						
Calcium		ND	mg/L	0.02						
Iron		ND	mg/L	0.002						
Magnesium		0.05	mg/L	0.01						
Molybdenum		ND	mg/L	0.003						
Potassium		ND	mg/L	0.04						
Sodium		ND	mg/L	0.2						
Lab ID: LFB-140407A	7	Laboratory Fortified Blank				Run: ICP4-C_140407A			04/07/14 13:46	
Arsenic		0.989	mg/L	0.10	99	85	115			
Calcium		49.1	mg/L	0.50	98	85	115			
Iron		0.982	mg/L	0.030	98	85	115			
Magnesium		49.0	mg/L	0.50	98	85	115			
Molybdenum		0.982	mg/L	0.10	98	85	115			
Potassium		49.9	mg/L	0.50	100	85	115			
Sodium		49.6	mg/L	0.50	99	85	115			

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

QA/QC Summary Report

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Report Date: 04/14/14
Project: Lisbon, UT Facility
Work Order: C14040141

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E200.7										Batch: R185225
Lab ID: C14040136-010BMS2	7	Sample Matrix Spike				Run: ICP4-C_140407A				04/07/14 16:48
Arsenic		2.02	mg/L	0.016	98	70	130			
Calcium		125	mg/L	1.0	92	70	130			
Iron		1.92	mg/L	0.030	94	70	130			
Magnesium		102	mg/L	1.0	93	70	130			
Molybdenum		1.94	mg/L	0.0059	95	70	130			
Potassium		98.4	mg/L	1.0	94	70	130			
Sodium		263	mg/L	1.0	87	70	130			
Lab ID: C14040136-010BMSD	7	Sample Matrix Spike Duplicate				Run: ICP4-C_140407A				04/07/14 16:51
Arsenic		1.96	mg/L	0.016	95	70	130	3.1	20	
Calcium		123	mg/L	1.0	90	70	130	1.6	20	
Iron		1.89	mg/L	0.030	92	70	130	1.8	20	
Magnesium		101	mg/L	1.0	92	70	130	1.3	20	
Molybdenum		1.91	mg/L	0.0059	94	70	130	1.7	20	
Potassium		96.6	mg/L	1.0	92	70	130	1.9	20	
Sodium		259	mg/L	1.0	83	70	130	1.4	20	

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

QA/QC Summary Report

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Report Date: 04/14/14
Project: Lisbon, UT Facility
Work Order: C14040141

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E200.8									Analytical Run: ICPMS2-C_140409A	
Lab ID: ICV	3	Initial Calibration Verification Standard							04/09/14 12:51	
Arsenic		0.0501	mg/L	0.0010	100	90	110			
Selenium		0.0498	mg/L	0.0010	100	90	110			
Uranium		0.0511	mg/L	0.00030	102	90	110			
Method: E200.8									Batch: R185294	
Lab ID: LRB	3	Method Blank				Run: ICPMS2-C_140409A			04/09/14 13:27	
Arsenic		ND	mg/L	0.00010						
Selenium		ND	mg/L	0.0002						
Uranium		ND	mg/L	1E-05						
Lab ID: LFB	3	Laboratory Fortified Blank				Run: ICPMS2-C_140409A			04/09/14 15:18	
Arsenic		0.0534	mg/L	0.0010	107	85	115			
Selenium		0.0534	mg/L	0.0010	107	85	115			
Uranium		0.0520	mg/L	0.00030	104	85	115			
Lab ID: C14040141-003BMS4	3	Sample Matrix Spike				Run: ICPMS2-C_140409A			04/09/14 20:07	
Arsenic		4.22	mg/L	0.0029	101	70	130			
Selenium		1.41	mg/L	0.0065	110	70	130			
Uranium		90.8	mg/L	0.0025		70	130			A
Lab ID: C14040141-003BMSD	3	Sample Matrix Spike Duplicate				Run: ICPMS2-C_140409A			04/09/14 20:10	
Arsenic		4.17	mg/L	0.0029	98	70	130	1.0	20	
Selenium		1.40	mg/L	0.0065	109	70	130	1.1	20	
Uranium		90.2	mg/L	0.0025		70	130	0.7	20	A

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

A - The analyte level was greater than four times the spike level. In accordance with the method % recovery is not calculated.

QA/QC Summary Report

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Report Date: 04/14/14
Project: Lisbon, UT Facility
Work Order: C14040141

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E300.0									Analytical Run: IC2-C_140404A	
Lab ID: CCV-040414-04	2	Continuing Calibration Verification Standard							04/04/14 21:37	
Chloride		9.74	mg/L	1.0	97	90	110			
Sulfate		39.7	mg/L	1.0	99	90	110			
Method: E300.0									Batch: R185171	
Lab ID: ICB	2	Method Blank				Run: IC2-C_140404A			04/04/14 09:08	
Chloride		ND	mg/L	0.04						
Sulfate		ND	mg/L	0.04						
Lab ID: LFB-040414	2	Laboratory Fortified Blank				Run: IC2-C_140404A			04/04/14 09:25	
Chloride		9.96	mg/L	1.0	100	90	110			
Sulfate		40.4	mg/L	1.0	101	90	110			
Lab ID: C14040137-007BMS	2	Sample Matrix Spike				Run: IC2-C_140404A			04/04/14 22:47	
Chloride		10.4	mg/L	1.0	104	90	110			
Sulfate		41.7	mg/L	1.0	104	90	110			
Lab ID: C14040137-007BMSD	2	Sample Matrix Spike Duplicate				Run: IC2-C_140404A			04/04/14 23:04	
Chloride		10.4	mg/L	1.0	103	90	110	0.6	20	
Sulfate		41.8	mg/L	1.0	104	90	110	0.3	20	

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

Workorder Receipt Checklist

Rio Algom Mining Corporation LLC C14040141

Login completed by: Dorian Quis
Date Received: 4/3/2014
Reviewed by: BL2000\khelm
Received by: dw
Reviewed Date: 4/4/2014
Carrier name: NDA

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on all shipping container(s)/cooler(s)?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on all sample bottles?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time? (Exclude analyses that are considered field parameters such as pH, DO, Res Cl, Sulfite, Ferrous Iron, etc.)	Yes ☑	No ☐	
Temp Blank received in all shipping container(s)/cooler(s)?	Yes ☑	No ☐	Not Applicable ☐
Container/Temp Blank temperature:	1.4°C On Ice		
Water - VOA vials have zero headspace?	Yes ☐	No ☐	No VOA vials submitted ☑
Water - pH acceptable upon receipt?	Yes ☐	No ☑	Not Applicable ☐

Standard Reporting Procedures:

Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH, Dissolved Oxygen and Residual Chlorine, are qualified as being analyzed outside of recommended holding time.

Solid/soil samples are reported on a wet weight basis (as received) unless specifically indicated. If moisture corrected, data units are typically noted as –dry. For agricultural and mining soil parameters/characteristics, all samples are dried and ground prior to sample analysis.

Contact and Corrective Action Comments:

Metals bottle for 7103 was received at pH 8; 1 mL HNO3 added to preserve to pH <2.

Chain of Custody and Analytical Request Record

PLEASE PRINT- Provide as much information as possible.

Company Name: Rio Algom Mining Corp

Report Mail Address: Montgomery and Associates
Results retrieved from Energy Source

Invoice Address: Email invoice to Gail
PO Box 218
Grants, NM 87020

Project Name, PWS, Permit, Etc.: Lisbon, UT Facility

Sample Origin State: UT

EPA/State Compliance: Yes ☐ No ☐

Contact Name: John Laney

Phone/Fax: (520) 425-2219

Email: jlaney@clmontgomery.com

Sampler: (Please Print) J. Kerns

Invoice Contact & Phone: Gail Alexander (505) 287-8851

Purchase Order:

Quote/Bottle Order: C3636

Special Report/Formats – ELI must be notified prior to sample submittal for the following:

☐ DW ☐ GSA ☐ POTW/WWTP ☐ State: _____ ☐ Other: _____

☐ A2LA ☐ EDD/EDT (Electronic Data) Format: _____ ☐ LEVEL IV ☐ NELAC

Number of Containers
Sample Type: A W S V B O
Air Water Soils/Solids Vegetation Biossay Other

ANALYSIS REQUESTED

SAMPLE IDENTIFICATION (Name, Location, Interval, etc.)	Collection Date	Collection Time	MATRIX	C3636	SEE ATTACHED	Normal Turnaround (TAT)
1 Z101	31MAR2014	1140	W	X		
2 Z102	31MAR2014	1230	W	X		
3 Z103	31MAR2014	1320	W	X		
4						
5						
6						
7						
8						
9						
10						

RUSH

Contact ELI prior to RUSH sample submittal for charges and scheduling – See Instruction Page

Comments: Metals Filtered and preserved in Field. "Separate Report"

C14040141

Shipped by: Fed Ex E

Cooler ID(s): 3792

Receipt Temp: 1.4 °C

On Ice: (Yes) No

Custody Seal Intact Signature Match: Y N

LABORATORY USE ONLY

Custody Record MUST be Signed

Relinquished by (print): J. Kerns Date/Time: 02APR2014 Signature:

Relinquished by (print): Date/Time: Signature:

Received by (print): Date/Time: Signature:

Received by (print): Date/Time: Signature:

Sample Disposal: Return to Client: _____ Lab Disposal: _____

Received by Laboratory: Date/Time: 4-3-14 1000 Signature:

In certain circumstances, samples submitted to Energy Laboratories, Inc. may be subcontracted to other certified laboratories in order to complete the analysis requested. This serves as notice of this possibility. All sub-contract data will be clearly notated on your analytical report.
Visit our web site at www.energylab.com for additional information, downloadable fee schedule, forms, and links.

Well Maintenance Inspection Form

Client: Montgomery & Associates Site: Rio Algom Mining Date: 4-1-14

Job #: 1350.15 Technician: JK Page 1 of 3

Inspection Point	Well Inspected - No Corrective Action Required	Entry Indicates Deficiency												Well Not Inspected (explain in notes)	Notes (Note any repairs made while on site)
		Cap non-functional	Lock non-functional	Lock missing	Bolts missing (# missing / # total tabs)	Tabs stripped (# stripped / # total tabs.)	Tabs broken (# broken / # of total tabs)	Annular seal incomplete	Apron damaged	Rim / Lid broken	Trip Hazard	Below Grade	Other (explain in notes)		
EF-3A	X														
EF-6	X														
EF-8	X		✓												NEEDS NEW LOCK
H-63	X														
LW-1	✓														
UW-1				X											
ML-1	X														
MW-13	X														
MW-5	X														
OW-UT-9	X														TOP OF CASING CRACKED
RL-1			4/4						✓						CRACKED APRON NEEDS NEW LOCK
RL-3									X						
RL-4	X														
RL-5	X														
RL-6	X														
MW-100	X														
MW-101	X														
MW-102	X														
MW-102DB	X														
MW-103	X														

Notes:

Repair codes: **rt**=retap/ bolts added or replaced **as**=annular seal repair.

Well Maintenance Inspection Form

Client: Montgomery & Associates Site: Rio Algom Mining Date: 4-1-14

Job #: 1350.15 Technician: JK Page 2 of 2

Inspection Point	Well Inspected - No Corrective Action Required	Entry Indicates Deficiency: Cap non-functional	Lock non-functional	Lock missing	Bolts missing (# missing / # total tabs)	Tabs stripped (# stripped / # total tabs.)	Tabs broken (# broken / # of total tabs)	Annular seal incomplete	Apron damaged	Rim / Lid broken	Trip Hazard	Below Grade	Other (explain in notes)	Well Not Inspected (explain in notes)	Notes (Note any repairs made while on site)
MW-104	X														
MW-105	X														
MW-106	X														
MW-107S	X														
MW-107D	X														
MW-108	X														
MW-109	X														
MW-110	✓														
MW-111	✓														
MW-112	X														
MW-113	X														
MW-114	X														
MW-115S	✓														
MW-115M	✓														
MW-116	X														
MW-117S	X														
MW-117M	X														
MW-118	X														
MW-119	X														
MW-120	X														

Notes:

Repair codes: **rt**=retap/ bolts added or replaced **as**=annular seal repair,

Well Maintenance Inspection Form

Client: Montgomery & Associates Site: Rio Algom Mining Date: 4-1-14

Job #: 1350.15 Technician: JK Page 3 of 3

		Entry Indicates Deficiency													
Inspection Point	Well Inspected - No Corrective Action Required	Cap non-functional	Lock non-functional	Lock missing	Bolts missing (# missing / # total tabs)	Tabs stripped (# stripped / # total tabs.)	Tabs broken (# broken / # of total tabs)	Annular seal incomplete	Apron damaged	Rim / Lid broken	Trip Hazard	Below Grade	Other (explain in notes)	Well Not Inspected (explain in notes)	Notes (Note any repairs made while on site)
MW-121	✓														
MW-122	X								✓						CRACKED APRON

Notes:

Repair codes: **rt**=retap/ bolts added or replaced **as**=annular seal repair,

Confluence Environmental, Inc

Equipment Calibration Log

Equipment make/ model	Equipment ID/ serial number	Date	Time	Calibration Standards	Equipment Reading	Equipment Calibrated	Temp (°C /	Tech init.	Comments
YSI Pro Series	#3 11610062	3-31-14	0700	pH 4.0/7.0/10.0	4/7/10	✓	7.0	JK	
YSI Pro Series	"	"	"	Conductivity 1413	1413	✓		JK	
YSI Pro Series	"	"	"	Dissolved O2 100%	78%	✓	—	JK	
YSI Pro Series	"	"	"	ORP 254.5	254.5	✓	8.0		
YSI Pro Series				pH 4.0/7.0/10.0					
YSI Pro Series				Conductivity 1413					
YSI Pro Series				Dissolved O2 100%					
YSI Pro Series				ORP					

Notes/comments:

Equipment Calibration Log

Equipment make/ model	Equipment ID/ serial number	Date	Time	Calibration Standards	Equipment Reading	Equipment Calibrated	Temp (°C /	Tech init.	Comments
YSI Pro Series	#3	4/2/14	630	pH 4.0/7.0/10.0	4.0, 7.0 10.0	Y	20	BM	
YSI Pro Series	"	"	"	Conductivity 1413	1413	Y	20	"	
YSI Pro Series	"	"	"	Dissolved O2 100%	100%	Y	20	"	
YSI Pro Series	"	"	"	ORP 237.5	237.5	Y	20	"	
YSI Pro Series	#4	4/2/14	630	pH 4.0/7.0/10.0	4.0, 7.0 10.0	Y	20	BM	
YSI Pro Series	"	"	"	Conductivity 1413	1413	Y	"	"	
YSI Pro Series	"	"	"	Dissolved O2 100%	100%	Y	"	"	
YSI Pro Series	"	"	"	ORP 237.5	237.5	Y	"	"	

Equipment Calibration Log

Equipment make/ model	Equipment ID/ serial number	Date	Time	Calibration Standards	Equipment Reading	Equipment Calibrated	Temp (°C /	Tech init.	Comments
YSI Pro Series	#3	4/3/14	630	pH 4.0/7.0/10.0	4.0, 7.0 10.0	Y	20	BM	
YSI Pro Series	"	"	"	Conductivity 1413	1413	Y	20	"	
YSI Pro Series	"	"	"	Dissolved O2 100%	100%	Y	20	"	
YSI Pro Series	"	"	"	ORP 237.5	237.5	Y	20	"	
YSI Pro Series	#4	4/3/14	630	pH 4.0/7.0/10.0	4.0, 7.0 10.0	Y	20	BM	
YSI Pro Series	"	"	"	Conductivity 1413	1413	Y	20	"	
YSI Pro Series	"	"	"	Dissolved O2 100%	100%	Y	20	"	
YSI Pro Series	"	"	"	ORP 237.5	237.5	Y	20	"	

Equipment Calibration Log

Equipment make/ model	Equipment ID/ serial number	Date	Time	Calibration Standards	Equipment Reading	Equipment Calibrated	Temp (°C)	Tech init.	Comments
YSI Pro Series	#3	4/5/14	1030	pH 4.0/7.0/10.0	4.0, 7.0 10.0	Y	20	BM	
YSI Pro Series				Conductivity 1413	1413	Y			
YSI Pro Series				Dissolved O2 100%	100%	Y			
YSI Pro Series				ORP 237.5	237.5	Y			
YSI Pro Series	#1			pH 4.0/7.0/10.0	4.0, 7.0 10.0	Y	20	BM	
YSI Pro Series				Conductivity 1413	1413	Y			
YSI Pro Series				Dissolved O2 100%	100%	Y			
YSI Pro Series				ORP 237.5	237.5	Y			

Equipment Calibration Log

Equipment make/ model	Equipment ID/ serial number	Date	Time	Calibration Standards	Equipment Reading	Equipment Calibrated	Temp (°C /	Tech init.	Comments
YSI Pro Series	#3	4/4/14	0830	pH 4.0/7.0/10.0	4.0, 7.0 10.0	Y	20	BM	
YSI Pro Series	↓	↓	↓	Conductivity 1413	1413	Y	↓	↓	
YSI Pro Series	↓	↓	↓	Dissolved O2 100%	100%	Y	↓	↓	
YSI Pro Series	↓	↓	↓	ORP 237.5	237.5	Y	↓	↓	
YSI Pro Series				pH 4.0/7.0/10.0					
YSI Pro Series				Conductivity 1413					
YSI Pro Series				Dissolved O2 100%					
YSI Pro Series				ORP					

Job#: 1350.15	**Sampler:** J Kerns - B Myers	**Client:** Montgomery & Associates
Well ID: EF-3A	**Date** (DDOct2012): 05APR2014	**Site:** Rio Algom Mining, Lisbon, UT
Weather Conditions: cool	**Sampler Signature:**	
Well diam: 1/4" 1" 2" 3" 4" (6") Other:	**DTW:** 81.27	**Total Depth:** 215
Purge equip: ES - diam: Bladder Peri Waterra Positive Air Displacement Ext. System		
disp bailer teflon bailer other: (NA)	**Tubing:** OD: New Dedicated (NA)	
Purge method: 3-5 Case Volume Micro/Low-Flow Extraction Other: (NA)		
Pump depth/ intake: 184'	**Multipliers:** 1"= 0.04 2"= 0.16 3"= 0.37 4"= 0.65 5"=1.02 6"= 1.47 Radius	
(TD - DTW X Multiplier = 1 Volume	80% Recovery (TD - DTW X 0.20 + DTW)	
1 Volume = _____ X _____ = _____ (Total Purge)	80%=	

Time	Temp (°C)	pH	SP Cond (mS / (µS))	Turbidity (NTU)	Purge Rate (gal or mL/ min)	Volume Removed (gal / L)	DO (mg/l)	ORP (mv)	DTW	Notes
1110	11.7	7.3	(4107)	3	—	—	2.5	191	—	

Did well dewater? YES (NO)	Total volume removed: — (gal / L)	
Sample method: Disp Bailer (Hydrasleeve) New Tubing Ext. Port Other:		
Sample date: 05APR2014	Sample time: 1110	DTW at sample: —
Sample ID: 7077	Lab: Energy Labs	Number of bottles: 2
Analysis: 500 ml NP poly - Alkalinity, Cl, SO4, TDS, EC, pH 250 ml HNO3 poly *field filtered - Dissolved Metals		
Equipment blank ID @	Field blank ID @	
Duplicate ID:	Pre-purge DO:	Post purge DO:
Fe^{2+}:	Pre-purge ORP:	Post purge ORP:
NAPL depth:	Volume of NAPL:	Volume removed: ml

Confluence Environmental, Inc.
3308 El Camino Ave., Suite 300 #148, Sacramento, CA 95821

Job#: 1350.15	**Sampler:** J Kerns / B Myers	**Client:** Montgomery & Associates
Well ID: EF-3A	**Date** (DDOct2012): 05APR2014	**Site:** Rio Algom Mining, Lisbon, UT
Weather Conditions: Wind / Cool	**Sampler Signature:**	
Well diam: 1/4" 1" 2" 3" 4" (6") Other:	**DTW:** 81.27	**Total Depth:** 215
Purge equip: (ES - diam:) Bladder Peri Waterra Positive Air Displacement Ext. System		
disp bailer teflon bailer other:	**Tubing:** OD: New (Dedicated) NA	
Purge method: 3-5 Case Volume (Micro/Low-Flow) Extraction Other:		
Pump depth/ intake:	**Multipliers:** 1"= 0.04 2"= 0.16 3"= 0.37 4"= 0.65 5"=1.02 6"= 1.47 Radius	
(TD - DTW X Multiplier = 1 Volume	80% Recovery (TD - DTW X 0.20 + DTW)	
1 Volume = _____ X _____ = _____ (Total Purge)	80%=	

Time	Temp (°C / F)	pH	SP Cond (mS / µS)	Turbidity (NTU)	Purge Rate (gal or mL/ min)	Volume Removed (gal / L)	DO (mg/l)	ORP (mv)	DTW	Notes
1134	11.0	7.5	58880	3	500	1.5	0.79	177	81.35	
1137	11.1	7.2	6229	3		3	0.74	176	81.35	
1140	11.2	7.1	76603	3		4.5	1.1	178	81.35	
1143	11.3	7.0	82141	3		6	0.70	180	81.35	
1146	11.3	7.0	8379	3		7.5	0.68	180	81.35	
1149	11.4	7.0	8502	3		89	0.71	181	81.35	
1152	11.4	7.0	84181	3		10.5	0.72	181	81.35	
1155	11.4	7.0	8472	3		12	0.71	181	81.35	

Did well dewater? YES (NO)	Total volume removed: 12 (gal / L)	
Sample method: Disp Bailer Hydrasleeve ~~New~~ (Tubing) Ext. Port Other:		
Sample date: 05APR2014	Sample time: 1155	DTW at sample: 81.35
Sample ID: ~~7078~~ 7078	Lab: Energy Labs	Number of bottles: 2
Analysis: 500 ml NP poly - Alkalinity, Cl, SO4, TDS, EC, pH 250 ml HNO3 poly *field filtered - Dissolved Metals		
Equipment blank ID @	Field blank ID @	
Duplicate ID:	Pre-purge DO:	Post purge DO:
Fe^{2+}:	Pre-purge ORP:	Post purge ORP:
NAPL depth:	Volume of NAPL:	Volume removed: ml

Confluence Environmental, Inc.
3308 El Camino Ave., Suite 300 #148, Sacramento, CA 95821

Job#: 1350.15	**Sampler:** J Kerns - B Myers	**Client:** Montgomery & Associates
Well ID: EF-6	**Date** (DDOct2012): 05APR2014	**Site:** Rio Algom Mining, Lisbon, UT
Weather Conditions: cool	**Sampler Signature:**	
Well diam: 1/4" 1" 2" 3" (4") 6" Other:	**DTW:** 70.99	**Total Depth:** 137
Purge equip: ES - diam: Bladder Peri Waterra Positive Air Displacement Ext. System		
disp bailer teflon bailer other: (HS)	**Tubing:** OD: New Dedicated (NA)	
Purge method: 3-5 Case Volume Micro/Low-Flow Extraction Other: (HS)		
Pump depth/ intake: 123	**Multipliers:** 1"= 0.04 2"= 0.16 3"= 0.37 4"= 0.65 5"=1.02 6"= 1.47 Radius	
(TD - DTW X Multiplier = 1 Volume	80% Recovery (TD - DTW X 0.20 + DTW)	
1 Volume = _____ X _____ = _____ (Total Purge)	80%=	

Time	Temp (°C /)	pH	SP Cond (mS (µS))	Turbidity (NTU)	Purge Rate (gal or mL/ min)	Volume Removed (gal / L)	DO (mg/l)	ORP (mv)	DTW	Notes
925	11.0	7.1	3128	3	—	—	9.8	173	—	

Did well dewater? YES (NO)	Total volume removed: — (gal / L)	
Sample method: Disp Bailer (Hydrasleeve) New Tubing Ext. Port Other:		
Sample date: 05APR2014	Sample time: 925	DTW at sample: —
Sample ID: 7139	Lab: Energy Labs	Number of bottles: 2
Analysis: 500 ml NP poly - Alkalinity, Cl, SO4, TDS, EC, pH 250 ml HNO3 poly *field filtered - Dissolved Metals		
Equipment blank ID @	Field blank ID @	
Duplicate ID:	Pre-purge DO:	Post purge DO:
Fe^{2+}:	Pre-purge ORP:	Post purge ORP:
NAPL depth:	Volume of NAPL:	Volume removed: ml

Confluence Environmental, Inc.
3308 El Camino Ave., Suite 300 #148, Sacramento, CA 95821

Job#: 1350.15	**Sampler:** J Kerns - B Myers	**Client:** Montgomery & Associates
Well ID: EF-6	**Date** (DDOct2012): 05APR2014	**Site:** Rio Algom Mining, Lisbon, UT
Weather Conditions: Cool	**Sampler Signature:**	
Well diam: 1/4" 1" 2" 3" (4") 6" Other:	**DTW:** 70.99	**Total Depth:** 137

Purge equip: (ES - diam:) Bladder Peri Waterra Positive Air Displacement Ext. System

disp bailer teflon bailer other: **Tubing:** OD: New (Dedicated) NA

Purge method: 3-5 Case Volume (Micro/Low-Flow) Extraction Other:

Pump depth/ intake: **Multipliers:** 1"= 0.04 2"= 0.16 3"= 0.37 4"= 0.65 5"=1.02 6"= 1.47 Radius

(TD - DTW X Multiplier = 1 Volume | 80% Recovery (TD - DTW X 0.20 + DTW)

1 Volume = _____ X _____ = _____ (Total Purge) | 80%= _____

Time	Temp (°C)	pH	SP Cond (mS / (S))	Turbidity (NTU)	Purge Rate (gal or mL / min)	Volume Removed (gal / L)	DO (mg/l)	ORP (mv)	DTW	Notes
951	10.8	7.1	3246	5	500	1.5	12.4	184	72.20	
954	10.9	7.0	3315	4	|	3	13.3	185	72.30	
957	11.1	7.0	3325	4	|	4.5	13.0	185	72.31	
1000	11.4	7.0	3325	3	|	6	13.0	184	72.31	
1003	11.6	7.0	3310	3	|	7.5	13.1	184	72.31	

Did well dewater? YES (NO) | Total volume removed: 7.5 (gal (L))

Sample method: Disp Bailer Hydrasleeve ~~New~~ (Tubing) Ext. Port Other:

Sample date: 05APR2014	Sample time: 1005	DTW at sample: 72.31
Sample ID: 7140	Lab: Energy Labs	Number of bottles: 2

Analysis: 500 ml NP poly - Alkalinity, Cl, SO4, TDS, EC, pH 250 ml HNO3 poly *field filtered - Dissolved Metals

Equipment blank ID @	Field blank ID @
Duplicate ID: ~~7111@~~ 7072@ 1015	Pre-purge DO: / Post purge DO:
Fe^{2+}:	Pre-purge ORP: / Post purge ORP:

NAPL depth:	Volume of NAPL:	Volume removed: ml

Confluence Environmental, Inc.
3308 El Camino Ave., Suite 300 #148, Sacramento, CA 95821

Job#: 1350.15	**Sampler:** J Kerns - B Myers	**Client:** Montgomery & Associates
Well ID: EF-8	**Date** (DDOct2012): 31 Mar 2014	**Site:** Rio Algom Mining, Lisbon, UT
Weather Conditions: Sunny - Windy - cool	**Sampler Signature:**	
Well diam: 1/4" 1" 2" 3" (4") 6" Other:	**DTW:** 73.50	**Total Depth:** 244.00
Purge equip: ES - diam: (Bladder) Peri Waterra Positive Air Displacement Ext. System		
disp bailer teflon bailer other:	**Tubing:** OD: New (Dedicated) NA	
Purge method: 3-5 Case Volume (Micro/Low-Flow) Extraction Other:		
Pump depth/ intake: 227'	**Multipliers:** 1"= 0.04 2"= 0.16 3"= 0.37 4"= 0.65 5"=1.02 6"= 1.47 Radius	
(TD - DTW X Multiplier = 1 Volume —	80% Recovery (TD - DTW X 0.20 + DTW)	
1 Volume = ___ X ___ = ___ (Total Purge)	80%=	

Time	Temp (°C)	pH	SP Cond (mS / (µS))	Turbidity (NTU)	Purge Rate (gal or mL / min)	Volume Removed (gal / L)	DO (mg/l)	ORP (mv)	DTW	Notes
1210	11.0	8.75	2173	.80	200	1.0	7.88	172.4	73.65	
1213	11.2	8.59	2222	3.37	200	1.6	8.70	175.0	73.65	
1216	11.1	8.80	2226	6.45	200	2.2	7.43	177.8	73.65	
1219	11.2	8.46	2242	1.50	200	2.8	6.31	178.4	73.65	
1222	11.1	8.42	2254	1.57	200	3.4	5.86	178.8	73.65	
1225	11.1	8.26	2254	.96	200	4.0	5.85	178.1	73.65	

Did well dewater? YES (NO)	Total volume removed: 4.0	(gal / (L))
Sample method: Disp Bailer Hydrasleeve New Tubing Ext. Port Other: Dedicated Tubing		
Sample date: 31mar2014	Sample time: 1230	DTW at sample: 73.65
Sample ID: ~~31 Mar 2014~~ incr 7102	Lab: Energy Labs	Number of bottles: 2
Analysis: 500 ml NP poly - Alkalinity, Cl, SO4, TDS, EC, pH 250 ml HNO3 poly *field filtered - Dissolved Metals		

Equipment blank ID @	Field blank ID @	
Duplicate ID:	Pre-purge DO:	Post purge DO:
Fe2+:	Pre-purge ORP:	Post purge ORP:
NAPL depth:	Volume of NAPL:	Volume removed: ml

Confluence Environmental, Inc.
3308 El Camino Ave., Suite 300 #148, Sacramento, CA 95821

Purging And Sampling Data Sheet

Job#: 1350.15	**Sampler:** J Kerns, B Myers	**Client:** Montgomery & Associates
Well ID: EF-8	**Date** (DDOct2012): 06APR2014	**Site:** Rio Algom Mining, Lisbon, UT
Weather Conditions: cold	**Sampler Signature:**	
Well diam: 1/4" 1" 2" 3" (4") 6" Other:	**DTW:** ~~73.49~~	**Total Depth:**
Purge equip: ES - diam: (Bladder) Peri Waterra Positive Air Displacement Ext. System		
disp bailer teflon bailer other:	**Tubing:** OD: New (Dedicated) NA	
Purge method: 3-5 Case Volume (Micro/Low-Flow) Extraction Other:		
Pump depth/ intake: —	**Multipliers:** 1"= 0.04 2"= 0.16 3"= 0.37 4"= 0.65 5"=1.02 6"= 1.47 Radius² X 0.163	
(TD - DTW X Multiplier = 1 Volume	80% Recovery (TD - DTW X 0.20 + DTW)	

1 Volume = _____ X _____ = _____ (Total Purge) 80%= _____

Time	Temp (°C / °F)	pH	SP Cond (mS / µS)	Turbidity (NTU)	Purge Rate (gal or mL / min)	Volume Removed (gal / L)	DO (mg/l)	ORP (mv)	DTW	Notes
1022	9.8	~~7.7~~ 7.3	2484	7	300	1	10.0	186	73.62	
1025	10.9	7.5	2278	5		1.9	13.3	194	73.67	
1028	10.9	7.5	2272	4		2.8	12.2	201	73.70	
1031	10.8	7.6	2275	4		3.7	9.4	207	73.70	
1034	10.8	7.6	2275	3		4.6	9.4	210	73.70	
1037	10.7	7.6	2274	3	—	5.5	9.5	212	73.70	

Did well dewater? YES (NO)	Total volume removed: 5.5 (gal / L)	
Sample method: Disp Bailer Hydrasleeve New Tubing Ext. Port Other: (dedi. Pump)		
Sample date: 06APR2014	Sample time: 1040	DTW at sample: 73.70
Sample ID: 7193	Lab: Energy Labs	Number of bottles: 2
Analysis: 500 ml NP poly - Alkalinity, Cl, SO4, TDS, EC, pH 250 ml HNO3 poly *field filtered - Dissolved Metals		
Equipment blank ID @	Field blank ID @	
* Duplicate ID: 7194 @ 1045	Pre-purge DO:	Post purge DO:
Fe^{2+}:	Pre-purge ORP:	Post purge ORP:
NAPL depth:	Volume of NAPL:	Volume removed: ml

Confluence Environmental, Inc
3308 El Camino Ave, Suite 300 #148, Sacramento, CA 95821, 916-760-7641

Job#: 1350.15	**Sampler:** J Kerns - B Myers	**Client:** Montgomery & Associates
Well ID: 14-63	**Date** (DDOct2012): 02APR2014	**Site:** Rio Algom Mining, Lisbon, UT
Weather Conditions: Cool	**Sampler Signature:**	
Well diam: 1/4" 1" 2" 3" 4" 6" Other: (5)	**DTW:** 133.30	**Total Depth:** 172
Purge equip: ES - diam: Bladder Peri Waterra Positive Air Displacement Ext. System		
disp bailer teflon bailer other: (HS)	**Tubing:** OD: New Dedicated (NA)	
Purge method: 3-5 Case Volume Micro/Low-Flow Extraction Other: (HS)		
Pump depth/ intake: 157'	**Multipliers:** 1"= 0.04 2"= 0.16 3"= 0.37 4"= 0.65 5"=1.02 6"= 1.47 Radius	
(TD - DTW X Multiplier = 1 Volume	80% Recovery (TD - DTW X 0.20 + DTW)	
1 Volume = _____ X _____ = _____ (Total Purge)	80%=	

Time	Temp (°C /	pH	SP Cond (mS / (µS)	Turbidity (NTU)	Purge Rate (gal or mL/ min)	Volume Removed (gal / L)	DO (mg/l)	ORP (mv)	DTW	Notes
1330	11.9	8.5	1042	8	—	—	4.4	121	—	

Did well dewater? YES (NO)	Total volume removed: — (gal / L)	
Sample method: Disp Bailer (Hydrasleeve) New Tubing Ext. Port Other:		
Sample date: 02APR2014	Sample time: 1330	DTW at sample: —
Sample ID: 7107	Lab: Energy Labs	Number of bottles: 2
Analysis: 500 ml NP poly - Alkalinity, Cl, SO4, TDS, EC, pH 250 ml HNO3 poly *field filtered - Dissolved Metals		
Equipment blank ID @	Field blank ID @	
Duplicate ID:	Pre-purge DO:	Post purge DO:
$Fe2^+$:	Pre-purge ORP:	Post purge ORP:
NAPL depth:	Volume of NAPL:	Volume removed: ml

Confluence Environmental, Inc.
3308 El Camino Ave., Suite 300 #148, Sacramento, CA 95821

Job#: 1350.15	**Sampler:** J Kerns, B Myers	**Client:** Montgomery & Associates
Well ID: H-63	**Date** (DDOct2012): 02APR2014	**Site:** Rio Algom Mining, Lisbon, UT
Weather Conditions: Cool	**Sampler Signature:**	
Well diam: 1/4" 1" 2" 3" 4" 6" Other: (5)	**DTW:** 133.30	**Total Depth:** 172.00
Purge equip: (ES - diam:) Bladder Peri Waterra Positive Air Displacement Ext. System		
disp bailer teflon bailer other:	**Tubing:** OD: New (Dedicated) NA	
Purge method: 3-5 Case Volume (Micro/Low-Flow) Extraction Other:		
Pump depth/ intake: 157	**Multipliers:** 1"= 0.04 2"= 0.16 3"= 0.37 4"= 0.65 5"=1.02 6"= 1.47 Radius	
(TD - DTW X Multiplier = 1 Volume	80% Recovery (TD - DTW X 0.20 + DTW)	
1 Volume = _____ X _____ = _____ (Total Purge)	80%= _____	

Time	Temp (°C /	pH	SP Cond (mS /(µS))	Turbidity (NTU)	Purge Rate (gal or (mL/ min))	Volume Removed (gal/(L))	DO (mg/l)	ORP (mv)	DTW	Notes
1344	10.5	8.2	1060	8	400	1.5	5.0	120	135.60	
1347	10.8	8.2	1016	7		2.7	4.8	121	135.60	
1350	11.1	8.1	1052	7		3.9	4.7	122	135.60	
1353	12.1	8.1	1064	6		5.1	4.6	122	135.60	
1356	14.0	8.1	1038	5		6.3	4.4	122	135.60	
1359	14.3	8.1	1057	5		7.5	4.3	122	135.60	
1402	14.4	8.1	1046	5	↓	8.7	4.3	122	135.60	

Did well dewater? YES (NO)	Total volume removed: 8.7 (gal /(L))	
Sample method: Disp Bailer Hydrasleeve ~~New~~ (Tubing) Ext. Port Other:		
Sample date: 02APR2014	Sample time: 1405	DTW at sample: 135.60
Sample ID: 7108	Lab: Energy Labs	Number of bottles: 2
Analysis: 500 ml NP poly - Alkalinity, Cl, SO4, TDS, EC, pH 250 ml HNO3 poly *field filtered - Dissolved Metals		
Equipment blank ID @	Field blank ID @	
Duplicate ID:	Pre-purge DO:	Post purge DO:
Fe^{2+}:	Pre-purge ORP:	Post purge ORP:
NAPL depth:	Volume of NAPL:	Volume removed: ml

Confluence Environmental, Inc.
3308 El Camino Ave., Suite 300 #148, Sacramento, CA 95821

Purging And Sampling Data Sheet

Job#: 1350.15	**Sampler:** J Kerns/B Myers	**Client:** Montgomery & Associates
Well ID: LW-1	**Date** (DDOct2012): 03APR2014	**Site:** Rio Algom Mining, Lisbon, UT
Weather Conditions: Wind	**Sampler Signature:**	
Well diam: 1/4" 1" 2" 3" (4") 6" Other:	**DTW:** 146.10 **Total Depth:** 233	
Purge equip: ES - diam: Bladder Peri Waterra Positive Air Displacement Ext. System		
disp bailer teflon bailer other: (HS) **Tubing:** OD: New Dedicated (NA)		
Purge method: 3-5 Case Volume Micro/Low-Flow Extraction Other: (HS)		
Pump depth/ intake: 220	**Multipliers:** 1"= 0.04 2"= 0.16 3"= 0.37 4"= 0.65 5"=1.02 6"= 1.47 Radius² X 0.163	

(TD - DTW X Multiplier = 1 Volume	80% Recovery (TD - DTW X 0.20 + DTW)

1 Volume = _____ X _____ = _____ (Total Purge) 80%= _____

Time	Temp (°C / °F)	pH	SP Cond (mS / µS)	Turbidity (NTU)	Purge Rate (gal or mL/ min)	Volume Removed (gal / L)	DO (mg/l)	ORP (mv)	DTW	Notes
1420	11.1	7.9	778	8	—	—	3.0	125	—	

Did well dewater? YES (NO)	Total volume removed: — (gal / L)	
Sample method: Disp Bailer (Hydrasleeve) New Tubing Ext. Port Other:		
Sample date: 03APR2014	Sample time: 1420	DTW at sample: —
Sample ID: 7121	Lab: Energy Labs	Number of bottles: 2
Analysis: 500 ml NP poly - Alkalinity, Cl, SO4, TDS, EC, pH 250 ml HNO3 poly *field filtered - Dissolved Metals		

Equipment blank ID @	Field blank ID @	
Duplicate ID:	Pre-purge DO:	Post purge DO:
$Fe2^{+}$:	Pre-purge ORP:	Post purge ORP:
NAPL depth:	Volume of NAPL:	Volume removed: ml

Confluence Environmental, Inc
3308 El Camino Ave, Suite 300 #148, Sacramento, CA 95821, 916-760-7641

Purging And Sampling Data Sheet

Job#: 1350.15	**Sampler:** J Kerns B Myers	**Client:** Montgomery & Associates
Well ID: PLW-1	**Date** (DDOct2012): 03APR2014	**Site:** Rio Algom Mining, Lisbon, UT
Weather Conditions: Wind	**Sampler Signature:**	
Well diam: 1/4" 1" 2" 3" (4") 6" Other:	**DTW:** 146.10 **Total Depth:** 233	
Purge equip: (ES - diam:) Bladder Peri Waterra Positive Air Displacement Ext. System		
disp bailer teflon bailer other:	**Tubing:** OD: New (Dedicated) NA	
Purge method: 3-5 Case Volume (Micro/Low-Flow) Extraction Other:		
Pump depth/ intake:	**Multipliers:** 1"= 0.04 2"= 0.16 3"= 0.37 4"= 0.65 5"=1.02 6"= 1.47 Radius² X 0.163	

(TD - DTW X Multiplier = 1 Volume	80% Recovery (TD - DTW X 0.20 + DTW)

1 Volume = _____ X _____ = _____ (Total Purge) 80%= _____

Time	Temp (°C / °F)	pH	SP Cond (mS / µS)	Turbidity (NTU)	Purge Rate (gal or mL/ min)	Volume Removed (gal / L)	DO (mg/l)	ORP (mv)	DTW	Notes
1432	10.3	7.6	591	14	400	1.5	3.5	137	146.40	
1435	10.6	7.6	586	12		2.7	3.1	140	146.40	
1438	10.8	7.5	585	12		3.9	3.1	143	146.40	
1441	11.0	7.5	579	10		5.1	3.1	144	146.40	
1444	11.1	7.5	577	10		6.3	3.1	145	146.40	

Did well dewater? YES (NO)	Total volume removed: 6.3 (gal / (L))	
Sample method: Disp Bailer Hydrasleeve ~~New~~ (Tubing) Ext. Port Other:		
Sample date: 03APR2014	Sample time: 1445	DTW at sample: 146.40
Sample ID: 7122	Lab: Energy Labs	Number of bottles: 2
Analysis: 500 ml NP poly - Alkalinity, Cl, SO4, TDS, EC, pH 250 ml HNO3 poly *field filtered - Dissolved Metals		

Equipment blank ID @	Field blank ID @	
Duplicate ID:	Pre-purge DO:	Post purge DO:
Fe^{2+}:	Pre-purge ORP:	Post purge ORP:
NAPL depth:	Volume of NAPL:	Volume removed: ml

Confluence Environmental, Inc
3308 El Camino Ave, Suite 300 #148, Sacramento, CA 95821, 916-760-7641

Job#: 1350.15	**Sampler:** J Kerns - B Myers	**Client:** Montgomery & Associates
Well ID: ~~AMW~~ MW-1	**Date** (DDOct2012): 02 Apr 2014	**Site:** Rio Algom Mining, Lisbon, UT
Weather Conditions: Cold - Windy	**Sampler Signature:**	
Well diam: 1/4" 1" 2" 3" (4") 6" Other:	**DTW:** 104.93	**Total Depth:** 140 -
Purge equip: ES - diam: Bladder Peri Waterra Positive Air Displacement Ext. System		
disp bailer teflon bailer other:	**Tubing:** OD: New Dedicated NA	
Purge method: 3-5 Case Volume Micro/Low-Flow Extraction Other:		
Pump depth/ intake: —	**Multipliers:** 1"= 0.04 2"= 0.16 3"= 0.37 4"= 0.65 5"=1.02 6"= 1.47 Radius	
(TD - DTW X Multiplier = 1 Volume	80% Recovery (TD - DTW X 0.20 + DTW)	
1 Volume = — X — = — (Total Purge)	80%=	

Time	Temp (°C)	pH	SP Cond (mS / µS)	Turbidity (NTU)	Purge Rate (gal or mL/ min)	Volume Removed (gal / L)	DO (mg/l)	ORP (mv)	DTW	Notes
1330	10	7.2	1013	8.5	—	—	4.12	186.9	104.93	HS @ 122.5

Did well dewater? YES (NO)	Total volume removed: — (gal / L)	
Sample method: Disp Bailer (Hydrasleeve) New Tubing Ext. Port Other:		
Sample date: 02APR2014 7144-JA	Sample time: 1330	DTW at sample: 104.93
Sample ID: 7144	Lab: Energy Labs	Number of bottles: 2
Analysis: 500 ml NP poly - Alkalinity, Cl, SO4, TDS, EC, pH 250 ml HNO3 poly *field filtered - Dissolved Metals		
Equipment blank ID @	Field blank ID @	
Duplicate ID:	Pre-purge DO:	Post purge DO:
Fe^{2+}:	Pre-purge ORP:	Post purge ORP:
NAPL depth:	Volume of NAPL:	Volume removed: ml

Confluence Environmental, Inc.
3308 El Camino Ave., Suite 300 #148, Sacramento, CA 95821

Job#: 1350.15	**Sampler:** J Kerns - B Myers	**Client:** Montgomery & Associates
Well ID: MW-1	**Date** (DDOct2012): 02APR2014	**Site:** Rio Algom Mining, Lisbon, UT

Weather Conditions: Windy - Cold **Sampler Signature:**

Well diam: 1/4" 1" 2" 3" (4") 6" Other: **DTW:** 104.93 **Total Depth:** 140

Purge equip: (ES - diam:) Bladder Peri Waterra Positive Air Displacement Ext. System

disp bailer teflon bailer other: **Tubing:** OD: New (Dedicated) NA

Purge method: 3-5 Case Volume (Micro/Low-Flow) Extraction Other:

Pump depth/ intake: 122.5 **Multipliers:** 1"= 0.04 2"= 0.16 3"= 0.37 4"= 0.65 5"=1.02 6"= 1.47 Radius

(TD - DTW X Multiplier = 1 Volume | 80% Recovery (TD - DTW X 0.20 + DTW)

1 Volume = ___ X ___ = ___ (Total Purge) | 80%= ___

Time	Temp (°C)	pH	SP Cond (mS / µS)	Turbidity (NTU)	Purge Rate (gal or mL / min)	Volume Removed (gal / L)	DO (mg/l)	ORP (mv)	DTW	Notes
1345	10.7	11.2	1000	9.3	500	1.0	4.24	128.1	105.19	
1348	10.7	11.2	999	8.7	500	2.5	4.19	126.3	105.43	
1351	10.4	11.3	1001	7.8	500	4.0	4.20	117.5	105.43	
1354	10.7	7.8	1001	7.7	500	5.5	4.27	99.8	105.43	
1357	11.1	7.4	1001	9.1	500	7.0	4.30	92.0	105.43	
1400	11.3	7.4	1002	9.4	500	8.5	4.31	88.8	105.43	
1403	11.3	7.4	997	9.5	500	10.0	4.27	85.0	105.43	

Did well dewater? YES (NO) Total volume removed: 10.0 (gal / (L))

Sample method: Disp Bailer Hydrasleeve New Tubing Ext. Port Other: Dedicated Tubing

Sample date: 02APR2014 Sample time: 1405 DTW at sample: 105.43

Sample ID: 7145 Lab: Energy Labs Number of bottles: 2

Analysis: 500 ml NP poly - Alkalinity, Cl, SO4, TDS, EC, pH 250 ml HNO3 poly *field filtered - Dissolved Metals

Equipment blank ID @ Field blank ID @

Duplicate ID: Pre-purge DO: Post purge DO:

Fe^{2+}: Pre-purge ORP: Post purge ORP:

NAPL depth: Volume of NAPL: Volume removed: ml

Confluence Environmental, Inc.
3308 El Camino Ave., Suite 300 #148, Sacramento, CA 95821

Job#: 1350.15	**Sampler:** J Kerns - B Myers	**Client:** Montgomery & Associates
Well ID: ML-1	**Date** (DDOct2012): 04APR2014	**Site:** Rio Algom Mining, Lisbon, UT
Weather Conditions: Windy - Cold		**Sampler Signature:**
Well diam: 1/4" 1" 2" 3" (4") 6" Other:		**DTW:** 42.55 **Total Depth:** 157
Purge equip: ES - diam: Bladder Peri Waterra Positive Air Displacement Ext. System		
disp bailer teflon bailer other:		**Tubing:** OD: New Dedicated NA
Purge method: 3-5 Case Volume Micro/Low-Flow Extraction Other:		
Pump depth/ intake: —	**Multipliers:** 1"= 0.04 2"= 0.16 3"= 0.37 4"= 0.65 5"=1.02 6"= 1.47 Radius	
(TD - DTW X Multiplier = 1 Volume	80% Recovery (TD - DTW X 0.20 + DTW)	
1 Volume = — X — = — (Total Purge)	80%= —	

Time	Temp (°C)	pH	SP Cond (mS (µS))	Turbidity (NTU)	Purge Rate (gal or mL/ min)	Volume Removed (gal / L)	DO (mg/l)	ORP (mv)	DTW	Notes
1110	12.4	7.8	1430	3.6	—	—	4.50	226.0	42.55	HS @ 146.5

Did well dewater? YES (NO)	Total volume removed: — (gal / L)
Sample method: Disp Bailer (Hydrasleeve) New Tubing Ext. Port Other:	
Sample date: 04APR2014 Sample time: 1110	DTW at sample: 42.55
Sample ID: 7164 Lab: Energy Labs	Number of bottles: 2 +2
Analysis: 500 ml NP poly - Alkalinity, Cl, SO4, TDS, EC, pH 250 ml HNO3 poly *field filtered - Dissolved Metals	
Equipment blank ID @	Field blank ID @
Duplicate ID: 7165 @ 1115	Pre-purge DO: Post purge DO:
$Fe2^{+}$:	Pre-purge ORP: Post purge ORP:
NAPL depth: Volume of NAPL:	Volume removed: ml

Confluence Environmental, Inc.
3308 El Camino Ave., Suite 300 #148, Sacramento, CA 95821

Job#: 1350.15	**Sampler:** J Kerns - B Myers	**Client:** Montgomery & Associates
Well ID: ML-1	**Date** (DDOct2012): 04APR2014	**Site:** Rio Algom Mining, Lisbon, UT
Weather Conditions: Windy - Cold	**Sampler Signature:**	
Well diam: 1/4" 1" 2" 3" (4") 6" Other:	**DTW:** 42.55	**Total Depth:** 157
Purge equip: (ES - diam:) Bladder Peri Waterra Positive Air Displacement Ext. System		
disp bailer teflon bailer other:	**Tubing:** OD: New (Dedicated) NA	
Purge method: (3-5 Case Volume) Micro/Low-Flow Extraction Other:		
Pump depth/ intake: 146.5'	**Multipliers:** 1"= 0.04 2"= 0.16 3"= 0.37 4"= 0.65 5"=1.02 6"= 1.47 Radius	
(TD - DTW X Multiplier = 1 Volume	80% Recovery (TD - DTW X 0.20 + DTW)	
1 Volume = ___ X ___ = ___ (Total Purge)	80%= ___	

Time	Temp (C)	pH	SP Cond (mS/(µS))	Turbidity (NTU)	Purge Rate (gal or (mL)/min)	Volume Removed (gal /(L))	DO (mg/l)	ORP (mv)	DTW	Notes
1125	10.2	8.2	1390	6.2	500	1.0	5.82	206.9	43.04	
1128	11.0	8.0	1399	4.6	500	2.5	2.71	202.6	43.00	
1131	11.0	8.0	1396	7.1	500	4.0	2.55	200.6	43.00	
1134	11.0	7.9	1396	10.5	500	5.5	2.45	193.6	43.00	
1137	10.9	8.0	1397	17.0	500	7.0	2.47	163.9	43.00	
1140	10.9	8.2	1397	17.5	500	8.5	2.39	148.9	43.00	
1143	10.9	8.2	1392	15.6	500	10.0	2.44	125.3	43.00	
1146	11.0	8.2	1394	13.9	500	11.5	2.41	110.0	43.00	
1149	11.0	8.3	1389	12.6	500	13.0	2.40	106.5	43.00	
1152	11.0	8.3	1391	12.0	500	14.5	2.39	102.6	43.00	

Did well dewater? YES (NO)	Total volume removed: 14.5 (gal /(L))
Sample method: Disp Bailer Hydrasleeve New Tubing Ext. Port Other: Dedicated Tubing	
Sample date: 04APR2014 Sample time: 1155	DTW at sample: 43.00
Sample ID: 7166 Lab: Energy Labs	Number of bottles: (2)
Analysis: 500 ml NP poly - Alkalinity, Cl, SO4, TDS, EC, pH 250 ml HNO3 poly *field filtered - Dissolved Metals	
Equipment blank ID @	Field blank ID @
Duplicate ID:	Pre-purge DO: / Post purge DO:
$Fe2^+$:	Pre-purge ORP: / Post purge ORP:
NAPL depth: / Volume of NAPL:	Volume removed: ml

Confluence Environmental, Inc.
3308 El Camino Ave., Suite 300 #148, Sacramento, CA 95821

Job#: 1350.15	**Sampler:** J Kerns - B Myers	**Client:** Montgomery & Associates
Well ID: MW13	**Date** (DDOct2012): 02APR2014	**Site:** Rio Algom Mining, Lisbon, UT
Weather Conditions: cool	**Sampler Signature:**	
Well diam: 1/4" 1" 2" 3" (4") 6" Other:	**DTW:** 93.49	**Total Depth:** 204
Purge equip: ES - diam: Bladder Peri Waterra Positive Air Displacement Ext. System		
disp bailer teflon bailer other: (HS)	**Tubing:** OD: New Dedicated (NA)	
Purge method: 3-5 Case Volume Micro/Low-Flow Extraction Other: (HS)		
Pump depth/ intake:	**Multipliers:** 1"= 0.04 2"= 0.16 3"= 0.37 4"= 0.65 5"=1.02 6"= 1.47 Radius	
(TD - DTW X Multiplier = 1 Volume	80% Recovery (TD - DTW X 0.20 + DTW)	
1 Volume = _____ X _____ = _____ (Total Purge)	80%=	

Time	Temp (°C)	pH	SP Cond (mS / (S))	Turbidity (NTU)	Purge Rate (gal or mL/ min)	Volume Removed (gal / L)	DO (mg/l)	ORP (mv)	DTW	Notes
1225	13.1	7.4	939	11	—	—	1.2	127	—	

Did well dewater? YES (NO) Total volume removed: — (gal / L)

Sample method: Disp Bailer (Hydrasleeve) New Tubing Ext. Port Other:

Sample date: 02APR2014	Sample time: 1225	DTW at sample: —
Sample ID: 7105	Lab: Energy Labs	Number of bottles: 2
Analysis: 500 ml NP poly - Alkalinity, Cl, SO4, TDS, EC, pH 250 ml HNO3 poly *field filtered - Dissolved Metals		
Equipment blank ID @	Field blank ID @	
Duplicate ID:	Pre-purge DO:	Post purge DO:
Fe^{2+}:	Pre-purge ORP:	Post purge ORP:
NAPL depth:	Volume of NAPL:	Volume removed: ml

Confluence Environmental, Inc.
3308 El Camino Ave., Suite 300 #148, Sacramento, CA 95821

Job#: 1350.15	**Sampler:** J Kerns - B Myers	**Client:** Montgomery & Associates
Well ID: MW-13	**Date** (DDOct2012): 02APR2014	**Site:** Rio Algom Mining, Lisbon, UT
Weather Conditions: Cool	**Sampler Signature:**	
Well diam: 1/4" 1" 2" 3" (4") 6" Other:	**DTW:** 93.49	**Total Depth:** 206
Purge equip: (ES - diam): Bladder Peri Waterra Positive Air Displacement Ext. System		
disp bailer teflon bailer other:	**Tubing:** OD: New (Dedicated) NA	
Purge method: 3-5 Case Volume (Micro/Low-Flow) Extraction Other:		
Pump depth/ intake: 168	**Multipliers:** 1"= 0.04 2"= 0.16 3"= 0.37 4"= 0.65 5"=1.02 6"= 1.47 Radius	
(TD - DTW X Multiplier = 1 Volume	80% Recovery (TD - DTW X 0.20 + DTW)	
1 Volume = _____ X _____ = _____ (Total Purge)	80%=	

Time	Temp (°C /	pH	SP Cond (mS / (uS)	Turbidity (NTU)	Purge Rate (gal or (mL/ min)	Volume Removed (gal / (L)	DO (mg/l)	ORP (mv)	DTW	Notes
1245	10.8	7.3	876	11	400	1	1.2	137	93.48	
1248	10.9	7.3	902	10		2.2	0.84	136	93.48	
1251	11.2	7.3	909	10		3.4	0.76	134	93.48	
1254	11.5	7.4	904	9		4.6	0.74	133	93.48	
1257	12.0	7.4	902	9		5.8	0.67	130	93.48	
1300	12.3	7.4	906	9		7	0.63	127	93.48	
1303	12.4	7.3	903	8		8.2	0.61	124	93.48	
1306	12.4	7.3	903	7		9.4	0.60	122	93.48	
1309	12.4	7.3	902	7	—	10.6	0.60	121	93.48	

Did well dewater? YES (NO)	Total volume removed: 10.6 (gal/(L)	
Sample method: Disp Bailer Hydrasleeve ~~New Tubing~~ Ext. Port Other:		
Sample date: 02APR2014	Sample time: 1310	DTW at sample: 93.48
Sample ID: 7106	Lab: Energy Labs	Number of bottles: 2
Analysis: 500 ml NP poly - Alkalinity, Cl, SO4, TDS, EC, pH 250 ml HNO3 poly *field filtered - Dissolved Metals		
Equipment blank ID @	Field blank ID @	
Duplicate ID:	Pre-purge DO:	Post purge DO:
Fe^{2+}:	Pre-purge ORP:	Post purge ORP:
NAPL depth:	Volume of NAPL:	Volume removed: ml

Confluence Environmental, Inc.
3308 El Camino Ave., Suite 300 #148, Sacramento, CA 95821

Purging And Sampling Data Sheet

Job#: 1350.15	**Sampler:** J Kerns B Myers	**Client:** Montgomery & Associates
Well ID: MW-5	**Date** (DDOct2012): 04/APR2014	**Site:** Rio Algom Mining, Lisbon, UT
Weather Conditions: cold	**Sampler Signature:** B. Myers	
Well diam: 1/4" 1" 2" 3" 4" (6") Other:	**DTW:** 153.57 **Total Depth:** 197	
Purge equip: ES - diam: Bladder Peri Waterra Positive Air Displacement Ext. System		
disp bailer teflon bailer other: (HS)	**Tubing:** OD: New Dedicated (NA)	
Purge method: 3-5 Case Volume Micro/Low-Flow Extraction Other: (HS)		
Pump depth/ intake: 183'	**Multipliers:** 1"= 0.04 2"= 0.16 3"= 0.37 4"= 0.65 5"=1.02 6"= 1.47 Radius² X 0.163	
(TD - DTW X Multiplier = 1 Volume	80% Recovery (TD - DTW X 0.20 + DTW)	

1 Volume = _____ X _____ = _____ (Total Purge) 80%= _____

Time	Temp (°C / °F)	pH	SP Cond (mS / µS)	Turbidity (NTU)	Purge Rate (gal or mL/ min)	Volume Removed (gal / L)	DO (mg/l)	ORP (mv)	DTW	Notes
850	8.7	7.1	1749	8	—	—	0.92	181	—	

Did well dewater? YES (NO) Total volume removed: — (gal / L)

Sample method: Disp Bailer (Hydrasleeve) New Tubing Ext. Port Other:

Sample date: 04/APR2014	Sample time: 850	DTW at sample: —
Sample ID: 7/25	Lab: Energy Labs	Number of bottles: 2
Analysis: 500 ml NP poly - Alkalinity, Cl, SO4, TDS, EC, pH 250 ml HNO3 poly *field filtered - Dissolved Metals		
Equipment blank ID @	Field blank ID @	
Duplicate ID:	Pre-purge DO:	Post purge DO:
Fe^{2+}:	Pre-purge ORP:	Post purge ORP:
NAPL depth:	Volume of NAPL:	Volume removed: ml

Confluence Environmental, Inc
3308 El Camino Ave, Suite 300 #148, Sacramento, CA 95821, 916-760-7641

Purging And Sampling Data Sheet

Job#: 1350.15	**Sampler:** J Kerns (B Myers)	**Client:** Montgomery & Associates
Well ID: MW-5	**Date** (DDOct2012): 04/APR2014	**Site:** Rio Algom Mining, Lisbon, UT
Weather Conditions: cold	**Sampler Signature:**	
Well diam: 1/4" 1" 2" 3" 4" (6") Other:	**DTW:** 153.51 **Total Depth:** 197	
Purge equip: (ES - diam:) Bladder Peri Waterra Positive Air Displacement Ext. System		
disp bailer teflon bailer other:	**Tubing:** OD: New (Dedicated) NA	
Purge method: 3-5 Case Volume (Micro/Low-Flow) Extraction Other:		
Pump depth/ intake: 183	**Multipliers:** 1"= 0.04 2"= 0.16 3"= 0.37 4"= 0.65 5"=1.02 6"= 1.47 Radius² X 0.163	
(TD - DTW X Multiplier = 1 Volume	80% Recovery (TD - DTW X 0.20 + DTW)	

1 Volume = _____ X _____ = _____ (Total Purge) 80%= _____

Time	Temp (°C/°F)	pH	SP Cond (mS / (S))	Turbidity (NTU)	Purge Rate (gal or mL/ min)	Volume Removed (gal / (L))	DO (mg/l)	ORP (mv)	DTW	Notes
902	8.6	6.9	1826	8	300	1	1.2	169	155.12	
905	9.2	6.9	1861	7	|	1.9	0.58	166	155.20	
908	9.8	6.9	1858	7	|	2.8	0.58	163	155.24	
911	10.1	6.9	1853	7	|	3.7	0.56	161	155.26	
914	10.3	6.9	1861	6	|	4.6	0.58	158	155.27	
917	10.6	6.9	1855	6	—	5.4	0.59	156	155.27	

Did well dewater? YES (NO)	Total volume removed: 5.4 (gal / (L))	
Sample method: Disp Bailer Hydrasleeve ~~New Tubing~~ Ext. Port Other:		
Sample date: 04/APR2014	Sample time: 920	DTW at sample: 155.27
Sample ID: 7126	Lab: Energy Labs	Number of bottles: 2
Analysis: 500 ml NP poly - Alkalinity, Cl, SO4, TDS, EC, pH 250 ml HNO3 poly *field filtered - Dissolved Metals		
Equipment blank ID @	Field blank ID @	
Duplicate ID:	Pre-purge DO:	Post purge DO:
Fe^{2+}:	Pre-purge ORP:	Post purge ORP:
NAPL depth:	Volume of NAPL:	Volume removed: ml

Confluence Environmental, Inc
3308 El Camino Ave, Suite 300 #148, Sacramento, CA 95821, 916-760-7641

Job#: 1350.15	**Sampler:** J Kerns - B Myers	**Client:** Montgomery & Associates
Well ID: OW-UT-9	**Date** (DDOct2012): 04APR2014	**Site:** Rio Algom Mining, Lisbon, UT
Weather Conditions: Cold	**Sampler Signature:**	
Well diam: 1/4" 1" 2" 3" (4") 6" Other:	**DTW:** 122.85	**Total Depth:** 142
Purge equip: ES - diam: Bladder Peri Waterra Positive Air Displacement Ext. System		
disp bailer teflon bailer other:	**Tubing:** OD: New Dedicated NA	
Purge method: 3-5 Case Volume Micro/Low-Flow Extraction Other:		
Pump depth/ intake: —	**Multipliers:** 1"= 0.04 2"= 0.16 3"= 0.37 4"= 0.65 5"=1.02 6"= 1.47 Radius	
(TD - DTW X Multiplier = 1 Volume	80% Recovery (TD - DTW X 0.20 + DTW)	
1 Volume = — X — = — (Total Purge)	80%=	

Time	Temp (°C)	pH	SP Cond (mS / (S))	Turbidity (NTU)	Purge Rate (gal or mL/ min)	Volume Removed (gal / L)	DO (mg/l)	ORP (mv)	DTW	Notes
1800	11.5	9.8	33537	14.7	—	—	1.23	2.4	122.85	HS@129.5

Did well dewater? YES (NO)	Total volume removed: — (gal / L)	
Sample method: Disp Bailer (Hydrasleeve) New Tubing Ext. Port Other:		
Sample date: 04APR2014	Sample time: 1800	DTW at sample: 122.85
Sample ID: 7174	Lab: Energy Labs	Number of bottles (2)
Analysis: 500 ml NP poly - Alkalinity, Cl, SO4, TDS, EC, pH 250 ml HNO3 poly *field filtered - Dissolved Metals		
Equipment blank ID @	Field blank ID @	
Duplicate ID:	Pre-purge DO:	Post purge DO:
$Fe2^{+}$:	Pre-purge ORP:	Post purge ORP:
NAPL depth:	Volume of NAPL:	Volume removed: ml

Confluence Environmental, Inc.
3308 El Camino Ave., Suite 300 #148, Sacramento, CA 95821

Job#: 1350.15	**Sampler:** J Kerns - B Myers	**Client:** Montgomery & Associates
Well ID: OW-UT-9	**Date** (DDOct2012): 31 Mar 2014	**Site:** Rio Algom Mining, Lisbon, UT
Weather Conditions: Sunny - Windy - Cool	**Sampler Signature:**	
Well diam: 1/4" 1" 2" 3" 4" (6") Other:	**DTW:** 122.85	**Total Depth:** 142.00
Purge equip: ES - diam: (Bladder) Peri Waterra Positive Air Displacement Ext. System		
disp bailer teflon bailer other:	**Tubing:** OD: New (Dedicated) NA	
Purge method: 3-5 Case Volume (Micro/Low-Flow) Extraction Other:		
Pump depth/ intake: 128	**Multipliers:** 1"= 0.04 2"= 0.16 3"= 0.37 4"= 0.65 5"=1.02 6"= 1.47 Radius	
(TD - DTW X Multiplier = 1 Volume	80% Recovery (TD - DTW X 0.20 + DTW)	
1 Volume = _____ X _____ = _____ (Total Purge)	80%=	

Time	Temp (°C /)	pH	SP Cond (mS / µS)	Turbidity (NTU)	Purge Rate (gal or mL / min)	Volume Removed (gal / L)	DO (mg/l)	ORP (mv)	DTW	Notes
1305	12.1	11.47	39636	5.06	500	1.0	0.32	127.5	123.16	
1308	12.2	11.21	39685	3.06	500	2.5	0.31	118.5	123.16	
1311	12.2	11.26	39676	2.81	500	4.0	0.31	115.5	123.16	
1314	12.1	10.71	39731	2.89	500	5.5	.30 MCK ~~3.2~~	114.7	123.16	
1317	12.2	10.69	39686	2.69	500	7.0	.30	114.2	123.16	

Did well dewater? YES (NO)	Total volume removed: 7.0 (gal) (L)	
Sample method: Disp Bailer Hydrasleeve New Tubing Ext. Port Other: Dedicated Tubing		
Sample date: 31 MAR 2014	Sample time: 1320	DTW at sample: 123.16
Sample ID: 7103	Lab: Energy Labs	Number of bottles: 2
Analysis: 500 ml NP poly - Alkalinity, Cl, SO4, TDS, EC, pH	250 ml HNO3 poly *field filtered - Dissolved Metals	
Equipment blank ID @	Field blank ID @	
Duplicate ID:	Pre-purge DO:	Post purge DO:
Fe^{2+}:	Pre-purge ORP:	Post purge ORP:
NAPL depth:	Volume of NAPL:	Volume removed: ml

Confluence Environmental, Inc.
3308 El Camino Ave., Suite 300 #148, Sacramento, CA 95821

Job#: 1350.15	**Sampler:** J Kerns - B Myers	**Client:** Montgomery & Associates
Well ID: RL-1	**Date** (DDOct2012): 31 MAR 2014	**Site:** Rio Algom Mining, Lisbon, UT
Weather Conditions: Sunny - Cool - windy	**Sampler Signature:** Megan Kerns	
Well diam: 1/4" 1" 2" 3" 4" 6" Other: 5"	**DTW:** 115.96	**Total Depth:** 124.00

Purge equip: ES - diam: (Bladder) Peri Waterra Positive Air Displacement Ext. System

disp bailer teflon bailer other: **Tubing:** OD: New (Dedicated) NA

Purge method: 3-5 Case Volume (Micro/Low-Flow) Extraction Other:

Pump depth/ intake: 120' **Multipliers:** 1"= 0.04 2"= 0.16 3"= 0.37 4"= 0.65 5"=1.02 6"= 1.47 Radius

(TD - DTW X Multiplier = 1 Volume — | 80% Recovery (TD - DTW X 0.20 + DTW)

1 Volume = — X — = — (Total Purge) | 80%= —

Time	Temp (°C)	pH	SP Cond (mS (µS))	Turbidity (NTU)	Purge Rate (gal or mL/ min)	Volume Removed (gal (L))	DO (mg/l)	ORP (mv)	DTW	Notes
1115	13.5	7.9	5641	1.8	200	1.0	4.27	219.0	115.98	
1125	11.5	7.8	11004	1.3	200	1.6	3.86	213.9	116.19	
1128	11.9	7.9	11009	1.3	200	2.2	3.51	210.5	116.2	
1131	12.1	7.9	11044	1.3	200	2.8	3.27	206.5	116.19	
1134	12.2	7.8	11053	.4	200	3.4	3.19	202.5	116.19	
1137	12.5	7.7	11039	.5	200	4.0	3.11	199.6	116.19	

Did well dewater? YES (NO) | Total volume removed: 4.0 (gal (L))

Sample method: Disp Bailer Hydrasleeve New Tubing Ext. Port Other: Dedicated Tubing

Sample date: 31 mar 2014 | Sample time: 1140 | DTW at sample: 116.19

Sample ID: 7101 | Lab: Energy Labs | Number of bottles: 2

Analysis: 500 ml NP poly - Alkalinity, Cl, SO4, TDS, EC, pH 250 ml HNO3 poly *field filtered - Dissolved Metals

Equipment blank ID @	Field blank ID @	
Duplicate ID:	Pre-purge DO:	Post purge DO:
Fe2+:	Pre-purge ORP:	Post purge ORP:
NAPL depth:	Volume of NAPL:	Volume removed: ml

Confluence Environmental, Inc.
3308 El Camino Ave., Suite 300 #148, Sacramento, CA 95821

Job#: 1350.15	**Sampler:** J Kerns - B Myers	**Client:** Montgomery & Associates
Well ID: RL-1	**Date** (DDOct2012): 06APR2014	**Site:** Rio Algom Mining, Lisbon, UT
Weather Conditions: cold / wind		**Sampler Signature:**
Well diam: 1/4" 1" 2" 3" (4") 6" Other:		**DTW:** 115.93 **Total Depth:** —
Purge equip: ES - diam: (Bladder) Peri Waterra Positive Air Displacement Ext. System		
disp bailer teflon bailer other:		**Tubing:** OD: New Dedicated NA
Purge method: 3-5 Case Volume (Micro/Low-Flow) Extraction Other:		
Pump depth/ intake: —	**Multipliers:** 1"= 0.04 2"= 0.16 3"= 0.37 4"= 0.65 5"=1.02 6"= 1.47 Radius	

(TD - DTW X Multiplier = 1 Volume	80% Recovery (TD - DTW X 0.20 + DTW)
1 Volume = _____ X _____ = _____ (Total Purge)	80%=

Time	Temp (°C)	pH	SP Cond (mS / µS)	Turbidity (NTU)	Purge Rate (gal or mL/ min)	Volume Removed (gal / L)	DO (mg/l)	ORP (mv)	DTW	Notes
947	11.4	7.2	10987	8	200	1	9.0	224	116.13	
950	11.9	7.2	10977	5		1.6	8.9	222	116.15	
953	11.7	7.1	10966	4		2.2	5.5	222	116.21	
956	11.9	7.1	11026	3		2.8	5.6	221	116.22	
959	11.9	7.1	11050	3		3.4	5.4	220	116.22	
1002	11.9	7.1	11063	3		4	5.3	219	116.22	

Did well dewater? YES (NO)	Total volume removed: 4 (gal / L)
Sample method: Disp Bailer Hydrasleeve New Tubing Ext. Port Other: (Dedi. Pump)	
Sample date: 06APR2014	Sample time: 1005 DTW at sample: 116.22
Sample ID: 7192	Lab: Energy Labs Number of bottles: 2
Analysis: 500 ml NP poly - Alkalinity, Cl, SO4, TDS, EC, pH 250 ml HNO3 poly *field filtered - Dissolved Metals	
Equipment blank ID @	Field blank ID @
Duplicate ID:	Pre-purge DO: Post purge DO:
Fe^{2+}:	Pre-purge ORP: Post purge ORP:
NAPL depth:	Volume of NAPL: Volume removed: ml

Confluence Environmental, Inc.
3308 El Camino Ave., Suite 300 #148, Sacramento, CA 95821

Purging And Sampling Data Sheet

Job#: 1350.15	**Sampler:** J Kerns (B Myers)	**Client:** Montgomery & Associates
Well ID: RL-3	**Date** (DDOct2012): 08APR2014	**Site:** Rio Algom Mining, Lisbon, UT
Weather Conditions: Wind	**Sampler Signature:**	
Well diam: 1/4" 1" 2" 3" 4" 6" Other: (5)	**DTW:** 14.91 **Total Depth:** 185	
Purge equip: ES - diam: Bladder Peri Waterra Positive Air Displacement Ext. System disp bailer teflon bailer other: (NS)	**Tubing:** OD: New Dedicated (NA)	
Purge method: 3-5 Case Volume Micro/Low-Flow Extraction Other: (NA)		
Pump depth/ intake: 185'	**Multipliers:** 1"= 0.04 2"= 0.16 3"= 0.37 4"= 0.65 5"=1.02 6"= 1.47 Radius² X 0.163	
(TD - DTW X Multiplier = 1 Volume	80% Recovery (TD - DTW X 0.20 + DTW)	

1 Volume = _____ X _____ = _____ (Total Purge) 80%= _____

Time	Temp (°C) °F	pH	SP Cond (mS) µS	Turbidity (NTU)	Purge Rate (gal or mL/ min)	Volume Removed (gal / L)	DO (mg/l)	ORP (mv)	DTW	Notes
1315	11.6	7.0	9671	11	—	—	4.1	191	—	

Did well dewater? YES (NO) Total volume removed: — (gal / L)

Sample method: Disp Bailer (Hydrasleeve) New Tubing Ext. Port Other:

Sample date: 08APR2014	Sample time: 1315	DTW at sample: —
Sample ID: 7118	Lab: Energy Labs	Number of bottles: 2
Analysis: 500 ml NP poly - Alkalinity, Cl, SO4, TDS, EC, pH 250 ml HNO3 poly *field filtered - Dissolved Metals		
Equipment blank ID @	Field blank ID @	
Duplicate ID:	Pre-purge DO:	Post purge DO:
Fe^{2+}:	Pre-purge ORP:	Post purge ORP:
NAPL depth:	Volume of NAPL:	Volume removed: ml

Confluence Environmental, Inc
3308 El Camino Ave, Suite 300 #148, Sacramento, CA 95821, 916-760-7641

Purging And Sampling Data Sheet

Job#: 1350.15	**Sampler:** J Kerns B Myers	**Client:** Montgomery & Associates
Well ID: RL-3	**Date** (DDOct2012): 03APR2014	**Site:** Rio Algom Mining, Lisbon, UT
Weather Conditions: Wind.	**Sampler Signature:**	
Well diam: 1/4" 1" 2" 3" 4" 6" Other: 5	**DTW:** 169.91 **Total Depth:** 185	
Purge equip: ES - diam: Bladder Peri Waterra Positive Air Displacement Ext. System disp bailer teflon bailer other:	**Tubing:** OD: New Dedicated NA	
Purge method: 3-5 Case Volume Micro/Low-Flow Extraction Other:		
Pump depth/ intake: 185'	**Multipliers:** 1"= 0.04 2"= 0.16 3"= 0.37 4"= 0.65 5"=1.02 6"= 1.47 Radius² X 0.163	
(TD - DTW X Multiplier = 1 Volume	80% Recovery (TD - DTW X 0.20 + DTW)	

1 Volume = _____ X _____ = _____ (Total Purge) 80%= _____

Time	Temp (°C / °F)	pH	SP Cond (mS / µS)	Turbidity (NTU)	Purge Rate (gal or mL/ min)	Volume Removed (gal / L)	DO (mg/l)	ORP (mv)	DTW	Notes
1329	10.8	7.0	10199	8	400	1.5	3.2	182	170.70	
1332	11.3	7.0	10315	7		2.7	3.5	180	170.70	
1335	11.7	7.0	10221	7		3.9	3.6	180	170.70	
1338	13.1	7.0	10255	6		5.1	4.0	178	170.70	
1341	13.4	7.0	10299	6		6.3	4.0	177	170.70	
1344	13.6	7.0	10287	6	—	7.5	4.1	175	170.70	

Did well dewater? YES NO	Total volume removed: 7.5 (gal L)	
Sample method: Disp Bailer Hydrasleeve ~~New~~ Tubing Ext. Port Other:		
Sample date: 03APR2014	Sample time: 1345	DTW at sample: 170.70
Sample ID: 7119	Lab: Energy Labs	Number of bottles: 2
Analysis: 500 ml NP poly - Alkalinity, Cl, SO4, TDS, EC, pH 250 ml HNO3 poly *field filtered - Dissolved Metals		
Equipment blank ID @	Field blank ID @	
Duplicate ID: 7120 @ 1350	Pre-purge DO:	Post purge DO:
Fe^{2+}:	Pre-purge ORP:	Post purge ORP:
NAPL depth:	Volume of NAPL:	Volume removed: ml

Confluence Environmental, Inc
3308 El Camino Ave, Suite 300 #148, Sacramento, CA 95821, 916-760-7641

Purging And Sampling Data Sheet

Job#: 1350.15	**Sampler:** J Kerns B Myers	**Client:** Montgomery & Associates
Well ID: RL-4	**Date** (DDOct2012): 03APR2014	**Site:** Rio Algom Mining, Lisbon, UT
Weather Conditions: cold	**Sampler Signature:**	
Well diam: 1/4" 1" 2" 3" 4" (6") Other:	**DTW:** 152.20 **Total Depth:** 178	
Purge equip: ES - diam: Bladder Peri Waterra Positive Air Displacement Ext. System		
disp bailer teflon bailer other: (1"S) **Tubing:** OD: New Dedicated NA		
Purge method: 3-5 Case Volume Micro/Low-Flow Extraction Other:		
Pump depth/ intake: (160') **Multipliers:** 1"= 0.04 2"= 0.16 3"= 0.37 4"= 0.65 5"=1.02 6"= 1.47 Radius² X 0.163		
(TD - DTW X Multiplier = 1 Volume	80% Recovery (TD - DTW X 0.20 + DTW)	

1 Volume = _____ X _____ = _____ (Total Purge) 80%= _____

Time	Temp (°C/°F)	pH	SP Cond (mS/µS)	Turbidity (NTU)	Purge Rate (gal or mL/ min)	Volume Removed (gal / L)	DO (mg/l)	ORP (mv)	DTW	Notes
1105	11.2	7.0	951	8	—	—	8.0	188	—	

Did well dewater? YES (NO) Total volume removed: — (gal / L)

Sample method: Disp Bailer (Hydrasleeve) New Tubing Ext. Port Other:

Sample date: 03APR2014	Sample time: 1105	DTW at sample: —
Sample ID: 7114	Lab: Energy Labs	Number of bottles: 2
Analysis: 500 ml NP poly - Alkalinity, Cl, SO4, TDS, EC, pH 250 ml HNO3 poly *field filtered - Dissolved Metals		
Equipment blank ID @	Field blank ID @	
Duplicate ID:	Pre-purge DO:	Post purge DO:
Fe^{2+}:	Pre-purge ORP:	Post purge ORP:
NAPL depth:	Volume of NAPL:	Volume removed: ml

Confluence Environmental, Inc
3308 El Camino Ave, Suite 300 #148, Sacramento, CA 95821, 916-760-7641

Purging And Sampling Data Sheet

Job#: 1350.15	**Sampler:** J Kerns B Myers	**Client:** Montgomery & Associates
Well ID: RL-4	**Date** (DDOct2012): 03APR2014	**Site:** Rio Algom Mining, Lisbon, UT
Weather Conditions: Cold	**Sampler Signature:**	
Well diam: 1/4" 1" 2" 3" 4" (6") Other:	**DTW:** 156.20 **Total Depth:** 178	
Purge equip: (ES - diam:) Bladder Peri Waterra Positive Air Displacement Ext. System disp bailer teflon bailer other:	**Tubing:** OD: New (Dedicated) NA	
Purge method: 3-5 Case Volume (Micro/Low-Flow) Extraction Other:		
Pump depth/ intake: 168'	**Multipliers:** 1"= 0.04 2"= 0.16 3"= 0.37 4"= 0.65 5"=1.02 6"= 1.47 Radius² X 0.163	
(TD - DTW X Multiplier = 1 Volume	80% Recovery (TD - DTW X 0.20 + DTW)	

1 Volume = _____ X _____ = _____ (Total Purge) 80%= _____

Time	Temp (°C/°F)	pH	SP Cond (mS/(µS))	Turbidity (NTU)	Purge Rate (gal or(mL/ min))	Volume Removed (gal/(L))	DO (mg/l)	ORP (mv)	DTW	Notes
1115	9.5	7.3	878	8	300	1	10.0	171	157.60	
1118	10.0	7.4	881	7	|	1.9	9.6	168	157.60	
1121	10.5	7.4	864	7	|	2.8	9.5	165	157.60	
1124	10.7	7.4	876	6	|	3.7	9.2	164	157.60	
1127	11.8	7.4	871	6	|	4.6	8.6	162	157.60	
1130	12.0	7.4	874	5	|	5.5	8.6	161	157.60	
1133	12.2	7.4	867	5	⊥	6.4	8.5	160	157.60	

Did well dewater? YES (NO)	Total volume removed: 6.4 (gal/(L))	
Sample method: Disp Bailer Hydrasleeve ~~New~~ (Tubing) Ext. Port Other:		
Sample date: 03APR2014	Sample time: 1135	DTW at sample: 157.60
Sample ID: 7115	Lab: Energy Labs	Number of bottles: 2
Analysis: 500 ml NP poly - Alkalinity, Cl, SO4, TDS, EC, pH 250 ml HNO3 poly *field filtered - Dissolved Metals		
Equipment blank ID @	Field blank ID @	
Duplicate ID:	Pre-purge DO:	Post purge DO:
Fe^{2+}:	Pre-purge ORP:	Post purge ORP:
NAPL depth:	Volume of NAPL:	Volume removed: ml

Confluence Environmental, Inc
3308 El Camino Ave, Suite 300 #148, Sacramento, CA 95821, 916-760-7641

Purging And Sampling Data Sheet

Job#: 1350.15	**Sampler:** J Kerns B Myers	**Client:** Montgomery & Associates
Well ID: RL-5	**Date** (DDOct2012): 03APR2014	**Site:** Rio Algom Mining, Lisbon, UT
Weather Conditions: Wind	**Sampler Signature:**	
Well diam: 1/4" 1" 2" 3" 4" 6" Other: (5)	**DTW:** 151.02 **Total Depth:** 188	
Purge equip: ES - diam: Bladder Peri Waterra Positive Air Displacement Ext. System disp bailer teflon bailer other: (HS)	**Tubing:** OD: New Dedicated (NA)	
Purge method: 3-5 Case Volume Micro/Low-Flow Extraction Other: (HS)		
Pump depth/ intake: 170.5	**Multipliers:** 1"= 0.04 2"= 0.16 3"= 0.37 4"= 0.65 5"=1.02 6"= 1.47 Radius² X 0.163	
(TD - DTW X Multiplier = 1 Volume	80% Recovery (TD - DTW X 0.20 + DTW)	

1 Volume = _____ X _____ = _____ (Total Purge) 80%= _____

Time	Temp (°C) °F)	pH	SP Cond (mS (µS)	Turbidity (NTU)	Purge Rate (gal or mL/ min)	Volume Removed (gal / L)	DO (mg/l)	ORP (mv)	DTW	Notes
1155	9.6	7.7	602	8	—	—	48.2	224	—	

Did well dewater? YES (NO) Total volume removed: — (gal / L)

Sample method: Disp Bailer (Hydrasleeve) New Tubing Ext. Port Other:

Sample date: 03APR2014 Sample time: 1155 DTW at sample: —

Sample ID: 7116 Lab: Energy Labs Number of bottles: 2

Analysis: 500 ml NP poly - Alkalinity, Cl, SO4, TDS, EC, pH 250 ml HNO3 poly *field filtered - Dissolved Metals

Equipment blank ID @	Field blank ID @	
Duplicate ID:	Pre-purge DO:	Post purge DO:
$Fe2^{+}$:	Pre-purge ORP:	Post purge ORP:
NAPL depth:	Volume of NAPL:	Volume removed: ml

Confluence Environmental, Inc
3308 El Camino Ave, Suite 300 #148, Sacramento, CA 95821, 916-760-7641

Purging And Sampling Data Sheet

Job#: 1350.15	**Sampler:** J Kerns B Myers	**Client:** Montgomery & Associates
Well ID: RL-5	**Date** (DDOct2012): 03APR2014	**Site:** Rio Algom Mining, Lisbon, UT
Weather Conditions: Wind	**Sampler Signature:**	
Well diam: 1/4" 1" 2" 3" 4" 6" Other: (5)	**DTW:** 151.62 **Total Depth:** 188	

Purge equip: (ES - diam:) Bladder Peri Waterra Positive Air Displacement Ext. System
disp bailer teflon bailer other: **Tubing:** OD: New (Dedicated) NA

Purge method: 3-5 Case Volume (Micro/Low-Flow) Extraction Other:

Pump depth/ intake: 170.5 **Multipliers:** 1"= 0.04 2"= 0.16 3"= 0.37 4"= 0.65 5"=1.02 6"= 1.47 Radius² X 0.163

(TD - DTW X Multiplier = 1 Volume	80% Recovery (TD - DTW X 0.20 + DTW)

1 Volume = _____ X _____ = _____ (Total Purge) 80%= _____

Time	Temp (°C / °F)	pH	SP Cond (mS / µS)	Turbidity (NTU)	Purge Rate (gal or mL/ min)	Volume Removed (gal / L)	DO (mg/l)	ORP (mv)	DTW	Notes
1206	10.3	7.6	631	7	400	1.5	10.7	198	151.95	
1209	10.8	7.5	633	6		2.7	10.4	192	151.95	
1212	11.0	7.5	632	6		3.9	10.3	184	151.95	
1215	11.1	7.5	631	6		5.1	10.1	179	151.95	
1218	11.4	7.5	630	6		6.3	10.0	177	151.95	
1221	12.7	7.5	629	6		7.5	9.4	172	151.95	
1224	13.0	7.5	628	5		8.7	9.4	169	151.95	
1227	13.4	7.5	628	5	—	9.9	9.4	167	151.95	

Did well dewater? YES (NO) Total volume removed: 9.9 (gal (L))

Sample method: Disp Bailer Hydrasleeve ~~New~~ (Tubing) Ext. Port Other:

Sample date: 03APR2014	Sample time: 1230	DTW at sample: 151.95
Sample ID: 7117	Lab: Energy Labs	Number of bottles: 2
Analysis: 500 ml NP poly - Alkalinity, Cl, SO4, TDS, EC, pH	250 ml HNO3 poly *field filtered - Dissolved Metals	

Equipment blank ID @	Field blank ID @	
Duplicate ID:	Pre-purge DO:	Post purge DO:
Fe^{2+}:	Pre-purge ORP:	Post purge ORP:
NAPL depth:	Volume of NAPL:	Volume removed: ml

Confluence Environmental, Inc
3308 El Camino Ave, Suite 300 #148, Sacramento, CA 95821, 916-760-7641

Purging And Sampling Data Sheet

Job#: 1350.15	**Sampler:** J Kerns B Myers	**Client:** Montgomery & Associates
Well ID: RL-6	**Date** (DDOct2012): 03/12/2014	**Site:** Rio Algom Mining, Lisbon, UT
Weather Conditions: Cold	**Sampler Signature:**	
Well diam: 1/4" 1" 2" 3" 4" 6" Other: (5)	**DTW:** 14.96	**Total Depth:** 20

Purge equip: ES - diam: Bladder Peri Waterra Positive Air Displacement Ext. System
disp bailer teflon bailer other: (HS) **Tubing:** OD: New Dedicated (NA)

Purge method: 3-5 Case Volume Micro/Low-Flow Extraction Other: (HS)

Pump depth/ intake: 19' **Multipliers:** 1"= 0.04 2"= 0.16 3"= 0.37 4"= 0.65 5"=1.02 6"= 1.47 Radius² X 0.163

(TD - DTW X Multiplier = 1 Volume	80% Recovery (TD - DTW X 0.20 + DTW)

1 Volume = _____ X _____ = _____ (Total Purge) 80%= _____

Time	Temp (°C / °F)	pH	SP Cond (mS / µS)	Turbidity (NTU)	Purge Rate (gal or mL/ min)	Volume Removed (gal / L)	DO (mg/l)	ORP (mv)	DTW	Notes
0850	8.2	7.0	1921	121	—	—	2.4	173	—	

Did well dewater? YES (NO) Total volume removed: — (gal / L)

Sample method: Disp Bailer (Hydrasleeve) New Tubing Ext. Port Other:

Sample date: 03/12/2014	Sample time: 0850	DTW at sample: —
Sample ID: 7109	Lab: Energy Labs	Number of bottles: 2

Analysis: 500 ml NP poly - Alkalinity, Cl, SO4, TDS, EC, pH 250 ml HNO3 poly *field filtered - Dissolved Metals

Equipment blank ID @	Field blank ID @	
Duplicate ID:	Pre-purge DO:	Post purge DO:
Fe^{2+}:	Pre-purge ORP:	Post purge ORP:
NAPL depth:	Volume of NAPL:	Volume removed: ml

Purging And Sampling Data Sheet

Job#: 1350.15	**Sampler:** J Kerns B Myers	**Client:** Montgomery & Associates
Well ID: RL-6	**Date** (DDOct2012): 03APR2014	**Site:** Rio Algom Mining, Lisbon, UT
Weather Conditions: Cold	**Sampler Signature:**	
Well diam: 1/4" 1" 2" 3" 4" 6" Other: (5)	**DTW:** 14.96	**Total Depth:** 20

Purge equip: (ES - diam:) Bladder Peri Waterra Positive Air Displacement Ext. System
disp bailer teflon bailer other: **Tubing:** OD: New (Dedicated) NA

Purge method: 3-5 Case Volume (Micro/Low-Flow) Extraction Other:

Pump depth/ intake: 19 **Multipliers:** 1"= 0.04 2"= 0.16 3"= 0.37 4"= 0.65 5"=1.02 6"= 1.47 Radius² X 0.163

(TD - DTW X Multiplier = 1 Volume | 80% Recovery (TD - DTW X 0.20 + DTW)

1 Volume = _____ X _____ = _____ (Total Purge) 80%= _____

Time	Temp (°C) °F	pH	SP Cond (mS (µS)	Turbidity (NTU)	Purge Rate (gal or (mL/ min)	Volume Removed (gal (L)	DO (mg/l)	ORP (mv)	DTW	Notes
902	7.7	7.0	2068	157	300	1	1.9	165	16.08	
905	9.2	7.0	2087	131	|	1.9	1.8	159	16.00	
908	9.8	7.0	2096	128	|	2.8	1.8	154	16.00	
911	10.0	7.0	2099	125	|	3.7	1.8	151	16.00	
914	10.3	7.0	2097	121	|	4.6	1.8	149	16.00	

Did well dewater? YES (NO) Total volume removed: 4.6 (gal (L))

Sample method: Disp Bailer Hydrasleeve ~~New Tubing~~ (Ext. Port) Other:

Sample date: 03APR2014	Sample time: 915	DTW at sample: 16.00
Sample ID: 7110	Lab: Energy Labs	Number of bottles: 2
Analysis: 500 ml NP poly - Alkalinity, Cl, SO4, TDS, EC, pH	250 ml HNO3 poly *field filtered - Dissolved Metals	

Equipment blank ID @	Field blank ID @	
Duplicate ID:	Pre-purge DO:	Post purge DO:
Fe2+:	Pre-purge ORP:	Post purge ORP:
NAPL depth:	Volume of NAPL:	Volume removed: ml

Confluence Environmental, Inc
3308 El Camino Ave, Suite 300 #148, Sacramento, CA 95821, 916-760-7641

Purging And Sampling Data Sheet

Job#: 1350.15	**Sampler:** J Kerns B Myers	**Client:** Montgomery & Associates
Well ID: MW100	**Date** (DDOct2012): 03APR2014	**Site:** Rio Algom Mining, Lisbon, UT
Weather Conditions: wind	**Sampler Signature:**	
Well diam: 1/4" 1" 2" 3" (4") 6" Other:	**DTW:** 146.92 **Total Depth:** 204	
Purge equip: ES - diam: Bladder Peri Waterra Positive Air Displacement Ext. System disp bailer teflon bailer other: (HS)	**Tubing:** OD: New Dedicated (NA)	
Purge method: 3-5 Case Volume Micro/Low-Flow Extraction Other: (HS)		
Pump depth/ intake: 176	**Multipliers:** 1"= 0.04 2"= 0.16 3"= 0.37 4"= 0.65 5"=1.02 6"= 1.47 Radius² X 0.163	
(TD - DTW X Multiplier = 1 Volume	80% Recovery (TD - DTW X 0.20 + DTW)	

1 Volume = _____ X _____ = _____ (Total Purge) 80%= _____

Time	Temp (°C / °F)	pH	SP Cond (mS / µS)	Turbidity (NTU)	Purge Rate (gal or mL/ min)	Volume Removed (gal / L)	DO (mg/l)	ORP (mv)	DTW	Notes
1505	10.4	7.3	6.03	10	—	—	2.1	203	—	

Did well dewater? YES (NO) Total volume removed: — (gal / L)

Sample method: Disp Bailer (Hydrasleeve) New Tubing Ext. Port Other:

Sample date: 03APR2014	Sample time: 1505	DTW at sample: —
Sample ID: 7123	Lab: Energy Labs	Number of bottles: 2
Analysis: 500 ml NP poly - Alkalinity, Cl, SO4, TDS, EC, pH 250 ml HNO3 poly *field filtered - Dissolved Metals		
Equipment blank ID @	Field blank ID @	
Duplicate ID:	Pre-purge DO:	Post purge DO:
Fe^{2+}:	Pre-purge ORP:	Post purge ORP:
NAPL depth:	Volume of NAPL:	Volume removed: ml

Confluence Environmental, Inc
3308 El Camino Ave, Suite 300 #148, Sacramento, CA 95821, 916-760-7641

Purging And Sampling Data Sheet

Job#: 1350.15	**Sampler:** J Kerns B Myers	**Client:** Montgomery & Associates
Well ID: MW100	**Date** (DDOct2012): 03APR2014	**Site:** Rio Algom Mining, Lisbon, UT
Weather Conditions: Wind	**Sampler Signature:**	
Well diam: 1/4" 1" 2" 3" (4") 6" Other:	**DTW:** 146.92 **Total Depth:** 204	
Purge equip: (ES - diam:) Bladder Peri Waterra Positive Air Displacement Ext. System		
disp bailer teflon bailer other:	**Tubing:** OD: New (Dedicated) NA	
Purge method: 3-5 Case Volume (Micro/Low-Flow) Extraction Other:		
Pump depth/ intake: 170	**Multipliers:** 1"= 0.04 2"= 0.16 3"= 0.37 4"= 0.65 5"=1.02 6"= 1.47 Radius² X 0.163	
(TD - DTW X Multiplier = 1 Volume	80% Recovery (TD - DTW X 0.20 + DTW)	

1 Volume = _____ X _____ = _____ (Total Purge) 80%= _____

Time	Temp (°C / °F)	pH	SP Cond (mS/ µS)	Turbidity (NTU)	Purge Rate (gal or mL/ min)	Volume Removed (gal / L)	DO (mg/l)	ORP (mv)	DTW	Notes
1515	10.7	7.3	863	13	400	1.5	1.5	181	147.40	
1518	10.9	7.2	842	10	|	2.7	1.5	175	147.40	
1521	11.1	7.2	848	8	|	3.9	1.5	170	147.40	
1524	11.2	7.2	848	8	|	5.1	1.5	167	147.40	
1527	11.5	7.2	849	7	⊥	6.3	1.5	165	147.40	

Did well dewater? YES (NO)	Total volume removed: 6.3 (gal / L)	
Sample method: Disp Bailer Hydrasleeve ~~New~~ (Tubing) Ext. Port Other:		
Sample date: 03APR2014	Sample time: 1530	DTW at sample: 147.40
Sample ID: 7124	Lab: Energy Labs	Number of bottles: 2
Analysis: 500 ml NP poly - Alkalinity, Cl, SO4, TDS, EC, pH 250 ml HNO3 poly *field filtered - Dissolved Metals		
Equipment blank ID @	Field blank ID @	
Duplicate ID:	Pre-purge DO:	Post purge DO:
Fe^{2+}:	Pre-purge ORP:	Post purge ORP:
NAPL depth:	Volume of NAPL:	Volume removed: ml

Confluence Environmental, Inc
3308 El Camino Ave, Suite 300 #148, Sacramento, CA 95821, 916-760-7641

Job#: 1350.15	**Sampler:** J Kerns / B Myers	**Client:** Montgomery & Associates
Well ID: MW-101	**Date** (DDOct2012): 04APR2014	**Site:** Rio Algom Mining, Lisbon, UT
Weather Conditions: cool	**Sampler Signature:**	
Well diam: 1/4" 1" 2" 3" (4") 6" Other:	**DTW:** 150.86	**Total Depth:** 161.00
Purge equip: ES - diam: Bladder Peri Waterra Positive Air Displacement Ext. System		
disp bailer teflon bailer other: (HS)	**Tubing:** OD: New Dedicated (NA)	
Purge method: 3-5 Case Volume Micro/Low-Flow Extraction Other:		
Pump depth/ intake: 156'	**Multipliers:** 1"= 0.04 2"= 0.16 3"= 0.37 4"= 0.65 5"=1.02 6"= 1.47 Radius	
(TD - DTW X Multiplier = 1 Volume	80% Recovery (TD - DTW X 0.20 + DTW)	
1 Volume = _____ X _____ = _____ (Total Purge)	80%=	

Time	Temp (°C)	pH	SP Cond (mS/µS)	Turbidity (NTU)	Purge Rate (gal or mL/ min)	Volume Removed (gal / L)	DO (mg/l)	ORP (mv)	DTW	Notes
1140	12.3	7.1	10589	31	—	—	3.5	95	—	

Did well dewater? YES (NO)	Total volume removed: — (gal / L)	
Sample method: Disp Bailer (Hydrasleeve) New Tubing Ext. Port Other:		
Sample date: 04APR2014	Sample time: 1140	DTW at sample: —
Sample ID: 7133	Lab: Energy Labs	Number of bottles: 2
Analysis: 500 ml NP poly - Alkalinity, Cl, SO4, TDS, EC, pH 250 ml HNO3 poly *field filtered - Dissolved Metals		
Equipment blank ID @	Field blank ID @	
Duplicate ID: 7134 @ 1145	Pre-purge DO:	Post purge DO:
Fe^{2+}:	Pre-purge ORP:	Post purge ORP:
NAPL depth:	Volume of NAPL:	Volume removed: ml

Confluence Environmental, Inc.
3308 El Camino Ave., Suite 300 #148, Sacramento, CA 95821

Job#: 1350.15	**Sampler:** J Kerns / B Myers	**Client:** Montgomery & Associates
Well ID: MW-101	**Date** (DDOct2012): 04APR2014	**Site:** Rio Algom Mining, Lisbon, UT
Weather Conditions: Cool	**Sampler Signature:**	
Well diam: 1/4" 1" 2" 3" 4" 6" Other:	**DTW:** 150.80	**Total Depth:** 161.00

Purge equip: ES - diam: Bladder Peri Waterra Positive Air Displacement Ext. System
disp bailer teflon bailer other: **Tubing:** OD: New Dedicated NA

Purge method: 3-5 Case Volume Micro/Low-Flow Extraction Other:

Pump depth/ intake: 156' **Multipliers:** 1"= 0.04 2"= 0.16 3"= 0.37 4"= 0.65 5"=1.02 6"= 1.47 Radius

(TD - DTW X Multiplier = 1 Volume | 80% Recovery (TD - DTW X 0.20 + DTW)

1 Volume = _____ X _____ = _____ (Total Purge) | 80%=

Time	Temp (°C)	pH	SP Cond (mS / µS)	Turbidity (NTU)	Purge Rate (gal or mL / min)	Volume Removed (gal / L)	DO (mg/l)	ORP (mv)	DTW	Notes
1156	11.1	7.1	16678	71000	400	1.5	4.0	99	151.80	brown/orange
1159	11.3	7.1	16763	71000		2.7	3.9	101	151.80	"
1202	11.5	7.1	16776	221		3.9	4.0	103	151.80	cloudy
1205	12.2	7.1	16765	167		5.1	4.0	104	151.80	
1208	12.5	7.0	16537	159		6.3	3.6	101	151.80	
1211	12.9	7.0	16744	155		7.5	3.7	100	151.80	
1214	13.1	7.0	16762	151		8.7	3.7	99	151.80	

Did well dewater? YES NO | Total volume removed: 8.7 (gal / L)

Sample method: Disp Bailer Hydrasleeve New Tubing Ext. Port Other:

Sample date: 04APR2014	Sample time: 1215	DTW at sample: 151.80
Sample ID: 7135	Lab: Energy Labs	Number of bottles: 2
Analysis: 500 ml NP poly - Alkalinity, Cl, SO4, TDS, EC, pH	250 ml HNO3 poly *field filtered - Dissolved Metals	

Equipment blank ID @	Field blank ID @	
Duplicate ID:	Pre-purge DO:	Post purge DO:
Fe^{2+}:	Pre-purge ORP:	Post purge ORP:
NAPL depth:	Volume of NAPL:	Volume removed: ml

Confluence Environmental, Inc.
3308 El Camino Ave., Suite 300 #148, Sacramento, CA 95821

Purging And Sampling Data Sheet

Job#: 1350.15	**Sampler:** J Kerns (B Myers)	**Client:** Montgomery & Associates
Well ID: MW-02	**Date** (DDOct2012): 04APR2014	**Site:** Rio Algom Mining, Lisbon, UT
Weather Conditions: Cold	**Sampler Signature:**	
Well diam: 1/4" 1" 2" 3" (4") 6" Other:	**DTW:** 125.04	**Total Depth:** 137

Purge equip: ES - diam: Bladder Peri Waterra Positive Air Displacement Ext. System
disp bailer teflon bailer other: (HS) **Tubing:** OD: New Dedicated (NA)

Purge method: 3-5 Case Volume Micro/Low-Flow Extraction Other:

Pump depth/ intake: 132.5 **Multipliers:** 1"= 0.04 2"= 0.16 3"= 0.37 4"= 0.65 5"=1.02 6"= 1.47 Radius² X 0.163

(TD - DTW X Multiplier = 1 Volume | 80% Recovery (TD - DTW X 0.20 + DTW)

1 Volume = _____ X _____ = _____ (Total Purge) 80%= _____

Time	Temp (°C / °F)	pH	SP Cond (mS / µS)	Turbidity (NTU)	Purge Rate (gal or mL / min)	Volume Removed (gal / L)	DO (mg/l)	ORP (mv)	DTW	Notes
945	10.2	8.6	18333	121	—	—	0.76	185	—	brownish/ yellowish

Did well dewater? YES (NO) Total volume removed: — (gal / L)

Sample method: Disp Bailer (Hydrasleeve) New Tubing Ext. Port Other:

Sample date: 04APR2014	Sample time: 945	DTW at sample: —
Sample ID: 2127	Lab: Energy Labs	Number of bottles: 2
Analysis: 500 ml NP poly - Alkalinity, Cl, SO4, TDS, EC, pH 250 ml HNO3 poly *field filtered - Dissolved Metals		
Equipment blank ID @	Field blank ID @	
Duplicate ID: 2128 @ 950	Pre-purge DO:	Post purge DO:
Fe2+:	Pre-purge ORP:	Post purge ORP:
NAPL depth:	Volume of NAPL:	Volume removed: ml

Confluence Environmental, Inc
3308 El Camino Ave, Suite 300 #148, Sacramento, CA 95821, 916-760-7641

Purging And Sampling Data Sheet

Job#: 1350.15	**Sampler:** J Kerns B Myers	**Client:** Montgomery & Associates
Well ID: MW-02	**Date** (DDOct2012): 04APR2014	**Site:** Rio Algom Mining, Lisbon, UT
Weather Conditions: Cool	**Sampler Signature:**	
Well diam: 1/4" 1" 2" 3" (4") 6" Other:	**DTW:** 125.04 **Total Depth:** 137	
Purge equip: (ES - diam:) Bladder Peri Waterra Positive Air Displacement Ext. System		
disp bailer teflon bailer other:	**Tubing:** OD: New (Dedicated) NA	
Purge method: 3-5 Case Volume (Micro/Low-Flow) Extraction Other:		
Pump depth/ intake: 132.5	**Multipliers:** 1"= 0.04 2"= 0.16 3"= 0.37 4"= 0.65 5"=1.02 6"= 1.47 Radius² X 0.163	
(TD - DTW X Multiplier = 1 Volume	80% Recovery (TD - DTW X 0.20 + DTW)	

1 Volume = _____ X _____ = _____ (Total Purge) 80%= _____

Time	Temp (°C) °F	pH	SP Cond (mS) (µS)	Turbidity (NTU)	Purge Rate (gal or mL/ min)	Volume Removed (gal/ L)	DO (mg/l)	ORP (mv)	DTW	Notes
959	10.0	8.4	18797	59	400	1.5	0.21	172	126.41	
1002	10.4	8.5	18790	56		2.7	0.17	168	126.45	
1005	10.6	8.5	18749	55		3.9	0.22	166	126.48	
1008	11.5	8.5	18720	57		5.1	0.25	164	126.50	
1011	13.1	8.5	18734	56		6.3	0.27	162	126.50	
1014	14.5	8.5	18630	58		7.5	0.27	160	126.50	
1017	14.8	8.5	18719	56		8.7	0.27	158	126.50	
1020	15.0	8.5	18742	54	↓	9.9	0.26	156	126.50	

Did well dewater? YES (NO)	Total volume removed: 9.9 (gal (L))	
Sample method: Disp Bailer Hydrasleeve ~~New Tubing~~ Ext. Port Other:		
Sample date: 04APR2014	Sample time: 1020	DTW at sample: 126.50
Sample ID: 2129	Lab: Energy Labs	Number of bottles: 2
Analysis: 500 ml NP poly - Alkalinity, Cl, SO4, TDS, EC, pH 250 ml HNO3 poly *field filtered - Dissolved Metals		
Equipment blank ID @	Field blank ID @	
Duplicate ID:	Pre-purge DO:	Post purge DO:
Fe^{2+}:	Pre-purge ORP:	Post purge ORP:
NAPL depth:	Volume of NAPL:	Volume removed: ml

Confluence Environmental, Inc
3308 El Camino Ave, Suite 300 #148, Sacramento, CA 95821, 916-760-7641

Purging And Sampling Data Sheet

Job#: 1350.15	**Sampler:** J Kerns B Myers	**Client:** Montgomery & Associates
Well ID: MW-102DB	**Date** (DDOct2012): 04APR2014	**Site:** Rio Algom Mining, Lisbon, UT
Weather Conditions: Cool	**Sampler Signature:**	
Well diam: 1/4" 1" 2" 3" (4") 6" Other:	**DTW:** 119.80 **Total Depth:** 177	
Purge equip: ES - diam: Bladder Peri Waterra Positive Air Displacement Ext. System		
disp bailer teflon bailer other: (HS) **Tubing:** OD: New Dedicated (NA)		
Purge method: 3-5 Case Volume Micro/Low-Flow Extraction Other:		
Pump depth/ intake: 163'	**Multipliers:** 1"= 0.04 2"= 0.16 3"= 0.37 4"= 0.65 5"=1.02 6"= 1.47 Radius² X 0.163	
(TD - DTW X Multiplier = 1 Volume	80% Recovery (TD - DTW X 0.20 + DTW)	

1 Volume = _____ X _____ = _____ (Total Purge) 80%= _____

Time	Temp (°C / °F)	pH	SP Cond (mS / µS)	Turbidity (NTU)	Purge Rate (gal or mL/ min)	Volume Removed (gal / L)	DO (mg/l)	ORP (mv)	DTW	Notes
1035	11.60	8.3	1525	29	—	—	0.65	101	—	

Did well dewater? YES (NO) Total volume removed: — (gal / L)

Sample method: Disp Bailer (Hydrasleeve) New Tubing Ext. Port Other:

Sample date: 04APR2014 Sample time: 1035 DTW at sample: —

Sample ID: 2130 Lab: Energy Labs Number of bottles: 2

Analysis: 500 ml NP poly - Alkalinity, Cl, SO4, TDS, EC, pH 250 ml HNO3 poly *field filtered - Dissolved Metals

Equipment blank ID @ Field blank ID @

Duplicate ID: Pre-purge DO: Post purge DO:

Fe^{2+}: Pre-purge ORP: Post purge ORP:

NAPL depth: Volume of NAPL: Volume removed: ml

Confluence Environmental, Inc
3308 El Camino Ave, Suite 300 #148, Sacramento, CA 95821, 916-760-7641

Job#: 1350.15	**Sampler:** J Kerns (B Myers)	**Client:** Montgomery & Associates
Well ID: MW102DB	**Date** (DDOct2012): 04APR2014	**Site:** Rio Algom Mining, Lisbon, UT
Weather Conditions: Cool	**Sampler Signature:**	
Well diam: 1/4" 1" 2" 3" (4") 6" Other:	**DTW:** 119.80	**Total Depth:** 177
Purge equip: (ES - diam:) Bladder Peri Waterra Positive Air Displacement Ext. System		
disp bailer teflon bailer other:	**Tubing:** OD: New (Dedicated) NA	
Purge method: 3-5 Case Volume (Micro/Low-Flow) Extraction Other:		
Pump depth/ intake: 163	**Multipliers:** 1"= 0.04 2"= 0.16 3"= 0.37 4"= 0.65 5"=1.02 6"= 1.47 Radius	
(TD - DTW X Multiplier = 1 Volume	80% Recovery (TD - DTW X 0.20 + DTW)	
1 Volume = _____ X _____ = _____ (Total Purge)	80%=	

Time	Temp (°C)	pH	SP Cond (mS (µS))	Turbidity (NTU)	Purge Rate (gal or (mL)/ min)	Volume Removed (gal (L))	DO (mg/l)	ORP (mv)	DTW	Notes
1046	10.7	8.0	978	12	500	2	0.19	36	120.90	
1049	11.1	8.0	953	10	|	3.5	0.19	-1	120.94	
1052	11.9	8.1	942	8	|	5	0.20	-30	120.96	
1055	12.3	8.1	940	8	|	6.5	0.19	-34	120.96	
1058	12.5	8.1	939	6	|	8	0.18	-36	120.96	
1101	12.8	8.1	916	6	|	9.5	0.18	-40	120.96	
1104	12.7	8.1	913	6	↓	11	0.19	-43	120.96	

Did well dewater? YES (NO)	Total volume removed: 11 (gal (L))	
Sample method: Disp Bailer Hydrasleeve ~~New~~ (Tubing) Ext. Port Other:		
Sample date: 04APR2014	Sample time: 1105	DTW at sample: 120.96
Sample ID: 2131	Lab: Energy Labs	Number of bottles: 2
Analysis: 500 ml NP poly - Alkalinity, Cl, SO4, TDS, EC, pH	250 ml HNO3 poly *field filtered - Dissolved Metals	
Equipment blank ID 2132 @ 1125	Field blank ID @	
Duplicate ID:	Pre-purge DO:	Post purge DO:
Fe^{2+}:	Pre-purge ORP:	Post purge ORP:
NAPL depth:	Volume of NAPL:	Volume removed: ml

Confluence Environmental, Inc.
3308 El Camino Ave., Suite 300 #148, Sacramento, CA 95821

Job#: 1350.15	**Sampler:** J Kerns - B Myers	**Client:** Montgomery & Associates
Well ID: MW-103	**Date** (DDOct2012): 04APR2014	**Site:** Rio Algom Mining, Lisbon, UT
Weather Conditions: Windy - Cold		**Sampler Signature:**
Well diam: 1/4" 1" 2" 3" (4") 6" Other:	**DTW:** 82.51	**Total Depth:** 113
Purge equip: ES - diam: Bladder Peri Waterra Positive Air Displacement Ext. System disp bailer teflon bailer other:	**Tubing:** OD: New Dedicated NA	
Purge method: 3-5 Case Volume Micro/Low-Flow Extraction Other:		
Pump depth/ intake: —	**Multipliers:** 1"= 0.04 2"= 0.16 3"= 0.37 4"= 0.65 5"=1.02 6"= 1.47 Radius	
(TD - DTW X Multiplier = 1 Volume	80% Recovery (TD - DTW X 0.20 + DTW)	
1 Volume = — X — = — (Total Purge)	80%= —	

Time	Temp (°C)	pH	SP Cond (mS / µS)	Turbidity (NTU)	Purge Rate (gal or mL/min)	Volume Removed (gal / L)	DO (mg/l)	ORP (mv)	DTW	Notes
1715	11.0	7.2	6586	10.05	—	—	50.82	167.4	82.51	H2S @ 99'

Did well dewater? YES (NO)	Total volume removed: — (gal / L)	
Sample method: Disp Bailer (Hydrasleeve) New Tubing Ext. Port Other:		
Sample date: 04APR2014	Sample time: 1715	DTW at sample: 82.51
Sample ID: 7177	Lab: Energy Labs	Number of bottles: (2)
Analysis: 500 ml NP poly - Alkalinity, Cl, SO4, TDS, EC, pH 250 ml HNO3 poly *field filtered - Dissolved Metals		
Equipment blank ID @	Field blank ID @	
Duplicate ID:	Pre-purge DO:	Post purge DO:
$Fe2^{+}$:	Pre-purge ORP:	Post purge ORP:
NAPL depth:	Volume of NAPL:	Volume removed: ml

Confluence Environmental, Inc.
3308 El Camino Ave., Suite 300 #148, Sacramento, CA 95821

Job#: 1350.15	**Sampler:** J Kerns - B Myers	**Client:** Montgomery & Associates
Well ID: MW-103	**Date** (DDOct2012): 04APR2014	**Site:** Rio Algom Mining, Lisbon, UT
Weather Conditions: Windy - Cold		**Sampler Signature:**
Well diam: 1/4" 1" 2" 3" (4") 6" Other:		**DTW:** 82.51 **Total Depth:** 113 -
Purge equip: (ES - diam) Bladder Peri Waterra Positive Air Displacement Ext. System		
disp bailer teflon bailer other:	**Tubing:** OD: New (Dedicated) NA	
Purge method: 3-5 Case Volume (Micro/Low-Flow) Extraction Other:		
Pump depth/ intake: 99	**Multipliers:** 1"= 0.04 2"= 0.16 3"= 0.37 4"= 0.65 5"=1.02 6"= 1.47 Radius	
(TD - DTW X Multiplier = 1 Volume	80% Recovery (TD - DTW X 0.20 + DTW)	
1 Volume = ___ X ___ = ___ (Total Purge)	80%= ___	

Time	Temp (°C)	pH	SP Cond (mS / µS)	Turbidity (NTU)	Purge Rate (gal or mL / min)	Volume Removed (gal / L)	DO (mg/l)	ORP (mv)	DTW	Notes
1724	10.2	7.1	6873	35.4	200	1.0	4.02	-58.9	84.00	
1727	10.7	7.1	7253	37.8	200	1.6	0.76	-109.3	84.20	
1730	10.6	7.0	7216	31.5	200	2.2	0.69	-121.4	84.20	
1733	10.7	7.0	7157	38.2	200	2.8	0.72	-123.5	84.29	
1736	10.8	7.1	7062	33.3	200	3.4	0.84	-123.3	84.29	
1739	10.9	7.1	7020	35.1	200	4.0	0.89	-120.2	84.29	
1742	10.9	7.1	6953	34.7	200	4.6	0.92	-120.1	84.29	

Did well dewater? YES (NO)	Total volume removed: 4.6 (gal / L)	
Sample method: Disp Bailer Hydrasleeve New Tubing Ext. Port Other: Dedicated Tubing		
Sample date: 04APR2014	Sample time: 1745	DTW at sample: 84.29
Sample ID: 7173	Lab: Energy Labs	Number of bottles (2)
Analysis: 500 ml NP poly - Alkalinity, Cl, SO4, TDS, EC, pH 250 ml HNO3 poly *field filtered - Dissolved Metals		
Equipment blank ID @	Field blank ID @	
Duplicate ID:	Pre-purge DO:	Post purge DO:
Fe^{2+}:	Pre-purge ORP:	Post purge ORP:
NAPL depth:	Volume of NAPL:	Volume removed: ml

Confluence Environmental, Inc.
3308 El Camino Ave., Suite 300 #148, Sacramento, CA 95821

Job#: 1350.15	**Sampler:** J Kerns - B Myers	**Client:** Montgomery & Associates
Well ID: MW104	**Date** (DDOct2012): 02APR2014	**Site:** Rio Algom Mining, Lisbon, UT
Weather Conditions: Cold	**Sampler Signature:**	
Well diam: 1/4" 1" 2" 3" (4") 6" Other:	**DTW:** 94.20	**Total Depth:** 108
Purge equip: (ES - diam:) Bladder Peri Waterra Positive Air Displacement Ext. System		
disp bailer teflon bailer other:	**Tubing:** OD: (New) Dedicated NA	
Purge method: 3-5 Case Volume Micro/Low-Flow Extraction Other:		
Pump depth/ intake: 5.HOVA	**Multipliers:** 1"= 0.04 2"= 0.16 3"= 0.37 4"= 0.65 5"=1.02 6"= 1.47 Radius	
(TD - DTW X Multiplier = 1 Volume	80% Recovery (TD - DTW X 0.20 + DTW)	
1 Volume = 9 X 3 = 27 (Total Purge)	80%=	

	Time	Temp (°C / F)	pH	SP Cond (mS / uS)	Turbidity (NTU)	Purge Rate (gal or mL/ min)	Volume Removed (gal / L)	DO (mg/l)	ORP (mv)	DTW	Notes
4/2/14	1108	11.6	7.3	1252	31	2	9	2.7	153	—	
		well dewatered @ 15 gallons									
4/6/14	910	10.3	7.7	1301	10	—	—	7.0	183	—	

Did well dewater? (YES) NO	Total volume removed: 15 (gal / L)	
Sample method: (Disp Bailer) Hydrasleeve New Tubing Ext. Port Other:		
Sample date: 06APR2014	Sample time: 910	DTW at sample: 103.65
Sample ID: 7191	Lab: Energy Labs	Number of bottles: 2
Analysis: 500 ml NP poly - Alkalinity, Cl, SO4, TDS, EC, pH 250 ml HNO3 poly *field filtered - Dissolved Metals		
Equipment blank ID @	Field blank ID @	
Duplicate ID:	Pre-purge DO:	Post purge DO:
$Fe2^+$:	Pre-purge ORP:	Post purge ORP:
NAPL depth:	Volume of NAPL:	Volume removed: ml

Confluence Environmental, Inc.
3308 El Camino Ave., Suite 300 #148, Sacramento, CA 95821

Purging And Sampling Data Sheet

Job#: 1350.15	**Sampler:** J Kerns B Myers	**Client:** Montgomery & Associates
Well ID: MW05	**Date** (DDOct2012): 04APR2014	**Site:** Rio Algom Mining, Lisbon, UT
Weather Conditions: Windy - Cold	**Sampler Signature:**	
Well diam: 1/4" 1" 2" 3" (4") 6" Other:	**DTW:** 73.04	**Total Depth:** 136'
Purge equip: ES - diam: Bladder Peri Waterra Positive Air Displacement Ext. System disp bailer teflon bailer other:	**Tubing:** OD: New Dedicated NA	
Purge method: 3-5 Case Volume Micro/Low-Flow Extraction Other:		
Pump depth/ intake: —	**Multipliers:** 1"= 0.04 2"= 0.16 3"= 0.37 4"= 0.65 5"=1.02 6"= 1.47 Radius² X 0.163	
(TD - DTW X Multiplier = 1 Volume	80% Recovery (TD - DTW X 0.20 + DTW)	

1 Volume = — X — = — (Total Purge) 80%= —

Time	Temp (°C) °F	pH	SP Cond (mS) µS	Turbidity (NTU)	Purge Rate (gal or mL/ min)	Volume Removed (gal / L)	DO (mg/l)	ORP (mv)	DTW	Notes
1630	11.8	7.6	1222	34.6	—	—	2.43	194.4	73.04	HS @ 105

Did well dewater? YES (NO) Total volume removed: — (gal / L)

Sample method: Disp Bailer (Hydrasleeve) New Tubing Ext. Port Other:

Sample date: 04APR2014 Sample time: 1630 DTW at sample: 73.04

Sample ID: 7170 Lab: Energy Labs Number of bottles: (2)

Analysis: 500 ml NP poly - Alkalinity, Cl, SO4, TDS, EC, pH 250 ml HNO3 poly *field filtered - Dissolved Metals

Equipment blank ID @ Field blank ID @

Duplicate ID: Pre-purge DO: Post purge DO:

$Fe2^{+}$: Pre-purge ORP: Post purge ORP:

NAPL depth: Volume of NAPL: Volume removed: ml

Confluence Environmental, Inc
3308 El Camino Ave, Suite 300 #148, Sacramento, CA 95821, 916-760-7641

Job#: 1350.15	**Sampler:** J Kerns - B Myers	**Client:** Montgomery & Associates
Well ID: MW-105	**Date** (DDOct2012): ~~W~~ 04APR2014	**Site:** Rio Algom Mining, Lisbon, UT
Weather Conditions: Windy - Cold		**Sampler Signature:**
Well diam: 1/4" 1" 2" 3" (4") 6" Other:		**DTW:** 73.04 **Total Depth:** 136'
Purge equip: (ES - diam:) Bladder Peri Waterra Positive Air Displacement Ext. System		
disp bailer teflon bailer other:	**Tubing:** OD: New (Dedicated) NA	
Purge method: 3-5 Case Volume (Micro/Low-Flow) Extraction Other:		
Pump depth/ intake: 105	**Multipliers:** 1"= 0.04 2"= 0.16 3"= 0.37 4"= 0.65 5"=1.02 6"= 1.47 Radius	
(TD - DTW X Multiplier = 1 Volume	80% Recovery (TD - DTW X 0.20 + DTW)	
1 Volume = _____ X _____ = _____ (Total Purge)	80%=	

Time	Temp (°C)	pH	SP Cond (mS / (S))	Turbidity (NTU)	Purge Rate (gal or (mL) / min)	Volume Removed (gal / (L))	DO (mg/l)	ORP (mv)	DTW	Notes
1642	11.8	7.6	1018	18.5	500	1.0	2.23	195.4	73.15	
1645	11.4	7.6	1657	16.6	500	2.5	2.77	190.3	73.14	
1648	11.6	7.4	1691	19.3	500	4.0	2.82	160.0	73.14	
1651	12.4	7.4	1706	17.0	500	5.5	2.91	137.7	73.14	
1654	12.7	7.4	1711	16.4	500	7.0	2.89	129.7	73.14	
1657	12.8	7.3	1706	16.7	500	8.5	2.91	127.2	73.14	
1700	12.8	7.3	1705	14.9	500	10.0	2.92	121.1	73.14	

Did well dewater? YES (NO)	Total volume removed: 10.0 (gal / (L))	
Sample method: Disp Bailer Hydrasleeve New Tubing Ext. Port Other: Dedicated Tubing		
Sample date: 04APR2014	Sample time: 1705	DTW at sample: 73.14
Sample ID: 7171	Lab: Energy Labs	Number of bottles (2)
Analysis: 500 ml NP poly - Alkalinity, Cl, SO4, TDS, EC, pH 250 ml HNO3 poly *field filtered - Dissolved Metals		
Equipment blank ID @	Field blank ID @	
Duplicate ID:	Pre-purge DO:	Post purge DO:
Fe^{2+}:	Pre-purge ORP:	Post purge ORP:
NAPL depth:	Volume of NAPL:	Volume removed: ml

Confluence Environmental, Inc.
3308 El Camino Ave., Suite 300 #148, Sacramento, CA 95821

Job#: 1350.15	**Sampler:** J Kerns - B Myers	**Client:** Montgomery & Associates
Well ID: MW-106	**Date** (DDOct2012): 02APR2014	**Site:** Rio Algom Mining, Lisbon, UT
Weather Conditions: Cold Snowing		**Sampler Signature:**
Well diam: 1/4" 1" 2" 3" 4" 6" Other:		**DTW:** 227.30 **Total Depth:** 267
Purge equip: (ES - diam:) Bladder Peri Waterra Positive Air Displacement Ext. System		
disp bailer teflon bailer other:	**Tubing:** OD: (New) Dedicated NA	
Purge method: 3-5 Case Volume Micro/Low-Flow Extraction Other: Purge Dry		
Pump depth/ intake: Bottom	**Multipliers:** 1"= 0.04 2"= 0.16 3"= 0.37 4"= 0.65 5"=1.02 6"= 1.47 Radius	
(TD - DTW X Multiplier = 1 Volume	80% Recovery (TD - DTW X 0.20 + DTW)	
1 Volume = 25.8 X 3 = 77.5 (Total Purge)	80%=	

	Time	Temp (°C)	pH	SP Cond (mS/µS)	Turbidity (NTU)	Purge Rate (gal or mL/ min)	Volume Removed (gal / L)	DO (mg/l)	ORP (mv)	DTW	Notes
4/2/14	0935	11.2	7.9	2651	17.1	1.5	26	1.96	279.8	240.03	
	1000	8.1	7.6	2737	9.1	1.5	63.5	2.25	230.0	258.32	
	1012	12.9	7.5	2762	15.3	0.5	69.5	1.19	16.8	259.63	
4/6/14	850	10.1	7.85	2782	8	—	—	1.9	186	—	

Did well dewater? (YES) NO	Total volume removed: 69.5 (gal / L)	
Sample method: (Disp Bailer) Hydrasleeve New Tubing Ext. Port Other:		
Sample date: 06APR2014	Sample time: 850	DTW at sample: 245.31
Sample ID: 7180	Lab: Energy Labs	Number of bottles: (2)
Analysis: 500 ml NP poly - Alkalinity, Cl, SO4, TDS, EC, pH 250 ml HNO3 poly *field filtered - Dissolved Metals		
Equipment blank ID @	Field blank ID @	
Duplicate ID:	Pre-purge DO:	Post purge DO:
Fe^{2+}:	Pre-purge ORP:	Post purge ORP:
NAPL depth:	Volume of NAPL:	Volume removed: ml

Confluence Environmental, Inc.
3308 El Camino Ave., Suite 300 #148, Sacramento, CA 95821

Purging And Sampling Data Sheet

Job#: 1350.15	**Sampler:** J Kerns B Myers	**Client:** Montgomery & Associates
Well ID: MW-107S	**Date** (DDOct2012): 03APR2014	**Site:** Rio Algom Mining, Lisbon, UT
Weather Conditions: cold	**Sampler Signature:**	
Well diam: 1/4" 1" 2" 3" (4") 6" Other:	**DTW:** 50.85	**Total Depth:** 62.00
Purge equip: ES - diam: Bladder Peri Waterra Positive Air Displacement Ext. System disp bailer teflon bailer other: (1/4")	**Tubing:** OD: New Dedicated (NA)	
Purge method: 3-5 Case Volume Micro/Low-Flow Extraction Other:		
Pump depth/ intake: 57.5	**Multipliers:** 1"= 0.04 2"= 0.16 3"= 0.37 4"= 0.65 5"=1.02 6"= 1.47 Radius² X 0.163	
(TD - DTW X Multiplier = 1 Volume	80% Recovery (TD - DTW X 0.20 + DTW)	

1 Volume = _____ X _____ = _____ (Total Purge) 80%= _____

Time	Temp (°C / °F)	pH	SP Cond (mS (µS))	Turbidity (NTU)	Purge Rate (gal or mL/ min)	Volume Removed (gal / L)	DO (mg/l)	ORP (mv)	DTW	Notes
952	10.4	4.8	2111	40	—	—	3.0	213	—	

Did well dewater? YES (NO) Total volume removed: — (gal / L)

Sample method: Disp Bailer (Hydrasleeve) New Tubing Ext. Port Other:

Sample date: 03APR2014	Sample time: 950	DTW at sample: —
Sample ID: 7111	Lab: Energy Labs	Number of bottles: 2
Analysis: 500 ml NP poly - Alkalinity, Cl, SO4, TDS, EC, pH 250 ml HNO3 poly *field filtered - Dissolved Metals		
Equipment blank ID @	Field blank ID @	
Duplicate ID:	Pre-purge DO:	Post purge DO:
Fe2+:	Pre-purge ORP:	Post purge ORP:
NAPL depth:	Volume of NAPL:	Volume removed: ml

Confluence Environmental, Inc
3308 El Camino Ave, Suite 300 #148, Sacramento, CA 95821, 916-760-7641

Purging And Sampling Data Sheet

Job#: 1350.15	**Sampler:** J Kerns B Myers	**Client:** Montgomery & Associates
Well ID: MW-107S	**Date** (DDOct2012): 03APR2014	**Site:** Rio Algom Mining, Lisbon, UT
Weather Conditions: Cold	**Sampler Signature:**	
Well diam: 1/4" 1" 2" 3" (4") 6" Other:	**DTW:** 50.85 **Total Depth:** 62.00	
Purge equip: (ES - diam:) Bladder Peri Waterra Positive Air Displacement Ext. System		
disp bailer teflon bailer other:	**Tubing:** OD: New (Dedicated) NA	
Purge method: 3-5 Case Volume (Micro/Low-Flow) Extraction Other:		
Pump depth/ intake: 57.5	**Multipliers:** 1"= 0.04 2"= 0.16 3"= 0.37 4"= 0.65 5"=1.02 6"= 1.47 Radius² X 0.163	
(TD - DTW X Multiplier = 1 Volume	80% Recovery (TD - DTW X 0.20 + DTW)	

1 Volume = _____ X _____ = _____ (Total Purge) 80%= _____

Time	Temp (°C / °F)	pH	SP Cond (mS / (µS))	Turbidity (NTU)	Purge Rate (gal or (mL) / min)	Volume Removed (gal / (L))	DO (mg/l)	ORP (mv)	DTW	Notes
1003	9.6	4.5	2152	22	300	1	2.3	207	51.08	
1006	10.6	4.5	2152	18	|	1.9	2.3	200	51.08	
1009	11.0	4.5	2150	16	|	2.8	2.2	199	51.08	
1012	11.6	4.5	2149	15	|	3.7	2.2	195	51.08	
1015	12.4	4.5	2152	12	|	4.6	2.2	192	51.08	
1018	12.8	4.5	2161	12	|	5.5	2.1	190	51.08	
1021	13.0	4.5	2164	10	|	6.4	2.2	187	51.08	
1024	13.2	4.5	2162	9	—	7.3	2.2	185	51.08	

Did well dewater? YES (NO)	Total volume removed: 7.3	(gal / (L))
Sample method: Disp Bailer Hydrasleeve ~~New~~ (Tubing) Ext. Port Other:		
Sample date: 03APR2014	Sample time: 1025	DTW at sample: 51.08
Sample ID: 7112	Lab: Energy Labs	Number of bottles: 2
Analysis: 500 ml NP poly - Alkalinity, Cl, SO4, TDS, EC, pH 250 ml HNO3 poly *field filtered - Dissolved Metals		
Equipment blank ID @	Field blank ID @	
Duplicate ID:	Pre-purge DO:	Post purge DO:
Fe^{2+}:	Pre-purge ORP:	Post purge ORP:
NAPL depth:	Volume of NAPL:	Volume removed: ml

Confluence Environmental, Inc
3308 El Camino Ave, Suite 300 #148, Sacramento, CA 95821, 916-760-7641

Purging And Sampling Data Sheet

Job#: 1350.15	**Sampler:** J Kerns B Myers	**Client:** Montgomery & Associates
Well ID: MW-107S	**Date** (DDOct2012): 03APR2014	**Site:** Rio Algom Mining, Lisbon, UT
Weather Conditions: cold	**Sampler Signature:**	
Well diam: 1/4" 1" 2" 3" (4") 6" Other:	**DTW:** 50.85 **Total Depth:** 62.00	

Purge equip: (ES - diam:) Bladder Peri Waterra Positive Air Displacement Ext. System
disp bailer teflon bailer other: **Tubing:** OD: New (Dedicated) NA

Purge method: (3-5 Case Volume) Micro/Low-Flow Extraction Other:

Pump depth/ intake: 57.5 **Multipliers:** 1"= 0.04 2"= 0.16 3"= 0.37 4"= 0.65 5"=1.02 6"= 1.47 Radius² X 0.163

(TD - DTW X Multiplier = 1 Volume	80% Recovery (TD - DTW X 0.20 + DTW)

1 Volume = 7.2 X 3 = 21.5 (Total Purge) 80%= 53.08

Time	Temp (°C / °F)	pH	SP Cond (mS / µS)	Turbidity (NTU)	Purge Rate (gal or mL / min)	Volume Removed (gal / L)	DO (mg/l)	ORP (mv)	DTW	Notes
1028	12.1	4.4	2195	13	1.5	7.2	2.5	196	53.63	
1033	11.9	4.4	2197	10	1	14.4	2.5	195	53.70	
1038	11.9	4.4	2184	8	1	21.5	2.5	193	53.85	
	vented very briefly for 80%									

Did well dewater? YES (NO) Total volume removed: 21.5 (gal / L)

Sample method: Disp Bailer Hydrasleeve ~~New Tubing~~ Ext. Port Other:

Sample date: 03APR2014	Sample time: 1040	DTW at sample: 53.08
Sample ID: 713	Lab: Energy Labs	Number of bottles: 2
Analysis: 500 ml NP poly - Alkalinity, Cl, SO4, TDS, EC, pH	250 ml HNO3 poly *field filtered - Dissolved Metals	

Equipment blank ID @	Field blank ID @	
Duplicate ID:	Pre-purge DO:	Post purge DO:
Fe2+:	Pre-purge ORP:	Post purge ORP:
NAPL depth:	Volume of NAPL:	Volume removed: ml

Confluence Environmental, Inc
3308 El Camino Ave, Suite 300 #148, Sacramento, CA 95821, 916-760-7641

Job#: 1350.15	**Sampler:** J Kerns - B Myers	**Client:** Montgomery & Associates
Well ID: MW-107D	**Date** (DDOct2012): 03APR2014	**Site:** Rio Algom Mining, Lisbon, UT
Weather Conditions: Cold - Windy	**Sampler Signature:**	
Well diam: 1/4" 1" 2" 3" (4") 6" Other:	**DTW:** 50.94	**Total Depth:** 82
Purge equip: ES - diam: Bladder Peri Waterra Positive Air Displacement Ext. System		
disp bailer teflon bailer other:	**Tubing:** OD: New Dedicated NA	
Purge method: 3-5 Case Volume Micro/Low-Flow Extraction Other:		
Pump depth/ intake: —	**Multipliers:** 1"= 0.04 2"= 0.16 3"= 0.37 4"= 0.65 5"=1.02 6"= 1.47 Radius	
(TD - DTW X Multiplier = 1 Volume	80% Recovery (TD - DTW X 0.20 + DTW)	
1 Volume = ___ X ___ = ___ (Total Purge)	80%=	

Time	Temp (°C /	pH	SP Cond (mS / µS)	Turbidity (NTU)	Purge Rate (gal or mL/ min)	Volume Removed (gal / L)	DO (mg/l)	ORP (mv)	DTW	Notes
—	No / insufficient water to collect parameters									HS@ 73'
—	Partial volume collected for unfiltered sample									—
—	Tear in HS —									

Did well dewater? YES (NO)	Total volume removed: — (gal / L)	
Sample method: Disp Bailer (Hydrasleeve) New Tubing Ext. Port Other:		
Sample date: 03APR2014	Sample time: 1015	DTW at sample: 50.94
Sample ID: 7149	Lab: Energy Labs	Number of bottles: 2
Analysis: 500 ml NP poly - Alkalinity, Cl, SO4, TDS, EC, pH 250 ml HNO3 poly *field filtered - Dissolved Metals		
Equipment blank ID @	Field blank ID @	
Duplicate ID:	Pre-purge DO:	Post purge DO:
$Fe2^{+}$:	Pre-purge ORP:	Post purge ORP:
NAPL depth:	Volume of NAPL:	Volume removed: ml

Confluence Environmental, Inc.
3308 El Camino Ave., Suite 300 #148, Sacramento, CA 95821

Job#: 1350.15	**Sampler:** J Kerns - B Myers	**Client:** Montgomery & Associates
Well ID: MW-1070	**Date** (DDOct2012): 03APR2014	**Site:** Rio Algom Mining, Lisbon, UT
Weather Conditions: Windy - Cold	**Sampler Signature:**	
Well diam: 1/4" 1" 2" 3" (4") 6" Other:	**DTW:** 50.94	**Total Depth:** 82
Purge equip: (ES - diam:) Bladder Peri Waterra Positive Air Displacement Ext. System		
disp bailer teflon bailer other:	**Tubing:** OD: New (Dedicated) NA	
Purge method: (3-5 Case Volume) Micro/Low-Flow Extraction Other:		
Pump depth/ intake: 73'	**Multipliers:** 1"= 0.04 2"= 0.16 3"= 0.37 4"= 0.65 5"=1.02 6"= 1.47 Radius	
(TD - DTW X Multiplier = 1 Volume	80% Recovery (TD - DTW X 0.20 + DTW)	
1 Volume = ___ X ___ = ___ (Total Purge)	80%= ___	

Time	Temp (°C)	pH	SP Cond (mS/(µS))	Turbidity (NTU)	Purge Rate (gal or mL/min)	Volume Removed (gal/(L))	DO (mg/l)	ORP (mv)	DTW	Notes
1026	9.7	7.4	1015	49.5	500	1.0	1.33	10.4	51.94	
1029	10.5	7.0	1012	55.2	500	2.5	0.95	92.0	51.42	
1032	11.3	8.0	1012	53.7	500	4.0	0.91	87.4	51.42	
1035	12.1	7.9	1013	51.3	500	5.5	0.90	87.4	51.42	
1038	12.5	8.0	1006	54.7	500	7.0	0.91	86.7	51.42	
1041	12.4	8.0	1009	51.5	500	8.5	1.25	52.6	51.42	
1044	12.3	8.0	1006	45.2	500	10.0	1.28	51.6	51.42	
1047	12.2	8.0	1007	45.7	500	11.5	1.35	50.0	51.42	

Did well dewater? YES (NO)	Total volume removed: 11.5 (gal/(L))	
Sample method: Disp Bailer Hydrasleeve New Tubing Ext. Port Other: Dedicated Tubing		
Sample date: 03APR2014	Sample time: 1048	DTW at sample: 51.42
Sample ID: 7150	Lab: Energy Labs	Number of bottles: 2
Analysis: 500 ml NP poly - Alkalinity, Cl, SO4, TDS, EC, pH 250 ml HNO3 poly *field filtered - Dissolved Metals		
Equipment blank ID @	Field blank ID @	
Duplicate ID:	Pre-purge DO:	Post purge DO:
Fe^{2+}:	Pre-purge ORP:	Post purge ORP:
NAPL depth:	Volume of NAPL:	Volume removed: ml

Confluence Environmental, Inc.
3308 El Camino Ave., Suite 300 #148, Sacramento, CA 95821

Job#: 1350.15	**Sampler:** J Kerns - B Myers	**Client:** Montgomery & Associates
Well ID: MW-1070	**Date** (DDOct2012): 03APR2014	**Site:** Rio Algom Mining, Lisbon, UT
Weather Conditions: Windy - Cold	**Sampler Signature:**	
Well diam: 1/4" 1" 2" 3" (4") 6" Other:	**DTW:** 50.94	**Total Depth:** 82
Purge equip: (ES - diam:) Bladder Peri Waterra Positive Air Displacement Ext. System		
disp bailer teflon bailer other:	**Tubing:** OD: New (Dedicated) NA	
Purge method: (3-5 Case Volume) Micro/Low-Flow Extraction Other:		
Pump depth/ intake: 73'	**Multipliers:** 1"= 0.04 2"= 0.16 3"= 0.37 4"= 0.65 5"=1.02 6"= 1.47 Radius	
(TD - DTW X Multiplier = 1 Volume	80% Recovery (TD - DTW X 0.20 + DTW)	
1 Volume = 20 X 3 = 60 (Total Purge)	80%=	

Time	Temp (°C)	pH	SP Cond (mS / (S))	Turbidity (NTU)	Purge Rate (gal) or mL/ min)	Volume Removed (gal) L)	DO (mg/l)	ORP (mv)	DTW	Notes
1103	11.8	7.1	991	15.7	2.0	20	1.54	20.1	54.44	
1113	11.8	6.8	990	5.90	2.0	40	1.72	-14.8	55.00	
1123	11.8	6.8	993	5.3	2.0	60	1.77	-13.8	55.00	

Did well dewater? YES (NO)	Total volume removed: 60 (gal) L)
Sample method: Disp Bailer Hydrasleeve New Tubing Ext. Port Other: Dedicated Tubing	
Sample date: 03APR2014 Sample time: 1125	DTW at sample: 55.00
Sample ID: 7151 Lab: Energy Labs	Number of bottles: (2)
Analysis: 500 ml NP poly - Alkalinity, Cl, SO4, TDS, EC, pH 250 ml HNO3 poly *field filtered - Dissolved Metals	
Equipment blank ID @	Field blank ID @
Duplicate ID: 7152 @ 1130	Pre-purge DO: Post purge DO:
Fe^{2+}:	Pre-purge ORP: Post purge ORP:
NAPL depth: Volume of NAPL:	Volume removed: ml

Confluence Environmental, Inc.
3308 El Camino Ave., Suite 300 #148, Sacramento, CA 95821

Job#: 1350.15	**Sampler:** J Kerns - B Myers	**Client:** Montgomery & Associates
Well ID: MW-108	**Date** (DDOct2012): 03APR2014	**Site:** Rio Algom Mining, Lisbon, UT
Weather Conditions: Windy - Cold		**Sampler Signature:**
Well diam: 1/4" 1" 2" 3" (4") 6" Other:		**DTW:** 24.78 **Total Depth:** 170
Purge equip: ES - diam: Bladder Peri Waterra Positive Air Displacement Ext. System disp bailer teflon bailer other:		**Tubing:** OD: New Dedicated NA
Purge method: 3-5 Case Volume Micro/Low-Flow Extraction Other:		
Pump depth/ intake: —	**Multipliers:** 1"= 0.04 2"= 0.16 3"= 0.37 4"= 0.65 5"=1.02 6"= 1.47 Radius	
(TD - DTW X Multiplier = 1 Volume —	80% Recovery (TD - DTW X 0.20 + DTW)	
1 Volume = — X — = — (Total Purge)	80%= —	

Time	Temp (°C / F)	pH	SP Cond (mS / µS)	Turbidity (NTU)	Purge Rate (gal or mL/ min)	Volume Removed (gal / L)	DO (mg/l)	ORP (mv)	DTW	Notes
1145	10.8	7.7	1085	10.24	—	—	9.14	136.9	24.78	H5 @ 131

Did well dewater? YES (NO)	Total volume removed: — (gal / L)	
Sample method: Disp Bailer (Hydrasleeve) New Tubing Ext. Port Other:		
Sample date: 03APR2014	Sample time: 1145	DTW at sample: 24.78
Sample ID: 7153	Lab: Energy Labs	Number of bottles: (2)
Analysis: 500 ml NP poly - Alkalinity, Cl, SO4, TDS, EC, pH 250 ml HNO3 poly *field filtered - Dissolved Metals		
Equipment blank ID @	Field blank ID @	
Duplicate ID:	Pre-purge DO:	Post purge DO:
$Fe2^{+}$:	Pre-purge ORP:	Post purge ORP:
NAPL depth:	Volume of NAPL:	Volume removed: ml

Confluence Environmental, Inc.
3308 El Camino Ave., Suite 300 #148, Sacramento, CA 95821

Job#: 1350.15	**Sampler:** J Kerns - B Myers	**Client:** Montgomery & Associates
Well ID: MW-108	**Date** (DDOct2012): 03APR2014	**Site:** Rio Algom Mining, Lisbon, UT
Weather Conditions: windy - cold	**Sampler Signature:**	
Well diam: 1/4" 1" 2" 3" (4") 6" Other:	**DTW:** 24.78	**Total Depth:** 170 —
Purge equip: (ES - diam:) Bladder Peri Waterra Positive Air Displacement Ext. System		
disp bailer teflon bailer other:	**Tubing:** OD: New (Dedicated) NA	
Purge method: 3-5 Case Volume (Micro/Low-Flow) Extraction Other:		
Pump depth/ intake: 131'	**Multipliers:** 1"= 0.04 2"= 0.16 3"= 0.37 4"= 0.65 5"=1.02 6"= 1.47 Radius	
(TD - DTW X Multiplier = 1 Volume	80% Recovery (TD - DTW X 0.20 + DTW)	
1 Volume = — X — = — (Total Purge)	80%= —	

Time	Temp (°C)	pH	SP Cond (mS / µS)	Turbidity (NTU)	Purge Rate (gal or mL min)	Volume Removed (gal L)	DO (mg/l)	ORP (mv)	DTW	Notes
1153	10.0	7.9	1061	5.0	500	1.0	8.87	104.7	25.09	
1156	10.7	7.6	1074	8.2	500	2.5	9.68	99.5	25.05	
1159	10.7	7.6	1076	8.4	500	4.0	10.04	90.9	25.05	
1202	10.8	7.6	1084	5.9	500	5.5	10.41	85.7	25.05	
1205	10.8	7.5	1075	5.7	500	7.0	10.37	83.0	25.05	

Did well dewater? YES (NO)	Total volume removed: 7.0 (gal (L))	
Sample method: Disp Bailer Hydrasleeve New Tubing Ext. Port Other: Dedicated Tubing		
Sample date: 03APR2014	Sample time: 1210	DTW at sample: 25.05
Sample ID: 7154	Lab: Energy Labs	Number of bottles: (2)
Analysis: 500 ml NP poly - Alkalinity, Cl, SO4, TDS, EC, pH 250 ml HNO3 poly *field filtered - Dissolved Metals		
Equipment blank ID @	Field blank ID @	
Duplicate ID:	Pre-purge DO:	Post purge DO:
Fe2+:	Pre-purge ORP:	Post purge ORP:
NAPL depth:	Volume of NAPL:	Volume removed: ml

Confluence Environmental, Inc.
3308 El Camino Ave., Suite 300 #148, Sacramento, CA 95821

Job#: 1350.15	**Sampler:** J Kerns - B Myers	**Client:** Montgomery & Associates
Well ID: MW-108	**Date** (DDOct2012): 03APR2014	**Site:** Rio Algom Mining, Lisbon, UT
Weather Conditions: Windy - Cold	**Sampler Signature:**	
Well diam: 1/4" 1" 2" 3" (4") 6" Other:	**DTW:** 24.78	**Total Depth:** 174.00

Purge equip: (ES - diam:) Bladder Peri Waterra Positive Air Displacement Ext. System
disp bailer teflon bailer other: **Tubing:** OD: New (Dedicated) NA

Purge method: (3-5 Case Volume) Micro/Low-Flow Extraction Other:

Pump depth/ intake: 131' **Multipliers:** 1"= 0.04 2"= 0.16 3"= 0.37 4"= 0.65 5"=1.02 6"= 1.47 Radius

(TD - DTW X Multiplier = 1 Volume | 80% Recovery (TD - DTW X 0.20 + DTW)

1 Volume = 97 X 3 = 291 (Total Purge) | 80%=

Time	Temp (°C / F)	pH	SP Cond (mS / µS)	Turbidity (NTU)	Purge Rate (gal or mL/ min)	Volume Removed (gal / L)	DO (mg/l)	ORP (mv)	DTW	Notes
1230	12.2	7.5	1085	3.4	5.0	97	10.51	101.6	29.11	
1300	12.2	7.5	1089	1.9	5.0	194	12.80	113.2	29.20	
1330	12.3	7.5	1093	1.6	5.0	291	11.46	118.6	29.25	

Did well dewater? YES (NO) | Total volume removed: 291 (gal / L)

Sample method: Disp Bailer Hydrasleeve New Tubing Ext. Port Other: Dedicated Tubing

Sample date: 03APR2014 | Sample time: 1335 | DTW at sample: 29.25

Sample ID: 7155 | Lab: Energy Labs | Number of bottles: 2

Analysis: 500 ml NP poly - Alkalinity, Cl, SO4, TDS, EC, pH 250 ml HNO3 poly *field filtered - Dissolved Metals

Equipment blank ID @ | Field blank ID @

Duplicate ID: | Pre-purge DO: | Post purge DO:

Fe^{2+}: | Pre-purge ORP: | Post purge ORP:

NAPL depth: | Volume of NAPL: | Volume removed: ml

Confluence Environmental, Inc.
3308 El Camino Ave., Suite 300 #148, Sacramento, CA 95821

Job#: 1350.15	**Sampler:** J Kerns - B Myers	**Client:** Montgomery & Associates
Well ID: MW-109	**Date** (DDOct2012): 03APR2014	**Site:** Rio Algom Mining, Lisbon, UT
Weather Conditions: Windy - Cold	**Sampler Signature:**	
Well diam: 1/4" 1" 2" 3" (4") 6" Other:	**DTW:** 135.99	**Total Depth:** 156
Purge equip: ES - diam: Bladder Peri Waterra Positive Air Displacement Ext. System		
disp bailer teflon bailer other:	**Tubing:** OD: New Dedicated NA	
Purge method: 3-5 Case Volume Micro/Low-Flow Extraction Other:		
Pump depth/ intake: —	**Multipliers:** 1"= 0.04 2"= 0.16 3"= 0.37 4"= 0.65 5"=1.02 6"= 1.47 Radius	
(TD - DTW X Multiplier = 1 Volume	80% Recovery (TD - DTW X 0.20 + DTW)	
1 Volume = — X — = — (Total Purge)	80%= —	

Time	Temp (°C)	pH	SP Cond (mS / (µS))	Turbidity (NTU)	Purge Rate (gal or mL/ min)	Volume Removed (gal / L)	DO (mg/l)	ORP (mv)	DTW	Notes
1500	11.7	7.4	32.31	3.6	—	—	3.88	82.8	135.99	HS @ 147'

Did well dewater? YES (NO)	Total volume removed: — (gal / L)	
Sample method: Disp Bailer (Hydrasleeve) New Tubing Ext. Port Other:		
Sample date: 03APR2014	Sample time: 1500	DTW at sample: 135.99
Sample ID: 7157	Lab: Energy Labs	Number of bottles: (2)
Analysis: 500 ml NP poly - Alkalinity, Cl, SO4, TDS, EC, pH 250 ml HNO3 poly *field filtered - Dissolved Metals		
Equipment blank ID @	Field blank ID @	
Duplicate ID:	Pre-purge DO:	Post purge DO:
Fe^{2+}:	Pre-purge ORP:	Post purge ORP:
NAPL depth:	Volume of NAPL:	Volume removed: ml

Confluence Environmental, Inc.
3308 El Camino Ave., Suite 300 #148, Sacramento, CA 95821

Job#: 1350.15	**Sampler:** J Kerns - B Myers	**Client:** Montgomery & Associates
Well ID: MW-109	**Date** (DDOct2012): 03APR2014	**Site:** Rio Algom Mining, Lisbon, UT
Weather Conditions: Windy - Cold	**Sampler Signature:**	
Well diam: 1/4" 1" 2" 3" (4") 6" Other:	**DTW:** 135.99	**Total Depth:** 156 -
Purge equip: (ES - diam:) Bladder Peri Waterra Positive Air Displacement Ext. System		
disp bailer teflon bailer other:	**Tubing:** OD: New (Dedicated) NA	
Purge method: 3-5 Case Volume (Micro/Low-Flow) Extraction Other:		
Pump depth/ intake: 147'	**Multipliers:** 1"= 0.04 2"= 0.16 3"= 0.37 4"= 0.65 5"=1.02 6"= 1.47 Radius	
(TD - DTW X Multiplier = 1 Volume	80% Recovery (TD - DTW X 0.20 + DTW)	
1 Volume = — X — = — (Total Purge)	80%= —	

Time	Temp (°C)	pH	SP Cond (mS/(µS))	Turbidity (NTU)	Purge Rate (gal or (mL)/min)	Volume Removed (gal/(L))	DO (mg/l)	ORP (mv)	DTW	Notes
1512	11.2	7.3	3709	533	200	1.0	3.90	78.2	137.73	
1515	11.4	7.9	3820	63.5	200	1.6	3.61	-22.6	138.03	
1518	11.5	8.8	3796	62.1	200	3.2	3.72	2.5	137.92	
1521	11.6	8.7	3810	59.4	200	3.8	3.31	22.6	137.91	
1524	11.7	8.6	3832	54.8	200	4.4	3.44	37.5	137.86	
1527	11.4	8.6	3804	45.3	200	5.0	3.78	44.5	137.90	
1530	11.3	8.6	3806	45.1	200	5.6	3.81	44.9	137.90	
1533	11.4	8.6	3804	45.0	200	6.2	3.80	44.7	137.90	

Did well dewater? YES (NO)	Total volume removed: 6.7 (gal/(L))	
Sample method: Disp Bailer Hydrasleeve New Tubing Ext. Port Other: Dedicated Tubing		
Sample date: 03APR2014	Sample time: 1535	DTW at sample: 137.90
Sample ID: 7158	Lab: Energy Labs	Number of bottles: (2)
Analysis: 500 ml NP poly - Alkalinity, Cl, SO4, TDS, EC, pH 250 ml HNO3 poly *field filtered - Dissolved Metals		
Equipment blank ID @	Field blank ID @	
Duplicate ID:	Pre-purge DO:	Post purge DO:
Fe^{2+}:	Pre-purge ORP:	Post purge ORP:
NAPL depth:	Volume of NAPL:	Volume removed: ml

Confluence Environmental, Inc.
3308 El Camino Ave., Suite 300 #148, Sacramento, CA 95821

Job#: 1350.15	**Sampler:** J Kerns - B Myers	**Client:** Montgomery & Associates
Well ID: MW-109	**Date** (DDOct2012): 03APR2014	**Site:** Rio Algom Mining, Lisbon, UT
Weather Conditions: Windy - Cold	**Sampler Signature:**	
Well diam: 1/4" 1" 2" 3" (4") 6" Other:	**DTW:** 135.99	**Total Depth:** 156

Purge equip: (ES - diam:) Bladder Peri Waterra Positive Air Displacement Ext. System

disp bailer teflon bailer other: **Tubing:** OD: New (Dedicated) NA

Purge method: (3-5 Case Volume) Micro/Low-Flow Extraction Other:

Pump depth/ intake: 147' **Multipliers:** 1"= 0.04 2"= 0.16 3"= 0.37 4"= 0.65 5"=1.02 6"= 1.47 Radius

(TD - DTW X Multiplier = 1 Volume | 80% Recovery (TD - DTW X 0.20 + DTW)

1 Volume = 13 X 3 = 39 (Total Purge) | 80%= 139.99

Time	Temp (°C)	pH	SP Cond (mS / µS)	Turbidity (NTU)	Purge Rate (gal or mL/ min)	Volume Removed (gal / L)	DO (mg/l)	ORP (mv)	DTW	Notes
1548	15.6	8.4	3018	12.1	1.0	13	4.49	63.8	144.35	
1603	15.8	8.2	3175	20.4	0.75	26	5.03	62.3	149.11	
1605	well	dewatered	@	approx	27.5	gallons				
0855	10.4	8.9	3040	10.2	—	—	(TA) 4.29 ~~10.60~~	205	136.26	

Did well dewater? (YES) NO | Total volume removed: 27.5 (gal) L)

Sample method: (Disp Bailer) Hydrasleeve New Tubing Ext. Port Other:

Sample date: 03APR2014 | Sample time: 0855 | DTW at sample: 136.26

Sample ID: ~~7159~~ (TA) 7160 | Lab: Energy Labs | Number of bottles: (2)

Analysis: 500 ml NP poly - Alkalinity, Cl, SO4, TDS, EC, pH 250 ml HNO3 poly *field filtered - Dissolved Metals

Equipment blank ID @	Field blank ID @	
Duplicate ID:	Pre-purge DO:	Post purge DO:
Fe^{2+}:	Pre-purge ORP:	Post purge ORP:
NAPL depth:	Volume of NAPL:	Volume removed: ml

Confluence Environmental, Inc.
3308 El Camino Ave., Suite 300 #148, Sacramento, CA 95821

Job#: 1350.15	**Sampler:** J Kerns - B Myers	**Client:** Montgomery & Associates
Well ID: MW-111	**Date** (DDOct2012): 01APR2014	**Site:** Rio Algom Mining, Lisbon, UT
Weather Conditions: Windy	**Sampler Signature:**	
Well diam: 1/4" 1" 2" 3" (4") 6" Other:	**DTW:** 91.99	**Total Depth:** 175.85
Purge equip: ES - diam: Bladder Peri Waterra Positive Air Displacement Ext. System		
disp bailer teflon bailer other:	**Tubing:** OD: New Dedicated NA	
Purge method: 3-5 Case Volume Micro/Low-Flow Extraction Other:		
Pump depth/ intake: —	**Multipliers:** 1"= 0.04 2"= 0.16 3"= 0.37 4"= 0.65 5"=1.02 6"= 1.47 Radius	
(TD - DTW X Multiplier = 1 Volume	80% Recovery (TD - DTW X 0.20 + DTW)	
1 Volume = — X — = — (Total Purge)	80%= —	

Time	Temp (°C)	pH	SP Cond (mS/µS)	Turbidity (NTU)	Purge Rate (gal or mL/ min)	Volume Removed (gal / L)	DO (mg/l)	ORP (mv)	DTW	Notes
0915	11.2	7.3	971	13	—	—	5.10	235.4	91.99	Post sample DTW=92.04

Did well dewater? YES (NO)	Total volume removed: — (gal / L)	
Sample method: (Disp Bailer) Hydrasleeve New Tubing Ext. Port Other:		
Sample date: 01APR2014	Sample time: 0915	DTW at sample: 91.99
Sample ID: 7104	Lab: Energy Labs	Number of bottles: (2)
Analysis: 500 ml NP poly - Alkalinity, Cl, SO4, TDS, EC, pH 250 ml HNO3 poly *field filtered - Dissolved Metals		
Equipment blank ID @	Field blank ID @	
Duplicate ID:	Pre-purge DO:	Post purge DO:
$Fe2^+$:	Pre-purge ORP:	Post purge ORP:
NAPL depth:	Volume of NAPL:	Volume removed: ml

Confluence Environmental, Inc.
3308 El Camino Ave., Suite 300 #148, Sacramento, CA 95821

Job#: 1350.15	**Sampler:** J Kerns - B Myers	**Client:** Montgomery & Associates
Well ID: MW-112	**Date** (DDOct2012): 04APR2014	**Site:** Rio Algom Mining, Lisbon, UT

Weather Conditions: Windy **Sampler Signature:**

Well diam: 1/4" 1" 2" 3" (4") 6" Other: **DTW:** 44.79 **Total Depth:** ~~97~~ 141.3'

Purge equip: ES - diam: Bladder Peri Waterra Positive Air Displacement Ext. System

disp bailer teflon bailer other: **Tubing:** OD: New Dedicated NA

Purge method: 3-5 Case Volume Micro/Low-Flow Extraction Other:

Pump depth/ intake: **Multipliers:** 1"= 0.04 2"= 0.16 3"= 0.37 4"= 0.65 5"=1.02 6"= 1.47 Radius

(TD - DTW X Multiplier = 1 Volume 80% Recovery (TD - DTW X 0.20 + DTW)

1 Volume = ___ X ___ = ___ (Total Purge) 80%= ___

Time	Temp (°C)	pH	SP Cond (mS (µS))	Turbidity (NTU)	Purge Rate (gal or mL/ min)	Volume Removed (gal / L)	DO (mg/l)	ORP (mv)	DTW	Notes
0930	10.1	8.7	1208	8.8	—	—	12.35	133.8	44.79	HS @ 94'

Did well dewater? YES (NO) Total volume removed: — (gal / L)

Sample method: Disp Bailer (Hydrasleeve) New Tubing Ext. Port Other:

Sample date: 04APR2014 Sample time: 0930 DTW at sample: 44.79

Sample ID: 716.1 Lab: Energy Labs Number of bottles: 2

Analysis: 500 ml NP poly - Alkalinity, Cl, SO4, TDS, EC, pH 250 ml HNO3 poly *field filtered - Dissolved Metals

Equipment blank ID @ Field blank ID @

Duplicate ID: Pre-purge DO: Post purge DO:

$Fe2^{+}$: Pre-purge ORP: Post purge ORP:

NAPL depth: Volume of NAPL: Volume removed: ml

Confluence Environmental, Inc.
3308 El Camino Ave., Suite 300 #148, Sacramento, CA 95821

Job#: 1350.15	**Sampler:** J Kerns - B Myers	**Client:** Montgomery & Associates
Well ID: MW-117	**Date** (DDOct2012): 04APR2014	**Site:** Rio Algom Mining, Lisbon, UT
Weather Conditions: Windy - Cold	**Sampler Signature:**	
Well diam: 1/4" 1" 2" 3" (4") 6" Other:	**DTW:** 44.79	**Total Depth:** 141.8
Purge equip: (ES - diam:) Bladder Peri Waterra Positive Air Displacement Ext. System		
disp bailer teflon bailer other:	**Tubing:** OD: New (Dedicated) NA	
Purge method: 3-5 Case Volume (Micro/Low-Flow) Extraction Other:		
Pump depth/ intake: 94'	**Multipliers:** 1"= 0.04 2"= 0.16 3"= 0.37 4"= 0.65 5"=1.02 6"= 1.47 Radius	
(TD - DTW X Multiplier = 1 Volume	80% Recovery (TD - DTW X 0.20 + DTW)	
1 Volume = ____ X ____ = ____ (Total Purge)	80%= ____	

Time	Temp (°C)	pH	SP Cond (mS (µS))	Turbidity (NTU)	Purge Rate (gal or mL/min)	Volume Removed (gal /(L))	DO (mg/l)	ORP (mv)	DTW	Notes
0945	9.9	8.3	1052	24.4	500	1.0	10.97	194.8	45.26	
0948	10.2	8.1	1092	27.7	500	2.5	10.10	201.5	45.22	
0951	10.0	8.4 ✓✓	1097	22.2	500	4.0	10.09	197.3	45.20 45.20	
0954	10.2	8.3	1099	24.9	500	5.5	10.13	201.7	45.19	
0957	10.0	8.3	1100	27.6	500	7.0	9.97	194.2	45.19	

Did well dewater? YES (NO)	Total volume removed: (gal /(L))	
Sample method: Disp Bailer Hydrasleeve New Tubing Ext. Port Other: Dedicated Tubing		
Sample date: 04APR2014	Sample time: 1000	DTW at sample: 45.19
Sample ID: 7162	Lab: Energy Labs	Number of bottles: (2)
Analysis: 500 ml NP poly - Alkalinity, Cl, SO4, TDS, EC, pH 250 ml HNO3 poly *field filtered - Dissolved Metals		
Equipment blank ID @	Field blank ID @	
Duplicate ID:	Pre-purge DO:	Post purge DO:
Fe^{2+}:	Pre-purge ORP:	Post purge ORP:
NAPL depth:	Volume of NAPL:	Volume removed: ml

Confluence Environmental, Inc.
3308 El Camino Ave., Suite 300 #148, Sacramento, CA 95821

Job#: 1350.15	**Sampler:** J Kerns - B Myers	**Client:** Montgomery & Associates
Well ID: MW-112	**Date** (DDOct2012): 04APR2014	**Site:** Rio Algom Mining, Lisbon, UT
Weather Conditions: Windy - Cold	**Sampler Signature:**	
Well diam: 1/4" 1" 2" 3" (4") 6" Other:	**DTW:** 44.79	**Total Depth:** 141.8
Purge equip: (ES - diam:) Bladder Peri Waterra Positive Air Displacement Ext. System		
disp bailer teflon bailer other:	**Tubing:** OD: New (Dedicated) NA	
Purge method: (3-5 Case Volume) Micro/Low-Flow Extraction Other:		
Pump depth/ intake: 94'	**Multipliers:** 1"= 0.04 2"= 0.16 3"= 0.37 4"= 0.65 5"=1.02 6"= 1.47 Radius	
(TD - DTW X Multiplier = 1 Volume	80% Recovery (TD - DTW X 0.20 + DTW)	
1 Volume = 63 X 3 = 189 (Total Purge)	80%= 64.19	

Time	Temp (°C)	pH	SP Cond (mS / (µS))	Turbidity (NTU)	Purge Rate (gal or mL/ min)	Volume Removed (gal / L)	DO (mg/l)	ORP (mv)	DTW	Notes
1019	11.8	8.0	1123	8.4	(4.0)	63	10.21	189.6	52.10	
1035	11.8	8.0	1156	5.9	4.0	126	10.16	192.8	52.75	
1051	11.8	8.0	1166	4.6	4.0	189	10.34	190.6	53.05	

Did well dewater? YES (NO)	Total volume removed: 189 (gal) / L)	
Sample method: Disp Bailer Hydrasleeve New Tubing Ext. Port Other: Dedicated Tubing		
Sample date: 04APR2014	Sample time: 1055	DTW at sample: 53.05
Sample ID: 7163	Lab: Energy Labs	Number of bottles: 2
Analysis: 500 ml NP poly - Alkalinity, Cl, SO4, TDS, EC, pH 250 ml HNO3 poly *field filtered - Dissolved Metals		
Equipment blank ID @	Field blank ID @	
Duplicate ID:	Pre-purge DO:	Post purge DO:
$Fe2^+$:	Pre-purge ORP:	Post purge ORP:
NAPL depth:	Volume of NAPL:	Volume removed: ml

Confluence Environmental, Inc.
3308 El Camino Ave., Suite 300 #148, Sacramento, CA 95821

Job#: 1350.15	**Sampler:** J Kerns (B Myers)	**Client:** Montgomery & Associates
Well ID: MW-113	**Date** (DDOct2012): 05APR2014	**Site:** Rio Algom Mining, Lisbon, UT
Weather Conditions: Cool	**Sampler Signature:**	
Well diam: 1/4" 1" 2" 3" (4") 6" Other:	**DTW:** 67.94	**Total Depth:** 104.45
Purge equip: ES - diam: Bladder Peri Waterra Positive Air Displacement Ext. System		
disp bailer teflon bailer other: (HS)	**Tubing:** OD: New Dedicated (NA)	
Purge method: 3-5 Case Volume Micro/Low-Flow Extraction Other: (HS)		
Pump depth/ intake: 87.5	**Multipliers:** 1"= 0.04 2"= 0.16 3"= 0.37 4"= 0.65 5"=1.02 6"= 1.47 Radius	
(TD - DTW X Multiplier = 1 Volume	80% Recovery (TD - DTW X 0.20 + DTW)	
1 Volume = _____ X _____ = _____ (Total Purge)	80%=	

Time	Temp (°C)	pH	SP Cond (mS/(µS))	Turbidity (NTU)	Purge Rate (gal or mL/ min)	Volume Removed (gal / L)	DO (mg/l)	ORP (mv)	DTW	Notes
850	11.1	7.9	3203	4	—	—	9.5	146	—	

Did well dewater? YES (NO)	Total volume removed: — (gal / L)	
Sample method: Disp Bailer (Hydrasleeve) New Tubing Ext. Port Other:		
Sample date: 05APR2014	Sample time: 850	DTW at sample: —
Sample ID: 7136	Lab: Energy Labs	Number of bottles: 2
Analysis: 500 ml NP poly - Alkalinity, Cl, SO4, TDS, EC, pH 250 ml HNO3 poly *field filtered - Dissolved Metals		
Equipment blank ID @	Field blank ID @	
Duplicate ID:	Pre-purge DO:	Post purge DO:
Fe^{2+}:	Pre-purge ORP:	Post purge ORP:
NAPL depth:	Volume of NAPL:	Volume removed: ml

Confluence Environmental, Inc.
3308 El Camino Ave., Suite 300 #148, Sacramento, CA 95821

Job#: 1350.15	**Sampler:** J Kerns (B Myers)	**Client:** Montgomery & Associates
Well ID: MW-13	**Date** (DDOct2012): 05APR2014	**Site:** Rio Algom Mining, Lisbon, UT
Weather Conditions: cool	**Sampler Signature:**	
Well diam: 1/4" 1" 2" 3" (4") 6" Other:	**DTW:** 67.94	**Total Depth:** 104.45

Purge equip: (ES - diam:) Bladder Peri Waterra Positive Air Displacement Ext. System

disp bailer teflon bailer other: **Tubing:** OD: New (Dedicated) NA

Purge method: 3-5 Case Volume (Micro/Low-Flow) Extraction Other:

Pump depth/ intake: **Multipliers:** 1"= 0.04 2"= 0.16 3"= 0.37 4"= 0.65 5"=1.02 6"= 1.47 Radius

(TD - DTW X Multiplier = 1 Volume | 80% Recovery (TD - DTW X 0.20 + DTW)

1 Volume = _____ X _____ = _____ (Total Purge) | 80%= _____

Time	Temp (°C)	pH	SP Cond (mS/µS)	Turbidity (NTU)	Purge Rate (gal or mL/ min)	Volume Removed (gal (L))	DO (mg/l)	ORP (mv)	DTW	Notes
857	10.1	8.0	3333	3	500	1.5	11.0	147	68.12	
900	10.7	7.9	3359	3		3	10.9	130	68.10	
903	11.0	7.9	3349	3		4.5	10.7	115	68.10	
906	11.9	7.9	3359	3		6	10.3	104	68.09	
909	12.5	7.9	3358	3		7.5	10.0	100	68.09	
912	12.4	7.9	3366	3		9	9.9	99	68.09	

Did well dewater? YES (NO) Total volume removed: 9 (gal (L))

Sample method: Disp Bailer Hydrasleeve ~~New~~ Tubing Ext. Port Other:

Sample date: 05APR2014	Sample time: 915	DTW at sample: 68.09
Sample ID: 7137	Lab: Energy Labs	Number of bottles: 2
Analysis: 500 ml NP poly - Alkalinity, Cl, SO4, TDS, EC, pH	250 ml HNO3 poly *field filtered - Dissolved Metals	

Equipment blank ID @	Field blank ID @	
Duplicate ID:	Pre-purge DO:	Post purge DO:
Fe^{2+}:	Pre-purge ORP:	Post purge ORP:
NAPL depth:	Volume of NAPL:	Volume removed: ml

Confluence Environmental, Inc.
3308 El Camino Ave., Suite 300 #148, Sacramento, CA 95821

Job#: 1350.15	**Sampler:** J Kerns - B Myers	**Client:** Montgomery & Associates
Well ID: MW113	**Date** (DDOct2012): 05APR2014	**Site:** Rio Algom Mining, Lisbon, UT
Weather Conditions: cool	**Sampler Signature:**	
Well diam: 1/4" 1" 2" 3" (4") 6" Other:	**DTW:** 67.94	**Total Depth:** 104.45

Purge equip: (ES - diam:) Bladder Peri Waterra Positive Air Displacement Ext. System

disp bailer teflon bailer other: **Tubing:** OD: New (Dedicated) NA

Purge method: (3-5 Case Volume) Micro/Low-Flow Extraction Other:

Pump depth/ intake: **Multipliers:** 1"= 0.04 2"= 0.16 3"= 0.37 4"= 0.65 5"=1.02 6"= 1.47 Radius

(TD - DTW X Multiplier = 1 Volume | 80% Recovery (TD - DTW X 0.20 + DTW)

1 Volume = 23.7 X 3 = 71 (Total Purge) 80%= 75.24

Time	Temp (°C)	pH	SP Cond (mS) (µS)	Turbidity (NTU)	Purge Rate (gal or mL/ min)	Volume Removed (gal / L)	DO (mg/l)	ORP (mv)	DTW	Notes
927	10.8	8.8	3091 ~~4884~~	3	3	24	9.7	100	70.63	
935	10.1	8.8	3110	3		48	9.8	91	71.15	
943	10.0	8.8	3115	3		71	9.9	87	71.31	

Did well dewater? YES (NO) Total volume removed: 71 (gal / L)

Sample method: Disp Bailer Hydrasleeve ~~New~~ Tubing Ext. Port Other:

Sample date: 05APR2014 Sample time: 945 DTW at sample: 71.31

Sample ID: 7138 Lab: Energy Labs Number of bottles: 2

Analysis: 500 ml NP poly - Alkalinity, Cl, SO4, TDS, EC, pH 250 ml HNO3 poly *field filtered - Dissolved Metals

Equipment blank ID @	Field blank ID @	
Duplicate ID:	Pre-purge DO:	Post purge DO:
Fe2+:	Pre-purge ORP:	Post purge ORP:
NAPL depth:	Volume of NAPL:	Volume removed: ml

Confluence Environmental, Inc.
3308 El Camino Ave., Suite 300 #148, Sacramento, CA 95821

Job#: 1350.15	**Sampler:** J Kerns - B Myers	**Client:** Montgomery & Associates
Well ID: MW-114	**Date** (DDOct2012): 04APR2014	**Site:** Rio Algom Mining, Lisbon, UT
Weather Conditions: Windy		**Sampler Signature:**
Well diam: 1/4" 1" 2" 3" (4") 6" Other:		**DTW:** 57.49 **Total Depth:** 199 -
Purge equip: ES - diam: Bladder Peri Waterra Positive Air Displacement Ext. System		
disp bailer teflon ~~bailer~~ other:		**Tubing:** OD: New Dedicated NA
Purge method: 3-5 Case Volume Micro/Low-Flow Extraction Other:		
Pump depth/ intake: —	**Multipliers:** 1"= 0.04 2"= 0.16 3"= 0.37 4"= 0.65 5"=1.02 6"= 1.47 Radius	
(TD - DTW X Multiplier = 1 Volume	80% Recovery (TD - DTW X 0.20 + DTW)	
1 Volume = — X — = — (Total Purge)	80%= —	

Time	Temp (°C)	pH	SP Cond (mS / µS)	Turbidity (NTU)	Purge Rate (gal or mL/ min)	Volume Removed (gal / L)	DO (mg/l)	ORP (mv)	DTW	Notes
1205	11.7	8.3	797	9.7	—	—	8.97	187.9	57.49	HS@ 121.2

Did well dewater? YES (NO)	Total volume removed: — (gal / L)	
Sample method: Disp Bailer (Hydrasleeve) New Tubing Ext. Port Other:		
Sample date: 04APR2014	Sample time: 1205	DTW at sample: 57.49
Sample ID: ~~MW~~ 7167	Lab: Energy Labs	Number of bottles: 2
Analysis: 500 ml NP poly - Alkalinity, Cl, SO4, TDS, EC, pH 250 ml HNO3 poly *field filtered - Dissolved Metals		
Equipment blank ID @	Field blank ID @	
Duplicate ID:	Pre-purge DO:	Post purge DO:
Fe^{2+}:	Pre-purge ORP:	Post purge ORP:
NAPL depth:	Volume of NAPL:	Volume removed: ml

Confluence Environmental, Inc.
3308 El Camino Ave., Suite 300 #148, Sacramento, CA 95821

Job#: 1350.15	**Sampler:** J Kerns - B Myers	**Client:** Montgomery & Associates
Well ID: MW-114	**Date** (DDOct2012): 04APR2014	**Site:** Rio Algom Mining, Lisbon, UT
Weather Conditions: Windy	**Sampler Signature:**	
Well diam: 1/4" 1" 2" 3" (4") 6" Other:	**DTW:** 57.49	**Total Depth:** 199 -

Purge equip: (ES - diam:) Bladder Peri Waterra Positive Air Displacement Ext. System

disp bailer teflon bailer other: **Tubing:** OD: New (Dedicated) NA

Purge method: 3-5 Case Volume (Micro/Low-Flow) Extraction Other:

Pump depth/ intake: 129.7 **Multipliers:** 1"= 0.04 2"= 0.16 3"= 0.37 4"= 0.65 5"=1.02 6"= 1.47 Radius

(TD - DTW X Multiplier = 1 Volume | 80% Recovery (TD - DTW X 0.20 + DTW)

1 Volume = — X — = — (Total Purge) | 80%= —

Time	Temp (°C)	pH	SP Cond (mS / (µS))	Turbidity (NTU)	Purge Rate (gal or (mL) / min)	Volume Removed (gal / L)	DO (mg/l)	ORP (mv)	DTW	Notes
1220	10.7	8.0	818	55.6	500	1.0	9.21	194.0	57.85	
1223	11.0	7.9	813	53.7	500	2.5	9.09	196.6	57.85	
1226	11.2	7.9	796	36.3	500	4.0	8.88	189.3	57.85	
1229	11.3	7.8	786	38.9	500	5.5	8.72	173.2	57.85	
1232	11.7	7.7	793	31.6	500	7.0	8.50	154.5	57.85	
1235	11.7	7.6	791	34.3	500	8.5	8.36	135.8	57.85	
1238	11.7	7.6	784	32.4	500	10.0	8.24	131.2	57.85	
1241	11.7	7.6	790	33.9	500	11.5	8.21	127.6	57.85	

Did well dewater? YES (NO) Total volume removed: 11.5 (gal / (L))

Sample method: Disp Bailer Hydrasleeve New Tubing Ext. Port Other: Dedicated Tubing

Sample date: 04APR2014	Sample time: 1245	DTW at sample: 57.85
Sample ID: 7168	Lab: Energy Labs	Number of bottles: 2

Analysis: 500 ml NP poly - Alkalinity, Cl, SO4, TDS, EC, pH 250 ml HNO3 poly *field filtered - Dissolved Metals

Equipment blank ID @	Field blank ID @	
Duplicate ID:	Pre-purge DO:	Post purge DO:
Fe^{2+}:	Pre-purge ORP:	Post purge ORP:
NAPL depth:	Volume of NAPL:	Volume removed: ml

Confluence Environmental, Inc.
3308 El Camino Ave., Suite 300 #148, Sacramento, CA 95821

Job#: 1350.15	**Sampler:** J Kerns - B Myers	**Client:** Montgomery & Associates
Well ID: MW-114	**Date** (DDOct2012): 04APR2014	**Site:** Rio Algom Mining, Lisbon, UT
Weather Conditions: Cloudy	**Sampler Signature:**	
Well diam: 1/4" 1" 2" 3" (4") 6" Other:	**DTW:** 57.49	**Total Depth:** 199-

Purge equip: (ES - diam:) Bladder Peri Waterra Positive Air Displacement Ext. System

disp bailer teflon bailer other: **Tubing:** OD: New (Dedicated) NA

Purge method: (3-5 Case Volume) Micro/Low-Flow Extraction Other:

Pump depth/ intake: **Multipliers:** 1"= 0.04 2"= 0.16 3"= 0.37 4"= 0.65 5"=1.02 6"= 1.47 Radius

(TD - DTW X Multiplier = 1 Volume | 80% Recovery (TD - DTW X 0.20 + DTW)

1 Volume = 92 X 3 = 276 (Total Purge) | 80%= 35.79

Time	Temp (°C)	pH	SP Cond (mS (µS))	Turbidity (NTU)	Purge Rate ((gal) or mL/ min)	Volume Removed ((gal) /L)	DO (mg/l)	ORP (mv)	DTW	Notes
1302	12.2	7.8	780	14.5	5.0	92	8.16	153.1	60.40	
1321	12.1	7.7	781	6.1	5.0	184	8.19	155.1	60.45	
1339	12.2	7.7	787	5.9	5.0	276	8.73	191.7	60.50	

Did well dewater? YES (NO) | Total volume removed: 276 ((gal) L)

Sample method: Disp Bailer Hydrasleeve New Tubing Ext. Port Other: Dedicated Tubing

Sample date: 04APR2014 | Sample time: 1345 | DTW at sample: 60.50

Sample ID: 7169 | Lab: Energy Labs | Number of bottles: (2)

Analysis: 500 ml NP poly - Alkalinity, Cl, SO4, TDS, EC, pH 250 ml HNO3 poly *field filtered - Dissolved Metals

Equipment blank ID @ | Field blank ID @

Duplicate ID: | Pre-purge DO: | Post purge DO:

$Fe2^{+}$: | Pre-purge ORP: | Post purge ORP:

NAPL depth: | Volume of NAPL: | Volume removed: ml

Confluence Environmental, Inc.
3308 El Camino Ave., Suite 300 #148, Sacramento, CA 95821

Job#: 1350.15	**Sampler:** J Kerns - B Myers	**Client:** Montgomery & Associates
Well ID: MW ~~1154~~ 1155	**Date** (DDOct2012): 05APR2014	**Site:** Rio Algom Mining, Lisbon, UT
Weather Conditions: Wind / cool	**Sampler Signature:**	
Well diam: 1/4" 1" 2" 3" (4") 6" Other:	**DTW:** ~~75.31~~ 75.37	**Total Depth:** 277/26.90
Purge equip: ES - diam: Bladder Peri Waterra Positive Air Displacement Ext. System		
disp bailer teflon bailer other: (HS)	**Tubing:** OD: New Dedicated (NA)	
Purge method: 3-5 Case Volume Micro/Low-Flow Extraction Other: (HS)		
Pump depth/ intake: 1495	**Multipliers:** 1"= 0.04 2"= 0.16 3"= 0.37 4"= 0.65 5"=1.02 6"= 1.47 Radius	
(TD - DTW X Multiplier = 1 Volume	80% Recovery (TD - DTW X 0.20 + DTW)	
1 Volume = _____ X _____ = _____ (Total Purge)	80%= _____	

Time	Temp (°C)	pH	SP Cond (mS (µS))	Turbidity (NTU)	Purge Rate (gal or mL/ min)	Volume Removed (gal / L)	DO (mg/l)	ORP (mv)	DTW	Notes
1405	11.7	8.1	1125	10	—	—	9.3	237	—	

Did well dewater? YES (NO)	Total volume removed: — (gal / L)	
Sample method: Disp Bailer (Hydrasleeve) New Tubing Ext. Port Other:		
Sample date: 05APR2014	Sample time: 1405	DTW at sample: —
Sample ID: 71688	Lab: Energy Labs	Number of bottles: 2
Analysis: 500 ml NP poly - Alkalinity, Cl, SO4, TDS, EC, pH 250 ml HNO3 poly *field filtered - Dissolved Metals		
Equipment blank ID @	Field blank ID @	
Duplicate ID:	Pre-purge DO:	Post purge DO:
Fe^{2+}:	Pre-purge ORP:	Post purge ORP:
NAPL depth:	Volume of NAPL:	Volume removed: ml

Confluence Environmental, Inc.
3308 El Camino Ave., Suite 300 #148, Sacramento, CA 95821

Job#: 1350.15	**Sampler:** J Kerns - B Myers	**Client:** Montgomery & Associates
Well ID: MW-11SS ~~MW-11~~	**Date** (DDOct2012): 05APR2014	**Site:** Rio Algom Mining, Lisbon, UT
Weather Conditions: cool/wind		**Sampler Signature:**
Well diam: 1/4" 1" 2" 3" (4") 6" Other:		**DTW:** ~~75.31~~ ~~75.37~~ **Total Depth:** ~~217~~ 126.90
Purge equip: ES - diam: Bladder Peri Waterra Positive Air Displacement Ext. System		
disp bailer teflon bailer other:	**Tubing:** OD: New Dedicated NA	
Purge method: 3-5 Case Volume Micro/Low-Flow Extraction Other:		
Pump depth/ intake:	**Multipliers:** 1"= 0.04 2"= 0.16 3"= 0.37 4"= 0.65 5"=1.02 6"= 1.47 Radius	
(TD - DTW X Multiplier = 1 Volume	80% Recovery (TD - DTW X 0.20 + DTW)	
1 Volume = _____ X _____ = _____ (Total Purge)	80%=	

Time	Temp (°C)	pH	SP Cond (mS/µS)	Turbidity (NTU)	Purge Rate (gal or mL/ min)	Volume Removed (gal/ L)	DO (mg/l)	ORP (mv)	DTW	Notes
1505	11.6	8.0	1123	7	500	1.5	10.9	199	75.30	
1508	11.6	8.1	1124	6		3	10.5	199	75.34	
1511	11.8	8.0	1124	6		4.5	10.5	200	75.35	
1514	13.1	8.0	1127	6		6	10.0	202	75.36	
1517	14.2	7.9	1130	5		7.5	9.9	197	75.36	
1520	14.5	7.9	1133	5		9	10.0	193	75.36	
1523	14.6	7.9	1136	5		10.5	9.9	191	75.36	

Did well dewater? YES (NO)	Total volume removed: 10.5 (gal/ L)	
Sample method: Disp Bailer Hydrasleeve New Tubing Ext. Port Other:		
Sample date: 05APR2014	Sample time: 1525	DTW at sample: 75.36
Sample ID: 7189	Lab: Energy Labs	Number of bottles: 2
Analysis: 500 ml NP poly - Alkalinity, Cl, SO4, TDS, EC, pH 250 ml HNO3 poly *field filtered - Dissolved Metals		
Equipment blank ID @	Field blank ID @	
Duplicate ID:	Pre-purge DO:	Post purge DO:
Fe2+:	Pre-purge ORP:	Post purge ORP:
NAPL depth:	Volume of NAPL:	Volume removed: ml

Confluence Environmental, Inc.
3308 El Camino Ave., Suite 300 #148, Sacramento, CA 95821

Job#: 1350.15	**Sampler:** J Kerns - B Myers	**Client:** Montgomery & Associates
Well ID: MW-1155	**Date** (DDOct2012): 05APR2014	**Site:** Rio Algom Mining, Lisbon, UT
Weather Conditions: cool/wind	**Sampler Signature:**	
Well diam: 1/4" 1" 2" 3" (4") 6" Other:	**DTW:** ~~75.31~~ 75.57	**Total Depth:** ~~247~~ 126.90
Purge equip: (ES - diam:) Bladder Peri Waterra Positive Air Displacement Ext. System		
disp bailer teflon bailer other:	**Tubing:** OD: New (Dedicated) NA	
Purge method: (3-5 Case Volume) Micro/Low-Flow Extraction Other:		
Pump depth/ intake:	**Multipliers:** 1"= 0.04 2"= 0.16 3"= 0.37 4"= 0.65 5"=1.02 6"= 1.47 Radius	
(TD - DTW X Multiplier = 1 Volume	80% Recovery (TD - DTW X 0.20 + DTW)	
1 Volume = ~~97~~ 33.5 X 3 = ~~270~~ 100.5 (Total Purge)	80%= 103.70	

Time	Temp (°C)	pH	SP Cond (mS (µS))	Turbidity (NTU)	Purge Rate (gal or mL/ min)	Volume Removed (gal / L)	DO (mg/l)	ORP (mv)	DTW	Notes
1538	12.0	7.7	1240	6	3.5	33.5	17.3	193	75.70	
1548	12.0	7.6	1237	5	1	67	12.4	195	75.70	
1558	12.0	7.6	1237	5	1	100.5	12.5	195	75.70	

Did well dewater? YES (NO)	Total volume removed: 100.5 (gal / L)	
Sample method: Disp Bailer Hydrasleeve ~~New~~ Tubing Ext. Port Other:		
Sample date: 05APR2014	Sample time: 1600	DTW at sample: 75.70
Sample ID: 7190	Lab: Energy Labs	Number of bottles: 2
Analysis: 500 ml NP poly - Alkalinity, Cl, SO4, TDS, EC, pH 250 ml HNO3 poly *field filtered - Dissolved Metals		
Equipment blank ID 7175 @ 1610	Field blank ID @	
Duplicate ID:	Pre-purge DO:	Post purge DO:
Fe^{2+}:	Pre-purge ORP:	Post purge ORP:
NAPL depth:	Volume of NAPL:	Volume removed: ml

Confluence Environmental, Inc.
3308 El Camino Ave., Suite 300 #148, Sacramento, CA 95821

Job#: 1350.15	**Sampler:** J Kerns (B Myers)	**Client:** Montgomery & Associates
Well ID: MW115M MW115S	**Date** (DDOct2012): 05APR2014	**Site:** Rio Algom Mining, Lisbon, UT
Weather Conditions: cool / wind	**Sampler Signature:**	
Well diam: 1/4" 1" 2" 3" (4") 6" Other:	**DTW:** 75.37	**Total Depth:** ~~126~~ 217

Purge equip: ES - diam: Bladder Peri Waterra Positive Air Displacement Ext. System

disp bailer teflon bailer other: (4S) **Tubing:** OD: New Dedicated (NA)

Purge method: 3-5 Case Volume Micro/Low-Flow Extraction Other: (4S)

Pump depth/ intake: 102' **Multipliers:** 1"= 0.04 2"= 0.16 3"= 0.37 4"= 0.65 5"=1.02 6"= 1.47 Radius

(TD - DTW X Multiplier = 1 Volume | 80% Recovery (TD - DTW X 0.20 + DTW)

1 Volume = _____ X _____ = _____ (Total Purge) | 80%=

Time	Temp (°C)	pH	SP Cond (mS (µS))	Turbidity (NTU)	Purge Rate (gal or mL/ min)	Volume Removed (gal / L)	DO (mg/l)	ORP (mv)	DTW	Notes
1320	11.9	6.0	1430	3	—	—	13.1	211	—	

Did well dewater? YES (NO) | Total volume removed: — (gal / L)

Sample method: Disp Bailer (Hydrasleeve) New Tubing Ext. Port Other:

Sample date: 05APR2015 | Sample time: 1320 | DTW at sample: —

Sample ID: 7182 | Lab: Energy Labs | Number of bottles: 2

Analysis: 500 ml NP poly - Alkalinity, Cl, SO4, TDS, EC, pH 250 ml HNO3 poly *field filtered - Dissolved Metals

Equipment blank ID @ | Field blank ID @

~~Duplicate ID~~: DUP ID 7183 @ 1320 | Pre-purge DO: | Post purge DO:

$Fe2^+$: | Pre-purge ORP: | Post purge ORP:

NAPL depth: | Volume of NAPL: | Volume removed: ml

Confluence Environmental, Inc.
3308 El Camino Ave., Suite 300 #148, Sacramento, CA 95821

Job#: 1350.15	**Sampler:** J Kerns - B Myers	**Client:** Montgomery & Associates
Well ID: ~~MW-HSS~~ 115M	**Date** (DDOct2012): 05APR2014	**Site:** Rio Algom Mining, Lisbon, UT
Weather Conditions: cool / wind	**Sampler Signature:**	
Well diam: 1/4" 1" 2" 3" (4") 6" Other:	**DTW:** 75.37	**Total Depth:** ~~126.90~~ 217
Purge equip: (ES - diam:) Bladder Peri Waterra Positive Air Displacement Ext. System		
disp bailer teflon bailer other:	**Tubing:** OD: New (Dedicated) NA	
Purge method: 3-5 Case Volume (Micro/Low-Flow) Extraction Other:		
Pump depth/ intake:	**Multipliers:** 1"= 0.04 2"= 0.16 3"= 0.37 4"= 0.65 5"=1.02 6"= 1.47 Radius	
(TD - DTW X Multiplier = 1 Volume	80% Recovery (TD - DTW X 0.20 + DTW)	
1 Volume = _____ X _____ = _____ (Total Purge)	80%=	

Time	Temp (C)	pH	SP Cond (mS / (uS))	Turbidity (NTU)	Purge Rate (gal or (mL) / min)	Volume Removed (gal / (L))	DO (mg/l)	ORP (mv)	DTW	Notes
1330	11.4	8.9	1220	5	500	15	12.6	121	75.25	
1333	11.9	9.1	1227	4		3	13.4	108	~~75~~.26	
1336	13.1	9.1	1222	4		4.5	13.4	94	75.26	
1339	13.1	9.1	1229	4		6	14.0	89	75.26	
1342	13.3	9.0	1226	4		7.5	15.0	83	75.26	
1345	13.3	9.0	1238	4		9	15.2	79	75.26	
1348	13.1	9.1	1239	4		10.5	15.6 ~~12.2~~	73	75.26	
1351	13.0	9.1	1246	4		12	16.0	75	75.26	
1354	13.0	9.1	1251	4		13.5	16.2	77	75.26	

Did well dewater? YES (NO)	Total volume removed: 13.5 (gal (L))	
Sample method: Disp Bailer Hydrasleeve ~~New~~ Tubing Ext. Port Other:		
Sample date: ~~05APR2014~~	Sample time: 1355	DTW at sample: 75.26
Sample ID: 7184	Lab: Energy Labs	Number of bottles: 2
Analysis: 500 ml NP poly - Alkalinity, Cl, SO4, TDS, EC, pH 250 ml HNO3 poly *field filtered - Dissolved Metals		
Equipment blank ID @	Field blank ID @	
~~Duplicate ID~~: Split to 7185 @	Pre-purge DO:	Post purge DO:
Fe2+:	Pre-purge ORP:	Post purge ORP:
NAPL depth:	Volume of NAPL:	Volume removed: ml

Confluence Environmental, Inc.
3308 El Camino Ave., Suite 300 #148, Sacramento, CA 95821

Job#: 1350.15	**Sampler:** J Kerns (B Myers)	**Client:** Montgomery & Associates
Well ID: MW ~~#5~~ 11514	**Date** (DDOct2012): 05APR2014	**Site:** Rio Algom Mining, Lisbon, UT
Weather Conditions: cool/wind	**Sampler Signature:**	
Well diam: 1/4" 1" 2" 3" (4") 6" Other:	**DTW:** 75.37	**Total Depth:** ~~126.90~~ 217
Purge equip: (ES - diam:) Bladder Peri Waterra Positive Air Displacement Ext. System		
disp bailer teflon bailer other:	**Tubing:** OD: New (Dedicated) NA	
Purge method: (3-5 Case Volume) Micro/Low-Flow Extraction Other:		
Pump depth/ intake:	**Multipliers:** 1"= 0.04 2"= 0.16 3"= 0.37 4"= 0.65 5"=1.02 6"= 1.47 Radius	
(TD - DTW X Multiplier = 1 Volume	80% Recovery (TD - DTW X 0.20 + DTW)	
1 Volume = ~~35.5~~ 92 X 3 = ~~106.5~~ 276 (Total Purge)	80%= 85.63	

Time	Temp (°C)	pH	SP Cond (mS/µS)	Turbidity (NTU)	Purge Rate (gal or mL/min)	Volume Removed (gal/L)	DO (mg/l)	ORP (mv)	DTW	Notes
1416	12.4	9.1	1594	5	5	92	15.2	109	75.75	
1434	12.4	9.0	1754	4	↓	184	14.4	117	75.82	
1452	12.4	9.0	1776	4	↓	276	14.0	120	75.86	

Did well dewater? YES (NO)	Total volume removed: 276 ((gal)/ L)	
Sample method: Disp Bailer Hydrasleeve ~~New~~ (Tubing) Ext. Port Other:		
Sample date: 05APR2014	Sample time: 1455	DTW at sample: 75.86
Sample ID: 7186	Lab: Energy Labs	Number of bottles: 2
Analysis: 500 ml NP poly - Alkalinity, Cl, SO4, TDS, EC, pH 250 ml HNO3 poly *field filtered - Dissolved Metals		
Equipment blank ID @	Field blank ID @	
~~Duplicate ID:~~ Split ID. 7187 @ 1455	Pre-purge DO:	Post purge DO:
Fe2+:	Pre-purge ORP:	Post purge ORP:
NAPL depth:	Volume of NAPL:	Volume removed: ml

Confluence Environmental, Inc.
3308 El Camino Ave., Suite 300 #148, Sacramento, CA 95821

Job#: 1350.15	**Sampler:** J Kerns (B Myers)	**Client:** Montgomery & Associates
Well ID: MW7/16	**Date** (DDOct2012): 05APR2014	**Site:** Rio Algom Mining, Lisbon, UT
Weather Conditions: cool / windy	**Sampler Signature:**	
Well diam: 1/4" 1" 2" 3" (4") 6" Other:	**DTW:** 84.80	**Total Depth:** 124.00

Purge equip: ES - diam: Bladder Peri Waterra Positive Air Displacement Ext. System

disp bailer teflon bailer other: (115) **Tubing:** OD: New Dedicated (NA)

Purge method: 3-5 Case Volume Micro/Low-Flow Extraction Other: (115)

Pump depth/ intake: 115' **Multipliers:** 1"= 0.04 2"= 0.16 3"= 0.37 4"= 0.65 5"=1.02 6"= 1.47 Radius

(TD - DTW X Multiplier = 1 Volume | 80% Recovery (TD - DTW X 0.20 + DTW)

1 Volume = _____ X _____ = _____ (Total Purge) | 80%= _____

Time	Temp (°C)	pH	SP Cond (mS / (µS))	Turbidity (NTU)	Purge Rate (gal or mL/ min)	Volume Removed (gal / L)	DO (mg/l)	ORP (mv)	DTW	Notes
1615	11.60	5.80	11962	12	—	—	1.60	263	—	

Did well dewater? YES (NO) | Total volume removed: — (gal / L)

Sample method: Disp Bailer (Hydrasleeve) New Tubing Ext. Port Other:

Sample date: 05APR2014	Sample time: 1615	DTW at sample: —
Sample ID: 7176	Lab: Energy Labs	Number of bottles: 2

Analysis: 500 ml NP poly - Alkalinity, Cl, SO4, TDS, EC, pH 250 ml HNO3 poly *field filtered - Dissolved Metals

Equipment blank ID @	Field blank ID @	
Duplicate ID:	Pre-purge DO:	Post purge DO:
Fe^{2+}:	Pre-purge ORP:	Post purge ORP:
NAPL depth:	Volume of NAPL:	Volume removed: ml

Confluence Environmental, Inc.
3308 El Camino Ave., Suite 300 #148, Sacramento, CA 95821

Purging And Sampling Data Sheet

Job#: 1350.15	**Sampler:** J Kerns B Myers	**Client:** Montgomery & Associates
Well ID: MW-16	**Date** (DDOct2012): 05APR2014	**Site:** Rio Algom Mining, Lisbon, UT
Weather Conditions: Cool/Wind	**Sampler Signature:**	
Well diam: 1/4" 1" 2" 3" (4") 6" Other:	**DTW:** 84.80	**Total Depth:** 124.00
Purge equip: (ES - diam) Bladder Peri Waterra Positive Air Displacement Ext. System		
disp bailer teflon bailer other:	**Tubing:** OD: New (Dedicated) NA	
Purge method: 3-5 Case Volume (Micro/Low-Flow) Extraction Other:		
Pump depth/ intake: 115'	**Multipliers:** 1"= 0.04 2"= 0.16 3"= 0.37 4"= 0.65 5"=1.02 6"= 1.47 Radius² X 0.163	
(TD - DTW X Multiplier = 1 Volume	80% Recovery (TD - DTW X 0.20 + DTW)	

1 Volume = _____ X _____ = _____ (Total Purge) 80%= _____

Time	Temp (°C) °F)	pH	SP Cond (mS / µS)	Turbidity (NTU)	Purge Rate (gal or mL/ min)	Volume Removed (gal/ L)	DO (mg/l)	ORP (mv)	DTW	Notes
1622	11.6	5.7	12477	5	500	1.5	0.94	144	87.00	bluish
1625	12.7	5.4	12546	5	↓	3	0.76	88	87.79	
1628	13.1	5.1	12522	5		4.5	0.64	92	87.82	
1631	13.0	5.1	12537	5		6	0.64	95	87.83	
1634	13.1	5.1	12521	5	↓	7.5	0.66	91	87.83	

Did well dewater? YES (NO) Total volume removed: 7.5 (gal/ L)

Sample method: Disp Bailer Hydrasleeve (New Tubing) Ext. Port Other:

Sample date: 05APR2014	Sample time: 1635	DTW at sample: 87.83
Sample ID: 7177	Lab: Energy Labs	Number of bottles: 2
Analysis: 500 ml NP poly - Alkalinity, Cl, SO4, TDS, EC, pH 250 ml HNO3 poly *field filtered - Dissolved Metals		
Equipment blank ID @	Field blank ID @	
Duplicate ID:	Pre-purge DO:	Post purge DO:
$Fe2^{+}$:	Pre-purge ORP:	Post purge ORP:
NAPL depth:	Volume of NAPL:	Volume removed: ml

Confluence Environmental, Inc
3308 El Camino Ave, Suite 300 #148, Sacramento, CA 95821, 916-760-7641

Purging And Sampling Data Sheet

Job#: 1350.15	**Sampler:** J Kerns B Myers	**Client:** Montgomery & Associates
Well ID: MW-11C	**Date** (DDOct2012): 05APR2014	**Site:** Rio Algom Mining, Lisbon, UT
Weather Conditions: cool/wind	**Sampler Signature:**	
Well diam: 1/4" 1" 2" 3" (4") 6" Other:	**DTW:** 84.80	**Total Depth:** 124.00

Purge equip: (ES - diam) Bladder Peri Waterra Positive Air Displacement Ext. System
disp bailer teflon bailer other: **Tubing:** OD: New (Dedicated) NA

Purge method: (3-5 Case Volume) Micro/Low-Flow Extraction Other:

Pump depth/ intake: 115 **Multipliers:** 1"= 0.04 2"= 0.16 3"= 0.37 4"= 0.65 5"=1.02 6"= 1.47 Radius² X 0.163

(TD - DTW X Multiplier = 1 Volume | 80% Recovery (TD - DTW X 0.20 + DTW)

1 Volume = 25.5 X 3 = 76.5 (Total Purge) 80%= 92.64

Time	Temp (°C / °F)	pH	SP Cond (mS / µS)	Turbidity (NTU)	Purge Rate (gal or mL / min)	Volume Removed (gal / L)	DO (mg/l)	ORP (mv)	DTW	Notes
1654	12.5	5.2	12500	8	2	25.5	1.0	242	96.00	
1706	12.5	5.1	12715	7	↓	51	1.0	256	96.51	
1718	12.5	5.1	12737	7	↓	76.5	1.0	261	96.91	
	Wa[illegible]	[illegible]fly	[illegible]	[illegible]	[illegible]					

Did well dewater? YES (NO) Total volume removed: 76.5 (gal / L)

Sample method: Disp Bailer Hydrasleeve ~~New~~(Tubing) Ext. Port Other:

Sample date: 05APR2014	Sample time: 1725	DTW at sample: 92.64
Sample ID: 7178	Lab: Energy Labs	Number of bottles: 2
Analysis: 500 ml NP poly - Alkalinity, Cl, SO4, TDS, EC, pH	250 ml HNO3 poly *field filtered - Dissolved Metals	
Equipment blank ID @	Field blank ID @	
Duplicate ID: 7179 @ 1730	Pre-purge DO:	Post purge DO:
Fe2+:	Pre-purge ORP:	Post purge ORP:
NAPL depth:	Volume of NAPL:	Volume removed: ml

Confluence Environmental, Inc
3308 El Camino Ave, Suite 300 #148, Sacramento, CA 95821, 916-760-7641

Job#: 1350.15	**Sampler:** J Kerns (B Myers)	**Client:** Montgomery & Associates
Well ID: HW1175	**Date** (DDOct2012): 05APR2014	**Site:** Rio Algom Mining, Lisbon, UT
Weather Conditions: cool	**Sampler Signature:**	
Well diam: 1/4" 1" 2" 3" (4") 6" Other:	**DTW:** 82.25	**Total Depth:** 126.7

Purge equip: ES - diam: Bladder Peri Waterra Positive Air Displacement Ext. System

disp bailer teflon bailer other: (HS) **Tubing:** OD: New Dedicated (NA)

Purge method: 3-5 Case Volume Micro/Low-Flow Extraction Other: (HS)

Pump depth/ intake: 105.5 **Multipliers:** 1"= 0.04 2"= 0.16 3"= 0.37 4"= 0.65 5"=1.02 6"= 1.47 Radius

(TD - DTW X Multiplier = 1 Volume | 80% Recovery (TD - DTW X 0.20 + DTW)

1 Volume = _____ X _____ = _____ (Total Purge) | 80%= _____

Time	Temp (°C)	pH	SP Cond (mS (µS))	Turbidity (NTU)	Purge Rate (gal or mL/ min)	Volume Removed (gal / L)	DO (mg/l)	ORP (mv)	DTW	Notes
1035	12.1	8.5	1200	4	—	—	6.9	113	—	

Did well dewater? YES (NO) Total volume removed: — (gal / L)

Sample method: Disp Bailer (Hydrasleeve) New Tubing Ext. Port Other:

Sample date: 05APR2014	Sample time: 1035	DTW at sample: —
Sample ID: 7073	Lab: Energy Labs	Number of bottles: 2

Analysis: 500 ml NP poly - Alkalinity, Cl, SO4, TDS, EC, pH 250 ml HNO3 poly *field filtered - Dissolved Metals

Equipment blank ID @	Field blank ID @	
Duplicate ID:	Pre-purge DO:	Post purge DO:
$Fe2^{+}$:	Pre-purge ORP:	Post purge ORP:
NAPL depth:	Volume of NAPL:	Volume removed: ml

Confluence Environmental, Inc.
3308 El Camino Ave., Suite 300 #148, Sacramento, CA 95821

Job#: 1350.15	**Sampler:** J Kerns - B Myers	**Client:** Montgomery & Associates
Well ID: MW11TS	**Date** (DDOct2012): 05APR2014	**Site:** Rio Algom Mining, Lisbon, UT
Weather Conditions: Cool	**Sampler Signature:**	
Well diam: 1/4" 1" 2" 3" (4") 6" Other:	**DTW:** 82.25	**Total Depth:** 124.70
Purge equip: (ES - diam:) Bladder Peri Waterra Positive Air Displacement Ext. System		
disp bailer teflon bailer other:	**Tubing:** OD: New (Dedicated) NA	
Purge method: 3-5 Case Volume (Micro/Low-Flow) Extraction Other:		
Pump depth/ intake:	**Multipliers:** 1"= 0.04 2"= 0.16 3"= 0.37 4"= 0.65 5"=1.02 6"= 1.47 Radius	
(TD - DTW X Multiplier = 1 Volume	80% Recovery (TD - DTW X 0.20 + DTW)	
1 Volume = _____ X _____ = _____ (Total Purge)	80%=	

Time	Temp (°C)	pH	SP Cond (mS / (S))	Turbidity (NTU)	Purge Rate (gal or mL / min)	Volume Removed (gal / L)	DO (mg/l)	ORP (mv)	DTW	Notes
1036	11.1	8.8	1184	4	500	1.5	11.3	132	82.39	
1041	11.1	8.9	1317	4	|	3	10.7	100	82.39	
1044	11.3	8.9	1331	4	|	4.5	12.5	98	82.39	
1047	13.7	8.8	1446	4	|	6	11.9	79	82.39	
1050	14.0	8.5	1471	4	|	7.5	11.7	61	82.39	
1053	14.2	8.5	1520	4	|	9	11.6	59	82.40	
1056	14.0	8.5	1540	4	|	10.5	11.5	54	82.40	
1059	13.7	8.5	1545	4	↓	12	11.5	53	82.40	

Did well dewater? YES (NO)	Total volume removed: 12 (gal / (L))	
Sample method: Disp Bailer Hydrasleeve ~~New~~ (Tubing) Ext. Port Other:		
Sample date: 05APR2014	Sample time: 1102	DTW at sample: 82.40
Sample ID: 7074	Lab: Energy Labs	Number of bottles: 2
Analysis: 500 ml NP poly - Alkalinity, Cl, SO4, TDS, EC, pH 250 ml HNO3 poly *field filtered - Dissolved Metals		

Equipment blank ID @	Field blank ID @	
Duplicate ID:	Pre-purge DO:	Post purge DO:
$Fe2^+$:	Pre-purge ORP:	Post purge ORP:
NAPL depth:	Volume of NAPL:	Volume removed: ml

Confluence Environmental, Inc.
3308 El Camino Ave., Suite 300 #148, Sacramento, CA 95821

Job#: 1350.15	**Sampler:** J Kerns - B Myers	**Client:** Montgomery & Associates
Well ID: MW-17S	**Date** (DDOct2012): 05APR2014	**Site:** Rio Algom Mining, Lisbon, UT
Weather Conditions: cool	**Sampler Signature:**	
Well diam: 1/4" 1" 2" 3" (4") 6" Other:	**DTW:** 82.25	**Total Depth:** 126.70
Purge equip: (ES - diam:) Bladder Peri Waterra Positive Air Displacement Ext. System		
disp bailer teflon bailer other:	**Tubing:** OD: New (Dedicated) NA	
Purge method: (3-5 Case Volume) Micro/Low-Flow Extraction Other:		
Pump depth/ intake:	**Multipliers:** 1"= 0.04 2"= 0.16 3"= 0.37 4"= 0.65 5"=1.02 6"= 1.47 Radius	
(TD - DTW X Multiplier = 1 Volume	80% Recovery (TD - DTW X 0.20 + DTW)	
1 Volume = 28.9 X 3 = 86.7 (Total Purge)	80%= 91.14	

Time	Temp (°C)	pH	SP Cond (mS / (µS))	Turbidity (NTU)	Purge Rate (gal or mL/ min)	Volume Removed (gal / L)	DO (mg/l)	ORP (mv)	DTW	Notes
1110	12.5	8.5	1578	3	3.5	29	12.3	72	82.87	
1118	12.5	8.5	1594	3	1	58	11.9	78	82.90	
1127	12.6	8.5	1609	3	1	87	11.4	80	82.90	

Did well dewater? YES (NO)	Total volume removed: 87 (gal / L)	
Sample method: Disp Bailer Hydrasleeve ~~New~~ (Tubing) Ext. Port Other:		
Sample date: 05APR2014	Sample time: 1130	DTW at sample: 82.90
Sample ID: 7075	Lab: Energy Labs	Number of bottles: 2
Analysis: 500 ml NP poly - Alkalinity, Cl, SO4, TDS, EC, pH 250 ml HNO3 poly *field filtered - Dissolved Metals		
Equipment blank ID @	Field blank ID @	
Duplicate ID: 7076 @ 1135	Pre-purge DO:	Post purge DO:
Fe^{2+}:	Pre-purge ORP:	Post purge ORP:
NAPL depth:	Volume of NAPL:	Volume removed: ml

Confluence Environmental, Inc.
3308 El Camino Ave., Suite 300 #148, Sacramento, CA 95821

Job#: 1350.15	**Sampler:** J Kerns (B Myers)	**Client:** Montgomery & Associates
Well ID: MW17~~MW~~	**Date** (DDOct2012): 05APR2014	**Site:** Rio Algom Mining, Lisbon, UT
Weather Conditions: Cool/wind		**Sampler Signature:**
Well diam: 1/4" 1" 2" 3" (4") 6" Other:		**DTW:** 82.65 **Total Depth:** 151.4
Purge equip: ES - diam: Bladder Peri Waterra Positive Air Displacement Ext. System		
disp bailer teflon bailer other: (HS)	**Tubing:** OD: New Dedicated (NA)	
Purge method: 3-5 Case Volume Micro/Low-Flow Extraction Other: (HS)		
Pump depth/ intake: 140'	**Multipliers:** 1"= 0.04 2"= 0.16 3"= 0.37 4"= 0.65 5"=1.02 6"= 1.47 Radius	
(TD - DTW X Multiplier = 1 Volume	80% Recovery (TD - DTW X 0.20 + DTW)	
1 Volume = _____ X _____ = _____ (Total Purge)	80%= _____	

Time	Temp (°C)	pH	SP Cond (mS (µS))	Turbidity (NTU)	Purge Rate (gal or mL/ min)	Volume Removed (gal / L)	DO (mg/l)	ORP (mv)	DTW	Notes
1150	11.0	10.3	2671	3	—	—	1.3	72	—	

Did well dewater? YES (NO)	Total volume removed: — (gal / L)	
Sample method: Disp Bailer (Hydrasleeve) New Tubing Ext. Port Other:		
Sample date: 05APR2014	Sample time: 1150	DTW at sample: —
Sample ID: 7079	Lab: Energy Labs	Number of bottles: 2
Analysis: 500 ml NP poly - Alkalinity, Cl, SO4, TDS, EC, pH 250 ml HNO3 poly *field filtered - Dissolved Metals		
Equipment blank ID @	Field blank ID @	
Duplicate ID:	Pre-purge DO:	Post purge DO:
$Fe2^+$:	Pre-purge ORP:	Post purge ORP:
NAPL depth:	Volume of NAPL:	Volume removed: ml

Confluence Environmental, Inc.
3308 El Camino Ave., Suite 300 #148, Sacramento, CA 95821

Job#: 1350.15	**Sampler:** J Kerns - B Myers	**Client:** Montgomery & Associates
Well ID: MW17M	**Date** (DDOct2012): 05APR2014	**Site:** Rio Algom Mining, Lisbon, UT
Weather Conditions: cool / wind	**Sampler Signature:**	
Well diam: 1/4" 1" 2" 3" (4") 6" Other:	**DTW:** 82.65	**Total Depth:** 151.40
Purge equip: (ES - diam:) Bladder Peri Waterra Positive Air Displacement Ext. System		
disp bailer teflon bailer other:	**Tubing:** OD: New (Dedicated) NA	
Purge method: 3-5 Case Volume (Micro/Low-Flow) Extraction Other:		
Pump depth/ intake:	**Multipliers:** 1"= 0.04 2"= 0.16 3"= 0.37 4"= 0.65 5"=1.02 6"= 1.47 Radius	
(TD - DTW X Multiplier = 1 Volume	80% Recovery (TD - DTW X 0.20 + DTW)	
1 Volume = _____ X _____ = _____ (Total Purge)	80%=	

Time	Temp (°C)	pH	SP Cond (mS / (µS))	Turbidity (NTU)	Purge Rate (gal or mL/ min)	Volume Removed (gal / L)	DO (mg/l)	ORP (mv)	DTW	Notes
1205	11.1	10.60	2781	60	500	1.5	2.88	35	83.41	White/Flaky crust on tubing
1208	11.3	10.2	2949	60	|	3	0.606	62	83.31	
1211	11.4	10.2	3015	5	|	4.5	0.49	61	83.15	
1214	11.5	10.3	3001	5	|	6	0.47	63	83.12	
1217	11.6	10.3	2979	5	|	7.5	0.46	62	83.12	
1220	11.9	10.3	2976 ~~2746~~	5	↓	9	0.47	61	83.12	

Did well dewater? YES (NO)	Total volume removed: 9	(gal / L)
Sample method: Disp Bailer Hydrasleeve ~~New~~ (Tubing) Ext. Port Other:		
Sample date: 05APR2014	Sample time: 1220	DTW at sample: 83.12
Sample ID: 7080	Lab: Energy Labs	Number of bottles: 2
Analysis: 500 ml NP poly - Alkalinity, Cl, SO4, TDS, EC, pH	250 ml HNO3 poly *field filtered - Dissolved Metals	
Equipment blank ID @	Field blank ID @	
Duplicate ID:	Pre-purge DO:	Post purge DO:
Fe^{2+}:	Pre-purge ORP:	Post purge ORP:
NAPL depth:	Volume of NAPL:	Volume removed: ml

Confluence Environmental, Inc.
3308 El Camino Ave., Suite 300 #148, Sacramento, CA 95821

Job#: 1350.15	**Sampler:** J Kerns (B Myers)	**Client:** Montgomery & Associates
Well ID: MW17M	**Date** (DDOct2012): 05APR2014	**Site:** Rio Algom Mining, Lisbon, UT
Weather Conditions: cool/wind		**Sampler Signature:**
Well diam: 1/4" 1" 2" 3" (4") 6" Other:		**DTW:** 82.65 **Total Depth:** 157.40
Purge equip: (ES - diam) Bladder Peri Waterra Positive Air Displacement Ext. System		
disp bailer teflon bailer other:	**Tubing:** OD: New (Dedicated) NA	
Purge method: (3-5 Case Volume) Micro/Low-Flow Extraction Other:		
Pump depth/ intake: —	**Multipliers:** 1"= 0.04 2"= 0.16 3"= 0.37 4"= 0.65 5"=1.02 6"= 1.47 Radius	
(TD - DTW X Multiplier = 1 Volume	80% Recovery (TD - DTW X 0.20 + DTW)	
1 Volume = 44.7 X 3 = 134 (Total Purge)		80%= 96.40

Time	Temp (°C)	pH	SP Cond (mS / µS)	Turbidity (NTU)	Purge Rate (gal or mL / min)	Volume Removed (gal / L)	DO (mg/l)	ORP (mv)	DTW	Notes
1239	12.6	10.4	2886	5	3	45	1.8	66	89.80	
1254	12.6	10.3	2798	5	3	90	2.1	72	89.90	
1309	12.6	10.3	2789	5	3	135	2.2	75	89.95	

Did well dewater? YES (NO)	Total volume removed: 135 ((gal) / L)
Sample method: Disp Bailer Hydrasleeve ~~New~~ Tubing Ext. Port Other:	
Sample date: 05APR2014	Sample time: 1310 DTW at sample: 89.95
Sample ID: 7181	Lab: Energy Labs Number of bottles: 2
Analysis: 500 ml NP poly - Alkalinity, Cl, SO4, TDS, EC, pH 250 ml HNO3 poly *field filtered - Dissolved Metals	
Equipment blank ID @	Field blank ID @
Duplicate ID:	Pre-purge DO: Post purge DO:
$Fe2^{+}$:	Pre-purge ORP: Post purge ORP:
NAPL depth:	Volume of NAPL: Volume removed: ml

Confluence Environmental, Inc.
3308 El Camino Ave., Suite 300 #148, Sacramento, CA 95821

Job#: 1350.15	**Sampler:** J Kerns - B Myers	**Client:** Montgomery & Associates
Well ID: MW-118	**Date** (DDOct2012): 03APR2014	**Site:** Rio Algom Mining, Lisbon, UT

Weather Conditions: Cold **Sampler Signature:**

Well diam: 1/4" 1" 2" 3" (4") 6" Other: **DTW:** 15.02 **Total Depth:** 64.4

Purge equip: ES - diam: Bladder Peri Waterra Positive Air Displacement Ext. System

disp bailer teflon bailer other: **Tubing:** OD: New Dedicated NA

Purge method: 3-5 Case Volume Micro/Low-Flow Extraction Other:

Pump depth/ intake: — **Multipliers:** 1"= 0.04 2"= 0.16 3"= 0.37 4"= 0.65 5"=1.02 6"= 1.47 Radius

(TD - DTW X Multiplier = 1 Volume — 80% Recovery (TD - DTW X 0.20 + DTW)

1 Volume = — X — = — (Total Purge) 80%=

Time	Temp (°C)	pH	SP Cond (mS / µS)	Turbidity (NTU)	Purge Rate (gal or mL/ min)	Volume Removed (gal / L)	DO (mg/l)	ORP (mv)	DTW	Notes
0845	10.4	8.7	848	603	—	—	1.19	201.5	15.02	HS@ 42'

Did well dewater? YES (NO) Total volume removed: — (gal / L)

Sample method: Disp Bailer (Hydrasleeve) New Tubing Ext. Port Other:

Sample date: 03APR2014 Sample time: 0845 DTW at sample: 15.02

Sample ID: -0 7146 Lab: Energy Labs Number of bottles: (2)

Analysis: 500 ml NP poly - Alkalinity, Cl, SO4, TDS, EC, pH 250 ml HNO3 poly *field filtered - Dissolved Metals

Equipment blank ID @ Field blank ID @

Duplicate ID: Pre-purge DO: Post purge DO:

Fe2+: Pre-purge ORP: Post purge ORP:

NAPL depth: Volume of NAPL: Volume removed: ml

Confluence Environmental, Inc.
3308 El Camino Ave., Suite 300 #148, Sacramento, CA 95821

Job#: 1350.15	**Sampler:** J Kerns - B Myers	**Client:** Montgomery & Associates
Well ID: MW-118	**Date** (DDOct2012): 03APR2014	**Site:** Rio Algom Mining, Lisbon, UT
Weather Conditions: Cold		**Sampler Signature:**
Well diam: 1/4" 1" 2" 3" (4") 6" Other:		**DTW:** 15.02 **Total Depth:** 66.4
Purge equip: (ES - diam:) Bladder Peri Waterra Positive Air Displacement Ext. System		
disp bailer teflon bailer other:	**Tubing:** OD: New (Dedicated) NA	
Purge method: 3-5 Case Volume (Micro/Low-Flow) Extraction Other:		
Pump depth/ intake: 42'	**Multipliers:** 1"= 0.04 2"= 0.16 3"= 0.37 4"= 0.65 5"=1.02 6"= 1.47 Radius	
(TD - DTW X Multiplier = 1 Volume —	80% Recovery (TD - DTW X 0.20 + DTW)	
1 Volume = — X — = — (Total Purge)	80%=	

Time	Temp (°C)	pH	SP Cond (mS/(µS))	Turbidity (NTU)	Purge Rate (gal or mL/ min)	Volume Removed (gal/(L))	DO (mg/l)	ORP (mv)	DTW	Notes
0900	9.1	8.3	878	623	500	1.0	0.85	185.9	15.12	
0903	9.0	8.2	878	615	500	2.5	0.63	61.1	15.12	
0906	9.1	8.2	880	605	500	4.0	0.57	40.6	15.12	
0909	9.0	8.3	878	104	500	5.5	0.58	29.0	15.12	
0912	9.1	8.2	878	108	500	7.0	0.57	26.0	15.12	
0915	9.1	8.3	879	110	500	8.5	0.57	27.0	15.11	
0918	9.2	8.3	879	105	500	10.0	0.56	31.3	15.11	

Did well dewater? YES (NO)	Total volume removed: 10 (gal/(L))	
Sample method: Disp Bailer Hydrasleeve New Tubing Ext. Port Other: Dedicated Tubing		
Sample date: 03APR2014	Sample time: 0920	DTW at sample: 15.11
Sample ID: 7147	Lab: Energy Labs	Number of bottles: (2)
Analysis: 500 ml NP poly - Alkalinity, Cl, SO4, TDS, EC, pH	250 ml HNO3 poly *field filtered - Dissolved Metals	
Equipment blank ID @	Field blank ID @	
Duplicate ID:	Pre-purge DO:	Post purge DO:
Fe^{2+}:	Pre-purge ORP:	Post purge ORP:
NAPL depth:	Volume of NAPL:	Volume removed: ml

Confluence Environmental, Inc.
3308 El Camino Ave., Suite 300 #148, Sacramento, CA 95821

Purging And Sampling Data Sheet

Job#: 1350.15	**Sampler:** J Kerns B Myers	**Client:** Montgomery & Associates
Well ID: MW-118	**Date** (DDOct2012): 03APR2014	**Site:** Rio Algom Mining, Lisbon, UT
Weather Conditions: Cold - Windy	**Sampler Signature:**	
Well diam: 1/4" 1" 2" 3" (4") 6" Other:	**DTW:** 15.02	**Total Depth:** 66.41

Purge equip: (ES - diam:) Bladder Peri Waterra Positive Air Displacement Ext. System
disp bailer teflon bailer other: **Tubing:** OD: New (Dedicated) NA

Purge method: (3-5 Case Volume) Micro/Low-Flow Extraction Other:

Pump depth/ intake: 42 **Multipliers:** 1"= 0.04 2"= 0.16 3"= 0.37 4"= 0.65 5"=1.02 6"= 1.47 Radius² X 0.163

(TD - DTW X Multiplier = 1 Volume	80% Recovery (TD - DTW X 0.20 + DTW)

1 Volume = 33.3 X 3 = 99.9 (Total Purge) 80%= —

Time	Temp (°C / °F)	pH	SP Cond (mS / µS)	Turbidity (NTU)	Purge Rate (gal or mL/ min)	Volume Removed (gal / L)	DO (mg/l)	ORP (mv)	DTW	Notes
0937	10.4	9.1	923	48.2	2.0	34	2.85	91.4	17.20	0925
0948	10.4	9.0	926	39.2	3.0	68	2.93	90.4	17.19	
1000 0956	10.4	9.1	934	33.3	3.0	100	3.04	88.9	17.19	

Did well dewater? YES (NO) Total volume removed: 100 (gal / L)

Sample method: Disp Bailer Hydrasleeve New Tubing Ext. Port Other: Dedicated Tubing

Sample date: 03APR2014	Sample time: 1005	DTW at sample:
Sample ID: 7148	Lab: Energy Labs	Number of bottles: 2

Analysis: 500 ml NP poly - Alkalinity, Cl, SO4, TDS, EC, pH 250 ml HNO3 poly *field filtered - Dissolved Metals

Equipment blank ID @	Field blank ID @	
Duplicate ID:	Pre-purge DO:	Post purge DO:
Fe^{2+}:	Pre-purge ORP:	Post purge ORP:
NAPL depth:	Volume of NAPL:	Volume removed: ml

Confluence Environmental, Inc
3308 El Camino Ave, Suite 300 #148, Sacramento, CA 95821, 916-760-7641

Purging And Sampling Data Sheet

Job#: 1350.15	**Sampler:** J Kerns B Myers	**Client:** Montgomery & Associates
Well ID: MW-119	**Date** (DDOct2012): 03APR2014	**Site:** Rio Algom Mining, Lisbon, UT
Weather Conditions: Windy - Cold	**Sampler Signature:**	
Well diam: 1/4" 1" 2" 3" (4") 6" Other:	**DTW:** 70.19	**Total Depth:** 90 -
Purge equip: ES - diam: Bladder Peri Waterra Positive Air Displacement Ext. System disp bailer teflon bailer other:	**Tubing:** OD: New Dedicated NA	
Purge method: 3-5 Case Volume Micro/Low-Flow Extraction Other:		
Pump depth/ intake: —	**Multipliers:** 1"= 0.04 2"= 0.16 3"= 0.37 4"= 0.65 5"=1.02 6"= 1.47 Radius² X 0.163	
(TD - DTW X Multiplier = 1 Volume	80% Recovery (TD - DTW X 0.20 + DTW)	

1 Volume = — X — = — (Total Purge) 80%= —

Time	Temp (°C / °F)	pH	SP Cond (mS / µS)	Turbidity (NTU)	Purge Rate (gal or mL/ min)	Volume Removed (gal / L)	DO (mg/l)	ORP (mv)	DTW	Notes
1345	11.5	7.6	4552	2.2	—	—	6.42	135.0	70.19	HS @ 75'

Did well dewater? YES (NO) Total volume removed: — (gal / L)

Sample method: Disp Bailer (Hydrasleeve) New Tubing Ext. Port Other:

Sample date: 03APR2014 Sample time: 1345 DTW at sample: 70.19

Sample ID: 7156 Lab: Energy Labs Number of bottles: (2)

Analysis: 500 ml NP poly - Alkalinity, Cl, SO4, TDS, EC, pH 250 ml HNO3 poly *field filtered - Dissolved Metals

Equipment blank ID @	Field blank ID @	
Duplicate ID:	Pre-purge DO:	Post purge DO:
$Fe2^{+}$:	Pre-purge ORP:	Post purge ORP:
NAPL depth:	Volume of NAPL:	Volume removed: ml

Confluence Environmental, Inc
3308 El Camino Ave, Suite 300 #148, Sacramento, CA 95821, 916-760-7641

Purging And Sampling Data Sheet

Job#: 1350.15	**Sampler:** J Kerns B Myers	**Client:** Montgomery & Associates
Well ID: MW-119	**Date** (DDOct2012): 03APR2014	**Site:** Rio Algom Mining, Lisbon, UT
Weather Conditions: windy - cold	**Sampler Signature:**	
Well diam: 1/4" 1" 2" 3" (4") 6" Other:	**DTW:** 70.19	**Total Depth:** 90-
Purge equip: (ES - diam:) Bladder Peri Waterra Positive Air Displacement Ext. System		
disp bailer teflon bailer other:	**Tubing:** OD: New (Dedicated) NA	
Purge method: 3-5 Case Volume (Micro/Low-Flow) Extraction Other:		
Pump depth/ intake:	**Multipliers:** 1"= 0.04 2"= 0.16 3"= 0.37 4"= 0.65 5"=1.02 6"= 1.47 Radius² X 0.163	
(TD - DTW X Multiplier = 1 Volume	80% Recovery (TD - DTW X 0.20 + DTW)	

1 Volume = _____ X _____ = _____ (Total Purge) 80%= _____

Time	Temp (°C / °F)	pH	SP Cond (mS / µS)	Turbidity (NTU)	Purge Rate (gal or mL/ min)	Volume Removed (gal / L)	DO (mg/l)	ORP (mv)	DTW	Notes
—	Insufficient water to Collect Sample per									
	Low Flow protocol				—	DTW too		Low	—	

Did well dewater? YES NO	Total volume removed:	(gal / L)
Sample method: Disp Bailer Hydrasleeve New Tubing Ext. Port Other:		
Sample date:	Sample time:	DTW at sample:
Sample ID:	Lab: Energy Labs	Number of bottles: 2
Analysis: 500 ml NP poly - Alkalinity, Cl, SO4, TDS, EC, pH 250 ml HNO3 poly *field filtered - Dissolved Metals		
Equipment blank ID @	Field blank ID @	
Duplicate ID:	Pre-purge DO:	Post purge DO:
$Fe2^{+}$:	Pre-purge ORP:	Post purge ORP:
NAPL depth:	Volume of NAPL:	Volume removed: ml

Confluence Environmental, Inc
3308 El Camino Ave, Suite 300 #148, Sacramento, CA 95821, 916-760-7641

Purging And Sampling Data Sheet

Job#: 1350.15	**Sampler:** J Kerns B Myers	**Client:** Montgomery & Associates
Well ID: MW-11C	**Date** (DDOct2012): 03 Apr 2014	**Site:** Rio Algom Mining, Lisbon, UT
Weather Conditions: windy -cold	**Sampler Signature:**	
Well diam: 1/4" 1" 2" 3" (4") 6" Other:	**DTW:** 70.19	**Total Depth:** 90 -
Purge equip: (ES - diam:) Bladder Peri Waterra Positive Air Displacement Ext. System		
disp bailer teflon bailer other:	**Tubing:** OD: New (Dedicated) NA	
Purge method: (3-5 Case Volume) Micro/Low-Flow Extraction Other:		
Pump depth/ intake: Bottom	**Multipliers:** 1"= 0.04 2"= 0.16 3"= 0.37 4"= 0.65 5"=1.02 6"= 1.47 Radius² X 0.163	
(TD - DTW X Multiplier = 1 Volume	80% Recovery (TD - DTW X 0.20 + DTW)	

1 Volume = 13 X 3 = 39 (Total Purge) 80%= 74.15

Time	Temp (°C / °F)	pH	SP Cond (mS / µS)	Turbidity (NTU)	Purge Rate (gal or mL/ min)	Volume Removed ((gal)/ L)	DO (mg/l)	ORP (mv)	DTW	Notes
1411	12.7	7.6	4852	4.4	1.0	13	6.24	121.7	80.10	
1413	well	dewatered	@	approx	15	gallons		—		
0830	9.8	7.6	4890	3.9	—	—	10.41	214	70.41	04APR2014

Did well dewater? (YES) NO — Total volume removed: 15.0 ((gal)/ L)

Sample method: (Disp Bailer) Hydrasleeve New Tubing Ext. Port Other:

Sample date: 04APR2014 — Sample time: 0830 — DTW at sample: 70.41

Sample ID: 7159 — Lab: Energy Labs — Number of bottles: (2)

Analysis: 500 ml NP poly - Alkalinity, Cl, SO4, TDS, EC, pH 250 ml HNO3 poly *field filtered - Dissolved Metals

Equipment blank ID @	Field blank ID @	
Duplicate ID:	Pre-purge DO:	Post purge DO:
$Fe2^{+}$:	Pre-purge ORP:	Post purge ORP:
NAPL depth:	Volume of NAPL:	Volume removed: ml

Confluence Environmental, Inc
3308 El Camino Ave, Suite 300 #148, Sacramento, CA 95821, 916-760-7641

Purging And Sampling Data Sheet

Job#: 1350.15	**Sampler:** J Kerns B Myers	**Client:** Montgomery & Associates
Well ID: MW-120	**Date** (DDOct2012): 02APR2014	**Site:** Rio Algom Mining, Lisbon, UT
Weather Conditions: Cold	**Sampler Signature:**	
Well diam: 1/4" 1" 2" 3" (4") 6" Other:	**DTW:** 125.83 **Total Depth:** 246.9	
Purge equip: ES - diam: Bladder Peri Waterra Positive Air Displacement Ext. System disp bailer teflon bailer other:	**Tubing:** OD: New Dedicated NA	
Purge method: 3-5 Case Volume Micro/Low-Flow Extraction Other:		
Pump depth/ intake: —	**Multipliers:** 1"= 0.04 2"= 0.16 3"= 0.37 4"= 0.65 5"=1.02 6"= 1.47 Radius² X 0.163	
(TD - DTW X Multiplier = 1 Volume	80% Recovery (TD - DTW X 0.20 + DTW)	

1 Volume = — X — = — (Total Purge) 80%= —

Time	Temp (°C) °F	pH	SP Cond (mS) µS	Turbidity (NTU)	Purge Rate (gal or mL/ min)	Volume Removed (gal / L)	DO (mg/l)	ORP (mv)	DTW	Notes
1050	10.8	7.2	1527	12.6	—	—	8.43	13.0	125.83	H2S @ 187.5

Did well dewater? YES (NO)	Total volume removed: — (gal / L)	
Sample method: Disp Bailer (Hydrasleeve) New Tubing Ext. Port Other:		
Sample date: 02APR2014	Sample time: 1050	DTW at sample:
Sample ID: 7141	Lab: Energy Labs	Number of bottles: (2)
Analysis: 500 ml NP poly - Alkalinity, Cl, SO4, TDS, EC, pH 250 ml HNO3 poly *field filtered - Dissolved Metals		

Equipment blank ID @	Field blank ID @	
Duplicate ID:	Pre-purge DO:	Post purge DO:
$Fe2^{+}$:	Pre-purge ORP:	Post purge ORP:
NAPL depth:	Volume of NAPL:	Volume removed: ml

Confluence Environmental, Inc
3308 El Camino Ave, Suite 300 #148, Sacramento, CA 95821, 916-760-7641

Purging And Sampling Data Sheet

Job#: 1350.15	**Sampler:** J Kerns B Myers	**Client:** Montgomery & Associates
Well ID: MW-120	**Date** (DDOct2012): 02APR2014	**Site:** Rio Algom Mining, Lisbon, UT
Weather Conditions: Cold	**Sampler Signature:**	
Well diam: 1/4" 1" 2" 3" (4") 6" Other:	**DTW:** 125.83 **Total Depth:** 246.9	
Purge equip: (ES - diam:) Bladder Peri Waterra Positive Air Displacement Ext. System		
disp bailer teflon bailer other:	**Tubing:** OD: New (Dedicated) NA	
Purge method: 3-5 Case Volume (Micro/Low-Flow) Extraction Other:		
Pump depth/ intake: 187.5	**Multipliers:** 1"= 0.04 2"= 0.16 3"= 0.37 4"= 0.65 5"=1.02 6"= 1.47 Radius² X 0.163	
(TD - DTW X Multiplier = 1 Volume	80% Recovery (TD - DTW X 0.20 + DTW)	

1 Volume = ___ X ___ = ___ (Total Purge) 80%= ___

Time	Temp (°C /°F)	pH	SP Cond (mS /(µS))	Turbidity (NTU)	Purge Rate (gal or mL/ min)	Volume Removed (gal /(L))	DO (mg/l)	ORP (mv)	DTW	Notes
1115	9.7	8.4	1459	23	500	1.0	9.04	83.0	125.90	
1118	10.1	7.5	1448	57	500	2.5	8.93	85.1	125.91	
1121	9.9	7.5 ~~8.6~~	1456	39	500	4.0	9.02	91.8	125.91	
1124	10.2	9.2	1434	38	500	5.5	8.84	89.5	125.91	
1127	10.9	8.5	1448	35	500	7.0	8.84	70.5	125.91	
1130	11.0	8.5	1448	37	500	8.5	8.81	68.2	125.91	
1133	11.0	8.5	1446	37	500	10.0	8.	68.1	125.91	

Did well dewater? YES (NO)	Total volume removed: 10.0 (gal /(L))	
Sample method: Disp Bailer Hydrasleeve New Tubing Ext. Port Other: (Dedicated)		
Sample date: 02APR2014	Sample time: 1135	DTW at sample: 125.91
Sample ID: 7147	Lab: Energy Labs	Number of bottles: 2
Analysis: 500 ml NP poly - Alkalinity, Cl, SO4, TDS, EC, pH 250 ml HNO3 poly *field filtered - Dissolved Metals		
Equipment blank ID @	Field blank ID @	
Duplicate ID:	Pre-purge DO:	Post purge DO:
Fe^{2+}:	Pre-purge ORP:	Post purge ORP:
NAPL depth:	Volume of NAPL:	Volume removed: ml

Confluence Environmental, Inc
3308 El Camino Ave, Suite 300 #148, Sacramento, CA 95821, 916-760-7641

Purging And Sampling Data Sheet

Job#: 1350.15	**Sampler:** J Kerns B Myers	**Client:** Montgomery & Associates
Well ID: MW-120	**Date** (DDOct2012): 02APR2014	**Site:** Rio Algom Mining, Lisbon, UT
Weather Conditions: Cold	**Sampler Signature:**	
Well diam: 1/4" 1" 2" 3" (4") 6" Other:	**DTW:** 125.83 **Total Depth:** 246.91	
Purge equip: ES - diam: Bladder Peri Waterra Positive Air Displacement Ext. System disp bailer teflon bailer other:	**Tubing:** OD: New (Dedicated) NA	
Purge method: 3-5 Case Volume Micro/Low-Flow Extraction Other:		
Pump depth/ intake: 187.5	**Multipliers:** 1"= 0.04 2"= 0.16 3"= 0.37 4"= 0.65 5"=1.02 6"= 1.47 Radius² X 0.163	
(TD - DTW X Multiplier = 1 Volume	80% Recovery (TD - DTW X 0.20 + DTW)	

1 Volume = 79 X 3 = 237 (Total Purge) 80%= _____

Time	Temp (°C / °F)	pH	SP Cond (mS / µS)	Turbidity (NTU)	Purge Rate (gal or mL/ min)	Volume Removed (gal / L)	DO (mg/l)	ORP (mv)	DTW	Notes
1203	12.5	7.3	1039	26.1	3.0	79	8.24	87.0	126.22	1136
1229	12.6	7.3	1030	21.6	3.0	158	8.18	93.1	126.22	
1257	12.5	7.3	990	8.9	3.0	237	8.14	103.1	126.22	

Did well dewater? YES (NO) Total volume removed: 237 (gal) / L)

Sample method: Disp Bailer Hydrasleeve New Tubing Ext. Port Other: Dedicated Tubing

Sample date: 02APR2014	Sample time: 1300	DTW at sample: 126.22
Sample ID: 7143	Lab: Energy Labs	Number of bottles: 2
Analysis: 500 ml NP poly - Alkalinity, Cl, SO4, TDS, EC, pH 250 ml HNO3 poly *field filtered - Dissolved Metals		
Equipment blank ID @	Field blank ID @	
Duplicate ID:	Pre-purge DO:	Post purge DO:
Fe^{2+}:	Pre-purge ORP:	Post purge ORP:
NAPL depth:	Volume of NAPL:	Volume removed: ml

Confluence Environmental, Inc
3308 El Camino Ave, Suite 300 #148, Sacramento, CA 95821, 916-760-7641

Sample Log

Job Number: 1350.15 | Date: 4-4-14 | Client: Montgomery and Associates

Site: Rio Algom Mining, Lisbon UT | Sampler: Brandon Myers

Well ID	Sample ID	Date	Time	Sample Method (HS, LF, P)	QC Sample (dup, split, rinse)	Ship Date/Notes
MW-119	7159	04 APR 2014	0830	P/grab	N/A	4-4-14
MW-109	7160	04 APR 2014	0855	P/grab	N/A	
MW-112	7161	04 APR 2014	0930	HS	N/A	
MW-112	7162	04 APR 2014	1000	LF	N/A	
MW-112	7163	04 APR 2014	1055	P	N/A	
ML-1	7164	04APR2014	1110	HS	N/A	
ML-1	7165	04 APR 2014	1115	HS	Dup	
ML-1	7166	04APR2014	1155	LF	N/A	
MW-114	7167	04APR2014	1205	HS	N/A	
MW-114	7168	04APR2014	1245	LF	N/A	
MW-114	7169	04APR2014	1345	P	N/A	
MW-105	7170	04 APR 2014	1630	HS	N/A	4-7-14
MW-105	7171	04 APR 2014	1705	LF	N/A	
MW-103	7172	04 APR 2014	1715	HS	N/A	
MW-103	7173	04 APR 2014	1745	LF	N/A	
DW-MT-9	7174	04 APR 2014	1800	HS	N/A	

Sample Log

Job Number: 1350.15 | Date: 31 Mar 2014 | Client: Montgomery and Associates

Site: Rio Algom Mining, Lisbon UT | Sampler: Josh Kerns

Well ID	Sample ID	Date	Time	Sample Method (HS, LF, P)	QC Sample (dup, split, rinse)	Ship Date/Notes
RL-1	7101	31 Mar 2014	1140	LF (Reg)	N/A	4-2-14
EF-8	7102	31 Mar 2014	1230	LF (Reg)		
OW-UT-9	7103	31 Mar 2014	1320	LF (Reg)		
MW-111	7104	01 APR 2014	0915	Grab		
MW-120	7141	02 APR 2014	1050	HS		
MW-120	7142	02 APR 2014	1135	LF		
MW-120	7143	02 APR 2014	1300	P		
UW-1	7144	02 APR 2014	1330	HS		
UW-1	7145	02 APR 2014	1405	LF		
MW-118	7146	03 APR 2014	0845	HS		4-4-14
MW-118	7147	03 APR 2014	0920	LF		
MW-118	7148	03 APR 2014	1005	P		
MW-1070	7149	03 APR 2014	1015	HS		
MW-1070	7150	03 APR 2014	1048	LF		
MW-1070	7151	03 APR 2014	1125	P		
MW-1070	7152	03 APR 2014	1130	P	Dup	
MW-108	7153	03 APR 2014	1145	HS	NA	
MW-108	7154	03 APR 2014	1210	LF		
MW-108	7155	03 APR 2014	1335	P		
MW-119	7156	03 APR 2014	1345	HS		
MW-109	7157	03 APR 2014	1500	HS		
MW-109	7158	03 APR 2014	1535	LF		

Sample Log

Job Number: 1350.15 | Date: 4/2/14 | Client: Montgomery and Associates

Site: Rio Algom Mining, Lisbon UT | Sampler: Josh Kerns

Well ID	Sample ID	Date	Time	Sample Method (HS, LF, P)	QC Sample (dup, split, rinse)	Ship Date/Notes
MW-13	7105	02APR2014	1225	HS	N/A	4/2/14
MW-13	7106	02APR2014	1310	LF	N/A	
H-63	7107		1330	HS	N/A	
H-63	7108		1405	LF	N/A	
RL-6	7109	03APR2014	850	HS	N/A	4/4/14
RL-6	7110		915	LF	N/A	
MW-107S	7111		950	HS	N/A	
MW-107S	7112		1025	LF	N/A	
MW-107S	7113		1040	P	N/A	
RL-4	7114		1105	HS	N/A	
RL-4	7115		1135	LF	N/A	
RL-5	7116		1155	HS	N/A	
RL-5	7117		1230	LF	N/A	
RL-3	7118		1315	HS	N/A	
RL-3	7119		1345	LF	DUP	
RL-3	7120		1350	LF	~~DUP~~ N/A	
LW-1	7121		1420	HS	N/A	
LW-1	7122		1445	LF	N/A	
MW-100	7123		1505	HS	N/A	
MW-100	7124		1530	LF	N/A	
MW-5	7125	04APR2014 ~~APR2~~	850	HS	N/A	
MW-5	7126		920	LF	N/A	

Sample Log

Job Number: 1350.15 | Date: | Client: Montgomery and Associates

Site: Rio Algom Mining, Lisbon UT | Sampler: Brandon Myers

Well ID	Sample ID	Date	Time	Sample Method (HS, LF, P)	QC Sample (dup, split, rinse)	Ship Date/Notes
MW117M	7180	05APR2014	1220	LF	N/A	4/7/14
MW117M	7181		1310	P	N/A	
MW115M	7182		1320	LF/HS	Split	
MW115M	7183		1320	HS	ACZ	
MW115M	7184		1355	LF	Split	
MW115M	7185		1355	LF	ACZ	
MW115M	7186		1455	P	Split	
MW115M	7187		1455	P	ACZ	
MW115S	7188		1405	HS	N/A	
MW115S	7189		1525	LF	N/A	
MW115S	7190		1600	P	Rinsate	
MW115S	7175		1610	G/rinsate	N/A	
MW116	7176		1615	HS	N/A	
MW116	7177		1635	LF	N/A	
MW116	7178		1725	P	DUP	
MW116	7179		1730	P	DUP @ MW116	
MW106	7180	06APR2014	850	P/G	N/A	
MW104	7191		910	P/G	N/A	
RL-1	7192		1005	LF	N/A	
EF-8	7193		1040	LF	DUP	
EF-8	7194		1045	LF	DUP @ EF-8 N/A	

Sample Log

Job Number: 1350.15 | Date: | Client: Montgomery and Associates

Site: Rio Algom Mining, Lisbon UT | Sampler: Brandon Myers

Well ID	Sample ID	Date	Time	Sample Method (HS, LF, P)	QC Sample (dup, split, rinse)	Ship Date/Notes
MW-102	7127 ~~2127~~	04APR2014	945	HS	DUP	4/4/14
MW-102	7128 ~~2128~~		950	HS (dup)	N/A	
MW-102	7129 ~~2129~~		1020	LF	N/A	
MW-102DB	7130 ~~2130~~		1035	HS	N/A	
MW-102DB	7131 ~~2131~~		1105	LF	Rinse	
MW-102DB	7132 ~~2132~~		1125	EB	MW-102DB ~~N/A~~	
MW-101	7133		1140	HS	DUP	
MW-101	7134		1145	HS	Dup @ MW-101	
MW-101	7135		1215	LF	N/A	
MW-113	7136	05APR2014	850	HS	N/A	4/7/14
MW-113	7137		915	LF	N/A	
MW-113	7138		945	P	N/A	
EF-6	7139		925	HS	N/A	
EF-6	7140		1005	LF	DUP	
EF-6	7072 ~~####~~		1010	LF	DUP @ EF-6 N/A	
MW-117S	7073		1035	HS	N/A	
MW-117S	7074		1100	LF	N/A	
MW-117S	7075		1130	P	DUP	
MW-117S	7076		1135	P	Dupe @ MW-117S	
EF-3A	7077		1110	HS	N/A	
EF-3A	7078		1155	LF	N/A	
MW-17M	7079		1150	HS	N/A	

ANALYTICAL SUMMARY REPORT

April 14, 2014

Rio Algom Mining Corporation LLC
Hwy 605 and 509
Grants, NM 87020

Work Order: C14040136 Quote ID: C3636 - Groundwater

Project Name: Lisbon, UT Facility

Energy Laboratories, Inc. Casper WY received the following 10 samples for Rio Algom Mining Corporation LLC on 4/3/2014 for analysis.

Lab ID	Client Sample ID	Collect Date	Receive Date	Matrix	Test
C14040136-001	7104	04/01/14 9:15	04/03/14	Aqueous	Metals by ICP/ICPMS, Dissolved Alkalinity Anion - Cation Balance Conductivity E300.0 Anions pH Solids, Total Dissolved Solids, Total Dissolved - Calculated
C14040136-002	7141	04/02/14 10:50	04/03/14	Aqueous	Same As Above
C14040136-003	7142	04/02/14 11:35	04/03/14	Aqueous	Same As Above
C14040136-004	7143	04/02/14 13:00	04/03/14	Aqueous	Same As Above
C14040136-005	7144	04/02/14 13:30	04/03/14	Aqueous	Same As Above
C14040136-006	7145	04/02/14 14:05	04/03/14	Aqueous	Same As Above
C14040136-007	7105	04/02/14 12:25	04/03/14	Aqueous	Same As Above
C14040136-008	7106	04/02/14 13:10	04/03/14	Aqueous	Same As Above
C14040136-009	7107	04/02/14 13:30	04/03/14	Aqueous	Same As Above
C14040136-010	7108	04/02/14 14:05	04/03/14	Aqueous	Same As Above

The results as reported relate only to the item(s) submitted for testing. The analyses presented in this report were performed at Energy Laboratories, Inc., 2393 Salt Creek Hwy., Casper, WY 82601, unless otherwise noted. Radiochemistry analyses were performed at Energy Laboratories, Inc., 2325 Kerzell Lane, Casper, WY 82601, unless otherwise noted. Any exceptions or problems with the analyses are noted in the Laboratory Analytical Report, the QA/QC Summary Report, or the Case Narrative.

If you have any questions regarding these test results, please call.

Report Approved By:

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility
Lab ID: C14040136-001
Client Sample ID: 7104

Report Date: 04/14/14
Collection Date: 04/01/14 09:15
DateReceived: 04/03/14
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Carbonate as CO3	10	mg/L		5		A2320 B	04/03/14 20:00 / jba
Bicarbonate as HCO3	458	mg/L		5		A2320 B	04/03/14 20:00 / jba
Calcium	7	mg/L		1		E200.7	04/04/14 14:28 / sf
Chloride	15	mg/L		1		E300.0	04/04/14 15:49 / wc
Magnesium	2	mg/L		1		E200.7	04/04/14 14:28 / sf
Potassium	4	mg/L		1		E200.7	04/04/14 14:28 / sf
Sodium	171	mg/L		1		E200.7	04/04/14 14:28 / sf
Sulfate	9	mg/L		1		E300.0	04/04/14 15:49 / wc
PHYSICAL PROPERTIES							
Conductivity @ 25 C	792	umhos/cm		1		A2510 B	04/03/14 16:01 / tmm
pH	8.39	s.u.	H	0.01		A4500-H B	04/04/14 12:53 / tmm
Solids, Total Dissolved TDS @ 180 C	518	mg/L	D	10		A2540 C	04/04/14 15:31 / tmm
METALS - DISSOLVED							
Arsenic	0.004	mg/L		0.001		E200.8	04/09/14 18:55 / clm
Iron	ND	mg/L		0.03		E200.7	04/04/14 14:28 / sf
Molybdenum	0.01	mg/L		0.01		E200.7	04/04/14 14:28 / sf
Selenium	0.001	mg/L		0.001		E200.8	04/09/14 18:55 / clm
Uranium	0.0153	mg/L		0.0003		E200.8	04/09/14 18:55 / clm
DATA QUALITY							
A/C Balance (± 5)	-5.32	%				A1030 E	04/11/14 15:18 / kbh
Anions	8.96	meq/L				A1030 E	04/11/14 15:18 / kbh
Cations	8.05	meq/L				A1030 E	04/11/14 15:18 / kbh
Solids, Total Dissolved Calculated	480	mg/L				A1030 E	04/11/14 15:18 / kbh
TDS Balance (0.80 - 1.20)	1.09					A1030 E	04/11/14 15:18 / kbh

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
H - Analysis performed past recommended holding time.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility
Lab ID: C14040136-002
Client Sample ID: 7141

Report Date: 04/14/14
Collection Date: 04/02/14 10:50
DateReceived: 04/03/14
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Carbonate as CO3	ND	mg/L		5		A2320 B	04/03/14 20:08 / jba
Bicarbonate as HCO3	196	mg/L		5		A2320 B	04/03/14 20:08 / jba
Calcium	180	mg/L		1		E200.7	04/04/14 14:39 / sf
Chloride	236	mg/L		1		E300.0	04/04/14 16:06 / wc
Magnesium	45	mg/L		1		E200.7	04/04/14 14:39 / sf
Potassium	4	mg/L		1		E200.7	04/04/14 14:39 / sf
Sodium	29	mg/L		1		E200.7	04/04/14 14:39 / sf
Sulfate	176	mg/L	D	2		E300.0	04/04/14 16:06 / wc
PHYSICAL PROPERTIES							
Conductivity @ 25 C	1370	umhos/cm		1		A2510 B	04/03/14 16:04 / tmm
pH	7.44	s.u.	H	0.01		A4500-H B	04/04/14 12:56 / tmm
Solids, Total Dissolved TDS @ 180 C	979	mg/L		10		A2540 C	04/04/14 15:32 / tmm
METALS - DISSOLVED							
Arsenic	0.005	mg/L		0.001		E200.8	04/09/14 19:08 / clm
Iron	ND	mg/L		0.03		E200.7	04/04/14 14:39 / sf
Molybdenum	ND	mg/L		0.01		E200.7	04/04/14 14:39 / sf
Selenium	0.013	mg/L		0.001		E200.8	04/09/14 19:08 / clm
Uranium	0.0060	mg/L		0.0003		E200.8	04/09/14 19:08 / clm
DATA QUALITY							
A/C Balance (± 5)	0.84	%				A1030 E	04/08/14 16:01 / kbh
Anions	13.8	meq/L				A1030 E	04/08/14 16:01 / kbh
Cations	14.1	meq/L				A1030 E	04/08/14 16:01 / kbh
Solids, Total Dissolved Calculated	800	mg/L				A1030 E	04/08/14 16:01 / kbh
TDS Balance (0.80 - 1.20)	1.23					A1030 E	04/08/14 16:01 / kbh

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
H - Analysis performed past recommended holding time.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility
Lab ID: C14040136-003
Client Sample ID: 7142

Report Date: 04/14/14
Collection Date: 04/02/14 11:35
DateReceived: 04/03/14
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Carbonate as CO3	ND	mg/L		5		A2320 B	04/03/14 20:15 / jba
Bicarbonate as HCO3	205	mg/L		5		A2320 B	04/03/14 20:15 / jba
Calcium	176	mg/L		1		E200.7	04/04/14 14:42 / sf
Chloride	243	mg/L		1		E300.0	04/04/14 16:24 / wc
Magnesium	45	mg/L		1		E200.7	04/04/14 14:42 / sf
Potassium	4	mg/L		1		E200.7	04/04/14 14:42 / sf
Sodium	29	mg/L		1		E200.7	04/04/14 14:42 / sf
Sulfate	209	mg/L	D	2		E300.0	04/04/14 16:24 / wc
PHYSICAL PROPERTIES							
Conductivity @ 25 C	1460	umhos/cm		1		A2510 B	04/03/14 16:07 / tmm
pH	7.40	s.u.	H	0.01		A4500-H B	04/04/14 12:59 / tmm
Solids, Total Dissolved TDS @ 180 C	1000	mg/L	D	10		A2540 C	04/04/14 15:32 / tmm
METALS - DISSOLVED							
Arsenic	0.003	mg/L		0.001		E200.8	04/09/14 19:11 / clm
Iron	0.11	mg/L		0.03		E200.7	04/04/14 14:42 / sf
Molybdenum	ND	mg/L		0.01		E200.7	04/04/14 14:42 / sf
Selenium	0.013	mg/L		0.001		E200.8	04/09/14 19:11 / clm
Uranium	0.0066	mg/L		0.0003		E200.8	04/09/14 19:11 / clm
DATA QUALITY							
A/C Balance (± 5)	-3.46	%				A1030 E	04/08/14 16:01 / kbh
Anions	14.9	meq/L				A1030 E	04/08/14 16:01 / kbh
Cations	13.9	meq/L				A1030 E	04/08/14 16:01 / kbh
Solids, Total Dissolved Calculated	840	mg/L				A1030 E	04/08/14 16:01 / kbh
TDS Balance (0.80 - 1.20)	1.19					A1030 E	04/08/14 16:01 / kbh

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
H - Analysis performed past recommended holding time.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility
Lab ID: C14040136-004
Client Sample ID: 7143

Report Date: 04/14/14
Collection Date: 04/02/14 13:00
DateReceived: 04/03/14
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Carbonate as CO3	ND	mg/L		5		A2320 B	04/03/14 20:46 / jba
Bicarbonate as HCO3	222	mg/L		5		A2320 B	04/03/14 20:46 / jba
Calcium	108	mg/L		1		E200.7	04/04/14 15:00 / sf
Chloride	114	mg/L		1		E300.0	04/04/14 16:41 / wc
Magnesium	30	mg/L		1		E200.7	04/04/14 15:00 / sf
Potassium	4	mg/L		1		E200.7	04/10/14 14:49 / sf
Sodium	39	mg/L		1		E200.7	04/04/14 15:00 / sf
Sulfate	173	mg/L	D	2		E300.0	04/04/14 16:41 / wc
PHYSICAL PROPERTIES							
Conductivity @ 25 C	1020	umhos/cm		1		A2510 B	04/03/14 16:10 / tmm
pH	7.53	s.u.	H	0.01		A4500-H B	04/04/14 13:02 / tmm
Solids, Total Dissolved TDS @ 180 C	654	mg/L		10		A2540 C	04/04/14 15:32 / tmm
METALS - DISSOLVED							
Arsenic	0.029	mg/L		0.001		E200.8	04/09/14 19:15 / clm
Iron	ND	mg/L		0.03		E200.7	04/04/14 15:00 / sf
Molybdenum	ND	mg/L		0.01		E200.7	04/04/14 15:00 / sf
Selenium	0.010	mg/L		0.001		E200.8	04/09/14 19:15 / clm
Uranium	0.0075	mg/L		0.0003		E200.8	04/09/14 19:15 / clm
DATA QUALITY							
A/C Balance (± 5)	-5.06	%				A1030 E	04/14/14 08:09 / kbh
Anions	10.6	meq/L				A1030 E	04/14/14 08:09 / kbh
Cations	9.61	meq/L				A1030 E	04/14/14 08:09 / kbh
Solids, Total Dissolved Calculated	600	mg/L				A1030 E	04/14/14 08:09 / kbh
TDS Balance (0.80 - 1.20)	1.09					A1030 E	04/14/14 08:09 / kbh

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
H - Analysis performed past recommended holding time.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility
Lab ID: C14040136-005
Client Sample ID: 7144

Report Date: 04/14/14
Collection Date: 04/02/14 13:30
DateReceived: 04/03/14
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Carbonate as CO3	ND	mg/L		5		A2320 B	04/03/14 21:02 / jba
Bicarbonate as HCO3	379	mg/L		5		A2320 B	04/03/14 21:02 / jba
Calcium	97	mg/L		1		E200.7	04/04/14 15:04 / sf
Chloride	20	mg/L		1		E300.0	04/04/14 16:58 / wc
Magnesium	57	mg/L		1		E200.7	04/04/14 15:04 / sf
Potassium	4	mg/L		1		E200.7	04/10/14 14:52 / sf
Sodium	27	mg/L		1		E200.7	04/04/14 15:04 / sf
Sulfate	239	mg/L	D	2		E300.0	04/04/14 16:58 / wc
PHYSICAL PROPERTIES							
Conductivity @ 25 C	1020	umhos/cm		1		A2510 B	04/03/14 16:13 / tmm
pH	7.40	s.u.	H	0.01		A4500-H B	04/04/14 13:05 / tmm
Solids, Total Dissolved TDS @ 180 C	708	mg/L		10		A2540 C	04/04/14 15:32 / tmm
METALS - DISSOLVED							
Arsenic	0.002	mg/L		0.001		E200.8	04/09/14 19:18 / clm
Iron	ND	mg/L		0.03		E200.7	04/04/14 15:04 / sf
Molybdenum	ND	mg/L		0.01		E200.7	04/04/14 15:04 / sf
Selenium	0.010	mg/L		0.001		E200.8	04/09/14 19:18 / clm
Uranium	0.0253	mg/L		0.0003		E200.8	04/09/14 19:18 / clm
DATA QUALITY							
A/C Balance (± 5)	-4.54	%				A1030 E	04/14/14 08:00 / kbh
Anions	11.8	meq/L				A1030 E	04/14/14 08:00 / kbh
Cations	10.8	meq/L				A1030 E	04/14/14 08:00 / kbh
Solids, Total Dissolved Calculated	650	mg/L				A1030 E	04/14/14 08:00 / kbh
TDS Balance (0.80 - 1.20)	1.08					A1030 E	04/14/14 08:00 / kbh

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
H - Analysis performed past recommended holding time.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility
Lab ID: C14040136-006
Client Sample ID: 7145

Report Date: 04/14/14
Collection Date: 04/02/14 14:05
DateReceived: 04/03/14
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Carbonate as CO3	ND	mg/L		5		A2320 B	04/03/14 21:20 / jba
Bicarbonate as HCO3	391	mg/L		5		A2320 B	04/03/14 21:20 / jba
Calcium	105	mg/L		1		E200.7	04/07/14 16:29 / sf
Chloride	20	mg/L		1		E300.0	04/04/14 17:16 / wc
Magnesium	61	mg/L		1		E200.7	04/07/14 16:29 / sf
Potassium	4	mg/L		1		E200.7	04/07/14 16:29 / sf
Sodium	30	mg/L		1		E200.7	04/07/14 16:29 / sf
Sulfate	243	mg/L	D	2		E300.0	04/04/14 17:16 / wc
PHYSICAL PROPERTIES							
Conductivity @ 25 C	1020	umhos/cm		1		A2510 B	04/03/14 16:16 / tmm
pH	7.37	s.u.	H	0.01		A4500-H B	04/04/14 13:08 / tmm
Solids, Total Dissolved TDS @ 180 C	704	mg/L		10		A2540 C	04/04/14 15:33 / tmm
METALS - DISSOLVED							
Arsenic	0.002	mg/L		0.001		E200.8	04/09/14 19:21 / clm
Iron	0.04	mg/L		0.03		E200.7	04/04/14 15:07 / sf
Molybdenum	ND	mg/L		0.01		E200.7	04/04/14 15:07 / sf
Selenium	0.010	mg/L		0.001		E200.8	04/09/14 19:21 / clm
Uranium	0.0257	mg/L		0.0003		E200.8	04/09/14 19:21 / clm
DATA QUALITY							
A/C Balance (± 5)	-2.10	%				A1030 E	04/11/14 15:27 / kbh
Anions	12.1	meq/L				A1030 E	04/11/14 15:27 / kbh
Cations	11.6	meq/L				A1030 E	04/11/14 15:27 / kbh
Solids, Total Dissolved Calculated	680	mg/L				A1030 E	04/11/14 15:27 / kbh
TDS Balance (0.80 - 1.20)	1.04					A1030 E	04/11/14 15:27 / kbh

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
H - Analysis performed past recommended holding time.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility
Lab ID: C14040136-007
Client Sample ID: 7105

Report Date: 04/14/14
Collection Date: 04/02/14 12:25
DateReceived: 04/03/14
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Carbonate as CO3	ND	mg/L		5		A2320 B	04/03/14 21:27 / jba
Bicarbonate as HCO3	243	mg/L		5		A2320 B	04/03/14 21:27 / jba
Calcium	79	mg/L		1		E200.7	04/07/14 16:33 / sf
Chloride	46	mg/L		1		E300.0	04/04/14 18:08 / wc
Magnesium	30	mg/L		1		E200.7	04/07/14 16:33 / sf
Potassium	4	mg/L		1		E200.7	04/07/14 16:33 / sf
Sodium	54	mg/L		1		E200.7	04/07/14 16:33 / sf
Sulfate	168	mg/L		1		E300.0	04/04/14 18:08 / wc
PHYSICAL PROPERTIES							
Conductivity @ 25 C	835	umhos/cm		1		A2510 B	04/03/14 16:19 / tmm
pH	7.52	s.u.	H	0.01		A4500-H B	04/04/14 13:11 / tmm
Solids, Total Dissolved TDS @ 180 C	533	mg/L		10		A2540 C	04/04/14 15:33 / tmm
METALS - DISSOLVED							
Arsenic	0.026	mg/L		0.001		E200.8	04/09/14 19:24 / clm
Iron	ND	mg/L		0.03		E200.7	04/04/14 15:11 / sf
Molybdenum	ND	mg/L		0.01		E200.7	04/04/14 15:11 / sf
Selenium	0.010	mg/L		0.001		E200.8	04/09/14 19:24 / clm
Uranium	0.0115	mg/L		0.0003		E200.8	04/09/14 19:24 / clm
DATA QUALITY							
A/C Balance (± 5)	-0.31	%				A1030 E	04/11/14 15:23 / kbh
Anions	8.89	meq/L				A1030 E	04/11/14 15:23 / kbh
Cations	8.84	meq/L				A1030 E	04/11/14 15:23 / kbh
Solids, Total Dissolved Calculated	520	mg/L				A1030 E	04/11/14 15:23 / kbh
TDS Balance (0.80 - 1.20)	1.03					A1030 E	04/11/14 15:23 / kbh

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
H - Analysis performed past recommended holding time.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility
Lab ID: C14040136-008
Client Sample ID: 7106

Report Date: 04/14/14
Collection Date: 04/02/14 13:10
DateReceived: 04/03/14
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Carbonate as CO3	ND	mg/L		5		A2320 B	04/03/14 21:35 / jba
Bicarbonate as HCO3	242	mg/L		5		A2320 B	04/03/14 21:35 / jba
Calcium	73	mg/L		1		E200.7	04/04/14 15:15 / sf
Chloride	51	mg/L		1		E300.0	04/04/14 19:00 / wc
Magnesium	28	mg/L		1		E200.7	04/04/14 15:15 / sf
Potassium	4	mg/L		1		E200.7	04/07/14 16:37 / sf
Sodium	52	mg/L		1		E200.7	04/04/14 15:15 / sf
Sulfate	168	mg/L		1		E300.0	04/04/14 19:00 / wc
PHYSICAL PROPERTIES							
Conductivity @ 25 C	860	umhos/cm		1		A2510 B	04/03/14 16:22 / tmm
pH	7.53	s.u.	H	0.01		A4500-H B	04/04/14 13:14 / tmm
Solids, Total Dissolved TDS @ 180 C	546	mg/L		10		A2540 C	04/04/14 15:33 / tmm
METALS - DISSOLVED							
Arsenic	0.026	mg/L		0.001		E200.8	04/09/14 19:28 / clm
Iron	ND	mg/L		0.03		E200.7	04/04/14 15:15 / sf
Molybdenum	ND	mg/L		0.01		E200.7	04/04/14 15:15 / sf
Selenium	0.010	mg/L		0.001		E200.8	04/09/14 19:28 / clm
Uranium	0.0113	mg/L		0.0003		E200.8	04/09/14 19:28 / clm
DATA QUALITY							
A/C Balance (± 5)	-4.36	%				A1030 E	04/08/14 16:01 / kbh
Anions	9.01	meq/L				A1030 E	04/08/14 16:01 / kbh
Cations	8.26	meq/L				A1030 E	04/08/14 16:01 / kbh
Solids, Total Dissolved Calculated	510	mg/L				A1030 E	04/08/14 16:01 / kbh
TDS Balance (0.80 - 1.20)	1.06					A1030 E	04/08/14 16:01 / kbh

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
H - Analysis performed past recommended holding time.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility
Lab ID: C14040136-009
Client Sample ID: 7107

Report Date: 04/14/14
Collection Date: 04/02/14 13:30
DateReceived: 04/03/14
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Carbonate as CO3	ND	mg/L		5		A2320 B	04/03/14 21:43 / jba
Bicarbonate as HCO3	247	mg/L		5		A2320 B	04/03/14 21:43 / jba
Calcium	29	mg/L		1		E200.7	04/07/14 16:40 / sf
Chloride	64	mg/L		1		E300.0	04/04/14 19:18 / wc
Magnesium	6	mg/L		1		E200.7	04/07/14 16:40 / sf
Potassium	3	mg/L		1		E200.7	04/07/14 16:40 / sf
Sodium	174	mg/L		1		E200.7	04/07/14 16:40 / sf
Sulfate	176	mg/L		1		E300.0	04/04/14 19:18 / wc
PHYSICAL PROPERTIES							
Conductivity @ 25 C	985	umhos/cm		1		A2510 B	04/03/14 16:28 / tmm
pH	8.22	s.u.	H	0.01		A4500-H B	04/04/14 13:17 / tmm
Solids, Total Dissolved TDS @ 180 C	614	mg/L		10		A2540 C	04/04/14 15:34 / tmm
METALS - DISSOLVED							
Arsenic	0.049	mg/L		0.001		E200.8	04/09/14 19:31 / clm
Iron	ND	mg/L		0.03		E200.7	04/04/14 15:18 / sf
Molybdenum	ND	mg/L		0.01		E200.7	04/04/14 15:18 / sf
Selenium	0.008	mg/L		0.001		E200.8	04/09/14 19:31 / clm
Uranium	0.0108	mg/L		0.0003		E200.8	04/09/14 19:31 / clm
DATA QUALITY							
A/C Balance (± 5)	-0.58	%				A1030 E	04/11/14 15:26 / kbh
Anions	9.74	meq/L				A1030 E	04/11/14 15:26 / kbh
Cations	9.63	meq/L				A1030 E	04/11/14 15:26 / kbh
Solids, Total Dissolved Calculated	600	mg/L				A1030 E	04/11/14 15:26 / kbh
TDS Balance (0.80 - 1.20)	1.01					A1030 E	04/11/14 15:26 / kbh

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
H - Analysis performed past recommended holding time.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility
Lab ID: C14040136-010
Client Sample ID: 7108

Report Date: 04/14/14
Collection Date: 04/02/14 14:05
DateReceived: 04/03/14
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Carbonate as CO3	ND	mg/L		5		A2320 B	04/03/14 21:52 / jba
Bicarbonate as HCO3	246	mg/L		5		A2320 B	04/03/14 21:52 / jba
Calcium	28	mg/L		1		E200.7	04/04/14 15:22 / sf
Chloride	63	mg/L		1		E300.0	04/04/14 19:35 / wc
Magnesium	6	mg/L		1		E200.7	04/04/14 15:22 / sf
Potassium	3	mg/L		1		E200.7	04/07/14 16:44 / sf
Sodium	158	mg/L		1		E200.7	04/04/14 15:22 / sf
Sulfate	175	mg/L		1		E300.0	04/04/14 19:35 / wc
PHYSICAL PROPERTIES							
Conductivity @ 25 C	983	umhos/cm		1		A2510 B	04/03/14 16:31 / tmm
pH	8.19	s.u.	H	0.01		A4500-H B	04/04/14 13:20 / tmm
Solids, Total Dissolved TDS @ 180 C	617	mg/L		10		A2540 C	04/04/14 15:34 / tmm
METALS - DISSOLVED							
Arsenic	0.047	mg/L		0.001		E200.8	04/09/14 19:54 / clm
Iron	ND	mg/L		0.03		E200.7	04/04/14 15:22 / sf
Molybdenum	ND	mg/L		0.01		E200.7	04/04/14 15:22 / sf
Selenium	0.008	mg/L		0.001		E200.8	04/09/14 19:54 / clm
Uranium	0.0109	mg/L		0.0003		E200.8	04/09/14 19:54 / clm
DATA QUALITY							
A/C Balance (± 5)	-4.57	%				A1030 E	04/08/14 16:01 / kbh
Anions	9.70	meq/L				A1030 E	04/08/14 16:01 / kbh
Cations	8.85	meq/L				A1030 E	04/08/14 16:01 / kbh
Solids, Total Dissolved Calculated	590	mg/L				A1030 E	04/08/14 16:01 / kbh
TDS Balance (0.80 - 1.20)	1.05					A1030 E	04/08/14 16:01 / kbh

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
H - Analysis performed past recommended holding time.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.

QA/QC Summary Report

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Report Date: 04/14/14
Project: Lisbon, UT Facility
Work Order: C14040136

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: A2320 B										Batch: R185114
Lab ID: MBLK	3	Method Blank				Run: MANTECH_140403A				04/03/14 16:13
Alkalinity, Total as CaCO3		0.6	mg/L	0.6						
Carbonate as CO3		ND	mg/L	1						
Bicarbonate as HCO3		ND	mg/L	1						
Lab ID: LCS_131219		Laboratory Control Sample				Run: MANTECH_140403A				04/03/14 16:26
Alkalinity, Total as CaCO3		261	mg/L	5.0	104	90	110			
Lab ID: C14040105-001ADUP	3	Sample Duplicate				Run: MANTECH_140403A				04/03/14 16:45
Alkalinity, Total as CaCO3		653	mg/L	5.0				1.8	10	
Carbonate as CO3		ND	mg/L	5.0					10	
Bicarbonate as HCO3		796	mg/L	5.0				1.8	10	
Lab ID: C14040120-001AMS		Sample Matrix Spike				Run: MANTECH_140403A				04/03/14 17:02
Alkalinity, Total as CaCO3		504	mg/L	5.0	101	80	120			

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

QA/QC Summary Report

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Report Date: 04/14/14
Project: Lisbon, UT Facility
Work Order: C14040136

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: A2510 B									Analytical Run: PHSC_101-C_140403A	
Lab ID: CCV - SC 1413		Continuing Calibration Verification Standard							04/03/14 10:44	
Conductivity @ 25 C		1350	umhos/cm	5.0	96	90	110			
Method: A2510 B									Batch: R185070	
Lab ID: SC 100		Initial Calibration Verification Standard				Run: PHSC_101-C_140403A			04/03/14 08:44	
Conductivity @ 25 C		101	umhos/cm	5.0	101	90	110			
Lab ID: SC 2ND 1413		Laboratory Control Sample				Run: PHSC_101-C_140403A			04/03/14 08:56	
Conductivity @ 25 C		1370	umhos/cm	5.0	97	90	110			
Lab ID: MBLK		Method Blank				Run: PHSC_101-C_140403A			04/03/14 09:46	
Conductivity @ 25 C		2	umhos/cm	0.8						
Lab ID: C14040136-008ADUP		Sample Duplicate				Run: PHSC_101-C_140403A			04/03/14 16:25	
Conductivity @ 25 C		860	umhos/cm	5.0				0.0	10	

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

QA/QC Summary Report

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Report Date: 04/14/14
Project: Lisbon, UT Facility
Work Order: C14040136

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: A2540 C									Batch: TDS140404A	
Lab ID: MB-1_140404A	Method Blank					Run: BAL-19_140404B			04/04/14 15:30	
Solids, Total Dissolved TDS @ 180 C		ND	mg/L	7						
Lab ID: LCS-2_140404A	Laboratory Control Sample					Run: BAL-19_140404B			04/04/14 15:30	
Solids, Total Dissolved TDS @ 180 C		2000	mg/L	20	100	90	110			
Lab ID: C14040134-001B MS	Sample Matrix Spike					Run: BAL-19_140404B			04/04/14 15:31	
Solids, Total Dissolved TDS @ 180 C		1270	mg/L	11	99	90	110			
Lab ID: C14040136-008A DUP	Sample Duplicate					Run: BAL-19_140404B			04/04/14 15:34	
Solids, Total Dissolved TDS @ 180 C		553	mg/L	10				1.2	5	

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

QA/QC Summary Report

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Report Date: 04/14/14
Project: Lisbon, UT Facility
Work Order: C14040136

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: **A4500-H B**									Analytical Run: PHSC_101-C_140404A	
Lab ID: **pH 6.86**	Initial Calibration Verification Standard								04/04/14 09:24	
pH		6.87	s.u.	0.010	100	98	102			
Lab ID: **CCV - pH 7**	Continuing Calibration Verification Standard								04/04/14 12:01	
pH		6.99	s.u.	0.010	100	98	102			
Method: **A4500-H B**									Batch: R185119	
Lab ID: **C14040136-010ADUP**	Sample Duplicate					Run: PHSC_101-C_140404A			04/04/14 13:23	
pH		8.18	s.u.	0.010				0.1	3	

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

QA/QC Summary Report

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC **Report Date:** 04/14/14

Project: Lisbon, UT Facility **Work Order:** C14040136

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E200.7									Analytical Run: ICP4-C_140404B	
Lab ID: ICV	6	Initial Calibration Verification Standard							04/04/14 12:52	
Calcium		50.1	mg/L	0.50	100	95	105			
Iron		4.98	mg/L	0.030	100	95	105			
Magnesium		49.9	mg/L	0.50	100	95	105			
Molybdenum		0.980	mg/L	0.10	98	95	105			
Potassium		49.7	mg/L	0.50	99	95	105			
Sodium		50.1	mg/L	0.50	100	95	105			
Lab ID: ICSA	6	Interference Check Sample A							04/04/14 13:06	
Calcium		469	mg/L	0.50	94	80	120			
Iron		180	mg/L	0.030	90	80	120			
Magnesium		495	mg/L	0.50	99	80	120			
Molybdenum		-0.00442	mg/L	0.10						
Potassium		-0.0245	mg/L	0.50						
Sodium		-0.492	mg/L	0.50						
Lab ID: ICSAB	6	Interference Check Sample AB							04/04/14 13:10	
Calcium		469	mg/L	0.50	94	80	120			
Iron		180	mg/L	0.030	90	80	120			
Magnesium		496	mg/L	0.50	99	80	120			
Molybdenum		-0.000950	mg/L	0.10						
Potassium		-0.0128	mg/L	0.50						
Sodium		-0.336	mg/L	0.50						
Method: E200.7									Batch: R185184	
Lab ID: MB-140404A	6	Method Blank				Run: ICP4-C_140404B			04/04/14 13:28	
Calcium		ND	mg/L	0.02						
Iron		ND	mg/L	0.002						
Magnesium		ND	mg/L	0.02						
Molybdenum		ND	mg/L	0.003						
Potassium		ND	mg/L	0.04						
Sodium		ND	mg/L	0.2						
Lab ID: LFB-140404A	6	Laboratory Fortified Blank				Run: ICP4-C_140404B			04/04/14 13:31	
Calcium		47.2	mg/L	0.50	94	85	115			
Iron		0.941	mg/L	0.030	94	85	115			
Magnesium		47.0	mg/L	0.50	94	85	115			
Molybdenum		0.939	mg/L	0.10	94	85	115			
Potassium		48.0	mg/L	0.50	96	85	115			
Sodium		47.3	mg/L	0.50	95	85	115			
Lab ID: C14040136-001BMS2	6	Sample Matrix Spike				Run: ICP4-C_140404B			04/04/14 14:32	
Calcium		97.4	mg/L	1.0	89	70	130			
Iron		1.82	mg/L	0.030	89	70	130			
Magnesium		92.7	mg/L	1.0	89	70	130			
Molybdenum		1.84	mg/L	0.0059	89	70	130			
Potassium		93.1	mg/L	1.0	87	70	130			

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

QA/QC Summary Report

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Report Date: 04/14/14
Project: Lisbon, UT Facility
Work Order: C14040136

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E200.7										Batch: R185184
Lab ID: C14040136-001BMS2	6	Sample Matrix Spike				Run: ICP4-C_140404B				04/04/14 14:32
Sodium		258	mg/L	1.0	85	70	130			
Lab ID: C14040136-001BMSD	6	Sample Matrix Spike Duplicate				Run: ICP4-C_140404B				04/04/14 14:35
Calcium		96.2	mg/L	1.0	88	70	130	1.3	20	
Iron		1.80	mg/L	0.030	88	70	130	1.3	20	
Magnesium		91.6	mg/L	1.0	88	70	130	1.2	20	
Molybdenum		1.82	mg/L	0.0059	89	70	130	0.8	20	
Potassium		91.8	mg/L	1.0	86	70	130	1.4	20	
Sodium		254	mg/L	1.0	82	70	130	1.4	20	
Lab ID: C14040136-010BMS2	6	Sample Matrix Spike				Run: ICP4-C_140404B				04/04/14 15:26
Calcium		115	mg/L	1.0	85	70	130			
Iron		1.74	mg/L	0.030	85	70	130			
Magnesium		93.8	mg/L	1.0	86	70	130			
Molybdenum		1.75	mg/L	0.0059	86	70	130			
Potassium		87.8	mg/L	1.0	84	70	130			
Sodium		239	mg/L	1.0	80	70	130			
Lab ID: C14040136-010BMSD	6	Sample Matrix Spike Duplicate				Run: ICP4-C_140404B				04/04/14 15:29
Calcium		114	mg/L	1.0	84	70	130	0.8	20	
Iron		1.74	mg/L	0.030	85	70	130	0.3	20	
Magnesium		93.1	mg/L	1.0	85	70	130	0.8	20	
Molybdenum		1.75	mg/L	0.0059	86	70	130	0.3	20	
Potassium		86.4	mg/L	1.0	82	70	130	1.7	20	
Sodium		238	mg/L	1.0	78	70	130	0.6	20	

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

QA/QC Summary Report

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Report Date: 04/14/14
Project: Lisbon, UT Facility
Work Order: C14040136

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E200.7									Analytical Run: ICP4-C_140407A	
Lab ID: ICSA		Interference Check Sample A							04/07/14 13:20	
Potassium		-0.0163	mg/L	0.50						
Lab ID: ICSAB		Interference Check Sample AB							04/07/14 13:24	
Potassium		-0.0127	mg/L	0.50						
Lab ID: ICV		Initial Calibration Verification Standard							04/07/14 13:07	
Potassium		49.6	mg/L	0.50	99	95	105			
Method: E200.7									Batch: R185225	
Lab ID: MB-140407A		Method Blank				Run: ICP4-C_140407A			04/07/14 13:42	
Potassium		ND	mg/L	0.04						
Lab ID: LFB-140407A		Laboratory Fortified Blank				Run: ICP4-C_140407A			04/07/14 13:46	
Potassium		49.9	mg/L	0.50	100	85	115			
Lab ID: C14040136-010BMS2		Sample Matrix Spike				Run: ICP4-C_140407A			04/07/14 16:48	
Potassium		98.4	mg/L	1.0	94	70	130			
Lab ID: C14040136-010BMSD		Sample Matrix Spike Duplicate				Run: ICP4-C_140407A			04/07/14 16:51	
Potassium		96.6	mg/L	1.0	92	70	130	1.9	20	
Method: E200.7									Analytical Run: ICP4-C_140410A	
Lab ID: ICV		Initial Calibration Verification Standard							04/10/14 13:19	
Potassium		48.8	mg/L	0.50	98	95	105			
Lab ID: ICSA		Interference Check Sample A							04/10/14 13:33	
Potassium		0.00555	mg/L	0.50						
Lab ID: ICSAB		Interference Check Sample AB							04/10/14 13:37	
Potassium		0.0183	mg/L	0.50						
Method: E200.7									Batch: R185354	
Lab ID: MB-140410A		Method Blank				Run: ICP4-C_140410A			04/10/14 13:55	
Potassium		ND	mg/L	0.04						
Lab ID: LFB-140410A		Laboratory Fortified Blank				Run: ICP4-C_140410A			04/10/14 13:59	
Potassium		46.6	mg/L	0.50	93	85	115			
Lab ID: C14040120-001BMS2		Sample Matrix Spike				Run: ICP4-C_140410A			04/10/14 14:24	
Potassium		93.1	mg/L	1.0	91	70	130			
Lab ID: C14040120-001BMSD		Sample Matrix Spike Duplicate				Run: ICP4-C_140410A			04/10/14 14:42	
Potassium		95.7	mg/L	1.0	93	70	130	2.7	20	

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

QA/QC Summary Report

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Report Date: 04/14/14
Project: Lisbon, UT Facility
Work Order: C14040136

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E200.8									Analytical Run: ICPMS2-C_140409A	
Lab ID: ICV	3	Initial Calibration Verification Standard							04/09/14 12:51	
Arsenic		0.0501	mg/L	0.0010	100	90	110			
Selenium		0.0498	mg/L	0.0010	100	90	110			
Uranium		0.0511	mg/L	0.00030	102	90	110			
Method: E200.8									Batch: R185294	
Lab ID: LRB	3	Method Blank				Run: ICPMS2-C_140409A			04/09/14 13:27	
Arsenic		ND	mg/L	0.00010						
Selenium		ND	mg/L	0.0002						
Uranium		ND	mg/L	1E-05						
Lab ID: LFB	3	Laboratory Fortified Blank				Run: ICPMS2-C_140409A			04/09/14 13:30	
Arsenic		0.0540	mg/L	0.0010	108	85	115			
Selenium		0.0538	mg/L	0.0010	108	85	115			
Uranium		0.0532	mg/L	0.00030	106	85	115			
Lab ID: C14040136-009BMS4	3	Sample Matrix Spike				Run: ICPMS2-C_140409A			04/09/14 19:34	
Arsenic		0.106	mg/L	0.0010	114	70	130			
Selenium		0.0644	mg/L	0.0010	114	70	130			
Uranium		0.0680	mg/L	0.00030	115	70	130			
Lab ID: C14040136-009BMSD	3	Sample Matrix Spike Duplicate				Run: ICPMS2-C_140409A			04/09/14 19:47	
Arsenic		0.104	mg/L	0.0010	110	70	130	1.9	20	
Selenium		0.0628	mg/L	0.0010	110	70	130	2.5	20	
Uranium		0.0677	mg/L	0.00030	114	70	130	0.5	20	

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

QA/QC Summary Report

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Report Date: 04/14/14
Project: Lisbon, UT Facility
Work Order: C14040136

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E300.0									Analytical Run: IC2-C_140404A	
Lab ID: CCV-040414-02	2	Continuing Calibration Verification Standard							04/04/14 13:29	
Chloride		9.74	mg/L	1.0	97	90	110			
Sulfate		39.5	mg/L	1.0	99	90	110			
Lab ID: CCV-040414-03	2	Continuing Calibration Verification Standard							04/04/14 17:33	
Chloride		9.72	mg/L	1.0	97	90	110			
Sulfate		39.6	mg/L	1.0	99	90	110			
Method: E300.0									Batch: R185171	
Lab ID: ICB	2	Method Blank				Run: IC2-C_140404A			04/04/14 09:08	
Chloride		ND	mg/L	0.04						
Sulfate		ND	mg/L	0.04						
Lab ID: LFB-040414	2	Laboratory Fortified Blank				Run: IC2-C_140404A			04/04/14 09:25	
Chloride		9.96	mg/L	1.0	100	90	110			
Sulfate		40.4	mg/L	1.0	101	90	110			
Lab ID: C14040132-010AMS	2	Sample Matrix Spike				Run: IC2-C_140404A			04/04/14 14:22	
Chloride		323	mg/L	2.1	102	90	110			
Sulfate		3590	mg/L	8.3	109	90	110			
Lab ID: C14040132-010AMSD	2	Sample Matrix Spike Duplicate				Run: IC2-C_140404A			04/04/14 14:39	
Chloride		319	mg/L	2.1	100	90	110	1.4	20	
Sulfate		3530	mg/L	8.3	102	90	110	1.7	20	

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

Workorder Receipt Checklist

Rio Algom Mining Corporation LLC C14040136

Login completed by: Tessa Parke
Date Received: 4/3/2014
Reviewed by: BL2000\khelm
Received by: ckw
Reviewed Date: 4/4/2014
Carrier name: Next Day Air

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on all shipping container(s)/cooler(s)?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on all sample bottles?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time? (Exclude analyses that are considered field parameters such as pH, DO, Res Cl, Sulfite, Ferrous Iron, etc.)	Yes ☑	No ☐	
Temp Blank received in all shipping container(s)/cooler(s)?	Yes ☑	No ☐	Not Applicable ☐
Container/Temp Blank temperature:	3.4°C On Ice		
Water - VOA vials have zero headspace?	Yes ☐	No ☐	No VOA vials submitted ☑
Water - pH acceptable upon receipt?	Yes ☑	No ☐	Not Applicable ☐

Standard Reporting Procedures:

Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH, Dissolved Oxygen and Residual Chlorine, are qualified as being analyzed outside of recommended holding time.

Solid/soil samples are reported on a wet weight basis (as received) unless specifically indicated. If moisture corrected, data units are typically noted as –dry. For agricultural and mining soil parameters/characteristics, all samples are dried and ground prior to sample analysis.

Contact and Corrective Action Comments:

None

Chain of Custody and Analytical Request Record

PLEASE PRINT- Provide as much information as possible.

Company Name: Rio Algom Mining Corp	Project Name, PWS, Permit, Etc.: Lisbon, UT Facility	Sample Origin State: UT	EPA/State Compliance: Yes ☐ No ☐
Report Mail Address: Montgomery and Associates Results retrieved from Energy Source	Contact Name: John Laney Phone/Fax: (520) 425-2219 Email: jlaney@clmontgomery.com		Sampler (Please Print): J. Kerns
Invoice Address: Email invoice to Gail PO Box 218 Grants, NM 87020	Invoice Contact & Phone: Gail Alexander (505) 287-8851	Purchase Order:	Quote/Bottle Order: C3636

Special Report/Formats – ELI must be notified prior to sample submittal for the following:

☐ DW ☐ A2LA
☐ GSA ☐ EDD/EDT (Electronic Data)
☐ POTW/WWTP Format: _____
☐ State: _____ ☐ LEVEL IV
☐ Other: _____ ☐ NELAC

Number of Containers
Sample Type: A Air, W Water, S Soils/Solids, V Vegetation, B Bioassay, O Other

ANALYSIS REQUESTED

	SAMPLE IDENTIFICATION (Name, Location, Interval, etc.)	Collection Date	Collection Time	MATRIX	C3636	SEE ATTACHED	Normal Turnaround (TAT)
1	7104	01APR2014	0915	W	X		
2	7141	02APR2014	1055	W	X		
3	7142	02APR2014	1135	W	X		
4	7143	02APR2014	1300	W	X		
5	7144	02APR2014	1330	W	X		
6	7145	02APR2014	1405	W	X		
7							
8							
9							
10							

RUSH

Contact ELI prior to **RUSH** sample submittal for charges and scheduling – See Instruction Page

Comments: Metals preserved and filtered in field

Shipped by: Fed Ex
Cooler ID(s): C3901
Receipt Temp: 3.4 °C
On Ice: (Yes) No
Custody Seal Y N
Intact (Y) N
Signature Match (Y) N

LABORATORY USE ONLY
C14040136

Custody Record MUST be Signed

Relinquished by (print): J. Kerns	Date/Time: 02APR2014/1520	Signature:	Received by (print):
Relinquished by (print):	Date/Time:	Signature:	Received by (print): Date/Time: Signature:
			Received by Laboratory: Date/Time: 4/3/14 1000 Signature:

Sample Disposal: Return to Client: _____ Lab Disposal: _____

In certain circumstances, samples submitted to Energy Laboratories, Inc. may be subcontracted to other certified laboratories in order to complete the analysis requested. This serves as notice of this possibility. All sub-contract data will be clearly notated on your analytical report.
Visit our web site at www.energylab.com for additional information, downloadable fee schedule, forms, and links.

Chain of Custody and Analytical Request Record

PLEASE PRINT- Provide as much information as possible.

Company Name: Rio Algom Mining Corp	Project Name, PWS, Permit, Etc.: Lisbon, UT Facility	Sample Origin State: UT	EPA/State Compliance: Yes ☐ No ☐
Report Mail Address: Montgomery and Associates Results retrieved from Energy Source	Contact Name: John Laney Phone/Fax: (520) 425-2219 Email: jlaney@clmontgomery.com		Sampler: (Please Print) B. Myers
Invoice Address: Email invoice to Gail PO Box 218 Grants, NM 87020	Invoice Contact & Phone: Gail Alexander (505) 287-8851	Purchase Order:	Quote/Bottle Order: C3636

Special Report/Formats – ELI must be notified prior to sample submittal for the following:

☐ DW ☐ A2LA
☐ GSA ☐ EDD/EDT (Electronic Data)
☐ POTW/WWTP Format: _____
☐ State: _____ ☐ LEVEL IV
☐ Other: _____ ☐ NELAC

Number of Containers
Sample Type: A Air W Water S Soils/Solids V Vegetation B Bioassay O Other

ANALYSIS REQUESTED

SEE ATTACHED

Normal Turnaround (TAT)

RUSH

Contact ELI prior to **RUSH** sample submittal for charges and scheduling – See Instruction Page

Comments: Metals filtered and preserved in field

Shipped by:

Cooler ID(s):

Receipt Temp 3.4 °C

On Ice: (Yes) No

Custody Seal Intact Signature Match: Y N

	SAMPLE IDENTIFICATION (Name, Location, Interval, etc.)	Collection Date	Collection Time	MATRIX	C3636
1	7105	02APR2014	1225	W	X
2	7106	"	1310	W	X
3	7107	"	1330	W	X
4	7108	"	1405	W	X
5					
6					
7					
8					
9					
10					

LABORATORY USE ONLY

C14040236

Custody Record MUST be Signed

Relinquished by (print): B. Myers	Date/Time: 02APR2014/1520	Signature:	Received by (print):	Date/Time:	Signature:
Relinquished by (print):	Date/Time:	Signature:	Received by (print):	Date/Time:	Signature:
			Received by Laboratory:	Date/Time: 4/3/14 1000	Signature:

Sample Disposal: Return to Client: _____ Lab Disposal: _____

In certain circumstances, samples submitted to Energy Laboratories, Inc. may be subcontracted to other certified laboratories in order to complete the analysis requested. This serves as notice of this possibility. All sub-contract data will be clearly notated on your analytical report.

Visit our web site at www.energylab.com for additional information, downloadable fee schedule, forms, and links

ANALYTICAL SUMMARY REPORT

April 17, 2014

Rio Algom Mining Corporation LLC
Hwy 605 and 509
Grants, NM 87020

Work Order: C14040216 Quote ID: C3636 - Groundwater

Project Name: Lisbon, UT Facility

Energy Laboratories, Inc. Casper WY received the following 51 samples for Rio Algom Mining Corporation LLC on 4/7/2014 for analysis.

Lab ID	Client Sample ID	Collect Date	Receive Date	Matrix	Test
C14040216-001	7156	04/03/14 13:45	04/07/14	Groundwater	Metals by ICP/ICPMS, Dissolved Alkalinity Anion - Cation Balance Conductivity E300.0 Anions pH Solids, Total Dissolved Solids, Total Dissolved - Calculated
C14040216-002	7157	04/03/14 15:00	04/07/14	Groundwater	Same As Above
C14040216-003	7158	04/03/14 15:35	04/07/14	Groundwater	Same As Above
C14040216-004	7159	04/03/14 8:30	04/07/14	Groundwater	Same As Above
C14040216-005	7160	04/04/14 8:55	04/07/14	Groundwater	Same As Above
C14040216-006	7161	04/04/14 9:30	04/07/14	Groundwater	Same As Above
C14040216-007	7162	04/04/14 10:00	04/07/14	Groundwater	Same As Above
C14040216-008	7163	04/04/14 10:55	04/07/14	Groundwater	Same As Above
C14040216-009	7164	04/04/14 11:10	04/07/14	Groundwater	Same As Above
C14040216-010	7165	04/04/14 11:15	04/07/14	Groundwater	Same As Above
C14040216-011	7166	04/04/14 11:55	04/07/14	Groundwater	Same As Above
C14040216-012	7167	04/04/14 12:05	04/07/14	Groundwater	Same As Above
C14040216-013	7168	04/04/14 12:45	04/07/14	Groundwater	Same As Above
C14040216-014	7169	04/04/14 13:45	04/07/14	Groundwater	Same As Above
C14040216-015	7109	04/03/14 8:50	04/07/14	Groundwater	Same As Above
C14040216-016	7110	04/03/14 9:15	04/07/14	Groundwater	Same As Above
C14040216-017	7111	04/03/14 9:50	04/07/14	Groundwater	Metals by ICP/ICPMS, Dissolved Acidity, Total as CaCO3 Alkalinity Anion - Cation Balance Conductivity E300.0 Anions pH Solids, Total Dissolved Solids, Total Dissolved - Calculated
C14040216-018	7112	04/03/14 10:25	04/07/14	Groundwater	Same As Above
C14040216-019	7113	04/03/14 10:40	04/07/14	Groundwater	Same As Above

ANALYTICAL SUMMARY REPORT

C14040216-020	7114	04/03/14 11:05	04/07/14	Groundwater	Metals by ICP/ICPMS, Dissolved Alkalinity Anion - Cation Balance Conductivity E300.0 Anions pH Solids, Total Dissolved Solids, Total Dissolved - Calculated
C14040216-021	7115	04/03/14 11:35	04/07/14	Groundwater	Same As Above
C14040216-022	7116	04/03/14 11:55	04/07/14	Groundwater	Same As Above
C14040216-023	7117	04/03/14 12:30	04/07/14	Groundwater	Same As Above
C14040216-024	7118	04/03/14 13:45	04/07/14	Groundwater	Same As Above
C14040216-025	7119	04/03/14 13:45	04/07/14	Groundwater	Same As Above
C14040216-026	7120	04/03/14 13:50	04/07/14	Groundwater	Same As Above
C14040216-027	7121	04/03/14 14:20	04/07/14	Groundwater	Same As Above
C14040216-028	7122	04/03/14 14:45	04/07/14	Groundwater	Same As Above
C14040216-029	7123	04/03/14 15:05	04/07/14	Groundwater	Same As Above
C14040216-030	7124	04/03/14 15:30	04/07/14	Groundwater	Same As Above
C14040216-031	7125	04/04/14 8:50	04/07/14	Groundwater	Same As Above
C14040216-032	7126	04/04/14 9:20	04/07/14	Groundwater	Same As Above
C14040216-033	7127	04/04/14 9:45	04/07/14	Groundwater	Same As Above
C14040216-034	7128	04/04/14 9:50	04/07/14	Groundwater	Same As Above
C14040216-035	7129	04/04/14 10:20	04/07/14	Groundwater	Same As Above
C14040216-036	7130	04/04/14 10:35	04/07/14	Groundwater	Same As Above
C14040216-037	7131	04/04/14 11:05	04/07/14	Groundwater	Same As Above
C14040216-038	7132	04/04/14 11:25	04/07/14	Groundwater	Same As Above
C14040216-039	7133	04/04/14 11:40	04/07/14	Groundwater	Same As Above
C14040216-040	7134	04/04/14 11:45	04/07/14	Groundwater	Same As Above
C14040216-041	7135	04/04/14 12:15	04/07/14	Groundwater	Same As Above
C14040216-042	7146	04/03/14 8:45	04/07/14	Groundwater	Same As Above
C14040216-043	7147	04/03/14 9:20	04/07/14	Groundwater	Same As Above
C14040216-044	7148	04/03/14 10:05	04/07/14	Groundwater	Same As Above
C14040216-045	7149	04/03/14 10:15	04/07/14	Groundwater	Same As Above
C14040216-046	7150	04/03/14 10:48	04/07/14	Groundwater	Same As Above
C14040216-047	7151	04/03/14 11:25	04/07/14	Groundwater	Same As Above
C14040216-048	7152	04/03/14 11:30	04/07/14	Groundwater	Same As Above
C14040216-049	7153	04/03/14 11:45	04/07/14	Groundwater	Same As Above
C14040216-050	7154	04/03/14 12:10	04/07/14	Groundwater	Same As Above
C14040216-051	7155	04/03/14 13:35	04/07/14	Groundwater	Same As Above

ANALYTICAL SUMMARY REPORT

The results as reported relate only to the item(s) submitted for testing. The analyses presented in this report were performed at Energy Laboratories, Inc., 2393 Salt Creek Hwy., Casper, WY 82601, unless otherwise noted. Radiochemistry analyses were performed at Energy Laboratories, Inc., 2325 Kerzell Lane, Casper, WY 82601, unless otherwise noted. Any exceptions or problems with the analyses are noted in the Laboratory Analytical Report, the QA/QC Summary Report, or the Case Narrative.

If you have any questions regarding these test results, please call.

Report Approved By:

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility
Lab ID: C14040216-001
Client Sample ID: 7156

Report Date: 04/17/14
Collection Date: 04/03/14 13:45
DateReceived: 04/07/14
Matrix: Groundwater

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Carbonate as CO3	ND	mg/L		5		A2320 B	04/07/14 17:18 / jba
Bicarbonate as HCO3	393	mg/L		5		A2320 B	04/07/14 17:18 / jba
Calcium	562	mg/L		1		E200.8	04/10/14 01:31 / cp
Chloride	424	mg/L	D	2		E300.0	04/09/14 00:54 / wc
Magnesium	153	mg/L		1		E200.8	04/10/14 01:31 / cp
Potassium	8	mg/L		1		E200.8	04/10/14 01:31 / cp
Sodium	396	mg/L		1		E200.7	04/10/14 14:56 / sf
Sulfate	2120	mg/L	D	8		E300.0	04/09/14 00:54 / wc
PHYSICAL PROPERTIES							
Conductivity @ 25 C	4900	umhos/cm		1		A2510 B	04/08/14 09:43 / alp
pH	7.29	s.u.	H	0.01		A4500-H B	04/08/14 09:43 / alp
Solids, Total Dissolved TDS @ 180 C	4100	mg/L		35		A2540 C	04/08/14 15:27 / tmm
METALS - DISSOLVED							
Arsenic	0.004	mg/L		0.001		E200.8	04/10/14 01:31 / cp
Iron	ND	mg/L		0.03		E200.8	04/10/14 01:31 / cp
Molybdenum	ND	mg/L		0.01		E200.8	04/10/14 01:31 / cp
Selenium	0.045	mg/L		0.001		E200.8	04/10/14 01:31 / cp
Uranium	5.91	mg/L		0.0003		E200.8	04/10/14 01:31 / cp
DATA QUALITY							
A/C Balance (± 5)	-4.75	%				A1030 E	04/14/14 08:00 / kbh
Anions	63.9	meq/L				A1030 E	04/14/14 08:00 / kbh
Cations	58.1	meq/L				A1030 E	04/14/14 08:00 / kbh
Solids, Total Dissolved Calculated	4000	mg/L				A1030 E	04/14/14 08:00 / kbh
TDS Balance (0.80 - 1.20)	1.04					A1030 E	04/14/14 08:00 / kbh

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
H - Analysis performed past recommended holding time.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility
Lab ID: C14040216-002
Client Sample ID: 7157

Report Date: 04/17/14
Collection Date: 04/03/14 15:00
DateReceived: 04/07/14
Matrix: Groundwater

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Carbonate as CO3	ND	mg/L		5		A2320 B	04/07/14 17:26 / jba
Bicarbonate as HCO3	330	mg/L		5		A2320 B	04/07/14 17:26 / jba
Calcium	277	mg/L		1		E200.7	04/14/14 15:58 / sf
Chloride	285	mg/L		1		E300.0	04/09/14 01:12 / wc
Magnesium	85	mg/L		1		E200.7	04/14/14 15:58 / sf
Potassium	13	mg/L		1		E200.7	04/14/14 15:58 / sf
Sodium	361	mg/L		1		E200.7	04/14/14 15:58 / sf
Sulfate	1380	mg/L	D	4		E300.0	04/09/14 01:12 / wc
PHYSICAL PROPERTIES							
Conductivity @ 25 C	3570	umhos/cm		1		A2510 B	04/08/14 09:46 / alp
pH	7.25	s.u.	H	0.01		A4500-H B	04/08/14 09:46 / alp
Solids, Total Dissolved TDS @ 180 C	2700	mg/L		35		A2540 C	04/08/14 15:27 / tmm
METALS - DISSOLVED							
Arsenic	0.002	mg/L		0.001		E200.8	04/10/14 01:47 / cp
Iron	ND	mg/L		0.03		E200.8	04/10/14 01:47 / cp
Molybdenum	ND	mg/L		0.01		E200.8	04/10/14 01:47 / cp
Selenium	0.026	mg/L		0.001		E200.8	04/10/14 01:47 / cp
Uranium	1.24	mg/L		0.0003		E200.8	04/10/14 01:47 / cp
DATA QUALITY							
A/C Balance (± 5)	-7.78	%				A1030 E	04/17/14 10:26 / kbh
Anions	43.1	meq/L				A1030 E	04/17/14 10:26 / kbh
Cations	36.9	meq/L				A1030 E	04/17/14 10:26 / kbh
Solids, Total Dissolved Calculated	2600	mg/L				A1030 E	04/17/14 10:26 / kbh
TDS Balance (0.80 - 1.20)	1.02					A1030 E	04/17/14 10:26 / kbh

- The Anion / Cation balance was confirmed by re-analysis.

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
H - Analysis performed past recommended holding time.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility
Lab ID: C14040216-003
Client Sample ID: 7158

Report Date: 04/17/14
Collection Date: 04/03/14 15:35
DateReceived: 04/07/14
Matrix: Groundwater

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Carbonate as CO3	ND	mg/L		5		A2320 B	04/07/14 17:34 / jba
Bicarbonate as HCO3	354	mg/L		5		A2320 B	04/07/14 17:34 / jba
Calcium	323	mg/L		1		E200.8	04/10/14 01:52 / cp
Chloride	303	mg/L		1		E300.0	04/09/14 01:30 / wc
Magnesium	95	mg/L		1		E200.8	04/10/14 01:52 / cp
Potassium	14	mg/L		1		E200.8	04/10/14 01:52 / cp
Sodium	422	mg/L		1		E200.7	04/10/14 15:00 / sf
Sulfate	1530	mg/L	D	4		E300.0	04/09/14 01:30 / wc
PHYSICAL PROPERTIES							
Conductivity @ 25 C	3970	umhos/cm		1		A2510 B	04/08/14 10:34 / alp
pH	7.32	s.u.	H	0.01		A4500-H B	04/08/14 10:34 / alp
Solids, Total Dissolved TDS @ 180 C	3060	mg/L		37		A2540 C	04/08/14 15:28 / tmm
METALS - DISSOLVED							
Arsenic	0.002	mg/L		0.001		E200.8	04/10/14 01:52 / cp
Iron	0.07	mg/L		0.03		E200.8	04/10/14 01:52 / cp
Molybdenum	0.02	mg/L		0.01		E200.8	04/10/14 01:52 / cp
Selenium	0.031	mg/L		0.001		E200.8	04/10/14 01:52 / cp
Uranium	2.85	mg/L		0.0003		E200.8	04/10/14 01:52 / cp
DATA QUALITY							
A/C Balance (± 5)	-4.88	%				A1030 E	04/14/14 08:00 / kbh
Anions	47.0	meq/L				A1030 E	04/14/14 08:00 / kbh
Cations	42.6	meq/L				A1030 E	04/14/14 08:00 / kbh
Solids, Total Dissolved Calculated	2900	mg/L				A1030 E	04/14/14 08:00 / kbh
TDS Balance (0.80 - 1.20)	1.04					A1030 E	04/14/14 08:00 / kbh

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
H - Analysis performed past recommended holding time.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility
Lab ID: C14040216-004
Client Sample ID: 7159

Report Date: 04/17/14
Collection Date: 04/03/14 08:30
DateReceived: 04/07/14
Matrix: Groundwater

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Carbonate as CO3	ND	mg/L		5		A2320 B	04/07/14 17:42 / jba
Bicarbonate as HCO3	395	mg/L		5		A2320 B	04/07/14 17:42 / jba
Calcium	566	mg/L		1		E200.8	04/10/14 01:56 / cp
Chloride	417	mg/L	D	2		E300.0	04/09/14 01:49 / wc
Magnesium	148	mg/L		1		E200.8	04/10/14 01:56 / cp
Potassium	8	mg/L		1		E200.8	04/10/14 01:56 / cp
Sodium	414	mg/L		1		E200.7	04/10/14 15:03 / sf
Sulfate	2110	mg/L	D	8		E300.0	04/09/14 01:49 / wc
PHYSICAL PROPERTIES							
Conductivity @ 25 C	4930	umhos/cm		1		A2510 B	04/08/14 10:37 / alp
pH	7.37	s.u.	H	0.01		A4500-H B	04/08/14 10:37 / alp
Solids, Total Dissolved TDS @ 180 C	4120	mg/L		34		A2540 C	04/08/14 15:28 / tmm
METALS - DISSOLVED							
Arsenic	0.004	mg/L		0.001		E200.8	04/10/14 01:56 / cp
Iron	ND	mg/L		0.03		E200.8	04/10/14 01:56 / cp
Molybdenum	ND	mg/L		0.01		E200.8	04/10/14 01:56 / cp
Selenium	0.049	mg/L		0.001		E200.8	04/10/14 01:56 / cp
Uranium	6.60	mg/L		0.0003		E200.8	04/10/14 01:56 / cp
DATA QUALITY							
A/C Balance (± 5)	-3.90	%				A1030 E	04/14/14 08:00 / kbh
Anions	63.5	meq/L				A1030 E	04/14/14 08:00 / kbh
Cations	58.7	meq/L				A1030 E	04/14/14 08:00 / kbh
Solids, Total Dissolved Calculated	4000	mg/L				A1030 E	04/14/14 08:00 / kbh
TDS Balance (0.80 - 1.20)	1.04					A1030 E	04/14/14 08:00 / kbh

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
H - Analysis performed past recommended holding time.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility
Lab ID: C14040216-005
Client Sample ID: 7160

Report Date: 04/17/14
Collection Date: 04/04/14 08:55
DateReceived: 04/07/14
Matrix: Groundwater

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Carbonate as CO3	ND	mg/L		5		A2320 B	04/07/14 17:50 / jba
Bicarbonate as HCO3	248	mg/L		5		A2320 B	04/07/14 17:50 / jba
Calcium	248	mg/L		1		E200.8	04/10/14 02:00 / cp
Chloride	243	mg/L		1		E300.0	04/09/14 02:07 / wc
Magnesium	70	mg/L		1		E200.8	04/10/14 02:00 / cp
Potassium	12	mg/L		1		E200.8	04/10/14 02:00 / cp
Sodium	293	mg/L		1		E200.8	04/10/14 02:00 / cp
Sulfate	1070	mg/L	D	4		E300.0	04/09/14 02:07 / wc
PHYSICAL PROPERTIES							
Conductivity @ 25 C	2980	umhos/cm		1		A2510 B	04/08/14 12:44 / alp
pH	7.47	s.u.	H	0.01		A4500-H B	04/08/14 12:44 / alp
Solids, Total Dissolved TDS @ 180 C	2170	mg/L		20		A2540 C	04/08/14 15:28 / tmm
METALS - DISSOLVED							
Arsenic	0.002	mg/L		0.001		E200.8	04/10/14 02:00 / cp
Iron	ND	mg/L		0.03		E200.8	04/10/14 02:00 / cp
Molybdenum	ND	mg/L		0.01		E200.8	04/10/14 02:00 / cp
Selenium	0.027	mg/L		0.001		E200.8	04/10/14 02:00 / cp
Uranium	0.528	mg/L		0.0003		E200.8	04/10/14 02:00 / cp
DATA QUALITY							
A/C Balance (± 5)	-4.35	%				A1030 E	04/11/14 06:52 / kbh
Anions	34.0	meq/L				A1030 E	04/11/14 06:52 / kbh
Cations	31.2	meq/L				A1030 E	04/11/14 06:52 / kbh
Solids, Total Dissolved Calculated	2100	mg/L				A1030 E	04/11/14 06:52 / kbh
TDS Balance (0.80 - 1.20)	1.03					A1030 E	04/11/14 06:52 / kbh

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
H - Analysis performed past recommended holding time.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility
Lab ID: C14040216-006
Client Sample ID: 7161

Report Date: 04/17/14
Collection Date: 04/04/14 09:30
DateReceived: 04/07/14
Matrix: Groundwater

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Carbonate as CO3	ND	mg/L		5		A2320 B	04/07/14 17:57 / jba
Bicarbonate as HCO3	221	mg/L		5		A2320 B	04/07/14 17:57 / jba
Calcium	113	mg/L		1		E200.8	04/10/14 02:26 / cp
Chloride	78	mg/L		1		E300.0	04/09/14 02:26 / wc
Magnesium	32	mg/L		1		E200.8	04/10/14 02:26 / cp
Potassium	3	mg/L		1		E200.8	04/10/14 02:26 / cp
Sodium	44	mg/L		1		E200.8	04/10/14 02:26 / cp
Sulfate	229	mg/L	D	2		E300.0	04/09/14 02:26 / wc
PHYSICAL PROPERTIES							
Conductivity @ 25 C	1060	umhos/cm		1		A2510 B	04/08/14 12:47 / alp
pH	7.74	s.u.	H	0.01		A4500-H B	04/08/14 12:47 / alp
Solids, Total Dissolved TDS @ 180 C	675	mg/L		10		A2540 C	04/08/14 15:29 / tmm
METALS - DISSOLVED							
Arsenic	0.018	mg/L		0.001		E200.8	04/10/14 02:26 / cp
Iron	ND	mg/L		0.03		E200.8	04/10/14 02:26 / cp
Molybdenum	ND	mg/L		0.01		E200.8	04/10/14 02:26 / cp
Selenium	0.008	mg/L		0.001		E200.8	04/10/14 02:26 / cp
Uranium	0.0092	mg/L		0.0003		E200.8	04/10/14 02:26 / cp
DATA QUALITY							
A/C Balance (± 5)	-2.90	%				A1030 E	04/11/14 06:52 / kbh
Anions	10.9	meq/L				A1030 E	04/11/14 06:52 / kbh
Cations	10.3	meq/L				A1030 E	04/11/14 06:52 / kbh
Solids, Total Dissolved Calculated	620	mg/L				A1030 E	04/11/14 06:52 / kbh
TDS Balance (0.80 - 1.20)	1.08					A1030 E	04/11/14 06:52 / kbh

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
H - Analysis performed past recommended holding time.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility
Lab ID: C14040216-007
Client Sample ID: 7162

Report Date: 04/17/14
Collection Date: 04/04/14 10:00
DateReceived: 04/07/14
Matrix: Groundwater

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Carbonate as CO3	ND	mg/L		5		A2320 B	04/07/14 18:13 / jba
Bicarbonate as HCO3	220	mg/L		5		A2320 B	04/07/14 18:13 / jba
Calcium	115	mg/L		1		E200.8	04/10/14 02:31 / cp
Chloride	88	mg/L		1		E300.0	04/09/14 02:44 / wc
Magnesium	32	mg/L		1		E200.8	04/10/14 02:31 / cp
Potassium	4	mg/L		1		E200.8	04/10/14 02:31 / cp
Sodium	47	mg/L		1		E200.8	04/10/14 02:31 / cp
Sulfate	227	mg/L	D	2		E300.0	04/09/14 02:44 / wc
PHYSICAL PROPERTIES							
Conductivity @ 25 C	1080	umhos/cm		1		A2510 B	04/08/14 12:50 / alp
pH	7.72	s.u.	H	0.01		A4500-H B	04/08/14 12:50 / alp
Solids, Total Dissolved TDS @ 180 C	671	mg/L		10		A2540 C	04/08/14 15:30 / tmm
METALS - DISSOLVED							
Arsenic	0.017	mg/L		0.001		E200.8	04/10/14 02:31 / cp
Iron	ND	mg/L		0.03		E200.8	04/10/14 02:31 / cp
Molybdenum	ND	mg/L		0.01		E200.8	04/10/14 02:31 / cp
Selenium	0.008	mg/L		0.001		E200.8	04/10/14 02:31 / cp
Uranium	0.0095	mg/L		0.0003		E200.8	04/10/14 02:31 / cp
DATA QUALITY							
A/C Balance (± 5)	-2.88	%				A1030 E	04/11/14 06:52 / kbh
Anions	11.2	meq/L				A1030 E	04/11/14 06:52 / kbh
Cations	10.5	meq/L				A1030 E	04/11/14 06:52 / kbh
Solids, Total Dissolved Calculated	640	mg/L				A1030 E	04/11/14 06:52 / kbh
TDS Balance (0.80 - 1.20)	1.05					A1030 E	04/11/14 06:52 / kbh

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
H - Analysis performed past recommended holding time.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility
Lab ID: C14040216-008
Client Sample ID: 7163

Report Date: 04/17/14
Collection Date: 04/04/14 10:55
DateReceived: 04/07/14
Matrix: Groundwater

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Carbonate as CO3	ND	mg/L		5		A2320 B	04/07/14 18:21 / jba
Bicarbonate as HCO3	222	mg/L		5		A2320 B	04/07/14 18:21 / jba
Calcium	124	mg/L		1		E200.7	04/14/14 16:01 / sf
Chloride	91	mg/L		1		E300.0	04/09/14 03:02 / wc
Magnesium	35	mg/L		1		E200.7	04/14/14 16:01 / sf
Potassium	4	mg/L		1		E200.7	04/14/14 16:01 / sf
Sodium	54	mg/L		1		E200.7	04/14/14 16:01 / sf
Sulfate	253	mg/L	D	2		E300.0	04/09/14 03:02 / wc
PHYSICAL PROPERTIES							
Conductivity @ 25 C	1130	umhos/cm		1		A2510 B	04/08/14 12:56 / alp
pH	7.71	s.u.	H	0.01		A4500-H B	04/08/14 12:56 / alp
Solids, Total Dissolved TDS @ 180 C	716	mg/L	D	10		A2540 C	04/08/14 15:31 / tmm
METALS - DISSOLVED							
Arsenic	0.021	mg/L		0.001		E200.8	04/10/14 02:35 / cp
Iron	ND	mg/L		0.03		E200.8	04/10/14 02:35 / cp
Molybdenum	ND	mg/L		0.01		E200.8	04/10/14 02:35 / cp
Selenium	0.008	mg/L		0.001		E200.8	04/10/14 02:35 / cp
Uranium	0.0095	mg/L		0.0003		E200.8	04/10/14 02:35 / cp
DATA QUALITY							
A/C Balance (± 5)	-1.24	%				A1030 E	04/17/14 06:52 / kbh
Anions	11.8	meq/L				A1030 E	04/17/14 06:52 / kbh
Cations	11.5	meq/L				A1030 E	04/17/14 06:52 / kbh
Solids, Total Dissolved Calculated	700	mg/L				A1030 E	04/17/14 06:52 / kbh
TDS Balance (0.80 - 1.20)	1.02					A1030 E	04/17/14 06:52 / kbh

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
H - Analysis performed past recommended holding time.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility
Lab ID: C14040216-009
Client Sample ID: 7164

Report Date: 04/17/14
Collection Date: 04/04/14 11:10
DateReceived: 04/07/14
Matrix: Groundwater

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Carbonate as CO3	ND	mg/L		5		A2320 B	04/07/14 18:28 / jba
Bicarbonate as HCO3	236	mg/L		5		A2320 B	04/07/14 18:28 / jba
Calcium	132	mg/L		1		E200.8	04/10/14 02:39 / cp
Chloride	140	mg/L		1		E300.0	04/09/14 03:58 / wc
Magnesium	36	mg/L		1		E200.8	04/10/14 02:39 / cp
Potassium	5	mg/L		1		E200.8	04/10/14 02:39 / cp
Sodium	78	mg/L		1		E200.8	04/10/14 02:39 / cp
Sulfate	298	mg/L	D	2		E300.0	04/09/14 03:58 / wc
PHYSICAL PROPERTIES							
Conductivity @ 25 C	1380	umhos/cm		1		A2510 B	04/08/14 12:59 / alp
pH	7.58	s.u.	H	0.01		A4500-H B	04/08/14 12:59 / alp
Solids, Total Dissolved TDS @ 180 C	866	mg/L		10		A2540 C	04/08/14 15:32 / tmm
METALS - DISSOLVED							
Arsenic	0.005	mg/L		0.001		E200.8	04/10/14 02:39 / cp
Iron	ND	mg/L		0.03		E200.8	04/10/14 02:39 / cp
Molybdenum	ND	mg/L		0.01		E200.8	04/10/14 02:39 / cp
Selenium	0.008	mg/L		0.001		E200.8	04/10/14 02:39 / cp
Uranium	0.0151	mg/L		0.0003		E200.8	04/10/14 02:39 / cp
DATA QUALITY							
A/C Balance (± 5)	-4.82	%				A1030 E	04/11/14 06:53 / kbh
Anions	14.4	meq/L				A1030 E	04/11/14 06:53 / kbh
Cations	13.1	meq/L				A1030 E	04/11/14 06:53 / kbh
Solids, Total Dissolved Calculated	830	mg/L				A1030 E	04/11/14 06:53 / kbh
TDS Balance (0.80 - 1.20)	1.05					A1030 E	04/11/14 06:53 / kbh

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
H - Analysis performed past recommended holding time.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility
Lab ID: C14040216-010
Client Sample ID: 7165

Report Date: 04/17/14
Collection Date: 04/04/14 11:15
DateReceived: 04/07/14
Matrix: Groundwater

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Carbonate as CO3	ND	mg/L		5		A2320 B	04/07/14 18:36 / jba
Bicarbonate as HCO3	236	mg/L		5		A2320 B	04/07/14 18:36 / jba
Calcium	134	mg/L		1		E200.8	04/10/14 02:44 / cp
Chloride	141	mg/L		1		E300.0	04/09/14 04:53 / wc
Magnesium	36	mg/L		1		E200.8	04/10/14 02:44 / cp
Potassium	5	mg/L		1		E200.8	04/10/14 02:44 / cp
Sodium	79	mg/L		1		E200.8	04/10/14 02:44 / cp
Sulfate	300	mg/L	D	2		E300.0	04/09/14 04:53 / wc
PHYSICAL PROPERTIES							
Conductivity @ 25 C	1380	umhos/cm		1		A2510 B	04/08/14 13:02 / alp
pH	7.58	s.u.	H	0.01		A4500-H B	04/08/14 13:02 / alp
Solids, Total Dissolved TDS @ 180 C	868	mg/L	D	10		A2540 C	04/08/14 15:32 / tmm
METALS - DISSOLVED							
Arsenic	0.005	mg/L		0.001		E200.8	04/10/14 02:44 / cp
Iron	ND	mg/L		0.03		E200.8	04/10/14 02:44 / cp
Molybdenum	ND	mg/L		0.01		E200.8	04/10/14 02:44 / cp
Selenium	0.008	mg/L		0.001		E200.8	04/10/14 02:44 / cp
Uranium	0.0148	mg/L		0.0003		E200.8	04/10/14 02:44 / cp
DATA QUALITY							
A/C Balance (± 5)	-4.47	%				A1030 E	04/11/14 06:53 / kbh
Anions	14.5	meq/L				A1030 E	04/11/14 06:53 / kbh
Cations	13.2	meq/L				A1030 E	04/11/14 06:53 / kbh
Solids, Total Dissolved Calculated	840	mg/L				A1030 E	04/11/14 06:53 / kbh
TDS Balance (0.80 - 1.20)	1.04					A1030 E	04/11/14 06:53 / kbh

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
H - Analysis performed past recommended holding time.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility
Lab ID: C14040216-011
Client Sample ID: 7166

Report Date: 04/17/14
Collection Date: 04/04/14 11:55
DateReceived: 04/07/14
Matrix: Groundwater

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Carbonate as CO3	ND	mg/L		5		A2320 B	04/07/14 18:44 / jba
Bicarbonate as HCO3	235	mg/L		5		A2320 B	04/07/14 18:44 / jba
Calcium	136	mg/L		1		E200.8	04/10/14 02:48 / cp
Chloride	139	mg/L		1		E300.0	04/09/14 05:11 / wc
Magnesium	36	mg/L		1		E200.8	04/10/14 02:48 / cp
Potassium	6	mg/L		1		E200.8	04/10/14 02:48 / cp
Sodium	79	mg/L		1		E200.8	04/10/14 02:48 / cp
Sulfate	295	mg/L	D	2		E300.0	04/09/14 05:11 / wc
PHYSICAL PROPERTIES							
Conductivity @ 25 C	1380	umhos/cm		1		A2510 B	04/08/14 13:05 / alp
pH	7.60	s.u.	H	0.01		A4500-H B	04/08/14 13:05 / alp
Solids, Total Dissolved TDS @ 180 C	867	mg/L		10		A2540 C	04/08/14 15:32 / tmm
METALS - DISSOLVED							
Arsenic	0.005	mg/L		0.001		E200.8	04/10/14 02:48 / cp
Iron	0.07	mg/L		0.03		E200.8	04/10/14 02:48 / cp
Molybdenum	ND	mg/L		0.01		E200.8	04/10/14 02:48 / cp
Selenium	0.008	mg/L		0.001		E200.8	04/10/14 02:48 / cp
Uranium	0.0143	mg/L		0.0003		E200.8	04/10/14 02:48 / cp
DATA QUALITY							
A/C Balance (± 5)	-3.28	%				A1030 E	04/11/14 06:53 / kbh
Anions	14.3	meq/L				A1030 E	04/11/14 06:53 / kbh
Cations	13.4	meq/L				A1030 E	04/11/14 06:53 / kbh
Solids, Total Dissolved Calculated	830	mg/L				A1030 E	04/11/14 06:53 / kbh
TDS Balance (0.80 - 1.20)	1.04					A1030 E	04/11/14 06:53 / kbh

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
H - Analysis performed past recommended holding time.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility
Lab ID: C14040216-012
Client Sample ID: 7167

Report Date: 04/17/14
Collection Date: 04/04/14 12:05
DateReceived: 04/07/14
Matrix: Groundwater

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Carbonate as CO3	ND	mg/L		5		A2320 B	04/07/14 18:52 / jba
Bicarbonate as HCO3	208	mg/L		5		A2320 B	04/07/14 18:52 / jba
Calcium	85	mg/L		1		E200.8	04/10/14 03:26 / cp
Chloride	46	mg/L		1		E300.0	04/09/14 05:30 / wc
Magnesium	24	mg/L		1		E200.8	04/10/14 03:26 / cp
Potassium	3	mg/L		1		E200.8	04/10/14 03:26 / cp
Sodium	31	mg/L		1		E200.8	04/10/14 03:26 / cp
Sulfate	141	mg/L		1		E300.0	04/09/14 05:30 / wc
PHYSICAL PROPERTIES							
Conductivity @ 25 C	769	umhos/cm		1		A2510 B	04/08/14 13:08 / alp
pH	7.70	s.u.	H	0.01		A4500-H B	04/08/14 13:08 / alp
Solids, Total Dissolved TDS @ 180 C	468	mg/L		10		A2540 C	04/08/14 15:33 / tmm
METALS - DISSOLVED							
Arsenic	0.023	mg/L		0.001		E200.8	04/10/14 03:26 / cp
Iron	ND	mg/L		0.03		E200.8	04/10/14 03:26 / cp
Molybdenum	ND	mg/L		0.01		E200.8	04/10/14 03:26 / cp
Selenium	0.008	mg/L		0.001		E200.8	04/10/14 03:26 / cp
Uranium	0.0071	mg/L		0.0003		E200.8	04/10/14 03:26 / cp
DATA QUALITY							
A/C Balance (± 5)	-1.26	%				A1030 E	04/11/14 06:53 / kbh
Anions	7.89	meq/L				A1030 E	04/11/14 06:53 / kbh
Cations	7.69	meq/L				A1030 E	04/11/14 06:53 / kbh
Solids, Total Dissolved Calculated	450	mg/L				A1030 E	04/11/14 06:53 / kbh
TDS Balance (0.80 - 1.20)	1.04					A1030 E	04/11/14 06:53 / kbh

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
H - Analysis performed past recommended holding time.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility
Lab ID: C14040216-013
Client Sample ID: 7168

Report Date: 04/17/14
Collection Date: 04/04/14 12:45
DateReceived: 04/07/14
Matrix: Groundwater

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Carbonate as CO3	ND	mg/L		5		A2320 B	04/07/14 19:00 / jba
Bicarbonate as HCO3	219	mg/L		5		A2320 B	04/07/14 19:00 / jba
Calcium	85	mg/L		1		E200.8	04/10/14 03:31 / cp
Chloride	47	mg/L		1		E300.0	04/09/14 05:48 / wc
Magnesium	24	mg/L		1		E200.8	04/10/14 03:31 / cp
Potassium	3	mg/L		1		E200.8	04/10/14 03:31 / cp
Sodium	32	mg/L		1		E200.8	04/10/14 03:31 / cp
Sulfate	142	mg/L		1		E300.0	04/09/14 05:48 / wc
PHYSICAL PROPERTIES							
Conductivity @ 25 C	778	umhos/cm		1		A2510 B	04/08/14 13:11 / alp
pH	7.74	s.u.	H	0.01		A4500-H B	04/08/14 13:11 / alp
Solids, Total Dissolved TDS @ 180 C	467	mg/L		10		A2540 C	04/08/14 15:34 / tmm
METALS - DISSOLVED							
Arsenic	0.017	mg/L		0.001		E200.8	04/10/14 03:31 / cp
Iron	ND	mg/L		0.03		E200.8	04/10/14 03:31 / cp
Molybdenum	0.01	mg/L		0.01		E200.8	04/10/14 03:31 / cp
Selenium	0.008	mg/L		0.001		E200.8	04/10/14 03:31 / cp
Uranium	0.0068	mg/L		0.0003		E200.8	04/10/14 03:31 / cp
DATA QUALITY							
A/C Balance (± 5)	-2.34	%				A1030 E	04/11/14 06:53 / kbh
Anions	8.09	meq/L				A1030 E	04/11/14 06:53 / kbh
Cations	7.72	meq/L				A1030 E	04/11/14 06:53 / kbh
Solids, Total Dissolved Calculated	450	mg/L				A1030 E	04/11/14 06:53 / kbh
TDS Balance (0.80 - 1.20)	1.03					A1030 E	04/11/14 06:53 / kbh

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
H - Analysis performed past recommended holding time.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility
Lab ID: C14040216-014
Client Sample ID: 7169

Report Date: 04/17/14
Collection Date: 04/04/14 13:45
DateReceived: 04/07/14
Matrix: Groundwater

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Carbonate as CO3	ND	mg/L		5		A2320 B	04/07/14 19:08 / jba
Bicarbonate as HCO3	210	mg/L		5		A2320 B	04/07/14 19:08 / jba
Calcium	83	mg/L		1		E200.8	04/10/14 03:35 / cp
Chloride	46	mg/L		1		E300.0	04/09/14 06:07 / wc
Magnesium	24	mg/L		1		E200.8	04/10/14 03:35 / cp
Potassium	3	mg/L		1		E200.8	04/10/14 03:35 / cp
Sodium	31	mg/L		1		E200.8	04/10/14 03:35 / cp
Sulfate	145	mg/L		1		E300.0	04/09/14 06:07 / wc
PHYSICAL PROPERTIES							
Conductivity @ 25 C	781	umhos/cm		1		A2510 B	04/08/14 13:14 / alp
pH	7.70	s.u.	H	0.01		A4500-H B	04/08/14 13:14 / alp
Solids, Total Dissolved TDS @ 180 C	471	mg/L		10		A2540 C	04/08/14 15:34 / tmm
METALS - DISSOLVED							
Arsenic	0.023	mg/L		0.001		E200.8	04/10/14 03:35 / cp
Iron	ND	mg/L		0.03		E200.8	04/10/14 03:35 / cp
Molybdenum	ND	mg/L		0.01		E200.8	04/10/14 03:35 / cp
Selenium	0.007	mg/L		0.001		E200.8	04/10/14 03:35 / cp
Uranium	0.0072	mg/L		0.0003		E200.8	04/10/14 03:35 / cp
DATA QUALITY							
A/C Balance (± 5)	-2.85	%				A1030 E	04/11/14 06:53 / kbh
Anions	7.97	meq/L				A1030 E	04/11/14 06:53 / kbh
Cations	7.53	meq/L				A1030 E	04/11/14 06:53 / kbh
Solids, Total Dissolved Calculated	450	mg/L				A1030 E	04/11/14 06:53 / kbh
TDS Balance (0.80 - 1.20)	1.05					A1030 E	04/11/14 06:53 / kbh

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
H - Analysis performed past recommended holding time.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility
Lab ID: C14040216-015
Client Sample ID: 7109

Report Date: 04/17/14
Collection Date: 04/03/14 08:50
DateReceived: 04/07/14
Matrix: Groundwater

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Carbonate as CO3	ND	mg/L		5		A2320 B	04/07/14 19:16 / jba
Bicarbonate as HCO3	306	mg/L		5		A2320 B	04/07/14 19:16 / jba
Calcium	306	mg/L		1		E200.8	04/10/14 03:39 / cp
Chloride	36	mg/L		1		E300.0	04/09/14 06:25 / wc
Magnesium	100	mg/L		1		E200.8	04/10/14 03:39 / cp
Potassium	2	mg/L		1		E200.8	04/10/14 03:39 / cp
Sodium	45	mg/L		1		E200.8	04/10/14 03:39 / cp
Sulfate	908	mg/L	D	2		E300.0	04/09/14 06:25 / wc
PHYSICAL PROPERTIES							
Conductivity @ 25 C	1990	umhos/cm		1		A2510 B	04/08/14 13:17 / alp
pH	7.54	s.u.	H	0.01		A4500-H B	04/08/14 13:17 / alp
Solids, Total Dissolved TDS @ 180 C	1630	mg/L		20		A2540 C	04/08/14 15:35 / tmm
METALS - DISSOLVED							
Arsenic	0.003	mg/L		0.001		E200.8	04/10/14 03:39 / cp
Iron	ND	mg/L		0.03		E200.8	04/10/14 03:39 / cp
Molybdenum	0.01	mg/L		0.01		E200.8	04/10/14 03:39 / cp
Selenium	0.008	mg/L		0.001		E200.8	04/10/14 03:39 / cp
Uranium	0.0176	mg/L		0.0003		E200.8	04/10/14 03:39 / cp
DATA QUALITY							
A/C Balance (± 5)	0.97	%				A1030 E	04/11/14 06:53 / kbh
Anions	25.0	meq/L				A1030 E	04/11/14 06:53 / kbh
Cations	25.5	meq/L				A1030 E	04/11/14 06:53 / kbh
Solids, Total Dissolved Calculated	1600	mg/L				A1030 E	04/11/14 06:53 / kbh
TDS Balance (0.80 - 1.20)	1.05					A1030 E	04/11/14 06:53 / kbh

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
H - Analysis performed past recommended holding time.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility
Lab ID: C14040216-016
Client Sample ID: 7110

Report Date: 04/17/14
Collection Date: 04/03/14 09:15
DateReceived: 04/07/14
Matrix: Groundwater

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Carbonate as CO3	ND	mg/L		5		A2320 B	04/07/14 19:47 / jba
Bicarbonate as HCO3	324	mg/L		5		A2320 B	04/07/14 19:47 / jba
Calcium	301	mg/L		1		E200.8	04/10/14 03:44 / cp
Chloride	37	mg/L		1		E300.0	04/09/14 13:00 / wc
Magnesium	96	mg/L		1		E200.8	04/10/14 03:44 / cp
Potassium	2	mg/L		1		E200.8	04/10/14 03:44 / cp
Sodium	43	mg/L		1		E200.8	04/10/14 03:44 / cp
Sulfate	915	mg/L	D	2		E300.0	04/09/14 13:00 / wc
PHYSICAL PROPERTIES							
Conductivity @ 25 C	2100	umhos/cm		1		A2510 B	04/08/14 13:20 / alp
pH	7.44	s.u.	H	0.01		A4500-H B	04/08/14 13:20 / alp
Solids, Total Dissolved TDS @ 180 C	1750	mg/L		19		A2540 C	04/08/14 15:35 / tmm
METALS - DISSOLVED							
Arsenic	0.003	mg/L		0.001		E200.8	04/10/14 03:44 / cp
Iron	0.06	mg/L		0.03		E200.8	04/10/14 03:44 / cp
Molybdenum	0.01	mg/L		0.01		E200.8	04/10/14 03:44 / cp
Selenium	0.009	mg/L		0.001		E200.8	04/10/14 03:44 / cp
Uranium	0.0170	mg/L		0.0003		E200.8	04/10/14 03:44 / cp
DATA QUALITY							
A/C Balance (± 5)	-1.32	%				A1030 E	04/11/14 06:54 / kbh
Anions	25.4	meq/L				A1030 E	04/11/14 06:54 / kbh
Cations	24.8	meq/L				A1030 E	04/11/14 06:54 / kbh
Solids, Total Dissolved Calculated	1600	mg/L				A1030 E	04/11/14 06:54 / kbh
TDS Balance (0.80 - 1.20)	1.13					A1030 E	04/11/14 06:54 / kbh

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
H - Analysis performed past recommended holding time.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility
Lab ID: C14040216-017
Client Sample ID: 7111

Report Date: 04/17/14
Collection Date: 04/03/14 09:50
DateReceived: 04/07/14
Matrix: Groundwater

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Acidity, Total as CaCO3	405	mg/L		5		A2310 B	04/15/14 08:53 / jba
Carbonate as CO3	ND	mg/L		5		A2320 B	04/07/14 20:00 / jba
Bicarbonate as HCO3	ND	mg/L		5		A2320 B	04/07/14 20:00 / jba
Calcium	256	mg/L		1		E200.7	04/14/14 16:12 / sf
Chloride	19	mg/L		1		E300.0	04/09/14 13:19 / wc
Magnesium	123	mg/L		1		E200.7	04/14/14 16:12 / sf
Potassium	8	mg/L		1		E200.7	04/14/14 16:12 / sf
Sodium	37	mg/L		1		E200.7	04/14/14 16:12 / sf
Sulfate	1290	mg/L	D	2		E300.0	04/09/14 13:19 / wc
PHYSICAL PROPERTIES							
Conductivity @ 25 C	2190	umhos/cm		1		A2510 B	04/08/14 13:23 / alp
pH	4.48	s.u.	H	0.01		A4500-H B	04/08/14 13:23 / alp
Solids, Total Dissolved TDS @ 180 C	1960	mg/L		19		A2540 C	04/08/14 15:35 / tmm
METALS - DISSOLVED							
Arsenic	0.005	mg/L		0.001		E200.8	04/10/14 03:48 / cp
Iron	0.05	mg/L		0.03		E200.8	04/10/14 03:48 / cp
Molybdenum	ND	mg/L		0.01		E200.8	04/10/14 03:48 / cp
Selenium	0.003	mg/L		0.001		E200.8	04/10/14 03:48 / cp
Uranium	0.0018	mg/L		0.0003		E200.8	04/10/14 03:48 / cp
DATA QUALITY							
A/C Balance (± 5)	-5.11	%				A1030 E	04/17/14 10:30 / kbh
Anions	27.4	meq/L				A1030 E	04/17/14 10:30 / kbh
Cations	24.7	meq/L				A1030 E	04/17/14 10:30 / kbh
Solids, Total Dissolved Calculated	1800	mg/L				A1030 E	04/17/14 10:30 / kbh
TDS Balance (0.80 - 1.20)	1.11					A1030 E	04/17/14 10:30 / kbh

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
H - Analysis performed past recommended holding time.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility
Lab ID: C14040216-018
Client Sample ID: 7112

Report Date: 04/17/14
Collection Date: 04/03/14 10:25
DateReceived: 04/07/14
Matrix: Groundwater

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Acidity, Total as CaCO3	422	mg/L		5		A2310 B	04/15/14 09:09 / jba
Carbonate as CO3	ND	mg/L		5		A2320 B	04/07/14 20:11 / jba
Bicarbonate as HCO3	ND	mg/L		5		A2320 B	04/07/14 20:11 / jba
Calcium	270	mg/L		1		E200.7	04/14/14 16:15 / sf
Chloride	19	mg/L		1		E300.0	04/09/14 13:37 / wc
Magnesium	129	mg/L		1		E200.7	04/14/14 16:15 / sf
Potassium	9	mg/L		1		E200.7	04/14/14 16:15 / sf
Sodium	40	mg/L		1		E200.7	04/14/14 16:15 / sf
Sulfate	1280	mg/L	D	2		E300.0	04/09/14 13:37 / wc
PHYSICAL PROPERTIES							
Conductivity @ 25 C	2180	umhos/cm		1		A2510 B	04/08/14 13:26 / alp
pH	4.49	s.u.	H	0.01		A4500-H B	04/08/14 13:26 / alp
Solids, Total Dissolved TDS @ 180 C	1960	mg/L		20		A2540 C	04/08/14 15:35 / tmm
METALS - DISSOLVED							
Arsenic	0.005	mg/L		0.001		E200.8	04/10/14 03:52 / cp
Iron	0.24	mg/L		0.03		E200.8	04/10/14 03:52 / cp
Molybdenum	ND	mg/L		0.01		E200.8	04/10/14 03:52 / cp
Selenium	0.004	mg/L		0.001		E200.8	04/10/14 03:52 / cp
Uranium	0.0019	mg/L		0.0003		E200.8	04/10/14 03:52 / cp
DATA QUALITY							
A/C Balance (± 5)	-2.18	%				A1030 E	04/17/14 10:31 / kbh
Anions	27.2	meq/L				A1030 E	04/17/14 10:31 / kbh
Cations	26.1	meq/L				A1030 E	04/17/14 10:31 / kbh
Solids, Total Dissolved Calculated	1800	mg/L				A1030 E	04/17/14 10:31 / kbh
TDS Balance (0.80 - 1.20)	1.10					A1030 E	04/17/14 10:31 / kbh

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
H - Analysis performed past recommended holding time.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility
Lab ID: C14040216-019
Client Sample ID: 7113

Report Date: 04/17/14
Collection Date: 04/03/14 10:40
DateReceived: 04/07/14
Matrix: Groundwater

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Acidity, Total as CaCO3	437	mg/L		5		A2310 B	04/15/14 09:16 / jba
Carbonate as CO3	ND	mg/L		5		A2320 B	04/07/14 20:15 / jba
Bicarbonate as HCO3	ND	mg/L		5		A2320 B	04/07/14 20:15 / jba
Calcium	266	mg/L		1		E200.7	04/14/14 16:33 / sf
Chloride	19	mg/L		1		E300.0	04/09/14 14:32 / wc
Magnesium	129	mg/L		1		E200.7	04/14/14 16:33 / sf
Potassium	9	mg/L		1		E200.7	04/14/14 16:33 / sf
Sodium	39	mg/L		1		E200.7	04/14/14 16:33 / sf
Sulfate	1300	mg/L	D	2		E300.0	04/09/14 14:32 / wc
PHYSICAL PROPERTIES							
Conductivity @ 25 C	2130	umhos/cm		1		A2510 B	04/08/14 14:07 / alp
pH	4.43	s.u.	H	0.01		A4500-H B	04/08/14 14:07 / alp
Solids, Total Dissolved TDS @ 180 C	1940	mg/L		20		A2540 C	04/08/14 15:36 / tmm
METALS - DISSOLVED							
Arsenic	0.006	mg/L		0.001		E200.8	04/10/14 04:18 / cp
Iron	ND	mg/L		0.03		E200.8	04/10/14 04:18 / cp
Molybdenum	ND	mg/L		0.01		E200.8	04/10/14 04:18 / cp
Selenium	0.004	mg/L		0.001		E200.8	04/10/14 04:18 / cp
Uranium	0.0016	mg/L		0.0003		E200.8	04/10/14 04:18 / cp
DATA QUALITY							
A/C Balance (± 5)	-3.42	%				A1030 E	04/17/14 10:32 / kbh
Anions	27.6	meq/L				A1030 E	04/17/14 10:32 / kbh
Cations	25.8	meq/L				A1030 E	04/17/14 10:32 / kbh
Solids, Total Dissolved Calculated	1800	mg/L				A1030 E	04/17/14 10:32 / kbh
TDS Balance (0.80 - 1.20)	1.08					A1030 E	04/17/14 10:32 / kbh

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
H - Analysis performed past recommended holding time.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility
Lab ID: C14040216-020
Client Sample ID: 7114

Report Date: 04/17/14
Collection Date: 04/03/14 11:05
DateReceived: 04/07/14
Matrix: Groundwater

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Carbonate as CO3	ND	mg/L		5		A2320 B	04/07/14 20:23 / jba
Bicarbonate as HCO3	224	mg/L		5		A2320 B	04/07/14 20:23 / jba
Calcium	84	mg/L		1		E200.8	04/10/14 04:22 / cp
Chloride	48	mg/L		1		E300.0	04/09/14 15:27 / wc
Magnesium	28	mg/L		1		E200.8	04/10/14 04:22 / cp
Potassium	3	mg/L		1		E200.8	04/10/14 04:22 / cp
Sodium	46	mg/L		1		E200.8	04/10/14 04:22 / cp
Sulfate	182	mg/L		1		E300.0	04/09/14 15:27 / wc
PHYSICAL PROPERTIES							
Conductivity @ 25 C	873	umhos/cm		1		A2510 B	04/08/14 14:10 / alp
pH	7.79	s.u.	H	0.01		A4500-H B	04/08/14 14:10 / alp
Solids, Total Dissolved TDS @ 180 C	548	mg/L	D	10		A2540 C	04/08/14 15:36 / tmm
METALS - DISSOLVED							
Arsenic	ND	mg/L		0.001		E200.8	04/10/14 04:22 / cp
Iron	ND	mg/L		0.03		E200.8	04/10/14 04:22 / cp
Molybdenum	ND	mg/L		0.01		E200.8	04/10/14 04:22 / cp
Selenium	0.005	mg/L		0.001		E200.8	04/10/14 04:22 / cp
Uranium	0.0029	mg/L		0.0003		E200.8	04/10/14 04:22 / cp
DATA QUALITY							
A/C Balance (± 5)	-2.65	%				A1030 E	04/11/14 06:54 / kbh
Anions	8.99	meq/L				A1030 E	04/11/14 06:54 / kbh
Cations	8.52	meq/L				A1030 E	04/11/14 06:54 / kbh
Solids, Total Dissolved Calculated	510	mg/L				A1030 E	04/11/14 06:54 / kbh
TDS Balance (0.80 - 1.20)	1.07					A1030 E	04/11/14 06:54 / kbh

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
H - Analysis performed past recommended holding time.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility
Lab ID: C14040216-021
Client Sample ID: 7115

Report Date: 04/17/14
Collection Date: 04/03/14 11:35
DateReceived: 04/07/14
Matrix: Groundwater

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Carbonate as CO3	ND	mg/L		5		A2320 B	04/07/14 20:31 / jba
Bicarbonate as HCO3	226	mg/L		5		A2320 B	04/07/14 20:31 / jba
Calcium	83	mg/L		1		E200.8	04/10/14 04:26 / cp
Chloride	49	mg/L		1		E300.0	04/09/14 15:46 / wc
Magnesium	27	mg/L		1		E200.8	04/10/14 04:26 / cp
Potassium	3	mg/L		1		E200.8	04/10/14 04:26 / cp
Sodium	45	mg/L		1		E200.8	04/10/14 04:26 / cp
Sulfate	184	mg/L		1		E300.0	04/09/14 15:46 / wc
PHYSICAL PROPERTIES							
Conductivity @ 25 C	881	umhos/cm		1		A2510 B	04/08/14 14:13 / alp
pH	7.81	s.u.	H	0.01		A4500-H B	04/08/14 14:13 / alp
Solids, Total Dissolved TDS @ 180 C	546	mg/L	D	10		A2540 C	04/08/14 15:37 / tmm
METALS - DISSOLVED							
Arsenic	ND	mg/L		0.001		E200.8	04/10/14 04:26 / cp
Iron	ND	mg/L		0.03		E200.8	04/10/14 04:26 / cp
Molybdenum	ND	mg/L		0.01		E200.8	04/10/14 04:26 / cp
Selenium	0.005	mg/L		0.001		E200.8	04/10/14 04:26 / cp
Uranium	0.0028	mg/L		0.0003		E200.8	04/10/14 04:26 / cp
DATA QUALITY							
A/C Balance (± 5)	-4.07	%				A1030 E	04/11/14 06:54 / kbh
Anions	9.09	meq/L				A1030 E	04/11/14 06:54 / kbh
Cations	8.38	meq/L				A1030 E	04/11/14 06:54 / kbh
Solids, Total Dissolved Calculated	510	mg/L				A1030 E	04/11/14 06:54 / kbh
TDS Balance (0.80 - 1.20)	1.06					A1030 E	04/11/14 06:54 / kbh

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
H - Analysis performed past recommended holding time.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility
Lab ID: C14040216-022
Client Sample ID: 7116

Report Date: 04/17/14
Collection Date: 04/03/14 11:55
DateReceived: 04/07/14
Matrix: Groundwater

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Carbonate as CO3	ND	mg/L		5		A2320 B	04/07/14 20:39 / jba
Bicarbonate as HCO3	224	mg/L		5		A2320 B	04/07/14 20:39 / jba
Calcium	67	mg/L		1		E200.8	04/10/14 04:31 / cp
Chloride	15	mg/L		1		E300.0	04/09/14 16:04 / wc
Magnesium	16	mg/L		1		E200.8	04/10/14 04:31 / cp
Potassium	2	mg/L		1		E200.8	04/10/14 04:31 / cp
Sodium	35	mg/L		1		E200.8	04/10/14 04:31 / cp
Sulfate	99	mg/L		1		E300.0	04/09/14 16:04 / wc
PHYSICAL PROPERTIES							
Conductivity @ 25 C	607	umhos/cm		1		A2510 B	04/08/14 14:16 / alp
pH	7.85	s.u.	H	0.01		A4500-H B	04/08/14 14:16 / alp
Solids, Total Dissolved TDS @ 180 C	358	mg/L		10		A2540 C	04/08/14 15:38 / tmm
METALS - DISSOLVED							
Arsenic	ND	mg/L		0.001		E200.8	04/10/14 04:31 / cp
Iron	ND	mg/L		0.03		E200.8	04/10/14 04:31 / cp
Molybdenum	ND	mg/L		0.01		E200.8	04/10/14 04:31 / cp
Selenium	0.003	mg/L		0.001		E200.8	04/10/14 04:31 / cp
Uranium	0.0022	mg/L		0.0003		E200.8	04/10/14 04:31 / cp
DATA QUALITY							
A/C Balance (± 5)	0.20	%				A1030 E	04/11/14 06:54 / kbh
Anions	6.22	meq/L				A1030 E	04/11/14 06:54 / kbh
Cations	6.24	meq/L				A1030 E	04/11/14 06:54 / kbh
Solids, Total Dissolved Calculated	350	mg/L				A1030 E	04/11/14 06:54 / kbh
TDS Balance (0.80 - 1.20)	1.03					A1030 E	04/11/14 06:54 / kbh

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
H - Analysis performed past recommended holding time.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility
Lab ID: C14040216-023
Client Sample ID: 7117

Report Date: 04/17/14
Collection Date: 04/03/14 12:30
DateReceived: 04/07/14
Matrix: Groundwater

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Carbonate as CO3	ND	mg/L		5		A2320 B	04/07/14 20:47 / jba
Bicarbonate as HCO3	238	mg/L		5		A2320 B	04/07/14 20:47 / jba
Calcium	64	mg/L		1		E200.8	04/10/14 06:30 / cp
Chloride	15	mg/L		1		E300.0	04/09/14 16:23 / wc
Magnesium	16	mg/L		1		E200.8	04/10/14 06:30 / cp
Potassium	3	mg/L		1		E200.8	04/10/14 06:30 / cp
Sodium	40	mg/L		1		E200.8	04/10/14 06:30 / cp
Sulfate	105	mg/L		1		E300.0	04/09/14 16:23 / wc
PHYSICAL PROPERTIES							
Conductivity @ 25 C	626	umhos/cm		1		A2510 B	04/08/14 14:19 / alp
pH	7.84	s.u.	H	0.01		A4500-H B	04/08/14 14:19 / alp
Solids, Total Dissolved TDS @ 180 C	379	mg/L		10		A2540 C	04/08/14 15:38 / tmm
METALS - DISSOLVED							
Arsenic	ND	mg/L		0.001		E200.8	04/10/14 06:30 / cp
Iron	ND	mg/L		0.03		E200.8	04/10/14 06:30 / cp
Molybdenum	ND	mg/L		0.01		E200.8	04/10/14 06:30 / cp
Selenium	0.003	mg/L		0.001		E200.8	04/10/14 06:30 / cp
Uranium	0.0022	mg/L		0.0003		E200.8	04/10/14 06:30 / cp
DATA QUALITY							
A/C Balance (± 5)	-1.76	%				A1030 E	04/11/14 06:54 / kbh
Anions	6.54	meq/L				A1030 E	04/11/14 06:54 / kbh
Cations	6.32	meq/L				A1030 E	04/11/14 06:54 / kbh
Solids, Total Dissolved Calculated	360	mg/L				A1030 E	04/11/14 06:54 / kbh
TDS Balance (0.80 - 1.20)	1.05					A1030 E	04/11/14 06:54 / kbh

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
H - Analysis performed past recommended holding time.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility
Lab ID: C14040216-024
Client Sample ID: 7118

Report Date: 04/17/14
Collection Date: 04/03/14 13:45
DateReceived: 04/07/14
Matrix: Groundwater

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Carbonate as CO3	ND	mg/L		5		A2320 B	04/07/14 20:57 / jba
Bicarbonate as HCO3	1250	mg/L		5		A2320 B	04/07/14 20:57 / jba
Calcium	455	mg/L		1		E200.7	04/14/14 16:36 / sf
Chloride	674	mg/L	D	5		E300.0	04/09/14 16:41 / wc
Magnesium	200	mg/L		1		E200.7	04/14/14 16:36 / sf
Potassium	18	mg/L		1		E200.7	04/14/14 16:36 / sf
Sodium	1550	mg/L	D	2		E200.7	04/14/14 16:36 / sf
Sulfate	3880	mg/L	D	20		E300.0	04/09/14 16:41 / wc
PHYSICAL PROPERTIES							
Conductivity @ 25 C	9740	umhos/cm		1		A2510 B	04/08/14 14:22 / alp
pH	7.42	s.u.	H	0.01		A4500-H B	04/08/14 14:22 / alp
Solids, Total Dissolved TDS @ 180 C	7960	mg/L		100		A2540 C	04/08/14 15:39 / tmm
METALS - DISSOLVED							
Arsenic	0.004	mg/L		0.001		E200.8	04/10/14 06:34 / cp
Iron	ND	mg/L		0.03		E200.8	04/10/14 06:34 / cp
Molybdenum	3.72	mg/L		0.01		E200.8	04/10/14 06:34 / cp
Selenium	0.057	mg/L		0.001		E200.8	04/10/14 06:34 / cp
Uranium	25.1	mg/L		0.0003		E200.8	04/10/14 06:34 / cp
DATA QUALITY							
A/C Balance (± 5)	-6.58	%				A1030 E	04/17/14 10:32 / kbh
Anions	122	meq/L				A1030 E	04/17/14 10:32 / kbh
Cations	107	meq/L				A1030 E	04/17/14 10:32 / kbh
Solids, Total Dissolved Calculated	7500	mg/L				A1030 E	04/17/14 10:32 / kbh
TDS Balance (0.80 - 1.20)	1.06					A1030 E	04/17/14 10:32 / kbh

- The Anion / Cation balance was confirmed by re-analysis.

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
H - Analysis performed past recommended holding time.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility
Lab ID: C14040216-025
Client Sample ID: 7119

Report Date: 04/17/14
Collection Date: 04/03/14 13:45
DateReceived: 04/07/14
Matrix: Groundwater

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Carbonate as CO3	ND	mg/L		5		A2320 B	04/07/14 21:07 / jba
Bicarbonate as HCO3	1360	mg/L		5		A2320 B	04/07/14 21:07 / jba
Calcium	552	mg/L		1		E200.8	04/10/14 06:39 / cp
Chloride	692	mg/L	D	10		E300.0	04/09/14 17:00 / wc
Magnesium	237	mg/L		1		E200.8	04/10/14 06:39 / cp
Potassium	18	mg/L		1		E200.8	04/10/14 06:39 / cp
Sodium	1810	mg/L		1		E200.8	04/10/14 06:39 / cp
Sulfate	4130	mg/L	D	40		E300.0	04/09/14 17:00 / wc
PHYSICAL PROPERTIES							
Conductivity @ 25 C	10400	umhos/cm		1		A2510 B	04/08/14 14:25 / alp
pH	7.46	s.u.	H	0.01		A4500-H B	04/08/14 14:25 / alp
Solids, Total Dissolved TDS @ 180 C	8420	mg/L		100		A2540 C	04/08/14 15:39 / tmm
METALS - DISSOLVED							
Arsenic	0.005	mg/L		0.001		E200.8	04/10/14 06:39 / cp
Iron	0.04	mg/L		0.03		E200.8	04/10/14 06:39 / cp
Molybdenum	7.46	mg/L		0.01		E200.8	04/10/14 06:39 / cp
Selenium	0.068	mg/L		0.001		E200.8	04/10/14 06:39 / cp
Uranium	35.4	mg/L		0.0003		E200.8	04/10/14 06:39 / cp
DATA QUALITY							
A/C Balance (± 5)	-1.45	%				A1030 E	04/11/14 06:54 / kbh
Anions	130	meq/L				A1030 E	04/11/14 06:54 / kbh
Cations	126	meq/L				A1030 E	04/11/14 06:54 / kbh
Solids, Total Dissolved Calculated	8200	mg/L				A1030 E	04/11/14 06:54 / kbh
TDS Balance (0.80 - 1.20)	1.02					A1030 E	04/11/14 06:54 / kbh

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
H - Analysis performed past recommended holding time.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility
Lab ID: C14040216-026
Client Sample ID: 7120

Report Date: 04/17/14
Collection Date: 04/03/14 13:50
DateReceived: 04/07/14
Matrix: Groundwater

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Carbonate as CO3	ND	mg/L		5		A2320 B	04/07/14 21:17 / jba
Bicarbonate as HCO3	1360	mg/L		5		A2320 B	04/07/14 21:17 / jba
Calcium	520	mg/L		1		E200.8	04/10/14 15:00 / cp
Chloride	699	mg/L	D	10		E300.0	04/09/14 17:18 / wc
Magnesium	244	mg/L		1		E200.8	04/10/14 06:43 / cp
Potassium	18	mg/L		1		E200.8	04/10/14 15:00 / cp
Sodium	1820	mg/L		1		E200.8	04/10/14 15:00 / cp
Sulfate	4200	mg/L	D	40		E300.0	04/09/14 17:18 / wc
PHYSICAL PROPERTIES							
Conductivity @ 25 C	10400	umhos/cm		1		A2510 B	04/08/14 14:28 / alp
pH	7.45	s.u.	H	0.01		A4500-H B	04/08/14 14:28 / alp
Solids, Total Dissolved TDS @ 180 C	8530	mg/L		100		A2540 C	04/08/14 15:40 / tmm
METALS - DISSOLVED							
Arsenic	0.004	mg/L	D	0.003		E200.8	04/10/14 15:00 / cp
Iron	0.06	mg/L		0.03		E200.8	04/10/14 15:00 / cp
Molybdenum	6.62	mg/L		0.01		E200.8	04/10/14 15:00 / cp
Selenium	0.069	mg/L	D	0.004		E200.8	04/10/14 15:00 / cp
Uranium	31.1	mg/L	D	0.0004		E200.8	04/10/14 15:00 / cp
DATA QUALITY							
A/C Balance (± 5)	-2.28	%				A1030 E	04/14/14 08:00 / kbh
Anions	132	meq/L				A1030 E	04/14/14 08:00 / kbh
Cations	126	meq/L				A1030 E	04/14/14 08:00 / kbh
Solids, Total Dissolved Calculated	8300	mg/L				A1030 E	04/14/14 08:00 / kbh
TDS Balance (0.80 - 1.20)	1.03					A1030 E	04/14/14 08:00 / kbh

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
H - Analysis performed past recommended holding time.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility
Lab ID: C14040216-027
Client Sample ID: 7121

Report Date: 04/17/14
Collection Date: 04/03/14 14:20
DateReceived: 04/07/14
Matrix: Groundwater

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Carbonate as CO3	ND	mg/L		5		A2320 B	04/07/14 21:35 / jba
Bicarbonate as HCO3	205	mg/L		5		A2320 B	04/07/14 21:35 / jba
Calcium	60	mg/L		1		E200.8	04/10/14 14:08 / cp
Chloride	10	mg/L		1		E300.0	04/09/14 17:36 / wc
Magnesium	15	mg/L		1		E200.8	04/10/14 14:08 / cp
Potassium	3	mg/L		1		E200.8	04/10/14 14:08 / cp
Sodium	27	mg/L		1		E200.8	04/10/14 14:08 / cp
Sulfate	113	mg/L		1		E300.0	04/09/14 17:36 / wc
PHYSICAL PROPERTIES							
Conductivity @ 25 C	592	umhos/cm		1		A2510 B	04/08/14 14:31 / alp
pH	7.74	s.u.	H	0.01		A4500-H B	04/08/14 14:31 / alp
Solids, Total Dissolved TDS @ 180 C	355	mg/L		10		A2540 C	04/08/14 15:40 / tmm
METALS - DISSOLVED							
Arsenic	ND	mg/L		0.001		E200.8	04/10/14 14:08 / cp
Iron	ND	mg/L		0.03		E200.8	04/10/14 14:08 / cp
Molybdenum	ND	mg/L		0.01		E200.8	04/10/14 14:08 / cp
Selenium	0.002	mg/L		0.001		E200.8	04/10/14 14:08 / cp
Uranium	0.0017	mg/L		0.0003		E200.8	04/10/14 14:08 / cp
DATA QUALITY							
A/C Balance (± 5)	-4.56	%				A1030 E	04/14/14 08:00 / kbh
Anions	6.01	meq/L				A1030 E	04/14/14 08:00 / kbh
Cations	5.48	meq/L				A1030 E	04/14/14 08:00 / kbh
Solids, Total Dissolved Calculated	340	mg/L				A1030 E	04/14/14 08:00 / kbh
TDS Balance (0.80 - 1.20)	1.03					A1030 E	04/14/14 08:00 / kbh

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
H - Analysis performed past recommended holding time.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility
Lab ID: C14040216-028
Client Sample ID: 7122

Report Date: 04/17/14
Collection Date: 04/03/14 14:45
DateReceived: 04/07/14
Matrix: Groundwater

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Carbonate as CO3	ND	mg/L		5		A2320 B	04/07/14 21:43 / jba
Bicarbonate as HCO3	205	mg/L		5		A2320 B	04/07/14 21:43 / jba
Calcium	58	mg/L		1		E200.8	04/10/14 14:13 / cp
Chloride	10	mg/L		1		E300.0	04/09/14 17:55 / wc
Magnesium	15	mg/L		1		E200.7	04/10/14 15:28 / sf
Potassium	3	mg/L		1		E200.8	04/10/14 14:13 / cp
Sodium	29	mg/L		1		E200.7	04/10/14 15:28 / sf
Sulfate	113	mg/L		1		E300.0	04/09/14 17:55 / wc
PHYSICAL PROPERTIES							
Conductivity @ 25 C	590	umhos/cm		1		A2510 B	04/08/14 14:34 / alp
pH	7.79	s.u.	H	0.01		A4500-H B	04/08/14 14:34 / alp
Solids, Total Dissolved TDS @ 180 C	361	mg/L		10		A2540 C	04/08/14 15:40 / tmm
METALS - DISSOLVED							
Arsenic	ND	mg/L		0.001		E200.8	04/10/14 14:13 / cp
Iron	ND	mg/L		0.03		E200.8	04/10/14 14:13 / cp
Molybdenum	ND	mg/L		0.01		E200.8	04/10/14 14:13 / cp
Selenium	0.002	mg/L		0.001		E200.8	04/10/14 14:13 / cp
Uranium	0.0021	mg/L		0.0003		E200.8	04/10/14 14:13 / cp
DATA QUALITY							
A/C Balance (± 5)	-4.71	%				A1030 E	04/15/14 14:26 / kbh
Anions	6.02	meq/L				A1030 E	04/15/14 14:26 / kbh
Cations	5.48	meq/L				A1030 E	04/15/14 14:26 / kbh
Solids, Total Dissolved Calculated	340	mg/L				A1030 E	04/15/14 14:26 / kbh
TDS Balance (0.80 - 1.20)	1.05					A1030 E	04/15/14 14:26 / kbh

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
H - Analysis performed past recommended holding time.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility
Lab ID: C14040216-029
Client Sample ID: 7123

Report Date: 04/17/14
Collection Date: 04/03/14 15:05
DateReceived: 04/07/14
Matrix: Groundwater

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Carbonate as CO3	ND	mg/L		5		A2320 B	04/07/14 21:51 / jba
Bicarbonate as HCO3	362	mg/L		5		A2320 B	04/07/14 21:51 / jba
Calcium	76	mg/L		1		E200.8	04/10/14 14:17 / cp
Chloride	10	mg/L		1		E300.0	04/09/14 18:50 / wc
Magnesium	55	mg/L		1		E200.7	04/10/14 15:39 / sf
Potassium	3	mg/L		1		E200.8	04/10/14 14:17 / cp
Sodium	10	mg/L		1		E200.7	04/10/14 15:39 / sf
Sulfate	165	mg/L		1		E300.0	04/09/14 18:50 / wc
PHYSICAL PROPERTIES							
Conductivity @ 25 C	869	umhos/cm		1		A2510 B	04/08/14 14:40 / alp
pH	7.72	s.u.	H	0.01		A4500-H B	04/08/14 14:40 / alp
Solids, Total Dissolved TDS @ 180 C	522	mg/L		10		A2540 C	04/08/14 15:41 / tmm
METALS - DISSOLVED							
Arsenic	ND	mg/L		0.001		E200.8	04/10/14 14:17 / cp
Iron	ND	mg/L		0.03		E200.8	04/10/14 14:17 / cp
Molybdenum	ND	mg/L		0.01		E200.8	04/10/14 14:17 / cp
Selenium	0.007	mg/L		0.001		E200.8	04/10/14 14:17 / cp
Uranium	0.0026	mg/L		0.0003		E200.8	04/10/14 14:17 / cp
DATA QUALITY							
A/C Balance (± 5)	-4.50	%				A1030 E	04/15/14 14:38 / kbh
Anions	9.68	meq/L				A1030 E	04/15/14 14:38 / kbh
Cations	8.84	meq/L				A1030 E	04/15/14 14:38 / kbh
Solids, Total Dissolved Calculated	510	mg/L				A1030 E	04/15/14 14:38 / kbh
TDS Balance (0.80 - 1.20)	1.02					A1030 E	04/15/14 14:38 / kbh

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
H - Analysis performed past recommended holding time.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility
Lab ID: C14040216-030
Client Sample ID: 7124

Report Date: 04/17/14
Collection Date: 04/03/14 15:30
DateReceived: 04/07/14
Matrix: Groundwater

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Carbonate as CO3	ND	mg/L		5		A2320 B	04/07/14 22:00 / jba
Bicarbonate as HCO3	374	mg/L		5		A2320 B	04/07/14 22:00 / jba
Calcium	89	mg/L		1		E200.8	04/10/14 07:00 / cp
Chloride	10	mg/L		1		E300.0	04/09/14 19:45 / wc
Magnesium	60	mg/L		1		E200.8	04/10/14 07:00 / cp
Potassium	3	mg/L		1		E200.8	04/10/14 07:00 / cp
Sodium	12	mg/L		1		E200.8	04/10/14 07:00 / cp
Sulfate	166	mg/L		1		E300.0	04/09/14 19:45 / wc
PHYSICAL PROPERTIES							
Conductivity @ 25 C	869	umhos/cm		1		A2510 B	04/08/14 14:43 / alp
pH	7.68	s.u.	H	0.01		A4500-H B	04/08/14 14:43 / alp
Solids, Total Dissolved TDS @ 180 C	526	mg/L		10		A2540 C	04/08/14 15:41 / tmm
METALS - DISSOLVED							
Arsenic	ND	mg/L		0.001		E200.8	04/10/14 07:00 / cp
Iron	ND	mg/L		0.03		E200.8	04/10/14 07:00 / cp
Molybdenum	ND	mg/L		0.01		E200.8	04/10/14 07:00 / cp
Selenium	0.007	mg/L		0.001		E200.8	04/10/14 07:00 / cp
Uranium	0.0037	mg/L		0.0003		E200.8	04/10/14 07:00 / cp
DATA QUALITY							
A/C Balance (± 5)	0.63	%				A1030 E	04/11/14 06:55 / kbh
Anions	9.90	meq/L				A1030 E	04/11/14 06:55 / kbh
Cations	10.0	meq/L				A1030 E	04/11/14 06:55 / kbh
Solids, Total Dissolved Calculated	530	mg/L				A1030 E	04/11/14 06:55 / kbh
TDS Balance (0.80 - 1.20)	1.00					A1030 E	04/11/14 06:55 / kbh

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
H - Analysis performed past recommended holding time.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility
Lab ID: C14040216-031
Client Sample ID: 7125

Report Date: 04/17/14
Collection Date: 04/04/14 08:50
DateReceived: 04/07/14
Matrix: Groundwater

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Carbonate as CO3	ND	mg/L		5		A2320 B	04/07/14 22:08 / jba
Bicarbonate as HCO3	318	mg/L		5		A2320 B	04/07/14 22:08 / jba
Calcium	285	mg/L		1		E200.8	04/10/14 07:26 / cp
Chloride	12	mg/L		1		E300.0	04/09/14 20:04 / wc
Magnesium	85	mg/L		1		E200.8	04/10/14 07:26 / cp
Potassium	4	mg/L		1		E200.8	04/10/14 07:26 / cp
Sodium	18	mg/L		1		E200.8	04/10/14 07:26 / cp
Sulfate	813	mg/L	D	2		E300.0	04/09/14 20:04 / wc
PHYSICAL PROPERTIES							
Conductivity @ 25 C	1800	umhos/cm		1		A2510 B	04/08/14 14:46 / alp
pH	7.37	s.u.	H	0.01		A4500-H B	04/08/14 14:46 / alp
Solids, Total Dissolved TDS @ 180 C	1480	mg/L		20		A2540 C	04/08/14 15:41 / tmm
METALS - DISSOLVED							
Arsenic	0.001	mg/L		0.001		E200.8	04/10/14 07:26 / cp
Iron	ND	mg/L		0.03		E200.8	04/10/14 14:21 / cp
Molybdenum	ND	mg/L		0.01		E200.8	04/10/14 14:21 / cp
Selenium	0.060	mg/L		0.001		E200.8	04/10/14 14:21 / cp
Uranium	0.0071	mg/L		0.0003		E200.8	04/10/14 07:26 / cp
DATA QUALITY							
A/C Balance (± 5)	-0.90	%				A1030 E	04/11/14 06:55 / kbh
Anions	22.5	meq/L				A1030 E	04/11/14 06:55 / kbh
Cations	22.1	meq/L				A1030 E	04/11/14 06:55 / kbh
Solids, Total Dissolved Calculated	1400	mg/L				A1030 E	04/11/14 06:55 / kbh
TDS Balance (0.80 - 1.20)	1.07					A1030 E	04/11/14 06:55 / kbh

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
H - Analysis performed past recommended holding time.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility
Lab ID: C14040216-032
Client Sample ID: 7126

Report Date: 04/17/14
Collection Date: 04/04/14 09:20
DateReceived: 04/07/14
Matrix: Groundwater

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Carbonate as CO3	ND	mg/L		5		A2320 B	04/07/14 22:16 / jba
Bicarbonate as HCO3	317	mg/L		5		A2320 B	04/07/14 22:16 / jba
Calcium	271	mg/L		1		E200.8	04/10/14 14:47 / cp
Chloride	12	mg/L		1		E300.0	04/09/14 20:22 / wc
Magnesium	86	mg/L		1		E200.8	04/10/14 14:47 / cp
Potassium	3	mg/L		1		E200.8	04/10/14 14:47 / cp
Sodium	18	mg/L		1		E200.8	04/10/14 14:47 / cp
Sulfate	856	mg/L	D	2		E300.0	04/09/14 20:22 / wc
PHYSICAL PROPERTIES							
Conductivity @ 25 C	1870	umhos/cm		1		A2510 B	04/08/14 14:49 / alp
pH	7.36	s.u.	H	0.01		A4500-H B	04/08/14 14:49 / alp
Solids, Total Dissolved TDS @ 180 C	1540	mg/L		20		A2540 C	04/08/14 15:42 / tmm
METALS - DISSOLVED							
Arsenic	0.001	mg/L		0.001		E200.8	04/10/14 14:47 / cp
Iron	ND	mg/L		0.03		E200.8	04/10/14 14:47 / cp
Molybdenum	ND	mg/L		0.01		E200.8	04/10/14 14:47 / cp
Selenium	0.055	mg/L		0.001		E200.8	04/10/14 14:47 / cp
Uranium	0.0066	mg/L		0.0003		E200.8	04/10/14 14:47 / cp
DATA QUALITY							
A/C Balance (± 5)	-4.25	%				A1030 E	04/14/14 08:01 / kbh
Anions	23.3	meq/L				A1030 E	04/14/14 08:01 / kbh
Cations	21.4	meq/L				A1030 E	04/14/14 08:01 / kbh
Solids, Total Dissolved Calculated	1400	mg/L				A1030 E	04/14/14 08:01 / kbh
TDS Balance (0.80 - 1.20)	1.08					A1030 E	04/14/14 08:01 / kbh

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
H - Analysis performed past recommended holding time.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility
Lab ID: C14040216-033
Client Sample ID: 7127

Report Date: 04/17/14
Collection Date: 04/04/14 09:45
DateReceived: 04/07/14
Matrix: Groundwater

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Carbonate as CO3	240	mg/L		5		A2320 B	04/10/14 11:42 / jba
Bicarbonate as HCO3	4270	mg/L		5		A2320 B	04/10/14 11:42 / jba
Calcium	37	mg/L		1		E200.8	04/10/14 15:04 / cp
Chloride	1260	mg/L	D	20		E300.0	04/09/14 20:40 / wc
Magnesium	63	mg/L		1		E200.8	04/10/14 15:04 / cp
Potassium	8	mg/L		1		E200.8	04/10/14 15:04 / cp
Sodium	4810	mg/L		1		E200.8	04/10/14 15:04 / cp
Sulfate	5980	mg/L	D	80		E300.0	04/09/14 20:40 / wc
PHYSICAL PROPERTIES							
Conductivity @ 25 C	18600	umhos/cm		5		A2510 B	04/08/14 14:52 / alp
pH	8.55	s.u.	H	0.01		A4500-H B	04/08/14 14:52 / alp
Solids, Total Dissolved TDS @ 180 C	14700	mg/L		200		A2540 C	04/08/14 15:42 / tmm
METALS - DISSOLVED							
Arsenic	0.161	mg/L	D	0.003		E200.8	04/10/14 15:04 / cp
Iron	0.14	mg/L		0.03		E200.8	04/10/14 15:04 / cp
Molybdenum	21.7	mg/L		0.01		E200.8	04/10/14 15:04 / cp
Selenium	0.128	mg/L	D	0.004		E200.8	04/10/14 15:04 / cp
Uranium	122	mg/L	D	0.0004		E200.8	04/10/14 15:04 / cp
DATA QUALITY							
A/C Balance (± 5)	-4.68	%				A1030 E	04/14/14 08:01 / kbh
Anions	238	meq/L				A1030 E	04/14/14 08:01 / kbh
Cations	217	meq/L				A1030 E	04/14/14 08:01 / kbh
Solids, Total Dissolved Calculated	14000	mg/L				A1030 E	04/14/14 08:01 / kbh
TDS Balance (0.80 - 1.20)	1.01					A1030 E	04/14/14 08:01 / kbh

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
H - Analysis performed past recommended holding time.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility
Lab ID: C14040216-034
Client Sample ID: 7128

Report Date: 04/17/14
Collection Date: 04/04/14 09:50
DateReceived: 04/07/14
Matrix: Groundwater

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Carbonate as CO3	240	mg/L		5		A2320 B	04/10/14 13:46 / jba
Bicarbonate as HCO3	4390	mg/L		5		A2320 B	04/10/14 13:46 / jba
Calcium	39	mg/L		1		E200.7	04/16/14 14:49 / sf
Chloride	1240	mg/L	D	20		E300.0	04/09/14 20:59 / wc
Magnesium	65	mg/L		1		E200.7	04/16/14 14:49 / sf
Potassium	9	mg/L		1		E200.7	04/16/14 14:49 / sf
Sodium	5080	mg/L	D	4		E200.7	04/16/14 14:49 / sf
Sulfate	6050	mg/L	D	80		E300.0	04/09/14 20:59 / wc
PHYSICAL PROPERTIES							
Conductivity @ 25 C	18900	umhos/cm		1		A2510 B	04/08/14 14:55 / alp
pH	8.53	s.u.	H	0.01		A4500-H B	04/08/14 14:55 / alp
Solids, Total Dissolved TDS @ 180 C	14900	mg/L		200		A2540 C	04/08/14 15:43 / tmm
METALS - DISSOLVED							
Arsenic	0.176	mg/L		0.001		E200.8	04/10/14 07:51 / cp
Iron	0.14	mg/L		0.03		E200.7	04/14/14 18:09 / sf
Molybdenum	23.8	mg/L		0.01		E200.8	04/10/14 07:51 / cp
Selenium	0.158	mg/L	D	0.005		E200.8	04/10/14 07:51 / cp
Uranium	136	mg/L		0.0003		E200.8	04/10/14 07:51 / cp
DATA QUALITY							
A/C Balance (± 5)	-2.64	%				A1030 E	04/17/14 12:26 / kbh
Anions	241	meq/L				A1030 E	04/17/14 12:26 / kbh
Cations	229	meq/L				A1030 E	04/17/14 12:26 / kbh
Solids, Total Dissolved Calculated	15000	mg/L				A1030 E	04/17/14 12:26 / kbh
TDS Balance (0.80 - 1.20)	1.00					A1030 E	04/17/14 12:26 / kbh

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
H - Analysis performed past recommended holding time.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility
Lab ID: C14040216-035
Client Sample ID: 7129

Report Date: 04/17/14
Collection Date: 04/04/14 10:20
DateReceived: 04/07/14
Matrix: Groundwater

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Carbonate as CO3	240	mg/L		5		A2320 B	04/10/14 13:51 / jba
Bicarbonate as HCO3	4390	mg/L		5		A2320 B	04/10/14 13:51 / jba
Calcium	46	mg/L		1		E200.8	04/10/14 07:56 / cp
Chloride	1310	mg/L	D	20		E300.0	04/09/14 21:17 / wc
Magnesium	64	mg/L		1		E200.8	04/10/14 07:56 / cp
Potassium	11	mg/L		1		E200.8	04/10/14 07:56 / cp
Sodium	4680	mg/L	D	4		E200.7	04/10/14 15:57 / sf
Sulfate	6200	mg/L	D	80		E300.0	04/09/14 21:17 / wc
PHYSICAL PROPERTIES							
Conductivity @ 25 C	18900	umhos/cm		1		A2510 B	04/08/14 14:58 / alp
pH	8.50	s.u.	H	0.01		A4500-H B	04/08/14 14:58 / alp
Solids, Total Dissolved TDS @ 180 C	14900	mg/L		200		A2540 C	04/08/14 15:43 / tmm
METALS - DISSOLVED							
Arsenic	0.177	mg/L		0.001		E200.8	04/10/14 07:56 / cp
Iron	0.16	mg/L		0.03		E200.8	04/10/14 07:56 / cp
Molybdenum	23.8	mg/L		0.01		E200.8	04/10/14 07:56 / cp
Selenium	0.138	mg/L		0.001		E200.8	04/10/14 07:56 / cp
Uranium	136	mg/L		0.0003		E200.8	04/10/14 07:56 / cp
DATA QUALITY							
A/C Balance (± 5)	-7.60	%				A1030 E	04/17/14 10:35 / kbh
Anions	246	meq/L				A1030 E	04/17/14 10:35 / kbh
Cations	211	meq/L				A1030 E	04/17/14 10:35 / kbh
Solids, Total Dissolved Calculated	15000	mg/L				A1030 E	04/17/14 10:35 / kbh
TDS Balance (0.80 - 1.20)	1.01					A1030 E	04/17/14 10:35 / kbh

- The Anion / Cation balance was confirmed by re-analysis.

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
H - Analysis performed past recommended holding time.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility
Lab ID: C14040216-036
Client Sample ID: 7130

Report Date: 04/17/14
Collection Date: 04/04/14 10:35
DateReceived: 04/07/14
Matrix: Groundwater

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Carbonate as CO3	6	mg/L		5		A2320 B	04/07/14 23:47 / jba
Bicarbonate as HCO3	456	mg/L		5		A2320 B	04/07/14 23:47 / jba
Calcium	31	mg/L		1		E200.7	04/14/14 16:40 / sf
Chloride	43	mg/L		1		E300.0	04/09/14 21:36 / wc
Magnesium	11	mg/L		1		E200.7	04/14/14 16:40 / sf
Potassium	4	mg/L		1		E200.7	04/14/14 16:40 / sf
Sodium	176	mg/L		1		E200.7	04/14/14 16:40 / sf
Sulfate	85	mg/L	D	2		E300.0	04/09/14 21:36 / wc
PHYSICAL PROPERTIES							
Conductivity @ 25 C	1020	umhos/cm		1		A2510 B	04/08/14 15:01 / alp
pH	8.19	s.u.	H	0.01		A4500-H B	04/08/14 15:01 / alp
Solids, Total Dissolved TDS @ 180 C	596	mg/L	D	10		A2540 C	04/08/14 15:43 / tmm
METALS - DISSOLVED							
Arsenic	0.003	mg/L		0.001		E200.8	04/10/14 08:21 / cp
Iron	0.44	mg/L		0.03		E200.8	04/10/14 08:21 / cp
Molybdenum	0.02	mg/L		0.01		E200.8	04/10/14 08:21 / cp
Selenium	ND	mg/L		0.001		E200.8	04/10/14 08:21 / cp
Uranium	0.0220	mg/L		0.0003		E200.8	04/10/14 08:21 / cp
DATA QUALITY							
A/C Balance (± 5)	-2.46	%				A1030 E	04/17/14 06:53 / kbh
Anions	10.8	meq/L				A1030 E	04/17/14 06:53 / kbh
Cations	10.2	meq/L				A1030 E	04/17/14 06:53 / kbh
Solids, Total Dissolved Calculated	600	mg/L				A1030 E	04/17/14 06:53 / kbh
TDS Balance (0.80 - 1.20)	1.00					A1030 E	04/17/14 06:53 / kbh

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
H - Analysis performed past recommended holding time.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility
Lab ID: C14040216-037
Client Sample ID: 7131

Report Date: 04/17/14
Collection Date: 04/04/14 11:05
DateReceived: 04/07/14
Matrix: Groundwater

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Carbonate as CO3	7	mg/L		5		A2320 B	04/08/14 00:04 / jba
Bicarbonate as HCO3	402	mg/L		5		A2320 B	04/08/14 00:04 / jba
Calcium	21	mg/L		1		E200.7	04/14/14 16:44 / sf
Chloride	41	mg/L		1		E300.0	04/09/14 21:54 / wc
Magnesium	8	mg/L		1		E200.7	04/14/14 16:44 / sf
Potassium	4	mg/L		1		E200.7	04/14/14 16:44 / sf
Sodium	166	mg/L		1		E200.7	04/14/14 16:44 / sf
Sulfate	69	mg/L		1		E300.0	04/09/14 21:54 / wc
PHYSICAL PROPERTIES							
Conductivity @ 25 C	912	umhos/cm		1		A2510 B	04/08/14 15:04 / alp
pH	8.26	s.u.	H	0.01		A4500-H B	04/08/14 15:04 / alp
Solids, Total Dissolved TDS @ 180 C	529	mg/L	D	10		A2540 C	04/08/14 15:44 / tmm
METALS - DISSOLVED							
Arsenic	0.003	mg/L		0.001		E200.8	04/10/14 08:26 / cp
Iron	0.34	mg/L		0.03		E200.8	04/10/14 08:26 / cp
Molybdenum	0.01	mg/L		0.01		E200.8	04/10/14 08:26 / cp
Selenium	ND	mg/L		0.001		E200.8	04/10/14 08:26 / cp
Uranium	0.0113	mg/L		0.0003		E200.8	04/10/14 08:26 / cp
DATA QUALITY							
A/C Balance (± 5)	-2.46	%				A1030 E	04/17/14 06:53 / kbh
Anions	9.52	meq/L				A1030 E	04/17/14 06:53 / kbh
Cations	9.06	meq/L				A1030 E	04/17/14 06:53 / kbh
Solids, Total Dissolved Calculated	530	mg/L				A1030 E	04/17/14 06:53 / kbh
TDS Balance (0.80 - 1.20)	1.00					A1030 E	04/17/14 06:53 / kbh

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
H - Analysis performed past recommended holding time.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility
Lab ID: C14040216-038
Client Sample ID: 7132

Report Date: 04/17/14
Collection Date: 04/04/14 11:25
DateReceived: 04/07/14
Matrix: Groundwater

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Carbonate as CO3	ND	mg/L		5		A2320 B	04/08/14 00:22 / jba
Bicarbonate as HCO3	27	mg/L		5		A2320 B	04/08/14 00:22 / jba
Calcium	9	mg/L		1		E200.8	04/10/14 08:30 / cp
Chloride	4	mg/L		1		E300.0	04/09/14 22:12 / wc
Magnesium	2	mg/L		1		E200.8	04/10/14 08:30 / cp
Potassium	ND	mg/L		1		E200.8	04/10/14 08:30 / cp
Sodium	3	mg/L		1		E200.8	04/10/14 08:30 / cp
Sulfate	11	mg/L		1		E300.0	04/09/14 22:12 / wc
PHYSICAL PROPERTIES							
Conductivity @ 25 C	89	umhos/cm		1		A2510 B	04/08/14 15:07 / alp
pH	7.18	s.u.	H	0.01		A4500-H B	04/08/14 15:07 / alp
Solids, Total Dissolved TDS @ 180 C	45	mg/L	D	10		A2540 C	04/08/14 15:44 / tmm
METALS - DISSOLVED							
Arsenic	ND	mg/L		0.001		E200.8	04/10/14 08:30 / cp
Iron	ND	mg/L		0.03		E200.8	04/10/14 08:30 / cp
Molybdenum	ND	mg/L		0.01		E200.8	04/10/14 08:30 / cp
Selenium	ND	mg/L		0.001		E200.8	04/10/14 08:30 / cp
Uranium	ND	mg/L		0.0003		E200.8	04/10/14 08:30 / cp
DATA QUALITY							
A/C Balance (± 5)	-0.81	%				A1030 E	04/11/14 06:55 / kbh
Anions	0.81	meq/L				A1030 E	04/11/14 06:55 / kbh
Cations	0.80	meq/L				A1030 E	04/11/14 06:55 / kbh
Solids, Total Dissolved Calculated	45	mg/L				A1030 E	04/11/14 06:55 / kbh
TDS Balance (0.80 - 1.20)	1.00					A1030 E	04/11/14 06:55 / kbh

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
H - Analysis performed past recommended holding time.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility
Lab ID: C14040216-039
Client Sample ID: 7133

Report Date: 04/17/14
Collection Date: 04/04/14 11:40
DateReceived: 04/07/14
Matrix: Groundwater

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Carbonate as CO3	ND	mg/L		5		A2320 B	04/08/14 00:37 / jba
Bicarbonate as HCO3	2940	mg/L		5		A2320 B	04/08/14 00:37 / jba
Calcium	365	mg/L		1		E200.8	04/10/14 08:34 / cp
Chloride	1150	mg/L	D	10		E300.0	04/09/14 23:26 / wc
Magnesium	128	mg/L		1		E200.8	04/10/14 08:34 / cp
Potassium	12	mg/L		1		E200.8	04/10/14 08:34 / cp
Sodium	4290	mg/L	D	4		E200.7	04/10/14 16:41 / sf
Sulfate	6560	mg/L	D	40		E300.0	04/09/14 23:26 / wc
PHYSICAL PROPERTIES							
Conductivity @ 25 C	16800	umhos/cm		1		A2510 B	04/08/14 15:22 / alp
pH	7.25	s.u.	H	0.01		A4500-H B	04/08/14 15:22 / alp
Solids, Total Dissolved TDS @ 180 C	13900	mg/L		100		A2540 C	04/08/14 15:45 / tmm
METALS - DISSOLVED							
Arsenic	0.006	mg/L		0.001		E200.8	04/10/14 08:34 / cp
Iron	ND	mg/L		0.03		E200.8	04/10/14 08:34 / cp
Molybdenum	29.9	mg/L		0.01		E200.8	04/10/14 08:34 / cp
Selenium	0.080	mg/L		0.001		E200.8	04/10/14 08:34 / cp
Uranium	68	mg/L	D	6		E200.7	04/10/14 16:41 / sf
DATA QUALITY							
A/C Balance (± 5)	-1.01	%				A1030 E	04/14/14 08:01 / kbh
Anions	220	meq/L				A1030 E	04/14/14 08:01 / kbh
Cations	216	meq/L				A1030 E	04/14/14 08:01 / kbh
Solids, Total Dissolved Calculated	14000	mg/L				A1030 E	04/14/14 08:01 / kbh
TDS Balance (0.80 - 1.20)	0.99					A1030 E	04/14/14 08:01 / kbh

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
H - Analysis performed past recommended holding time.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility
Lab ID: C14040216-040
Client Sample ID: 7134

Report Date: 04/17/14
Collection Date: 04/04/14 11:45
DateReceived: 04/07/14
Matrix: Groundwater

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Carbonate as CO3	ND	mg/L		5		A2320 B	04/08/14 00:52 / jba
Bicarbonate as HCO3	2940	mg/L		5		A2320 B	04/08/14 00:52 / jba
Calcium	360	mg/L		1		E200.8	04/10/14 08:39 / cp
Chloride	1160	mg/L	D	10		E300.0	04/10/14 00:21 / wc
Magnesium	124	mg/L		1		E200.8	04/10/14 08:39 / cp
Potassium	12	mg/L		1		E200.8	04/10/14 08:39 / cp
Sodium	4180	mg/L	D	4		E200.7	04/10/14 16:44 / sf
Sulfate	6610	mg/L	D	40		E300.0	04/10/14 00:21 / wc
PHYSICAL PROPERTIES							
Conductivity @ 25 C	16800	umhos/cm		1		A2510 B	04/08/14 15:25 / alp
pH	7.26	s.u.	H	0.01		A4500-H B	04/08/14 15:25 / alp
Solids, Total Dissolved TDS @ 180 C	13600	mg/L		100		A2540 C	04/08/14 15:45 / tmm
METALS - DISSOLVED							
Arsenic	0.006	mg/L		0.001		E200.8	04/10/14 08:39 / cp
Iron	ND	mg/L		0.03		E200.8	04/10/14 08:39 / cp
Molybdenum	30.6	mg/L		0.01		E200.8	04/10/14 08:39 / cp
Selenium	0.084	mg/L		0.001		E200.8	04/10/14 08:39 / cp
Uranium	68	mg/L	D	6		E200.7	04/10/14 16:44 / sf
DATA QUALITY							
A/C Balance (± 5)	-2.55	%				A1030 E	04/14/14 08:01 / kbh
Anions	221	meq/L				A1030 E	04/14/14 08:01 / kbh
Cations	210	meq/L				A1030 E	04/14/14 08:01 / kbh
Solids, Total Dissolved Calculated	14000	mg/L				A1030 E	04/14/14 08:01 / kbh
TDS Balance (0.80 - 1.20)	0.97					A1030 E	04/14/14 08:01 / kbh

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
H - Analysis performed past recommended holding time.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility
Lab ID: C14040216-041
Client Sample ID: 7135

Report Date: 04/17/14
Collection Date: 04/04/14 12:15
DateReceived: 04/07/14
Matrix: Groundwater

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Carbonate as CO3	ND	mg/L		5		A2320 B	04/08/14 01:06 / jba
Bicarbonate as HCO3	2930	mg/L		5		A2320 B	04/08/14 01:06 / jba
Calcium	353	mg/L		1		E200.8	04/10/14 08:43 / cp
Chloride	1160	mg/L	D	10		E300.0	04/10/14 00:40 / wc
Magnesium	124	mg/L		1		E200.8	04/10/14 08:43 / cp
Potassium	12	mg/L		1		E200.8	04/10/14 08:43 / cp
Sodium	4240	mg/L	D	4		E200.7	04/10/14 16:48 / sf
Sulfate	6610	mg/L	D	40		E300.0	04/10/14 00:40 / wc
PHYSICAL PROPERTIES							
Conductivity @ 25 C	16800	umhos/cm		1		A2510 B	04/08/14 15:28 / alp
pH	7.22	s.u.	H	0.01		A4500-H B	04/08/14 15:28 / alp
Solids, Total Dissolved TDS @ 180 C	13800	mg/L		100		A2540 C	04/08/14 15:46 / tmm
METALS - DISSOLVED							
Arsenic	0.007	mg/L		0.001		E200.8	04/10/14 08:43 / cp
Iron	0.11	mg/L		0.03		E200.8	04/10/14 08:43 / cp
Molybdenum	29.5	mg/L		0.01		E200.8	04/10/14 08:43 / cp
Selenium	0.096	mg/L		0.001		E200.8	04/10/14 08:43 / cp
Uranium	69	mg/L	D	6		E200.7	04/10/14 16:48 / sf
DATA QUALITY							
A/C Balance (± 5)	-1.92	%				A1030 E	04/14/14 08:01 / kbh
Anions	221	meq/L				A1030 E	04/14/14 08:01 / kbh
Cations	212	meq/L				A1030 E	04/14/14 08:01 / kbh
Solids, Total Dissolved Calculated	14000	mg/L				A1030 E	04/14/14 08:01 / kbh
TDS Balance (0.80 - 1.20)	0.98					A1030 E	04/14/14 08:01 / kbh

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
H - Analysis performed past recommended holding time.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility
Lab ID: C14040216-042
Client Sample ID: 7146

Report Date: 04/17/14
Collection Date: 04/03/14 08:45
DateReceived: 04/07/14
Matrix: Groundwater

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Carbonate as CO3	ND	mg/L		5		A2320 B	04/08/14 01:14 / jba
Bicarbonate as HCO3	236	mg/L		5		A2320 B	04/08/14 01:14 / jba
Calcium	111	mg/L		1		E200.8	04/10/14 08:47 / cp
Chloride	27	mg/L		1		E300.0	04/10/14 00:58 / wc
Magnesium	37	mg/L		1		E200.8	04/10/14 08:47 / cp
Potassium	4	mg/L		1		E200.8	04/10/14 08:47 / cp
Sodium	28	mg/L		1		E200.8	04/10/14 08:47 / cp
Sulfate	260	mg/L		1		E300.0	04/10/14 00:58 / wc
PHYSICAL PROPERTIES							
Conductivity @ 25 C	915	umhos/cm		1		A2510 B	04/08/14 15:31 / alp
pH	7.43	s.u.	H	0.01		A4500-H B	04/08/14 15:31 / alp
Solids, Total Dissolved TDS @ 180 C	614	mg/L		10		A2540 C	04/08/14 15:48 / tmm
METALS - DISSOLVED							
Arsenic	0.003	mg/L		0.001		E200.8	04/10/14 08:47 / cp
Iron	0.03	mg/L		0.03		E200.8	04/10/14 08:47 / cp
Molybdenum	0.09	mg/L		0.01		E200.8	04/10/14 08:47 / cp
Selenium	0.001	mg/L		0.001		E200.8	04/10/14 08:47 / cp
Uranium	0.0136	mg/L		0.0003		E200.8	04/10/14 08:47 / cp
DATA QUALITY							
A/C Balance (± 5)	-0.66	%				A1030 E	04/11/14 06:55 / kbh
Anions	10.0	meq/L				A1030 E	04/11/14 06:55 / kbh
Cations	9.91	meq/L				A1030 E	04/11/14 06:55 / kbh
Solids, Total Dissolved Calculated	580	mg/L				A1030 E	04/11/14 06:55 / kbh
TDS Balance (0.80 - 1.20)	1.05					A1030 E	04/11/14 06:55 / kbh

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
H - Analysis performed past recommended holding time.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility
Lab ID: C14040216-043
Client Sample ID: 7147

Report Date: 04/17/14
Collection Date: 04/03/14 09:20
DateReceived: 04/07/14
Matrix: Groundwater

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Carbonate as CO3	ND	mg/L		5		A2320 B	04/08/14 01:22 / jba
Bicarbonate as HCO3	239	mg/L		5		A2320 B	04/08/14 01:22 / jba
Calcium	103	mg/L		1		E200.8	04/10/14 09:25 / cp
Chloride	26	mg/L		1		E300.0	04/10/14 01:17 / wc
Magnesium	36	mg/L		1		E200.8	04/10/14 09:25 / cp
Potassium	3	mg/L		1		E200.8	04/10/14 09:25 / cp
Sodium	25	mg/L		1		E200.8	04/10/14 09:25 / cp
Sulfate	258	mg/L		1		E300.0	04/10/14 01:17 / wc
PHYSICAL PROPERTIES							
Conductivity @ 25 C	917	umhos/cm		1		A2510 B	04/08/14 15:34 / alp
pH	7.48	s.u.	H	0.01		A4500-H B	04/08/14 15:34 / alp
Solids, Total Dissolved TDS @ 180 C	609	mg/L	D	10		A2540 C	04/08/14 15:48 / tmm
METALS - DISSOLVED							
Arsenic	0.003	mg/L		0.001		E200.8	04/10/14 09:25 / cp
Iron	0.27	mg/L		0.03		E200.8	04/10/14 09:25 / cp
Molybdenum	0.06	mg/L		0.01		E200.8	04/10/14 09:25 / cp
Selenium	ND	mg/L		0.001		E200.8	04/10/14 09:25 / cp
Uranium	0.0046	mg/L		0.0003		E200.8	04/10/14 09:25 / cp
DATA QUALITY							
A/C Balance (± 5)	-3.86	%				A1030 E	04/11/14 06:55 / kbh
Anions	10.0	meq/L				A1030 E	04/11/14 06:55 / kbh
Cations	9.29	meq/L				A1030 E	04/11/14 06:55 / kbh
Solids, Total Dissolved Calculated	570	mg/L				A1030 E	04/11/14 06:55 / kbh
TDS Balance (0.80 - 1.20)	1.07					A1030 E	04/11/14 06:55 / kbh

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
H - Analysis performed past recommended holding time.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility
Lab ID: C14040216-044
Client Sample ID: 7148

Report Date: 04/17/14
Collection Date: 04/03/14 10:05
DateReceived: 04/07/14
Matrix: Groundwater

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Carbonate as CO3	ND	mg/L		5		A2320 B	04/08/14 01:30 / jba
Bicarbonate as HCO3	243	mg/L		5		A2320 B	04/08/14 01:30 / jba
Calcium	113	mg/L		1		E200.8	04/10/14 09:30 / cp
Chloride	28	mg/L		1		E300.0	04/10/14 01:35 / wc
Magnesium	39	mg/L		1		E200.8	04/10/14 09:30 / cp
Potassium	4	mg/L		1		E200.8	04/10/14 09:30 / cp
Sodium	31	mg/L		1		E200.8	04/10/14 09:30 / cp
Sulfate	285	mg/L		1		E300.0	04/10/14 01:35 / wc
PHYSICAL PROPERTIES							
Conductivity @ 25 C	979	umhos/cm		1		A2510 B	04/08/14 15:37 / alp
pH	7.34	s.u.	H	0.01		A4500-H B	04/08/14 15:37 / alp
Solids, Total Dissolved TDS @ 180 C	669	mg/L	D	10		A2540 C	04/08/14 15:49 / tmm
METALS - DISSOLVED							
Arsenic	0.002	mg/L		0.001		E200.8	04/10/14 09:30 / cp
Iron	0.06	mg/L		0.03		E200.8	04/10/14 09:30 / cp
Molybdenum	0.05	mg/L		0.01		E200.8	04/10/14 09:30 / cp
Selenium	0.001	mg/L		0.001		E200.8	04/10/14 09:30 / cp
Uranium	0.0104	mg/L		0.0003		E200.8	04/10/14 09:30 / cp
DATA QUALITY							
A/C Balance (± 5)	-2.41	%				A1030 E	04/11/14 06:55 / kbh
Anions	10.8	meq/L				A1030 E	04/11/14 06:55 / kbh
Cations	10.3	meq/L				A1030 E	04/11/14 06:55 / kbh
Solids, Total Dissolved Calculated	620	mg/L				A1030 E	04/11/14 06:55 / kbh
TDS Balance (0.80 - 1.20)	1.08					A1030 E	04/11/14 06:55 / kbh

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
H - Analysis performed past recommended holding time.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility
Lab ID: C14040216-045
Client Sample ID: 7149

Report Date: 04/17/14
Collection Date: 04/03/14 10:15
DateReceived: 04/07/14
Matrix: Groundwater

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Carbonate as CO3	ND	mg/L		5		A2320 B	04/08/14 01:37 / jba
Bicarbonate as HCO3	124	mg/L		5		A2320 B	04/08/14 01:37 / jba
Calcium	114	mg/L		1		E200.8	04/10/14 09:34 / cp
Chloride	20	mg/L		1		E300.0	04/10/14 01:53 / wc
Magnesium	46	mg/L		1		E200.8	04/10/14 09:34 / cp
Potassium	5	mg/L		1		E200.8	04/10/14 09:34 / cp
Sodium	29	mg/L		1		E200.8	04/10/14 09:34 / cp
Sulfate	450	mg/L	D	2		E300.0	04/10/14 01:53 / wc
PHYSICAL PROPERTIES							
Conductivity @ 25 C	1080	umhos/cm		1		A2510 B	04/08/14 15:40 / alp
pH	6.83	s.u.	H	0.01		A4500-H B	04/08/14 15:40 / alp
Solids, Total Dissolved TDS @ 180 C	783	mg/L	D	10		A2540 C	04/08/14 15:49 / tmm
METALS - DISSOLVED							
Arsenic	0.004	mg/L		0.001		E200.8	04/10/14 09:34 / cp
Iron	0.20	mg/L		0.03		E200.8	04/10/14 09:34 / cp
Molybdenum	ND	mg/L		0.01		E200.8	04/10/14 09:34 / cp
Selenium	ND	mg/L		0.001		E200.8	04/10/14 09:34 / cp
Uranium	0.0007	mg/L		0.0003		E200.8	04/10/14 09:34 / cp
DATA QUALITY							
A/C Balance (± 5)	-4.53	%				A1030 E	04/11/14 06:55 / kbh
Anions	12.0	meq/L				A1030 E	04/11/14 06:55 / kbh
Cations	10.9	meq/L				A1030 E	04/11/14 06:55 / kbh
Solids, Total Dissolved Calculated	730	mg/L				A1030 E	04/11/14 06:55 / kbh
TDS Balance (0.80 - 1.20)	1.08					A1030 E	04/11/14 06:55 / kbh

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
H - Analysis performed past recommended holding time.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility
Lab ID: C14040216-046
Client Sample ID: 7150

Report Date: 04/17/14
Collection Date: 04/03/14 10:48
DateReceived: 04/07/14
Matrix: Groundwater

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Carbonate as CO3	ND	mg/L		5		A2320 B	04/08/14 01:45 / jba
Bicarbonate as HCO3	127	mg/L		5		A2320 B	04/08/14 01:45 / jba
Calcium	117	mg/L		1		E200.8	04/10/14 09:38 / cp
Chloride	20	mg/L		1		E300.0	04/10/14 02:12 / wc
Magnesium	48	mg/L		1		E200.8	04/10/14 09:38 / cp
Potassium	6	mg/L		1		E200.8	04/10/14 09:38 / cp
Sodium	31	mg/L		1		E200.8	04/10/14 09:38 / cp
Sulfate	435	mg/L	D	2		E300.0	04/10/14 02:12 / wc
PHYSICAL PROPERTIES							
Conductivity @ 25 C	1050	umhos/cm		1		A2510 B	04/08/14 15:44 / alp
pH	6.56	s.u.	H	0.01		A4500-H B	04/08/14 15:44 / alp
Solids, Total Dissolved TDS @ 180 C	770	mg/L	D	10		A2540 C	04/08/14 15:49 / tmm
METALS - DISSOLVED							
Arsenic	0.004	mg/L		0.001		E200.8	04/10/14 09:38 / cp
Iron	0.23	mg/L		0.03		E200.8	04/10/14 09:38 / cp
Molybdenum	ND	mg/L		0.01		E200.8	04/10/14 14:51 / cp
Selenium	ND	mg/L		0.001		E200.8	04/10/14 09:38 / cp
Uranium	0.0006	mg/L		0.0003		E200.8	04/10/14 09:38 / cp
DATA QUALITY							
A/C Balance (± 5)	-1.88	%				A1030 E	04/11/14 06:55 / kbh
Anions	11.7	meq/L				A1030 E	04/11/14 06:55 / kbh
Cations	11.2	meq/L				A1030 E	04/11/14 06:55 / kbh
Solids, Total Dissolved Calculated	720	mg/L				A1030 E	04/11/14 06:55 / kbh
TDS Balance (0.80 - 1.20)	1.07					A1030 E	04/11/14 06:55 / kbh

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
H - Analysis performed past recommended holding time.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility
Lab ID: C14040216-047
Client Sample ID: 7151

Report Date: 04/17/14
Collection Date: 04/03/14 11:25
DateReceived: 04/07/14
Matrix: Groundwater

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Carbonate as CO3	ND	mg/L		5		A2320 B	04/08/14 02:00 / jba
Bicarbonate as HCO3	127	mg/L		5		A2320 B	04/08/14 02:00 / jba
Calcium	110	mg/L		1		E200.8	04/10/14 09:43 / cp
Chloride	20	mg/L		1		E300.0	04/10/14 02:30 / wc
Magnesium	46	mg/L		1		E200.8	04/10/14 09:43 / cp
Potassium	5	mg/L		1		E200.8	04/10/14 09:43 / cp
Sodium	31	mg/L		1		E200.8	04/10/14 09:43 / cp
Sulfate	425	mg/L	D	2		E300.0	04/10/14 02:30 / wc
PHYSICAL PROPERTIES							
Conductivity @ 25 C	1040	umhos/cm		1		A2510 B	04/08/14 15:50 / alp
pH	6.56	s.u.	H	0.01		A4500-H B	04/08/14 15:50 / alp
Solids, Total Dissolved TDS @ 180 C	744	mg/L	D	10		A2540 C	04/08/14 15:50 / tmm
METALS - DISSOLVED							
Arsenic	0.004	mg/L		0.001		E200.8	04/10/14 09:43 / cp
Iron	0.07	mg/L		0.03		E200.8	04/10/14 09:43 / cp
Molybdenum	ND	mg/L		0.01		E200.8	04/10/14 09:43 / cp
Selenium	ND	mg/L		0.001		E200.8	04/10/14 09:43 / cp
Uranium	0.0006	mg/L		0.0003		E200.8	04/10/14 09:43 / cp
DATA QUALITY							
A/C Balance (± 5)	-3.47	%				A1030 E	04/11/14 06:56 / kbh
Anions	11.5	meq/L				A1030 E	04/11/14 06:56 / kbh
Cations	10.7	meq/L				A1030 E	04/11/14 06:56 / kbh
Solids, Total Dissolved Calculated	700	mg/L				A1030 E	04/11/14 06:56 / kbh
TDS Balance (0.80 - 1.20)	1.06					A1030 E	04/11/14 06:56 / kbh

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
H - Analysis performed past recommended holding time.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility
Lab ID: C14040216-048
Client Sample ID: 7152

Report Date: 04/17/14
Collection Date: 04/03/14 11:30
DateReceived: 04/07/14
Matrix: Groundwater

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Carbonate as CO3	ND	mg/L		5		A2320 B	04/08/14 02:08 / jba
Bicarbonate as HCO3	143	mg/L		5		A2320 B	04/08/14 02:08 / jba
Calcium	108	mg/L		1		E200.8	04/10/14 09:47 / cp
Chloride	20	mg/L		1		E300.0	04/10/14 02:49 / wc
Magnesium	46	mg/L		1		E200.8	04/10/14 09:47 / cp
Potassium	5	mg/L		1		E200.8	04/10/14 09:47 / cp
Sodium	30	mg/L		1		E200.8	04/10/14 09:47 / cp
Sulfate	426	mg/L	D	2		E300.0	04/10/14 02:49 / wc
PHYSICAL PROPERTIES							
Conductivity @ 25 C	1030	umhos/cm		5		A2510 B	04/08/14 15:53 / alp
pH	6.57	s.u.	H	0.01		A4500-H B	04/08/14 15:53 / alp
Solids, Total Dissolved TDS @ 180 C	752	mg/L		10		A2540 C	04/08/14 15:50 / tmm
METALS - DISSOLVED							
Arsenic	0.004	mg/L		0.001		E200.8	04/10/14 09:47 / cp
Iron	0.07	mg/L		0.03		E200.8	04/10/14 09:47 / cp
Molybdenum	ND	mg/L		0.01		E200.8	04/10/14 09:47 / cp
Selenium	ND	mg/L		0.001		E200.8	04/10/14 09:47 / cp
Uranium	0.0006	mg/L		0.0003		E200.8	04/10/14 09:47 / cp
DATA QUALITY							
A/C Balance (± 5)	-4.89	%				A1030 E	04/11/14 06:56 / kbh
Anions	11.8	meq/L				A1030 E	04/11/14 06:56 / kbh
Cations	10.7	meq/L				A1030 E	04/11/14 06:56 / kbh
Solids, Total Dissolved Calculated	710	mg/L				A1030 E	04/11/14 06:56 / kbh
TDS Balance (0.80 - 1.20)	1.06					A1030 E	04/11/14 06:56 / kbh

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
H - Analysis performed past recommended holding time.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility
Lab ID: C14040216-049
Client Sample ID: 7153

Report Date: 04/17/14
Collection Date: 04/03/14 11:45
DateReceived: 04/07/14
Matrix: Groundwater

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Carbonate as CO3	ND	mg/L		5		A2320 B	04/08/14 02:16 / jba
Bicarbonate as HCO3	253	mg/L		5		A2320 B	04/08/14 02:16 / jba
Calcium	130	mg/L		1		E200.8	04/10/14 10:13 / cp
Chloride	68	mg/L		1		E300.0	04/10/14 03:44 / wc
Magnesium	32	mg/L		1		E200.8	04/10/14 10:13 / cp
Potassium	4	mg/L		1		E200.8	04/10/14 10:13 / cp
Sodium	50	mg/L		1		E200.8	04/10/14 10:13 / cp
Sulfate	283	mg/L	D	2		E300.0	04/10/14 03:44 / wc
PHYSICAL PROPERTIES							
Conductivity @ 25 C	1130	umhos/cm		5		A2510 B	04/08/14 15:56 / alp
pH	7.49	s.u.	H	0.01		A4500-H B	04/08/14 15:56 / alp
Solids, Total Dissolved TDS @ 180 C	750	mg/L		10		A2540 C	04/08/14 15:50 / tmm
METALS - DISSOLVED							
Arsenic	0.014	mg/L		0.001		E200.8	04/10/14 10:13 / cp
Iron	ND	mg/L		0.03		E200.7	04/10/14 17:02 / sf
Molybdenum	ND	mg/L		0.01		E200.8	04/10/14 10:13 / cp
Selenium	0.004	mg/L		0.001		E200.8	04/10/14 10:13 / cp
Uranium	0.0094	mg/L		0.0003		E200.8	04/10/14 10:13 / cp
DATA QUALITY							
A/C Balance (± 5)	-3.01	%				A1030 E	04/14/14 08:01 / kbh
Anions	12.1	meq/L				A1030 E	04/14/14 08:01 / kbh
Cations	11.4	meq/L				A1030 E	04/14/14 08:01 / kbh
Solids, Total Dissolved Calculated	720	mg/L				A1030 E	04/14/14 08:01 / kbh
TDS Balance (0.80 - 1.20)	1.05					A1030 E	04/14/14 08:01 / kbh

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
H - Analysis performed past recommended holding time.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility
Lab ID: C14040216-050
Client Sample ID: 7154

Report Date: 04/17/14
Collection Date: 04/03/14 12:10
DateReceived: 04/07/14
Matrix: Groundwater

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Carbonate as CO3	ND	mg/L		5		A2320 B	04/08/14 02:24 / jba
Bicarbonate as HCO3	255	mg/L		5		A2320 B	04/08/14 02:24 / jba
Calcium	129	mg/L		1		E200.8	04/10/14 10:17 / cp
Chloride	66	mg/L	D	5		E300.0	04/10/14 04:39 / wc
Magnesium	35	mg/L		1		E200.8	04/10/14 10:17 / cp
Potassium	4	mg/L		1		E200.8	04/10/14 10:17 / cp
Sodium	55	mg/L		1		E200.8	04/10/14 10:17 / cp
Sulfate	270	mg/L	D	20		E300.0	04/10/14 04:39 / wc
PHYSICAL PROPERTIES							
Conductivity @ 25 C	1130	umhos/cm		5		A2510 B	04/08/14 15:59 / alp
pH	7.55	s.u.	H	0.01		A4500-H B	04/08/14 15:59 / alp
Solids, Total Dissolved TDS @ 180 C	749	mg/L	D	10		A2540 C	04/08/14 15:50 / tmm
METALS - DISSOLVED							
Arsenic	0.014	mg/L		0.001		E200.8	04/10/14 10:17 / cp
Iron	0.03	mg/L		0.03		E200.7	04/10/14 17:06 / sf
Molybdenum	ND	mg/L		0.01		E200.8	04/10/14 10:17 / cp
Selenium	0.005	mg/L		0.001		E200.8	04/10/14 10:17 / cp
Uranium	0.0094	mg/L		0.0003		E200.8	04/10/14 10:17 / cp
DATA QUALITY							
A/C Balance (± 5)	0.58	%				A1030 E	04/14/14 08:02 / kbh
Anions	11.7	meq/L				A1030 E	04/14/14 08:02 / kbh
Cations	11.8	meq/L				A1030 E	04/14/14 08:02 / kbh
Solids, Total Dissolved Calculated	700	mg/L				A1030 E	04/14/14 08:02 / kbh
TDS Balance (0.80 - 1.20)	1.07					A1030 E	04/14/14 08:02 / kbh

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
H - Analysis performed past recommended holding time.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility
Lab ID: C14040216-051
Client Sample ID: 7155

Report Date: 04/17/14
Collection Date: 04/03/14 13:35
DateReceived: 04/07/14
Matrix: Groundwater

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Carbonate as CO3	ND	mg/L		5		A2320 B	04/08/14 02:32 / jba
Bicarbonate as HCO3	256	mg/L		5		A2320 B	04/08/14 02:32 / jba
Calcium	132	mg/L		1		E200.8	04/10/14 10:22 / cp
Chloride	70	mg/L		1		E300.0	04/10/14 04:58 / wc
Magnesium	34	mg/L		1		E200.8	04/10/14 10:22 / cp
Potassium	4	mg/L		1		E200.8	04/10/14 10:22 / cp
Sodium	55	mg/L		1		E200.8	04/10/14 10:22 / cp
Sulfate	293	mg/L	D	2		E300.0	04/10/14 04:58 / wc
PHYSICAL PROPERTIES							
Conductivity @ 25 C	1150	umhos/cm		5		A2510 B	04/08/14 16:02 / alp
pH	7.55	s.u.	H	0.01		A4500-H B	04/08/14 16:02 / alp
Solids, Total Dissolved TDS @ 180 C	758	mg/L	D	10		A2540 C	04/08/14 15:51 / tmm
METALS - DISSOLVED							
Arsenic	0.014	mg/L		0.001		E200.8	04/10/14 10:22 / cp
Iron	ND	mg/L		0.03		E200.7	04/10/14 17:10 / sf
Molybdenum	0.01	mg/L		0.01		E200.7	04/10/14 17:10 / sf
Selenium	0.005	mg/L		0.001		E200.8	04/10/14 10:22 / cp
Uranium	0.0095	mg/L		0.0003		E200.8	04/10/14 10:22 / cp
DATA QUALITY							
A/C Balance (± 5)	-2.42	%				A1030 E	04/14/14 08:02 / kbh
Anions	12.4	meq/L				A1030 E	04/14/14 08:02 / kbh
Cations	11.8	meq/L				A1030 E	04/14/14 08:02 / kbh
Solids, Total Dissolved Calculated	740	mg/L				A1030 E	04/14/14 08:02 / kbh
TDS Balance (0.80 - 1.20)	1.03					A1030 E	04/14/14 08:02 / kbh

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
H - Analysis performed past recommended holding time.

QA/QC Summary Report

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Report Date: 04/17/14
Project: Lisbon, UT Facility
Work Order: C14040216

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: A2310 B										Batch: R185479
Lab ID: MBLK	Method Blank					Run: MANTECH_140415A				04/15/14 08:46
Acidity, Total as CaCO3		3	mg/L	0.9						
Lab ID: C14040216-017ADUP	Sample Duplicate					Run: MANTECH_140415A				04/15/14 09:01
Acidity, Total as CaCO3		455	mg/L	5.0				11	20	

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

QA/QC Summary Report

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Report Date: 04/17/14
Project: Lisbon, UT Facility
Work Order: C14040216

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: A2320 B									Batch: R185214	
Lab ID: MBLK	3	Method Blank				Run: MANTECH_140407A			04/07/14 16:00	
Alkalinity, Total as CaCO3		0.7	mg/L	0.6						
Carbonate as CO3		ND	mg/L	1						
Bicarbonate as HCO3		ND	mg/L	1						
Lab ID: LCS_131219		Laboratory Control Sample				Run: MANTECH_140407A			04/07/14 16:14	
Alkalinity, Total as CaCO3		260	mg/L	5.0	104	90	110			
Lab ID: C14040196-002AMS		Sample Matrix Spike				Run: MANTECH_140407A			04/07/14 16:47	
Alkalinity, Total as CaCO3		420	mg/L	5.0	98	80	120			
Lab ID: C14040216-006ADUP	3	Sample Duplicate				Run: MANTECH_140407A			04/07/14 18:05	
Alkalinity, Total as CaCO3		190	mg/L	5.0				5.0	10	
Carbonate as CO3		ND	mg/L	5.0					10	
Bicarbonate as HCO3		232	mg/L	5.0				5.0	10	
Method: A2320 B									Batch: 140410_1_ALK-W	
Lab ID: MBLK1_140410_	3	Method Blank				Run: TTR-ALK_140410A			04/10/14 11:09	
Alkalinity, Total as CaCO3		1	mg/L	1						
Carbonate as CO3		ND	mg/L	1						
Bicarbonate as HCO3		2	mg/L	1						
Lab ID: LCS_131219		Laboratory Control Sample				Run: TTR-ALK_140410A			04/10/14 11:21	
Alkalinity, Total as CaCO3		1280	mg/L	5.0	102	90	110			
Lab ID: C14040216-033ADUP	3	Sample Duplicate				Run: TTR-ALK_140410A			04/10/14 11:47	
Alkalinity, Total as CaCO3		3900	mg/L	5.0				0.0	10	
Carbonate as CO3		180	mg/L	5.0				29	10	R
Bicarbonate as HCO3		4390	mg/L	5.0				2.8	10	
Lab ID: C14040216-033AMS		Sample Matrix Spike				Run: TTR-ALK_140410A			04/10/14 11:54	
Alkalinity, Total as CaCO3		6400	mg/L	5.0	100	80	120			

Qualifiers:

RL - Analyte reporting limit.
ND - Not detected at the reporting limit.
R - RPD exceeds advisory limit.

QA/QC Summary Report

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Report Date: 04/17/14
Project: Lisbon, UT Facility
Work Order: C14040216

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: A2510 B										Batch: R185221
Lab ID: SC 100	Initial Calibration Verification Standard					Run: PHSC_101-C_140408A				04/08/14 08:46
Conductivity @ 25 C		106	umhos/cm	5.0	106	90	110			
Lab ID: SC 2ND 1413	Laboratory Control Sample					Run: PHSC_101-C_140408A				04/08/14 08:59
Conductivity @ 25 C		1430	umhos/cm	5.0	101	90	110			
Lab ID: MBLK	Method Blank					Run: PHSC_101-C_140408A				04/08/14 09:28
Conductivity @ 25 C		2	umhos/cm	0.8						
Lab ID: C14040216-007ADUP	Sample Duplicate					Run: PHSC_101-C_140408A				04/08/14 12:53
Conductivity @ 25 C		1080	umhos/cm	5.0				0.3	10	
Lab ID: C14040216-018ADUP	Sample Duplicate					Run: PHSC_101-C_140408A				04/08/14 13:29
Conductivity @ 25 C		2180	umhos/cm	5.0				0.1	10	

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

QA/QC Summary Report

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Report Date: 04/17/14
Project: Lisbon, UT Facility
Work Order: C14040216

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: A2540 C									Batch: TDS140408B	
Lab ID: MB-1_140408B		Method Blank				Run: BAL-19_140408A			04/08/14 15:26	
Solids, Total Dissolved TDS @ 180 C		ND	mg/L	7						
Lab ID: LCS-2_140408B		Laboratory Control Sample				Run: BAL-19_140408A			04/08/14 15:27	
Solids, Total Dissolved TDS @ 180 C		2040	mg/L	20	102	90	110			
Lab ID: C14040216-001A DUP		Sample Duplicate				Run: BAL-19_140408A			04/08/14 15:27	
Solids, Total Dissolved TDS @ 180 C		4100	mg/L	39				0.1	5	
Lab ID: C14040216-002A MS		Sample Matrix Spike				Run: BAL-19_140408A			04/08/14 15:28	
Solids, Total Dissolved TDS @ 180 C		6720	mg/L	40	100	90	110			
Lab ID: C14040216-021A DUP		Sample Duplicate				Run: BAL-19_140408A			04/08/14 15:38	
Solids, Total Dissolved TDS @ 180 C		545	mg/L	10				0.1	5	
Lab ID: C14040216-022A MS		Sample Matrix Spike				Run: BAL-19_140408A			04/08/14 15:38	
Solids, Total Dissolved TDS @ 180 C		1460	mg/L	11	99	90	110			

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

QA/QC Summary Report

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Report Date: 04/17/14
Project: Lisbon, UT Facility
Work Order: C14040216

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: **A4500-H B**								Analytical Run: PHSC_101-C_140408A		
Lab ID: **pH 6.86**	Initial Calibration Verification Standard								04/08/14 08:43	
pH		6.88	s.u.	0.010	100	98	102			
Method: **A4500-H B**									Batch: R185221	
Lab ID: **C14040216-007ADUP**	Sample Duplicate					Run: PHSC_101-C_140408A			04/08/14 12:53	
pH		7.71	s.u.	0.010				0.1	3	
Lab ID: **C14040216-018ADUP**	Sample Duplicate					Run: PHSC_101-C_140408A			04/08/14 13:29	
pH		4.49	s.u.	0.010				0.0	3	

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

QA/QC Summary Report

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC **Report Date:** 04/17/14

Project: Lisbon, UT Facility **Work Order:** C14040216

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: **E200.7**									Analytical Run: ICP2-C_140414A	
Lab ID: **ICV**	Initial Calibration Verification Standard								04/14/14 11:50	
Iron		5.08	mg/L	0.030	102	95	105			
Lab ID: **ICSA**	Interference Check Sample A								04/14/14 12:18	
Iron		187	mg/L	0.030	94	80	120			
Lab ID: **ICSAB**	Interference Check Sample AB								04/14/14 12:22	
Iron		188	mg/L	0.030	94	80	120			
Method: **E200.7**									Batch: R185452	
Lab ID: **MB-140414A**	Method Blank				Run: ICP2-C_140414A				04/14/14 12:46	
Iron		0.002	mg/L	0.001						
Lab ID: **LFB-140414A**	Laboratory Fortified Blank				Run: ICP2-C_140414A				04/14/14 12:50	
Iron		0.967	mg/L	0.030	97	85	115			
Lab ID: **C14040342-001BMS2**	Sample Matrix Spike				Run: ICP2-C_140414A				04/14/14 20:30	
Iron		9.87	mg/L	0.030	97	70	130			
Lab ID: **C14040342-001BMSD**	Sample Matrix Spike Duplicate				Run: ICP2-C_140414A				04/14/14 20:34	
Iron		9.74	mg/L	0.030	95	70	130	1.4	20	

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

QA/QC Summary Report

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Report Date: 04/17/14
Project: Lisbon, UT Facility
Work Order: C14040216

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E200.7									Analytical Run: ICP4-C_140410A	
Lab ID: ICV	5	Initial Calibration Verification Standard							04/10/14 13:19	
Iron		4.87	mg/L	0.030	97	95	105			
Magnesium		48.8	mg/L	0.50	98	95	105			
Molybdenum		0.986	mg/L	0.10	99	95	105			
Sodium		48.9	mg/L	0.50	98	95	105			
Uranium		5.14	mg/L	1.0	103	95	105			
Lab ID: ICSA	5	Interference Check Sample A							04/10/14 13:33	
Iron		175	mg/L	0.030	88	80	120			
Magnesium		484	mg/L	0.50	97	80	120			
Molybdenum		0.00118	mg/L	0.10						
Sodium		-0.0743	mg/L	0.50						
Uranium		0.0750	mg/L	1.0						
Lab ID: ICSAB	5	Interference Check Sample AB							04/10/14 13:37	
Iron		181	mg/L	0.030	91	80	120			
Magnesium		503	mg/L	0.50	101	80	120			
Molybdenum		0.000790	mg/L	0.10						
Sodium		0.0329	mg/L	0.50						
Uranium		0.146	mg/L	1.0						
Method: E200.7										Batch: R185354
Lab ID: MB-140410A	5	Method Blank				Run: ICP4-C_140410A			04/10/14 13:55	
Iron		ND	mg/L	0.002						
Magnesium		ND	mg/L	0.02						
Molybdenum		ND	mg/L	0.003						
Sodium		ND	mg/L	0.2						
Uranium		ND	mg/L	0.3						
Lab ID: LFB-140410A	5	Laboratory Fortified Blank				Run: ICP4-C_140410A			04/10/14 13:59	
Iron		0.913	mg/L	0.030	91	85	115			
Magnesium		45.6	mg/L	0.50	91	85	115			
Molybdenum		0.929	mg/L	0.10	93	85	115			
Sodium		46.3	mg/L	0.50	93	85	115			
Uranium		4.85	mg/L	1.0	97	85	115			
Lab ID: C14040216-028BMS2	5	Sample Matrix Spike				Run: ICP4-C_140410A			04/10/14 15:32	
Iron		1.77	mg/L	0.030	87	70	130			
Magnesium		105	mg/L	1.0	88	70	130			
Molybdenum		1.83	mg/L	0.0059	89	70	130			
Sodium		119	mg/L	1.0	88	70	130			
Uranium		9.35	mg/L	0.61	92	70	130			
Lab ID: C14040216-028BMSD	5	Sample Matrix Spike Duplicate				Run: ICP4-C_140410A			04/10/14 15:35	
Iron		1.73	mg/L	0.030	85	70	130	2.3	20	
Magnesium		103	mg/L	1.0	86	70	130	2.1	20	
Molybdenum		1.78	mg/L	0.0059	87	70	130	2.4	20	

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

QA/QC Summary Report

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC **Report Date:** 04/17/14

Project: Lisbon, UT Facility **Work Order:** C14040216

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E200.7										Batch: R185354
Lab ID: C14040216-028BMSD	5	Sample Matrix Spike Duplicate				Run: ICP4-C_140410A				04/10/14 15:35
Sodium		116	mg/L	1.0	85	70	130	3.2	20	
Uranium		9.25	mg/L	0.61	91	70	130	1.1	20	
Lab ID: C14040216-046BMS2	5	Sample Matrix Spike				Run: ICP4-C_140410A				04/10/14 16:56
Iron		2.15	mg/L	0.030	96	70	130			
Magnesium		148	mg/L	1.0	98	70	130			
Molybdenum		1.92	mg/L	0.0059	94	70	130			
Sodium		130	mg/L	1.0	98	70	130			
Uranium		10.1	mg/L	0.61	99	70	130			
Lab ID: C14040216-046BMSD	5	Sample Matrix Spike Duplicate				Run: ICP4-C_140410A				04/10/14 16:59
Iron		2.16	mg/L	0.030	96	70	130	0.0	20	
Magnesium		148	mg/L	1.0	98	70	130	0.3	20	
Molybdenum		1.93	mg/L	0.0059	94	70	130	0.4	20	
Sodium		130	mg/L	1.0	98	70	130	0.4	20	
Uranium		10.1	mg/L	0.61	99	70	130	0.1	20	

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

QA/QC Summary Report

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC **Report Date:** 04/17/14

Project: Lisbon, UT Facility **Work Order:** C14040216

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E200.7									Analytical Run: ICP4-C_140414A	
Lab ID: ICV	4	Initial Calibration Verification Standard							04/14/14 15:11	
Calcium		49.5	mg/L	0.50	99	95	105			
Magnesium		49.2	mg/L	0.50	98	95	105			
Potassium		49.0	mg/L	0.50	98	95	105			
Sodium		49.4	mg/L	0.50	99	95	105			
Lab ID: ICSA	4	Interference Check Sample A							04/14/14 15:25	
Calcium		467	mg/L	0.50	93	80	120			
Magnesium		495	mg/L	0.50	99	80	120			
Potassium		-0.0257	mg/L	0.50						
Sodium		-0.183	mg/L	0.50						
Lab ID: ICSAB	4	Interference Check Sample AB							04/14/14 15:29	
Calcium		473	mg/L	0.50	95	80	120			
Magnesium		500	mg/L	0.50	100	80	120			
Potassium		-0.0191	mg/L	0.50						
Sodium		-0.0369	mg/L	0.50						
Method: E200.7									Batch: R185466	
Lab ID: MB-140414A	4	Method Blank				Run: ICP4-C_140414A			04/14/14 15:47	
Calcium		ND	mg/L	0.02						
Magnesium		ND	mg/L	0.02						
Potassium		ND	mg/L	0.04						
Sodium		ND	mg/L	0.2						
Lab ID: LFB-140414A	4	Laboratory Fortified Blank				Run: ICP4-C_140414A			04/14/14 15:51	
Calcium		48.4	mg/L	0.50	97	85	115			
Magnesium		48.2	mg/L	0.50	96	85	115			
Potassium		50.3	mg/L	0.50	101	85	115			
Sodium		49.8	mg/L	0.50	100	85	115			
Lab ID: C14040216-008BMS2	4	Sample Matrix Spike				Run: ICP4-C_140414A			04/14/14 16:05	
Calcium		219	mg/L	1.0	94	70	130			
Magnesium		133	mg/L	1.0	96	70	130			
Potassium		104	mg/L	1.0	98	70	130			
Sodium		152	mg/L	1.0	96	70	130			
Lab ID: C14040216-008BMSD	4	Sample Matrix Spike Duplicate				Run: ICP4-C_140414A			04/14/14 16:08	
Calcium		218	mg/L	1.0	93	70	130	0.4	20	
Magnesium		133	mg/L	1.0	95	70	130	0.3	20	
Potassium		103	mg/L	1.0	97	70	130	0.4	20	
Sodium		152	mg/L	1.0	96	70	130	0.2	20	
Lab ID: C14040293-018BMS2	4	Sample Matrix Spike				Run: ICP4-C_140414A			04/14/14 16:58	
Calcium		250	mg/L	1.0	88	70	130			
Magnesium		138	mg/L	1.0	93	70	130			
Potassium		99.9	mg/L	1.0	94	70	130			
Sodium		219	mg/L	1.0	90	70	130			

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

QA/QC Summary Report

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Report Date: 04/17/14
Project: Lisbon, UT Facility
Work Order: C14040216

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: **E200.7**									Batch: R185466	
Lab ID: **C14040293-018BMS2**	4	Sample Matrix Spike				Run: ICP4-C_140414A			04/14/14 16:58	
Lab ID: **C14040293-018BMSD**	4	Sample Matrix Spike Duplicate				Run: ICP4-C_140414A			04/14/14 17:02	
Calcium		249	mg/L	1.0	87	70	130	0.5	20	
Magnesium		138	mg/L	1.0	92	70	130	0.5	20	
Potassium		98.9	mg/L	1.0	93	70	130	0.9	20	
Sodium		217	mg/L	1.0	89	70	130	0.7	20	

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

QA/QC Summary Report

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC **Report Date:** 04/17/14

Project: Lisbon, UT Facility **Work Order:** C14040216

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E200.7									Analytical Run: ICP4-C_140416A	
Lab ID: ICV	4	Initial Calibration Verification Standard							04/16/14 14:02	
Calcium		50.3	mg/L	0.50	101	95	105			
Magnesium		50.2	mg/L	0.50	100	95	105			
Potassium		49.6	mg/L	0.50	99	95	105			
Sodium		49.9	mg/L	0.50	100	95	105			
Lab ID: ICSA	4	Interference Check Sample A							04/16/14 14:16	
Calcium		453	mg/L	0.50	91	80	120			
Magnesium		489	mg/L	0.50	98	80	120			
Potassium		-0.00472	mg/L	0.50						
Sodium		-0.158	mg/L	0.50						
Lab ID: ICSAB	4	Interference Check Sample AB							04/16/14 14:20	
Calcium		468	mg/L	0.50	94	80	120			
Magnesium		501	mg/L	0.50	100	80	120			
Potassium		-0.0513	mg/L	0.50						
Sodium		-0.137	mg/L	0.50						
Method: E200.7									Batch: R185561	
Lab ID: MB-140416A	4	Method Blank				Run: ICP4-C_140416A			04/16/14 14:38	
Calcium		0.03	mg/L	0.02						
Magnesium		0.06	mg/L	0.01						
Potassium		ND	mg/L	0.04						
Sodium		ND	mg/L	0.2						
Lab ID: LFB-140416A	4	Laboratory Fortified Blank				Run: ICP4-C_140416A			04/16/14 14:42	
Calcium		48.6	mg/L	0.50	97	85	115			
Magnesium		48.1	mg/L	0.50	96	85	115			
Potassium		49.1	mg/L	0.50	98	85	115			
Sodium		48.7	mg/L	0.50	97	85	115			
Lab ID: C14040293-010BMS2	4	Sample Matrix Spike				Run: ICP4-C_140416A			04/16/14 14:56	
Calcium		181	mg/L	1.0	88	70	130			
Magnesium		119	mg/L	1.0	91	70	130			
Potassium		95.7	mg/L	1.0	91	70	130			
Sodium		284	mg/L	1.0	81	70	130			
Lab ID: C14040293-010BMSD	4	Sample Matrix Spike Duplicate				Run: ICP4-C_140416A			04/16/14 14:59	
Calcium		181	mg/L	1.0	88	70	130	0.1	20	
Magnesium		118	mg/L	1.0	91	70	130	0.3	20	
Potassium		95.4	mg/L	1.0	90	70	130	0.3	20	
Sodium		284	mg/L	1.0	81	70	130	0.1	20	

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

QA/QC Summary Report

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC **Report Date:** 04/17/14

Project: Lisbon, UT Facility **Work Order:** C14040216

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E200.8									Analytical Run: ICPMS4-C_140409A	
Lab ID: ICV	9	Initial Calibration Verification Standard							04/09/14 13:08	
Arsenic		0.0483	mg/L	0.0010	97	90	110			
Calcium		9.92	mg/L	0.0066	99	90	110			
Iron		1.01	mg/L	0.0010	101	90	110			
Magnesium		10.6	mg/L	0.0027	106	90	110			
Molybdenum		0.0490	mg/L	0.0010	98	90	110			
Potassium		10.0	mg/L	0.0041	100	90	110			
Selenium		0.0494	mg/L	0.0010	99	90	110			
Sodium		10.5	mg/L	0.0043	105	90	110			
Uranium		0.0504	mg/L	0.00030	101	90	110			
Method: E200.8									Batch: R185310	
Lab ID: LRB	9	Method Blank				Run: ICPMS4-C_140409A			04/09/14 14:03	
Arsenic		ND	mg/L	5E-05						
Calcium		0.03	mg/L	0.007						
Iron		0.0006	mg/L	0.0006						
Magnesium		ND	mg/L	0.003						
Molybdenum		ND	mg/L	3E-05						
Potassium		ND	mg/L	0.004						
Selenium		ND	mg/L	7E-05						
Sodium		0.01	mg/L	0.004						
Uranium		ND	mg/L	9E-06						
Lab ID: LFB	9	Laboratory Fortified Blank				Run: ICPMS4-C_140409A			04/09/14 14:07	
Arsenic		0.0494	mg/L	0.0010	99	85	115			
Calcium		12.7	mg/L	0.0066	102	85	115			
Iron		1.29	mg/L	0.0010	103	85	115			
Magnesium		13.4	mg/L	0.0027	107	85	115			
Molybdenum		0.0514	mg/L	0.0010	103	85	115			
Potassium		12.6	mg/L	0.0041	101	85	115			
Selenium		0.0529	mg/L	0.0010	106	85	115			
Sodium		13.2	mg/L	0.0043	106	85	115			
Uranium		0.0518	mg/L	0.00030	104	85	115			
Lab ID: C14040216-001BMS4	8	Sample Matrix Spike				Run: ICPMS4-C_140409A			04/10/14 01:35	
Arsenic		0.115	mg/L	0.0010	111	70	130			
Calcium		578	mg/L	1.0		70	130			A
Iron		2.52	mg/L	0.030	100	70	130			
Magnesium		171	mg/L	1.0		70	130			A
Molybdenum		0.104	mg/L	0.0010	102	70	130			
Potassium		32.0	mg/L	1.0	97	70	130			
Selenium		0.153	mg/L	0.0010	108	70	130			
Uranium		6.13	mg/L	0.00030		70	130			A
Lab ID: C14040216-001BMSD	9	Sample Matrix Spike Duplicate				Run: ICPMS4-C_140409A			04/10/14 01:39	
Arsenic		0.114	mg/L	0.0010	110	70	130	1.1	20	
Calcium		575	mg/L	1.0		70	130	0.6	20	A

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

A - The analyte level was greater than four times the spike level. In accordance with the method % recovery is not calculated.

QA/QC Summary Report

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC **Report Date:** 04/17/14

Project: Lisbon, UT Facility **Work Order:** C14040216

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E200.8									Batch: R185310	
Lab ID: C14040216-001BMSD	9	Sample Matrix Spike Duplicate				Run: ICPMS4-C_140409A			04/10/14 01:39	
Iron		2.41	mg/L	0.030	96	70	130	4.7	20	
Magnesium		164	mg/L	1.0		70	130	4.5	20	A
Molybdenum		0.107	mg/L	0.0010	105	70	130	2.6	20	
Potassium		31.8	mg/L	1.0	96	70	130	0.8	20	
Selenium		0.147	mg/L	0.0010	102	70	130	3.9	20	
Sodium		381	mg/L	1.0	1520	70	130		20	S
Uranium		6.14	mg/L	0.00030		70	130	0.3	20	A
Lab ID: C14040216-022BMS4	9	Sample Matrix Spike				Run: ICPMS4-C_140409A			04/10/14 04:35	
Arsenic		0.0581	mg/L	0.0010	115	70	130			
Calcium		78.1	mg/L	1.0		70	130			A
Iron		1.30	mg/L	0.030	104	70	130			
Magnesium		27.3	mg/L	1.0	90	70	130			
Molybdenum		0.0504	mg/L	0.0010	100	70	130			
Potassium		14.7	mg/L	1.0	100	70	130			
Selenium		0.0607	mg/L	0.0010	116	70	130			
Sodium		45.9	mg/L	1.0	86	70	130			
Uranium		0.0572	mg/L	0.00030	110	70	130			
Lab ID: C14040216-022BMSD	9	Sample Matrix Spike Duplicate				Run: ICPMS4-C_140409A			04/10/14 04:39	
Arsenic		0.0562	mg/L	0.0010	112	70	130	3.3	20	
Calcium		75.8	mg/L	1.0		70	130	3.0	20	A
Iron		1.24	mg/L	0.030	99	70	130	4.3	20	
Magnesium		26.3	mg/L	1.0	82	70	130	3.7	20	
Molybdenum		0.0504	mg/L	0.0010	100	70	130	0.1	20	
Potassium		14.3	mg/L	1.0	97	70	130	2.9	20	
Selenium		0.0584	mg/L	0.0010	111	70	130	3.9	20	
Sodium		44.0	mg/L	1.0	71	70	130	4.1	20	
Uranium		0.0568	mg/L	0.00030	109	70	130	0.7	20	
Lab ID: C14040216-042BMS4	9	Sample Matrix Spike				Run: ICPMS4-C_140409A			04/10/14 08:52	
Arsenic		0.0607	mg/L	0.0010	116	70	130			
Calcium		124	mg/L	1.0		70	130			A
Iron		1.31	mg/L	0.030	102	70	130			
Magnesium		49.4	mg/L	1.0	98	70	130			
Molybdenum		0.133	mg/L	0.0010	78	70	130			
Potassium		17.1	mg/L	1.0	106	70	130			
Selenium		0.0552	mg/L	0.0010	108	70	130			
Sodium		39.0	mg/L	1.0	89	70	130			
Uranium		0.0619	mg/L	0.00030	97	70	130			
Lab ID: C14040216-042BMSD	9	Sample Matrix Spike Duplicate				Run: ICPMS4-C_140409A			04/10/14 09:17	
Arsenic		0.0555	mg/L	0.0010	106	70	130	9.0	20	
Calcium		114	mg/L	1.0		70	130	8.3	20	A
Iron		1.26	mg/L	0.030	98	70	130	4.3	20	
Magnesium		46.0	mg/L	1.0	71	70	130	7.2	20	

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

A - The analyte level was greater than four times the spike level. In accordance with the method % recovery is not calculated.

S - Spike recovery outside of advisory limits.

QA/QC Summary Report

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Report Date: 04/17/14
Project: Lisbon, UT Facility
Work Order: C14040216

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E200.8									Batch: R185310	
Lab ID: C14040216-042BMSD	9	Sample Matrix Spike Duplicate				Run: ICPMS4-C_140409A			04/10/14 09:17	
Molybdenum		0.116	mg/L	0.0010	44	70	130	14	20	S
Potassium		15.6	mg/L	1.0	94	70	130	9.5	20	
Selenium		0.0531	mg/L	0.0010	104	70	130	3.9	20	
Sodium		35.8	mg/L	1.0	64	70	130	8.6	20	S
Uranium		0.0559	mg/L	0.00030	85	70	130	10	20	

Qualifiers:

RL - Analyte reporting limit.
ND - Not detected at the reporting limit.
S - Spike recovery outside of advisory limits.

QA/QC Summary Report

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC **Report Date:** 04/17/14

Project: Lisbon, UT Facility **Work Order:** C14040216

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E200.8									Analytical Run: ICPMS4-C_140409E	
Lab ID: ICV	9	Initial Calibration Verification Standard							04/09/14 13:08	
Arsenic		0.0483	mg/L	0.0010	97	90	110			
Calcium		9.92	mg/L	0.0066	99	90	110			
Iron		1.01	mg/L	0.0010	101	90	110			
Magnesium		10.6	mg/L	0.0027	106	90	110			
Molybdenum		0.0490	mg/L	0.0010	98	90	110			
Potassium		10.0	mg/L	0.0041	100	90	110			
Selenium		0.0494	mg/L	0.0010	99	90	110			
Sodium		10.5	mg/L	0.0043	105	90	110			
Uranium		0.0504	mg/L	0.00030	101	90	110			
Method: E200.8									Batch: R185351	
Lab ID: LRB	9	Method Blank				Run: ICPMS4-C_140409B			04/09/14 14:03	
Arsenic		ND	mg/L	5E-05						
Calcium		0.03	mg/L	0.007						
Iron		0.0006	mg/L	0.0006						
Magnesium		ND	mg/L	0.003						
Molybdenum		ND	mg/L	3E-05						
Potassium		ND	mg/L	0.004						
Selenium		ND	mg/L	7E-05						
Sodium		0.01	mg/L	0.004						
Uranium		ND	mg/L	9E-06						
Lab ID: LFB	9	Laboratory Fortified Blank				Run: ICPMS4-C_140409B			04/09/14 14:07	
Arsenic		0.0494	mg/L	0.0010	99	85	115			
Calcium		12.7	mg/L	0.0066	102	85	115			
Iron		1.29	mg/L	0.0010	103	85	115			
Magnesium		13.4	mg/L	0.0027	107	85	115			
Molybdenum		0.0514	mg/L	0.0010	103	85	115			
Potassium		12.6	mg/L	0.0041	101	85	115			
Selenium		0.0529	mg/L	0.0010	106	85	115			
Sodium		13.2	mg/L	0.0043	106	85	115			
Uranium		0.0518	mg/L	0.00030	104	85	115			
Lab ID: C14040216-051BMS4	9	Sample Matrix Spike				Run: ICPMS4-C_140409B			04/10/14 10:26	
Arsenic		0.0710	mg/L	0.0010	115	70	130			
Calcium		141	mg/L	1.0		70	130			A
Iron		1.27	mg/L	0.030	101	70	130			
Magnesium		45.6	mg/L	1.0	93	70	130			
Molybdenum		0.0602	mg/L	0.0010	107	70	130			
Potassium		16.3	mg/L	1.0	101	70	130			
Selenium		0.0592	mg/L	0.0010	109	70	130			
Sodium		66.4	mg/L	1.0		70	130			A
Uranium		0.0634	mg/L	0.00030	108	70	130			
Lab ID: C14040216-051BMSD	9	Sample Matrix Spike Duplicate				Run: ICPMS4-C_140409B			04/10/14 10:30	
Arsenic		0.0731	mg/L	0.0010	119	70	130	3.0	20	

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

A - The analyte level was greater than four times the spike level. In accordance with the method % recovery is not calculated.

QA/QC Summary Report

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Report Date: 04/17/14
Project: Lisbon, UT Facility
Work Order: C14040216

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E200.8									Batch: R185351	
Lab ID: C14040216-051BMSD	9	Sample Matrix Spike Duplicate				Run: ICPMS4-C_140409B			04/10/14 10:30	
Calcium		146	mg/L	1.0		70	130	3.3	20	A
Iron		1.31	mg/L	0.030	104	70	130	2.6	20	
Magnesium		46.6	mg/L	1.0	101	70	130	2.3	20	
Molybdenum		0.0628	mg/L	0.0010	112	70	130	4.2	20	
Potassium		16.7	mg/L	1.0	104	70	130	2.4	20	
Selenium		0.0615	mg/L	0.0010	113	70	130	3.9	20	
Sodium		67.7	mg/L	1.0		70	130	2.0	20	A
Uranium		0.0662	mg/L	0.00030	113	70	130	4.3	20	

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

A - The analyte level was greater than four times the spike level. In accordance with the method % recovery is not calculated.

QA/QC Summary Report

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC **Report Date:** 04/17/14

Project: Lisbon, UT Facility **Work Order:** C14040216

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E300.0									Analytical Run: IC1-C_140408A	
Lab ID: CCV-040814-01	2	Continuing Calibration Verification Standard							04/08/14 23:22	
Chloride		10.1	mg/L	1.0	101	90	110			
Sulfate		40.4	mg/L	1.0	101	90	110			
Lab ID: CCV-040814-02	2	Continuing Calibration Verification Standard							04/09/14 03:21	
Chloride		10.2	mg/L	1.0	102	90	110			
Sulfate		41.1	mg/L	1.0	103	90	110			
Lab ID: CCV-040814-03	2	Continuing Calibration Verification Standard							04/09/14 13:55	
Chloride		9.81	mg/L	1.0	98	90	110			
Sulfate		39.3	mg/L	1.0	98	90	110			
Lab ID: CCV-040814-04	2	Continuing Calibration Verification Standard							04/09/14 18:13	
Chloride		9.97	mg/L	1.0	100	90	110			
Sulfate		40.0	mg/L	1.0	100	90	110			
Lab ID: CCV-040814-05	2	Continuing Calibration Verification Standard							04/09/14 22:31	
Chloride		10.3	mg/L	1.0	103	90	110			
Sulfate		40.9	mg/L	1.0	102	90	110			
Lab ID: CCV-040814-06	2	Continuing Calibration Verification Standard							04/10/14 03:07	
Chloride		10.3	mg/L	1.0	103	90	110			
Sulfate		41.1	mg/L	1.0	103	90	110			
Method: E300.0									Batch: R185309	
Lab ID: ICB	2	Method Blank				Run: IC1-C_140408A			04/08/14 22:45	
Chloride		ND	mg/L	0.04						
Sulfate		0.2	mg/L	0.1						
Lab ID: LFB-040814-01	2	Laboratory Fortified Blank				Run: IC1-C_140408A			04/08/14 23:03	
Chloride		9.88	mg/L	1.0	99	90	110			
Sulfate		39.6	mg/L	1.0	99	90	110			
Lab ID: C14040216-009AMS	2	Sample Matrix Spike				Run: IC1-C_140408A			04/09/14 04:16	
Chloride		192	mg/L	1.0	105	90	110			
Sulfate		511	mg/L	2.1	107	90	110			
Lab ID: C14040216-009AMSD	2	Sample Matrix Spike Duplicate				Run: IC1-C_140408A			04/09/14 04:35	
Chloride		189	mg/L	1.0	99	90	110	1.6	20	
Sulfate		502	mg/L	2.1	102	90	110	1.7	20	
Lab ID: C14040216-019AMS	2	Sample Matrix Spike				Run: IC1-C_140408A			04/09/14 14:51	
Chloride		71.6	mg/L	1.0	104	90	110			
Sulfate		1460	mg/L	2.1		90	110			A
Lab ID: C14040216-019AMSD	2	Sample Matrix Spike Duplicate				Run: IC1-C_140408A			04/09/14 15:09	
Chloride		71.3	mg/L	1.0	104	90	110	0.4	20	
Sulfate		1460	mg/L	2.1		90	110	0.6	20	A

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

A - The analyte level was greater than four times the spike level. In accordance with the method % recovery is not calculated.

QA/QC Summary Report

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Report Date: 04/17/14
Project: Lisbon, UT Facility
Work Order: C14040216

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E300.0										Batch: R185309
Lab ID: C14040216-049AMS	2	Sample Matrix Spike				Run: IC1-C_140408A				04/10/14 04:02
Chloride		122	mg/L	1.0	108	90	110			
Sulfate		495	mg/L	2.1	106	90	110			
Lab ID: C14040216-049AMSD	2	Sample Matrix Spike Duplicate				Run: IC1-C_140408A				04/10/14 04:21
Chloride		121	mg/L	1.0	105	90	110	1.0	20	
Sulfate		490	mg/L	2.1	104	90	110	1.0	20	

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

Workorder Receipt Checklist

Rio Algom Mining Corporation LLC C14040216

Login completed by: Dorian Quis
Date Received: 4/7/2014
Reviewed by: BL2000\khelm
Received by: dcq
Reviewed Date: 4/8/2014
Carrier name: NDA

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on all shipping container(s)/cooler(s)?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on all sample bottles?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time? (Exclude analyses that are considered field parameters such as pH, DO, Res Cl, Sulfite, Ferrous Iron, etc.)	Yes ☑	No ☐	
Temp Blank received in all shipping container(s)/cooler(s)?	Yes ☑	No ☐	Not Applicable ☐
Container/Temp Blank temperature:	1.2°C On Ice		
Water - VOA vials have zero headspace?	Yes ☐	No ☐	No VOA vials submitted ☑
Water - pH acceptable upon receipt?	Yes ☑	No ☐	Not Applicable ☐

Standard Reporting Procedures:

Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH, Dissolved Oxygen and Residual Chlorine, are qualified as being analyzed outside of recommended holding time.

Solid/soil samples are reported on a wet weight basis (as received) unless specifically indicated. If moisture corrected, data units are typically noted as –dry. For agricultural and mining soil parameters/characteristics, all samples are dried and ground prior to sample analysis.

Contact and Corrective Action Comments:

Due to sample matrix, no further preservation was attempted for samples 7127, 7128, 7129.

Chain of Custody and Analytical Request Record

PLEASE PRINT- Provide as much information as possible.

Company Name: Rio Algom Mining Corp	Project Name, PWS, Permit, Etc.: Lisbon, UT Facility	Sample Origin State: UT	EPA/State Compliance: Yes ☐ No ☐
Report Mail Address: Montgomery and Associates Results retrieved from Energy Source	Contact Name: John Laney Phone/Fax: (520) 425-2219 Email: jlaney@clmontgomery.com		Sampler: (Please Print) J. Kerns
Invoice Address: Email invoice to Gail PO Box 218 Grants, NM 87020	Invoice Contact & Phone: Gail Alexander (505) 287-8851	Purchase Order:	Quote/Bottle Order: C3636

Special Report/Formats – ELI must be notified prior to sample submittal for the following:

☐ DW ☐ A2LA
☐ GSA ☐ EDD/EDT (Electronic Data)
☐ POTW/WWTP Format: _____
☐ State: _____ ☐ LEVEL IV
☐ Other: _____ ☐ NELAC

Number of Containers
Sample Type: A Air W Water S Soils/Solids V Vegetation B Bioassay O Other

ANALYSIS REQUESTED

SEE ATTACHED

Normal Turnaround (TAT)

RUSH

Contact ELI prior to **RUSH** sample submittal for charges and scheduling – See Instruction Page

Comments: Metals samples filtered and preserved in field.

Shipped by: FE-Exp
Cooler ID(s): Various
Receipt Temp: 1.2 °C
On Ice: (Yes) No
Custody Seal Intact Signature Match: (Y) N

	SAMPLE IDENTIFICATION (Name, Location, Interval, etc.)	Collection Date	Collection Time	MATRIX	C3636										
1	7156	03APR2014	1345	W	X										
2	~~7156~~ JK 7157	03APR2014	1500	W	X										
3	7158	03APR2014	1535	W	X										
4	7159	04APR2014	0830	W	X									C1404D216	
5	7160	04APR2014	0855	W	X										
6	7161	04APR2014	0930	W	X										
7	7162	04APR2014	1000	W	X										
8	7163	04APR2014	1055	W	X										
9	7164	04APR2014	1110	W	X										
10	7165	04APR2014	1115	W	X										

LABORATORY USE ONLY

Custody Record MUST be Signed

Relinquished by (print): J. Kerns	Date/Time: 4-4-14 / 1500	Signature:	Received by (print):	Date/Time:	Signature:
Relinquished by (print):	Date/Time:	Signature:	Received by (print):	Date/Time:	Signature:
			Received by Laboratory:	Date/Time: 4/7/14 1030	Signature: Dorian Quist

Sample Disposal: Return to Client: _____ Lab Disposal: _____

In certain circumstances, samples submitted to Energy Laboratories, Inc. may be subcontracted to other certified laboratories in order to complete the analysis requested. This serves as notice of this possibility. All sub-contract data will be clearly notated on your analytical report.
Visit our web site at www.energylab.com for additional information, downloadable fee schedule, forms and links

Chain of Custody and Analytical Request Record

PLEASE PRINT- Provide as much information as possible.

Company Name:	Project Name, PWS, Permit, Etc.	Sample Origin	EPA/State Compliance:
Rio Algom Mining Corp	Lisbon, UT Facility	State: UT	Yes ☐ No ☐
Report Mail Address: Montgomery and Associates Results retrieved from Energy Source	**Contact Name:** John Laney **Phone/Fax:** (520) 425-2219 **Email:** jlaney@clmontgomery.com		**Sampler: (Please Print)** J. Kerns
Invoice Address: Email invoice to Gail PO Box 218 Grants, NM 87020	**Invoice Contact & Phone:** Gail Alexander (505) 287-8851	**Purchase Order:**	**Quote/Bottle Order:** C3636

Special Report/Formats – ELI must be notified prior to sample submittal for the following:

- ☐ DW
- ☐ GSA
- ☐ POTW/WWTP
- ☐ State: _____
- ☐ Other: _____
- ☐ A2LA
- ☐ EDD/EDT (Electronic Data) Format: _____
- ☐ LEVEL IV
- ☐ NELAC

Number of Containers
Sample Type: A Air W Water S Soils/Solids V Vegetation B Bioassay O Other

ANALYSIS REQUESTED

SAMPLE IDENTIFICATION (Name, Location, Interval, etc.)	Collection Date	Collection Time	MATRIX	C3636	SEE ATTACHED	Normal Turnaround (TAT)
1 7166	04APR2014	1155	W	X		
2 7167	04APR2014	1205	W	X		
3 7168	04APR2014	1245	W	X		C1404 0216
4 7169	04APR2014	1345	W	X		
5						
6						
7						
8						
9						
10						

RUSH

Contact ELI prior to RUSH sample submittal for charges and scheduling – See Instruction Page

Comments: Metals samples filtered and preserved in field

Shipped by: FE-Exp

Cooler ID(s): various

Receipt Temp 1.2 °C

On Ice: (Yes) No

Custody Seal (Y) N

Intact (Y) N

Signature Match (Y) N

LABORATORY USE ONLY

Custody Record MUST be Signed

Relinquished by (print):	Date/Time	Signature:	Received by (print):	Date/Time:	Signature:
J. Kerns	04APR2014/1500				
Relinquished by (print):	Date/Time:	Signature:	Received by (print):	Date/Time:	Signature:
			Received by Laboratory:	Date/Time: 4/7/14 1030	Signature:

Sample Disposal: Return to Client: _____ Lab Disposal: _____

In certain circumstances, samples submitted to Energy Laboratories, Inc. may be subcontracted to other certified laboratories in order to complete the analysis requested. This serves as notice of this possibility. All sub-contract data will be clearly notated on your analytical report.
Visit our web site at www.energylab.com for additional information, downloadable fee schedule, forms, and links.

Chain of Custody and Analytical Request Record

PLEASE PRINT- Provide as much information as possible.

Company Name: Rio Algom Mining Corp	Project Name, PWS, Permit, Etc.: Lisbon, UT Facility	Sample Origin State: UT	EPA/State Compliance: Yes ☐ No ☐
Report Mail Address: Montgomery and Associates Results retrieved from Energy Source	Contact Name: John Laney Phone/Fax: (520) 425-2219 Email: jlaney@clmontgomery.com		Sampler: (Please Print) Brandon Myers
Invoice Address: Email invoice to Gail PO Box 218 Grants, NM 87020	Invoice Contact & Phone: Gail Alexander (505) 287-8851	Purchase Order:	Quote/Bottle Order: C3636

Special Report/Formats – ELI must be notified prior to sample submittal for the following:

☐ DW ☐ A2LA
☐ GSA ☐ EDD/EDT (Electronic Data)
☐ POTW/WWTP Format: _____
☐ State: _____ ☐ LEVEL IV
☐ Other: _____ ☐ NELAC

RUSH

Contact ELI prior to RUSH sample submittal for charges and scheduling – See Instruction Page

Comments: metals preserved + filtered in field

Shipped by: FE-Exp
Cooler ID(s): Various
Receipt Temp: 1.2 °C
On Ice: (Yes) No
Custody Seal (Y) N
Intact (Y) N
Signature Match (Y) N

	SAMPLE IDENTIFICATION (Name, Location, Interval, etc.)	Collection Date	Collection Time	MATRIX	Number of Containers / Sample Type: A W S V B O / Air Water Soils/Solids Vegetation Bioassay Other — C3636	SEE ATTACHED	Normal Turnaround (TAT)
1	7109	03/APR/14	0850	w	X		
2	7110		915	w	X		
3	7111		950	w	X		
4	7112		1025	w	X		
5	7113		1040	w	X		
6	7114		1105	w	X		
7	7115		1135	w	X		
8	7116		1155	w	X		
9	7117		1236	w	X		
10	7118		1345	w	X		

C1404016

LABORATORY USE ONLY

Custody Record MUST be Signed

Relinquished by (print): B Myers	Date/Time: 4/4/14 1800	Signature:	Received by (print):	Date/Time:	Signature:
Relinquished by (print):	Date/Time:	Signature:	Received by (print):	Date/Time:	Signature:
			Received by Laboratory:	Date/Time: 4/7/14 1030	Signature:

Sample Disposal: Return to Client: _____ Lab Disposal: _____

In certain circumstances, samples submitted to Energy Laboratories, Inc. may be subcontracted to other certified laboratories in order to complete the analysis requested. This serves as notice of this possibility. All sub-contract data will be clearly notated on your analytical report.
Visit our web site at www.energylab.com for additional information, downloadable fee schedule, forms, and links.

Chain of Custody and Analytical Request Record

PLEASE PRINT- Provide as much information as possible.

Company Name:	Project Name, PWS, Permit, Etc.	Sample Origin	EPA/State Compliance:
Rio Algom Mining Corp	Lisbon, UT Facility	State: UT	Yes ☐ No ☐

Report Mail Address:	Contact Name:	Phone/Fax:	Email:	Sampler: (Please Print)
Montgomery and Associates Results retrieved from Energy Source	John Laney	(520) 425-2219	jlaney@clmontgomery.com	Branden Myers

Invoice Address:	Invoice Contact & Phone:	Purchase Order:	Quote/Bottle Order:
Email invoice to Gail PO Box 218 Grants, NM 87020	Gail Alexander (505) 287-8851		C3636

Special Report/Formats – ELI must be notified prior to sample submittal for the following:

☐ DW ☐ A2LA
☐ GSA ☐ EDD/EDT (Electronic Data)
☐ POTW/WWTP Format: _____
☐ State: _____ ☐ LEVEL IV
☐ Other: _____ ☐ NELAC

Number of Containers
Sample Type: A Air W Water S Soils/Solids V Vegetation B Bioassay O Other

ANALYSIS REQUESTED

SEE ATTACHED

Normal Turnaround (TAT)

RUSH

Contact ELI prior to **RUSH** sample submittal for charges and scheduling – See Instruction Page

Comments: metals preserved & filtered in field

Shipped by: FE-Exp

Cooler ID(s): Various

Receipt Temp: 1.2 °C

On Ice: (Yes) No

Custody Seal (Y) N
Intact (Y) N
Signature Match (Y) N

	SAMPLE IDENTIFICATION (Name, Location, Interval, etc.)	Collection Date	Collection Time	MATRIX	C3636											
1	7119	03APR2014	1345	W	X											
2	7120		1350	W	X											
3	7121		1420	W	X											
4	7122		1445	W	X										C1404021 6	
5	7123		1525	W	X											
6	7124		1530	W	X											
7	7125	04APR2014	850	W	X											
8	7126		920	W	X											
9	~~7127~~ 7127		945	W	X											
10	~~7128~~ 7128		950	W	X											

LABORATORY USE ONLY

Custody Record MUST be Signed

	Relinquished by (print):	Date/Time:	Signature:	Received by (print):	Date/Time:	Signature:
	B. Myers	4/4/14 1500				
	Relinquished by (print):	Date/Time:	Signature:	Received by (print):	Date/Time:	Signature:
				Received by Laboratory:	Date/Time:	Signature:
					4/7/14 1030	Darian Rios

Sample Disposal: Return to Client: _____ Lab Disposal: _____

In certain circumstances, samples submitted to Energy Laboratories, Inc. may be subcontracted to other certified laboratories in order to complete the analysis requested. This serves as notice of this possibility. All sub-contract data will be clearly notated on your analytical report.
Visit our web site at www.energylab.com for additional information, downloadable fee schedule, forms, and links.

Chain of Custody and Analytical Request Record

PLEASE PRINT- Provide as much information as possible.

Company Name: Rio Algom Mining Corp	Project Name, PWS, Permit, Etc.: Lisbon, UT Facility	Sample Origin State: UT	EPA/State Compliance: Yes ☐ No ☐
Report Mail Address: Montgomery and Associates Results retrieved from Energy Source	Contact Name: John Laney Phone/Fax: (520) 425-2219 Email: jlaney@clmontgomery.com		Sampler: (Please Print) Brandon Myers
		Purchase Order:	Quote/Bottle Order: C3636
Invoice Address: Email invoice to Gail PO Box 218 Grants, NM 87020	Invoice Contact & Phone: Gail Alexander (505) 287-8851		

Special Report/Formats – ELI must be notified prior to sample submittal for the following:

☐ DW ☐ GSA ☐ POTW/WWTP ☐ State: _____ ☐ Other: _____
☐ A2LA ☐ EDD/EDT (Electronic Data) Format: _____ ☐ LEVEL IV ☐ NELAC

Number of Containers
Sample Type: A Air W Water S Soils/Solids V Vegetation B Bioassay O Other

ANALYSIS REQUESTED

SEE ATTACHED

Normal Turnaround (TAT)

RUSH

Contact ELI prior to **RUSH** sample submittal for charges and scheduling – See Instruction Page

Comments: Metals Preserved in field

Shipped by: FE-Exp
Cooler ID(s): Various
Receipt Temp: 1.2 °C
On Ice: (Yes) No
Custody Seal (Y) N
Intact (Y) N
Signature Match (Y) N

	SAMPLE IDENTIFICATION (Name, Location, Interval, etc.)	Collection Date	Collection Time	MATRIX	C3636
1	~~2129~~ 7129	4/4/2014	1020	W	X
2	~~2130~~ 7130		1035	W	X
3	~~2131~~ 7131		1105	W	X
4	~~2132~~ 7132		1125	W	X
5	7133		1140	W	X
6	7134		1145	W	X
7	7135	—	1215	W	X
8					
9					
10					

C1404216

LABORATORY USE ONLY

Custody Record MUST be Signed

Relinquished by (print): B Myers Date/Time: 4/4/14 1520 Signature:
Relinquished by (print): Date/Time: Signature:
Received by (print): Date/Time: Signature:
Received by (print): Date/Time: Signature:
Received by Laboratory: Date/Time: 4/7/14 1030 Signature: Darian Ross

Sample Disposal: Return to Client: _____ Lab Disposal: _____

In certain circumstances, samples submitted to Energy Laboratories, Inc. may be subcontracted to other certified laboratories in order to complete the analysis requested. This serves as notice of this possibility. All sub-contract data will be clearly notated on your analytical report.
Visit our web site at www.energylab.com for additional information, downloadable fee schedule, forms, and links

ENERGY LABORATORIES

Chain of Custody and Analytical Request Record

PLEASE PRINT - Provide as much information as possible.

Company Name: Rio Algom Mining Corp.	Project Name, PWS, Permit, Etc.: Lisbon, UT Facility	Sample Origin State: UT
Report Mail Address: Montgomery and Associates Results retrieved from Energy Source	Contact Name: John Laney; Phone/Fax: (520) 425-2219	Email: jlaney@elmontgomery.com
Invoice Address: Email invoice to Gail PO Box 218 Grants, NM 87020	Invoice Contact & Phone: Gail Alexander (505) 287-8851	Purchase Order:

Quote/Bottle Order: C3636

Special Report/Formats – ELI must be notified prior to sample submittal for the following:

- [ ] DW
- [ ] GSA
- [ ] POTW/WWTP
- [ ] State: ______
- [ ] Other: ______
- [ ] A2LA
- [ ] EDD/EDT (Electronic Data) Format: ______
- [ ] LEVEL IV
- [ ] NELAC

Number of Containers; Sample Type: A W S V B O; Air Water Soils/Solids Vegetation Bioassay Other

ANALYSIS REQUESTED

SEE ATTACHED

Normal Turnaround (TAT)

RUSH — Contact ELI prior to RUSH sample submittal for charges and scheduling – See Instruction Page

Comments:

SAMPLE IDENTIFICATION (Name, Location, Interval, etc.)	Collection Date	Collection Time	MATRIX	C3636
Z146	03APR2014	0845	W	X
Z147	03APR2014	0920	W	X
Z148	03APR2014	1005	W	X
Z149	03APR2014	1015	W	X
Z152	03APR2014	[illegible]	[illegible]	X
Z15[illegible]	[illegible]	[illegible]	[illegible]	X
[illegible]	03APR2014	[illegible]	[illegible]	X
[illegible]	[illegible]	[illegible]	[illegible]	X

ANALYTICAL SUMMARY REPORT

April 23, 2014

Rio Algom Mining Corporation LLC
Hwy 605 and 509
Grants, NM 87020

Workorder No.: C14040293 Quote ID: C3636 - Groundwater

Project Name: Lisbon, UT Facility

Energy Laboratories, Inc. Casper WY received the following 33 samples for Rio Algom Mining Corporation LLC on 4/8/2014 for analysis.

Sample ID	Client Sample ID	Collect Date	Receive Date	Matrix	Test
C14040293-001	7136	04/05/14 8:50	04/08/14	Groundwater	Metals by ICP/ICPMS, Dissolved Alkalinity Anion - Cation Balance Conductivity E300.0 Anions pH Solids, Total Dissolved Solids, Total Dissolved - Calculated
C14040293-002	7137	04/05/14 9:15	04/08/14	Groundwater	Same As Above
C14040293-003	7138	04/05/14 9:45	04/08/14	Groundwater	Same As Above
C14040293-004	7139	04/05/14 9:25	04/08/14	Groundwater	Same As Above
C14040293-005	7140	04/05/14 10:05	04/08/14	Groundwater	Same As Above
C14040293-006	7072	04/05/14 10:10	04/08/14	Groundwater	Same As Above
C14040293-007	7073	04/05/14 10:35	04/08/14	Groundwater	Same As Above
C14040293-008	7074	04/05/14 11:00	04/08/14	Groundwater	Same As Above
C14040293-009	7075	04/05/14 11:30	04/08/14	Groundwater	Same As Above
C14040293-010	7076	04/05/14 11:35	04/08/14	Groundwater	Same As Above
C14040293-011	7077	04/05/14 11:10	04/08/14	Groundwater	Same As Above
C14040293-012	7078	04/05/14 11:55	04/08/14	Groundwater	Same As Above
C14040293-013	7079	04/05/14 11:50	04/08/14	Groundwater	Same As Above
C14040293-014	7080	04/05/14 12:20	04/08/14	Groundwater	Same As Above
C14040293-015	7181	04/05/14 13:10	04/08/14	Groundwater	Same As Above
C14040293-016	7182	04/05/14 13:20	04/08/14	Groundwater	Same As Above
C14040293-017	7184	04/05/14 13:55	04/08/14	Groundwater	Same As Above
C14040293-018	7186	04/05/14 14:55	04/08/14	Groundwater	Same As Above
C14040293-019	7188	04/05/14 14:05	04/08/14	Groundwater	Same As Above
C14040293-020	7189	04/05/14 15:25	04/08/14	Groundwater	Same As Above
C14040293-021	7190	04/05/14 16:00	04/08/14	Groundwater	Same As Above
C14040293-022	7175	04/05/14 16:10	04/08/14	Groundwater	Same As Above

ANALYTICAL SUMMARY REPORT

C14040293-023	7176	04/05/14 16:15	04/08/14	Groundwater	Metals by ICP/ICPMS, Dissolved Acidity, Total as CaCO3 Alkalinity Anion - Cation Balance Conductivity E300.0 Anions pH Solids, Total Dissolved Solids, Total Dissolved - Calculated
C14040293-024	7177	04/05/14 16:35	04/08/14	Groundwater	Same As Above
C14040293-025	7178	04/05/14 17:25	04/08/14	Groundwater	Same As Above
C14040293-026	7179	04/05/14 17:30	04/08/14	Groundwater	Same As Above
C14040293-027	7180	04/06/14 8:50	04/08/14	Groundwater	Metals by ICP/ICPMS, Dissolved Alkalinity Anion - Cation Balance Conductivity E300.0 Anions pH Solids, Total Dissolved Solids, Total Dissolved - Calculated
C14040293-028	7191	04/06/14 9:10	04/08/14	Groundwater	Same As Above
C14040293-029	7170	04/04/14 16:30	04/08/14	Groundwater	Same As Above
C14040293-030	7171	04/04/14 17:05	04/08/14	Groundwater	Same As Above
C14040293-031	7172	04/04/14 17:15	04/08/14	Groundwater	Same As Above
C14040293-032	7173	04/04/14 17:45	04/08/14	Groundwater	Same As Above
C14040293-033	7174	04/04/14 18:00	04/08/14	Groundwater	Same As Above

The results as reported relate only to the item(s) submitted for testing. The analyses presented in this report were performed at Energy Laboratories, Inc., 2393 Salt Creek Hwy., Casper, WY 82601, unless otherwise noted. Radiochemistry analyses were performed at Energy Laboratories, Inc., 2325 Kerzell Lane, Casper, WY 82601, unless otherwise noted. Any exceptions or problems with the analyses are noted in the Laboratory Analytical Report, the QA/QC Summary Report, or the Case Narrative.

If you have any questions regarding these test results, please call.

Report Approved By:

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility
Lab ID: C14040293-001
Client Sample ID: 7136

Report Date: 04/23/14
Collection Date: 04/05/14 08:50
DateReceived: 04/08/14
Matrix: Groundwater

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Carbonate as CO3	ND	mg/L		5		A2320 B	04/09/14 18:33 / jba
Bicarbonate as HCO3	434	mg/L		5		A2320 B	04/09/14 18:33 / jba
Calcium	198	mg/L		1		E200.7	04/11/14 16:51 / sf
Chloride	395	mg/L		1		E300.0	04/10/14 01:13 / wc
Magnesium	50	mg/L		1		E200.7	04/11/14 16:51 / sf
Potassium	5	mg/L		1		E200.7	04/11/14 16:51 / sf
Sodium	400	mg/L		1		E200.7	04/11/14 16:51 / sf
Sulfate	745	mg/L	D	4		E300.0	04/10/14 01:13 / wc
PHYSICAL PROPERTIES							
Conductivity @ 25 C	3130	umhos/cm		1		A2510 B	04/09/14 14:40 / alp
pH	7.34	s.u.	H	0.01		A4500-H B	04/09/14 14:40 / alp
Solids, Total Dissolved TDS @ 180 C	2210	mg/L		20		A2540 C	04/09/14 15:51 / alp
METALS - DISSOLVED							
Arsenic	0.016	mg/L		0.001		E200.8	04/10/14 20:54 / clm
Iron	ND	mg/L		0.03		E200.7	04/11/14 16:51 / sf
Molybdenum	ND	mg/L		0.01		E200.8	04/10/14 20:54 / clm
Selenium	0.015	mg/L		0.001		E200.8	04/10/14 20:54 / clm
Uranium	1.57	mg/L		0.0003		E200.8	04/10/14 20:54 / clm
DATA QUALITY							
A/C Balance (± 5)	-4.26	%				A1030 E	04/15/14 09:51 / kbh
Anions	34.3	meq/L				A1030 E	04/15/14 09:51 / kbh
Cations	31.5	meq/L				A1030 E	04/15/14 09:51 / kbh
Solids, Total Dissolved Calculated	2100	mg/L				A1030 E	04/15/14 09:51 / kbh
TDS Balance (0.80 - 1.20)	1.07					A1030 E	04/15/14 09:51 / kbh

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
H - Analysis performed past recommended holding time.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility
Lab ID: C14040293-002
Client Sample ID: 7137

Report Date: 04/23/14
Collection Date: 04/05/14 09:15
DateReceived: 04/08/14
Matrix: Groundwater

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Carbonate as CO3	ND	mg/L		5		A2320 B	04/09/14 18:41 / jba
Bicarbonate as HCO3	437	mg/L		5		A2320 B	04/09/14 18:41 / jba
Calcium	199	mg/L		1		E200.7	04/11/14 16:55 / sf
Chloride	397	mg/L		1		E300.0	04/10/14 01:30 / wc
Magnesium	50	mg/L		1		E200.7	04/11/14 16:55 / sf
Potassium	5	mg/L		1		E200.7	04/11/14 16:55 / sf
Sodium	409	mg/L		1		E200.7	04/11/14 16:55 / sf
Sulfate	749	mg/L	D	4		E300.0	04/10/14 01:30 / wc
PHYSICAL PROPERTIES							
Conductivity @ 25 C	3140	umhos/cm		1		A2510 B	04/09/14 14:43 / alp
pH	7.35	s.u.	H	0.01		A4500-H B	04/09/14 14:43 / alp
Solids, Total Dissolved TDS @ 180 C	2230	mg/L		18		A2540 C	04/09/14 15:51 / alp
METALS - DISSOLVED							
Arsenic	0.014	mg/L		0.001		E200.8	04/10/14 20:57 / clm
Iron	0.05	mg/L		0.03		E200.7	04/11/14 16:55 / sf
Molybdenum	ND	mg/L		0.01		E200.8	04/10/14 20:57 / clm
Selenium	0.015	mg/L		0.001		E200.8	04/10/14 20:57 / clm
Uranium	1.59	mg/L		0.0003		E200.8	04/10/14 20:57 / clm
DATA QUALITY							
A/C Balance (± 5)	-3.77	%				A1030 E	04/15/14 09:52 / kbh
Anions	34.5	meq/L				A1030 E	04/15/14 09:52 / kbh
Cations	32.0	meq/L				A1030 E	04/15/14 09:52 / kbh
Solids, Total Dissolved Calculated	2100	mg/L				A1030 E	04/15/14 09:52 / kbh
TDS Balance (0.80 - 1.20)	1.07					A1030 E	04/15/14 09:52 / kbh

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
H - Analysis performed past recommended holding time.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility
Lab ID: C14040293-003
Client Sample ID: 7138

Report Date: 04/23/14
Collection Date: 04/05/14 09:45
DateReceived: 04/08/14
Matrix: Groundwater

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Carbonate as CO3	ND	mg/L		5		A2320 B	04/09/14 18:50 / jba
Bicarbonate as HCO3	424	mg/L		5		A2320 B	04/09/14 18:50 / jba
Calcium	203	mg/L		1		E200.7	04/11/14 16:58 / sf
Chloride	400	mg/L		1		E300.0	04/10/14 01:47 / wc
Magnesium	51	mg/L		1		E200.7	04/11/14 16:58 / sf
Potassium	5	mg/L		1		E200.7	04/11/14 16:58 / sf
Sodium	396	mg/L		1		E200.7	04/11/14 16:58 / sf
Sulfate	747	mg/L	D	4		E300.0	04/10/14 01:47 / wc
PHYSICAL PROPERTIES							
Conductivity @ 25 C	3100	umhos/cm		1		A2510 B	04/09/14 14:46 / alp
pH	7.42	s.u.	H	0.01		A4500-H B	04/09/14 14:46 / alp
Solids, Total Dissolved TDS @ 180 C	2170	mg/L		17		A2540 C	04/09/14 15:51 / alp
METALS - DISSOLVED							
Arsenic	0.016	mg/L		0.001		E200.8	04/10/14 21:00 / clm
Iron	ND	mg/L		0.03		E200.7	04/11/14 16:58 / sf
Molybdenum	ND	mg/L		0.01		E200.8	04/10/14 21:00 / clm
Selenium	0.015	mg/L		0.001		E200.8	04/10/14 21:00 / clm
Uranium	1.25	mg/L		0.0003		E200.8	04/10/14 21:00 / clm
DATA QUALITY							
A/C Balance (± 5)	-4.03	%				A1030 E	04/15/14 09:52 / kbh
Anions	34.3	meq/L				A1030 E	04/15/14 09:52 / kbh
Cations	31.7	meq/L				A1030 E	04/15/14 09:52 / kbh
Solids, Total Dissolved Calculated	2100	mg/L				A1030 E	04/15/14 09:52 / kbh
TDS Balance (0.80 - 1.20)	1.05					A1030 E	04/15/14 09:52 / kbh

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
H - Analysis performed past recommended holding time.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility
Lab ID: C14040293-004
Client Sample ID: 7139

Report Date: 04/23/14
Collection Date: 04/05/14 09:25
DateReceived: 04/08/14
Matrix: Groundwater

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Carbonate as CO3	ND	mg/L		5		A2320 B	04/09/14 18:58 / jba
Bicarbonate as HCO3	487	mg/L		5		A2320 B	04/09/14 18:58 / jba
Calcium	186	mg/L		1		E200.7	04/11/14 17:02 / sf
Chloride	380	mg/L		1		E300.0	04/10/14 09:23 / wc
Magnesium	49	mg/L		1		E200.7	04/11/14 17:02 / sf
Potassium	5	mg/L		1		E200.7	04/11/14 17:02 / sf
Sodium	427	mg/L		1		E200.7	04/11/14 17:02 / sf
Sulfate	764	mg/L	D	4		E300.0	04/10/14 09:23 / wc
PHYSICAL PROPERTIES							
Conductivity @ 25 C	3150	umhos/cm		1		A2510 B	04/09/14 14:49 / alp
pH	7.33	s.u.	H	0.01		A4500-H B	04/09/14 14:49 / alp
Solids, Total Dissolved TDS @ 180 C	2220	mg/L		20		A2540 C	04/09/14 15:52 / alp
METALS - DISSOLVED							
Arsenic	0.016	mg/L		0.001		E200.8	04/10/14 21:13 / clm
Iron	ND	mg/L		0.03		E200.7	04/11/14 17:02 / sf
Molybdenum	ND	mg/L		0.01		E200.8	04/10/14 21:13 / clm
Selenium	0.016	mg/L		0.001		E200.8	04/10/14 21:13 / clm
Uranium	2.38	mg/L		0.0003		E200.8	04/10/14 21:13 / clm
DATA QUALITY							
A/C Balance (± 5)	-4.61	%				A1030 E	04/15/14 09:52 / kbh
Anions	35.1	meq/L				A1030 E	04/15/14 09:52 / kbh
Cations	32.0	meq/L				A1030 E	04/15/14 09:52 / kbh
Solids, Total Dissolved Calculated	2100	mg/L				A1030 E	04/15/14 09:52 / kbh
TDS Balance (0.80 - 1.20)	1.06					A1030 E	04/15/14 09:52 / kbh

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
H - Analysis performed past recommended holding time.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility
Lab ID: C14040293-005
Client Sample ID: 7140

Report Date: 04/23/14
Collection Date: 04/05/14 10:05
DateReceived: 04/08/14
Matrix: Groundwater

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Carbonate as CO3	ND	mg/L		5		A2320 B	04/09/14 19:29 / jba
Bicarbonate as HCO3	495	mg/L		5		A2320 B	04/09/14 19:29 / jba
Calcium	189	mg/L		1		E200.7	04/11/14 17:06 / sf
Chloride	384	mg/L		1		E300.0	04/10/14 10:15 / wc
Magnesium	49	mg/L		1		E200.7	04/11/14 17:06 / sf
Potassium	5	mg/L		1		E200.7	04/11/14 17:06 / sf
Sodium	436	mg/L		1		E200.7	04/11/14 17:06 / sf
Sulfate	786	mg/L	D	4		E300.0	04/10/14 10:15 / wc
PHYSICAL PROPERTIES							
Conductivity @ 25 C	3200	umhos/cm		5		A2510 B	04/09/14 14:52 / alp
pH	7.25	s.u.	H	0.01		A4500-H B	04/09/14 14:52 / alp
Solids, Total Dissolved TDS @ 180 C	2250	mg/L		19		A2540 C	04/09/14 15:52 / alp
METALS - DISSOLVED							
Arsenic	0.016	mg/L		0.001		E200.8	04/10/14 21:17 / clm
Iron	ND	mg/L		0.03		E200.7	04/11/14 17:06 / sf
Molybdenum	ND	mg/L		0.01		E200.8	04/10/14 21:17 / clm
Selenium	0.016	mg/L		0.001		E200.8	04/10/14 21:17 / clm
Uranium	2.30	mg/L		0.0003		E200.8	04/10/14 21:17 / clm
DATA QUALITY							
A/C Balance (± 5)	-4.75	%				A1030 E	04/15/14 09:52 / kbh
Anions	35.8	meq/L				A1030 E	04/15/14 09:52 / kbh
Cations	32.6	meq/L				A1030 E	04/15/14 09:52 / kbh
Solids, Total Dissolved Calculated	2100	mg/L				A1030 E	04/15/14 09:52 / kbh
TDS Balance (0.80 - 1.20)	1.05					A1030 E	04/15/14 09:52 / kbh

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
H - Analysis performed past recommended holding time.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility
Lab ID: C14040293-006
Client Sample ID: 7072

Report Date: 04/23/14
Collection Date: 04/05/14 10:10
DateReceived: 04/08/14
Matrix: Groundwater

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Carbonate as CO3	ND	mg/L		5		A2320 B	04/09/14 19:47 / jba
Bicarbonate as HCO3	496	mg/L		5		A2320 B	04/09/14 19:47 / jba
Calcium	189	mg/L		1		E200.7	04/11/14 17:23 / sf
Chloride	384	mg/L		1		E300.0	04/10/14 10:32 / wc
Magnesium	49	mg/L		1		E200.7	04/11/14 17:23 / sf
Potassium	5	mg/L		1		E200.7	04/11/14 17:23 / sf
Sodium	437	mg/L		1		E200.7	04/11/14 17:23 / sf
Sulfate	786	mg/L	D	4		E300.0	04/10/14 10:32 / wc
PHYSICAL PROPERTIES							
Conductivity @ 25 C	3200	umhos/cm		1		A2510 B	04/09/14 14:55 / alp
pH	7.47	s.u.	H	0.01		A4500-H B	04/09/14 14:55 / alp
Solids, Total Dissolved TDS @ 180 C	2260	mg/L		17		A2540 C	04/09/14 15:52 / alp
METALS - DISSOLVED							
Arsenic	0.016	mg/L		0.001		E200.8	04/10/14 21:20 / clm
Iron	ND	mg/L		0.03		E200.7	04/11/14 17:23 / sf
Molybdenum	ND	mg/L		0.01		E200.8	04/10/14 21:20 / clm
Selenium	0.016	mg/L		0.001		E200.8	04/10/14 21:20 / clm
Uranium	2.36	mg/L		0.0003		E200.8	04/10/14 21:20 / clm
DATA QUALITY							
A/C Balance (± 5)	-4.77	%				A1030 E	04/15/14 09:52 / kbh
Anions	35.9	meq/L				A1030 E	04/15/14 09:52 / kbh
Cations	32.6	meq/L				A1030 E	04/15/14 09:52 / kbh
Solids, Total Dissolved Calculated	2100	mg/L				A1030 E	04/15/14 09:52 / kbh
TDS Balance (0.80 - 1.20)	1.06					A1030 E	04/15/14 09:52 / kbh

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
H - Analysis performed past recommended holding time.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility
Lab ID: C14040293-007
Client Sample ID: 7073

Report Date: 04/23/14
Collection Date: 04/05/14 10:35
DateReceived: 04/08/14
Matrix: Groundwater

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Carbonate as CO3	ND	mg/L		5		A2320 B	04/09/14 20:04 / jba
Bicarbonate as HCO3	211	mg/L		5		A2320 B	04/09/14 20:04 / jba
Calcium	105	mg/L		1		E200.7	04/11/14 17:27 / sf
Chloride	102	mg/L		1		E300.0	04/10/14 10:50 / wc
Magnesium	31	mg/L		1		E200.7	04/11/14 17:27 / sf
Potassium	3	mg/L		1		E200.7	04/11/14 17:27 / sf
Sodium	50	mg/L		1		E200.7	04/11/14 17:27 / sf
Sulfate	199	mg/L	D	2		E300.0	04/10/14 10:50 / wc
PHYSICAL PROPERTIES							
Conductivity @ 25 C	1020	umhos/cm		1		A2510 B	04/09/14 14:58 / alp
pH	7.63	s.u.	H	0.01		A4500-H B	04/09/14 14:58 / alp
Solids, Total Dissolved TDS @ 180 C	676	mg/L		10		A2540 C	04/09/14 15:53 / alp
METALS - DISSOLVED							
Arsenic	0.006	mg/L		0.001		E200.8	04/10/14 21:23 / clm
Iron	ND	mg/L		0.03		E200.7	04/11/14 17:27 / sf
Molybdenum	0.04	mg/L		0.01		E200.8	04/10/14 21:23 / clm
Selenium	0.006	mg/L		0.001		E200.8	04/10/14 21:23 / clm
Uranium	0.222	mg/L		0.0003		E200.8	04/10/14 21:23 / clm
DATA QUALITY							
A/C Balance (± 5)	-3.05	%				A1030 E	04/15/14 09:52 / kbh
Anions	10.7	meq/L				A1030 E	04/15/14 09:52 / kbh
Cations	10.1	meq/L				A1030 E	04/15/14 09:52 / kbh
Solids, Total Dissolved Calculated	620	mg/L				A1030 E	04/15/14 09:52 / kbh
TDS Balance (0.80 - 1.20)	1.09					A1030 E	04/15/14 09:52 / kbh

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
H - Analysis performed past recommended holding time.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility
Lab ID: C14040293-008
Client Sample ID: 7074

Report Date: 04/23/14
Collection Date: 04/05/14 11:00
DateReceived: 04/08/14
Matrix: Groundwater

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Carbonate as CO3	ND	mg/L		5		A2320 B	04/09/14 20:12 / jba
Bicarbonate as HCO3	346	mg/L		5		A2320 B	04/09/14 20:12 / jba
Calcium	90	mg/L		1		E200.7	04/11/14 17:31 / sf
Chloride	139	mg/L		1		E300.0	04/10/14 11:07 / wc
Magnesium	24	mg/L		1		E200.7	04/11/14 17:31 / sf
Potassium	3	mg/L		1		E200.7	04/11/14 17:31 / sf
Sodium	175	mg/L		1		E200.7	04/11/14 17:31 / sf
Sulfate	250	mg/L	D	2		E300.0	04/10/14 11:07 / wc
PHYSICAL PROPERTIES							
Conductivity @ 25 C	1450	umhos/cm		1		A2510 B	04/09/14 15:01 / alp
pH	7.71	s.u.	H	0.01		A4500-H B	04/09/14 15:01 / alp
Solids, Total Dissolved TDS @ 180 C	942	mg/L	D	10		A2540 C	04/09/14 15:53 / alp
METALS - DISSOLVED							
Arsenic	0.038	mg/L		0.001		E200.8	04/10/14 21:26 / clm
Iron	ND	mg/L		0.03		E200.7	04/11/14 17:31 / sf
Molybdenum	0.22	mg/L		0.01		E200.8	04/10/14 21:26 / clm
Selenium	0.010	mg/L		0.001		E200.8	04/10/14 21:26 / clm
Uranium	1.21	mg/L		0.0003		E200.8	04/10/14 21:26 / clm
DATA QUALITY							
A/C Balance (± 5)	-3.47	%				A1030 E	04/15/14 09:52 / kbh
Anions	15.2	meq/L				A1030 E	04/15/14 09:52 / kbh
Cations	14.2	meq/L				A1030 E	04/15/14 09:52 / kbh
Solids, Total Dissolved Calculated	890	mg/L				A1030 E	04/15/14 09:52 / kbh
TDS Balance (0.80 - 1.20)	1.06					A1030 E	04/15/14 09:52 / kbh

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
H - Analysis performed past recommended holding time.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility
Lab ID: C14040293-009
Client Sample ID: 7075

Report Date: 04/23/14
Collection Date: 04/05/14 11:30
DateReceived: 04/08/14
Matrix: Groundwater

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Carbonate as CO3	ND	mg/L		5		A2320 B	04/09/14 20:20 / jba
Bicarbonate as HCO3	356	mg/L		5		A2320 B	04/09/14 20:20 / jba
Calcium	87	mg/L		1		E200.7	04/11/14 17:41 / sf
Chloride	150	mg/L		1		E300.0	04/10/14 11:25 / wc
Magnesium	24	mg/L		1		E200.7	04/11/14 17:41 / sf
Potassium	3	mg/L		1		E200.7	04/11/14 17:41 / sf
Sodium	187	mg/L		1		E200.7	04/11/14 17:41 / sf
Sulfate	269	mg/L	D	2		E300.0	04/10/14 11:25 / wc
PHYSICAL PROPERTIES							
Conductivity @ 25 C	1520	umhos/cm		1		A2510 B	04/09/14 15:04 / alp
pH	7.71	s.u.	H	0.01		A4500-H B	04/09/14 15:04 / alp
Solids, Total Dissolved TDS @ 180 C	986	mg/L		11		A2540 C	04/09/14 15:54 / alp
METALS - DISSOLVED							
Arsenic	0.039	mg/L		0.001		E200.8	04/10/14 21:39 / clm
Iron	ND	mg/L		0.03		E200.7	04/11/14 17:41 / sf
Molybdenum	0.25	mg/L		0.01		E200.8	04/10/14 21:39 / clm
Selenium	0.010	mg/L		0.001		E200.8	04/10/14 21:39 / clm
Uranium	1.38	mg/L		0.0003		E200.8	04/10/14 21:39 / clm
DATA QUALITY							
A/C Balance (± 5)	-5.02	%				A1030 E	04/15/14 09:56 / kbh
Anions	16.1	meq/L				A1030 E	04/15/14 09:56 / kbh
Cations	14.5	meq/L				A1030 E	04/15/14 09:56 / kbh
TDS Balance (0.80 - 1.20)	1.05					A1030 E	04/15/14 09:56 / kbh

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
H - Analysis performed past recommended holding time.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility
Lab ID: C14040293-010
Client Sample ID: 7076

Report Date: 04/23/14
Collection Date: 04/05/14 11:35
DateReceived: 04/08/14
Matrix: Groundwater

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Carbonate as CO3	ND	mg/L		5		A2320 B	04/09/14 20:28 / jba
Bicarbonate as HCO3	355	mg/L		5		A2320 B	04/09/14 20:28 / jba
Calcium	92	mg/L		1		E200.7	04/16/14 14:52 / sf
Chloride	150	mg/L		1		E300.0	04/10/14 11:42 / wc
Magnesium	25	mg/L		1		E200.7	04/16/14 14:52 / sf
Potassium	3	mg/L		1		E200.7	04/16/14 14:52 / sf
Sodium	202	mg/L		1		E200.7	04/16/14 14:52 / sf
Sulfate	269	mg/L	D	2		E300.0	04/10/14 11:42 / wc
PHYSICAL PROPERTIES							
Conductivity @ 25 C	1520	umhos/cm		1		A2510 B	04/09/14 15:10 / alp
pH	7.72	s.u.	H	0.01		A4500-H B	04/09/14 15:10 / alp
Solids, Total Dissolved TDS @ 180 C	986	mg/L		10		A2540 C	04/09/14 15:54 / alp
METALS - DISSOLVED							
Arsenic	0.040	mg/L		0.001		E200.8	04/10/14 21:52 / clm
Iron	ND	mg/L		0.03		E200.7	04/11/14 17:45 / sf
Molybdenum	0.25	mg/L		0.01		E200.8	04/10/14 21:52 / clm
Selenium	0.011	mg/L		0.001		E200.8	04/10/14 21:52 / clm
Uranium	1.40	mg/L		0.0003		E200.8	04/10/14 21:52 / clm
DATA QUALITY							
A/C Balance (± 5)	-1.71	%				A1030 E	04/21/14 15:37 / kbh
Anions	16.1	meq/L				A1030 E	04/21/14 15:37 / kbh
Cations	15.5	meq/L				A1030 E	04/21/14 15:37 / kbh
Solids, Total Dissolved Calculated	960	mg/L				A1030 E	04/21/14 15:37 / kbh
TDS Balance (0.80 - 1.20)	1.03					A1030 E	04/21/14 15:37 / kbh

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
H - Analysis performed past recommended holding time.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility
Lab ID: C14040293-011
Client Sample ID: 7077

Report Date: 04/23/14
Collection Date: 04/05/14 11:10
DateReceived: 04/08/14
Matrix: Groundwater

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Carbonate as CO3	ND	mg/L		5		A2320 B	04/09/14 20:38 / jba
Bicarbonate as HCO3	1180	mg/L		5		A2320 B	04/09/14 20:38 / jba
Calcium	180	mg/L		1		E200.7	04/11/14 17:48 / sf
Chloride	664	mg/L	D	2		E300.0	04/10/14 11:59 / wc
Magnesium	95	mg/L		1		E200.7	04/11/14 17:48 / sf
Potassium	10	mg/L		1		E200.7	04/11/14 17:48 / sf
Sodium	1320	mg/L		1		E200.7	04/11/14 17:48 / sf
Sulfate	1950	mg/L	D	8		E300.0	04/10/14 11:59 / wc
PHYSICAL PROPERTIES							
Conductivity @ 25 C	6590	umhos/cm		1		A2510 B	04/09/14 15:13 / alp
pH	7.53	s.u.	H	0.01		A4500-H B	04/09/14 15:13 / alp
Solids, Total Dissolved TDS @ 180 C	5180	mg/L		100		A2540 C	04/09/14 15:54 / alp
METALS - DISSOLVED							
Arsenic	0.184	mg/L		0.001		E200.8	04/10/14 21:55 / clm
Iron	ND	mg/L		0.03		E200.7	04/11/14 17:48 / sf
Molybdenum	2.45	mg/L		0.01		E200.8	04/10/14 21:55 / clm
Selenium	0.034	mg/L		0.001		E200.8	04/10/14 21:55 / clm
Uranium	22.7	mg/L	D	0.0005		E200.8	04/10/14 21:55 / clm
DATA QUALITY							
A/C Balance (± 5)	-2.78	%				A1030 E	04/15/14 09:53 / kbh
Anions	78.8	meq/L				A1030 E	04/15/14 09:53 / kbh
Cations	74.6	meq/L				A1030 E	04/15/14 09:53 / kbh
Solids, Total Dissolved Calculated	4800	mg/L				A1030 E	04/15/14 09:53 / kbh
TDS Balance (0.80 - 1.20)	1.07					A1030 E	04/15/14 09:53 / kbh

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
H - Analysis performed past recommended holding time.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility
Lab ID: C14040293-012
Client Sample ID: 7078

Report Date: 04/23/14
Collection Date: 04/05/14 11:55
DateReceived: 04/08/14
Matrix: Groundwater

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Carbonate as CO3	ND	mg/L		5		A2320 B	04/09/14 20:49 / jba
Bicarbonate as HCO3	1280	mg/L		5		A2320 B	04/09/14 20:49 / jba
Calcium	298	mg/L		1		E200.7	04/11/14 17:52 / sf
Chloride	859	mg/L	D	5		E300.0	04/10/14 12:17 / wc
Magnesium	147	mg/L		1		E200.7	04/11/14 17:52 / sf
Potassium	14	mg/L		1		E200.7	04/11/14 17:52 / sf
Sodium	1440	mg/L	D	2		E200.7	04/11/14 17:52 / sf
Sulfate	2630	mg/L	D	20		E300.0	04/10/14 12:17 / wc
PHYSICAL PROPERTIES							
Conductivity @ 25 C	8070	umhos/cm		1		A2510 B	04/09/14 15:16 / alp
pH	7.12	s.u.	H	0.01		A4500-H B	04/09/14 15:16 / alp
Solids, Total Dissolved TDS @ 180 C	6440	mg/L		100		A2540 C	04/09/14 15:54 / alp
METALS - DISSOLVED							
Arsenic	0.099	mg/L		0.001		E200.8	04/10/14 21:59 / clm
Iron	ND	mg/L		0.03		E200.7	04/11/14 17:52 / sf
Molybdenum	2.03	mg/L		0.01		E200.8	04/10/14 21:59 / clm
Selenium	0.041	mg/L	D	0.003		E200.8	04/10/14 21:59 / clm
Uranium	27.5	mg/L	D	0.001		E200.8	04/10/14 21:59 / clm
DATA QUALITY							
A/C Balance (± 5)	-5.09	%				A1030 E	04/15/14 09:57 / kbh
Anions	99.8	meq/L				A1030 E	04/15/14 09:57 / kbh
Cations	90.1	meq/L				A1030 E	04/15/14 09:57 / kbh
Solids, Total Dissolved Calculated	6000	mg/L				A1030 E	04/15/14 09:57 / kbh
TDS Balance (0.80 - 1.20)	1.07					A1030 E	04/15/14 09:57 / kbh

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
H - Analysis performed past recommended holding time.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility
Lab ID: C14040293-013
Client Sample ID: 7079

Report Date: 04/23/14
Collection Date: 04/05/14 11:50
DateReceived: 04/08/14
Matrix: Groundwater

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Carbonate as CO3	68	mg/L		5		A2320 B	04/09/14 20:57 / jba
Bicarbonate as HCO3	167	mg/L		5		A2320 B	04/09/14 20:57 / jba
Calcium	18	mg/L		1		E200.7	04/11/14 18:36 / sf
Chloride	327	mg/L		1		E300.0	04/10/14 12:34 / wc
Magnesium	19	mg/L		1		E200.7	04/11/14 18:36 / sf
Potassium	11	mg/L		1		E200.7	04/11/14 18:36 / sf
Sodium	510	mg/L		1		E200.7	04/11/14 18:36 / sf
Sulfate	532	mg/L	D	4		E300.0	04/10/14 12:34 / wc
PHYSICAL PROPERTIES							
Conductivity @ 25 C	2510	umhos/cm		1		A2510 B	04/09/14 15:19 / alp
pH	9.67	s.u.	H	0.01		A4500-H B	04/09/14 15:19 / alp
Solids, Total Dissolved TDS @ 180 C	1590	mg/L		19		A2540 C	04/09/14 15:55 / alp
METALS - DISSOLVED							
Arsenic	0.038	mg/L		0.001		E200.8	04/10/14 22:02 / clm
Iron	ND	mg/L		0.03		E200.7	04/11/14 18:36 / sf
Molybdenum	0.54	mg/L		0.01		E200.8	04/10/14 22:02 / clm
Selenium	0.013	mg/L		0.001		E200.8	04/10/14 22:02 / clm
Uranium	2.73	mg/L		0.0003		E200.8	04/10/14 22:02 / clm
DATA QUALITY							
A/C Balance (± 5)	-1.20	%				A1030 E	04/15/14 09:53 / kbh
Anions	25.6	meq/L				A1030 E	04/15/14 09:53 / kbh
Cations	25.0	meq/L				A1030 E	04/15/14 09:53 / kbh
Solids, Total Dissolved Calculated	1600	mg/L				A1030 E	04/15/14 09:53 / kbh
TDS Balance (0.80 - 1.20)	0.99					A1030 E	04/15/14 09:53 / kbh

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
H - Analysis performed past recommended holding time.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility
Lab ID: C14040293-014
Client Sample ID: 7080

Report Date: 04/23/14
Collection Date: 04/05/14 12:20
DateReceived: 04/08/14
Matrix: Groundwater

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Carbonate as CO3	76	mg/L		5		A2320 B	04/09/14 21:06 / jba
Bicarbonate as HCO3	211	mg/L		5		A2320 B	04/09/14 21:06 / jba
Calcium	25	mg/L		1		E200.7	04/11/14 18:40 / sf
Chloride	357	mg/L		1		E300.0	04/10/14 13:26 / wc
Magnesium	23	mg/L		1		E200.7	04/11/14 18:40 / sf
Potassium	10	mg/L		1		E200.7	04/11/14 18:40 / sf
Sodium	572	mg/L		1		E200.7	04/11/14 18:40 / sf
Sulfate	559	mg/L	D	4		E300.0	04/10/14 13:26 / wc
PHYSICAL PROPERTIES							
Conductivity @ 25 C	2780	umhos/cm		1		A2510 B	04/09/14 15:22 / alp
pH	9.60	s.u.	H	0.01		A4500-H B	04/09/14 15:22 / alp
Solids, Total Dissolved TDS @ 180 C	1730	mg/L		20		A2540 C	04/10/14 15:22 / tmm
METALS - DISSOLVED							
Arsenic	0.051	mg/L		0.001		E200.8	04/10/14 22:05 / clm
Iron	ND	mg/L		0.03		E200.7	04/11/14 18:40 / sf
Molybdenum	0.61	mg/L		0.01		E200.8	04/10/14 22:05 / clm
Selenium	0.012	mg/L		0.001		E200.8	04/10/14 22:05 / clm
Uranium	3.68	mg/L		0.0003		E200.8	04/10/14 22:05 / clm
DATA QUALITY							
A/C Balance (± 5)	0.62	%				A1030 E	04/15/14 09:54 / kbh
Anions	27.9	meq/L				A1030 E	04/15/14 09:54 / kbh
Cations	28.3	meq/L				A1030 E	04/15/14 09:54 / kbh
Solids, Total Dissolved Calculated	1800	mg/L				A1030 E	04/15/14 09:54 / kbh
TDS Balance (0.80 - 1.20)	0.98					A1030 E	04/15/14 09:54 / kbh

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
H - Analysis performed past recommended holding time.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility
Lab ID: C14040293-015
Client Sample ID: 7181

Report Date: 04/23/14
Collection Date: 04/05/14 13:10
DateReceived: 04/08/14
Matrix: Groundwater

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Carbonate as CO3	24	mg/L		5		A2320 B	04/09/14 21:14 / jba
Bicarbonate as HCO3	247	mg/L		5		A2320 B	04/09/14 21:14 / jba
Calcium	65	mg/L		1		E200.7	04/16/14 15:03 / sf
Chloride	294	mg/L		1		E300.0	04/10/14 14:19 / wc
Magnesium	21	mg/L		1		E200.7	04/16/14 15:03 / sf
Potassium	9	mg/L		1		E200.7	04/16/14 15:03 / sf
Sodium	492	mg/L		1		E200.7	04/16/14 15:03 / sf
Sulfate	371	mg/L	D	4		E300.0	04/10/14 14:19 / wc
PHYSICAL PROPERTIES							
Conductivity @ 25 C	2550	umhos/cm		1		A2510 B	04/09/14 15:25 / alp
pH	8.99	s.u.	H	0.01		A4500-H B	04/09/14 15:25 / alp
Solids, Total Dissolved TDS @ 180 C	1580	mg/L		19		A2540 C	04/10/14 15:23 / tmm
METALS - DISSOLVED							
Arsenic	0.228	mg/L		0.001		E200.8	04/10/14 22:08 / clm
Iron	ND	mg/L		0.03		E200.7	04/11/14 18:43 / sf
Molybdenum	0.54	mg/L		0.01		E200.8	04/10/14 22:08 / clm
Selenium	0.013	mg/L		0.001		E200.8	04/10/14 22:08 / clm
Uranium	3.39	mg/L		0.0003		E200.8	04/10/14 22:08 / clm
DATA QUALITY							
A/C Balance (± 5)	10.6	%				A1030 E	04/21/14 15:56 / kbh
Anions	21.6	meq/L				A1030 E	04/21/14 15:56 / kbh
Cations	26.7	meq/L				A1030 E	04/21/14 15:56 / kbh
Solids, Total Dissolved Calculated	1500	mg/L				A1030 E	04/21/14 15:56 / kbh
TDS Balance (0.80 - 1.20)	1.08					A1030 E	04/21/14 15:56 / kbh

- The Anion / Cation balance was confirmed by re-analysis.

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
H - Analysis performed past recommended holding time.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility
Lab ID: C14040293-016
Client Sample ID: 7182

Report Date: 04/23/14
Collection Date: 04/05/14 13:20
DateReceived: 04/08/14
Matrix: Groundwater

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Carbonate as CO3	ND	mg/L		5		A2320 B	04/09/14 21:31 / jba
Bicarbonate as HCO3	225	mg/L		5		A2320 B	04/09/14 21:31 / jba
Calcium	121	mg/L		1		E200.7	04/14/14 16:47 / sf
Chloride	147	mg/L		1		E300.0	04/10/14 14:36 / wc
Magnesium	37	mg/L		1		E200.7	04/14/14 16:47 / sf
Potassium	3	mg/L		1		E200.7	04/14/14 16:47 / sf
Sodium	58	mg/L		1		E200.7	04/14/14 16:47 / sf
Sulfate	187	mg/L	D	2		E300.0	04/10/14 14:36 / wc
PHYSICAL PROPERTIES							
Conductivity @ 25 C	1170	umhos/cm		1		A2510 B	04/09/14 15:28 / alp
pH	7.69	s.u.	H	0.01		A4500-H B	04/09/14 15:28 / alp
Solids, Total Dissolved TDS @ 180 C	724	mg/L	D	10		A2540 C	04/10/14 15:23 / tmm
METALS - DISSOLVED							
Arsenic	0.019	mg/L		0.001		E200.8	04/10/14 22:11 / clm
Iron	ND	mg/L		0.03		E200.7	04/14/14 16:47 / sf
Molybdenum	ND	mg/L		0.01		E200.8	04/10/14 22:11 / clm
Selenium	0.008	mg/L		0.001		E200.8	04/10/14 22:11 / clm
Uranium	0.0147	mg/L		0.0003		E200.8	04/10/14 22:11 / clm
DATA QUALITY							
A/C Balance (± 5)	-1.63	%				A1030 E	04/17/14 06:54 / kbh
Anions	12.1	meq/L				A1030 E	04/17/14 06:54 / kbh
Cations	11.7	meq/L				A1030 E	04/17/14 06:54 / kbh
Solids, Total Dissolved Calculated	700	mg/L				A1030 E	04/17/14 06:54 / kbh
TDS Balance (0.80 - 1.20)	1.03					A1030 E	04/17/14 06:54 / kbh

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
H - Analysis performed past recommended holding time.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility
Lab ID: C14040293-017
Client Sample ID: 7184

Report Date: 04/23/14
Collection Date: 04/05/14 13:55
DateReceived: 04/08/14
Matrix: Groundwater

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Carbonate as CO3	ND	mg/L		5		A2320 B	04/09/14 21:38 / jba
Bicarbonate as HCO3	223	mg/L		5		A2320 B	04/09/14 21:38 / jba
Calcium	119	mg/L		1		E200.7	04/14/14 16:51 / sf
Chloride	145	mg/L		1		E300.0	04/10/14 14:54 / wc
Magnesium	36	mg/L		1		E200.7	04/14/14 16:51 / sf
Potassium	3	mg/L		1		E200.7	04/14/14 16:51 / sf
Sodium	58	mg/L		1		E200.7	04/14/14 16:51 / sf
Sulfate	184	mg/L	D	2		E300.0	04/10/14 14:54 / wc
PHYSICAL PROPERTIES							
Conductivity @ 25 C	1170	umhos/cm		1		A2510 B	04/09/14 15:31 / alp
pH	7.65	s.u.	H	0.01		A4500-H B	04/09/14 15:31 / alp
Solids, Total Dissolved TDS @ 180 C	723	mg/L	D	10		A2540 C	04/10/14 15:23 / tmm
METALS - DISSOLVED							
Arsenic	0.017	mg/L		0.001		E200.8	04/10/14 22:15 / clm
Iron	ND	mg/L		0.03		E200.7	04/14/14 16:51 / sf
Molybdenum	0.01	mg/L		0.01		E200.8	04/10/14 22:15 / clm
Selenium	0.008	mg/L		0.001		E200.8	04/10/14 22:15 / clm
Uranium	0.0164	mg/L		0.0003		E200.8	04/10/14 22:15 / clm
DATA QUALITY							
A/C Balance (± 5)	-1.72	%				A1030 E	04/17/14 06:54 / kbh
Anions	11.9	meq/L				A1030 E	04/17/14 06:54 / kbh
Cations	11.5	meq/L				A1030 E	04/17/14 06:54 / kbh
Solids, Total Dissolved Calculated	690	mg/L				A1030 E	04/17/14 06:54 / kbh
TDS Balance (0.80 - 1.20)	1.05					A1030 E	04/17/14 06:54 / kbh

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
H - Analysis performed past recommended holding time.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility
Lab ID: C14040293-018
Client Sample ID: 7186

Report Date: 04/23/14
Collection Date: 04/05/14 14:55
DateReceived: 04/08/14
Matrix: Groundwater

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Carbonate as CO3	ND	mg/L		5		A2320 B	04/09/14 21:47 / jba
Bicarbonate as HCO3	319	mg/L		5		A2320 B	04/09/14 21:47 / jba
Calcium	160	mg/L		1		E200.7	04/14/14 16:55 / sf
Chloride	182	mg/L		1		E300.0	04/10/14 15:11 / wc
Magnesium	44	mg/L		1		E200.7	04/14/14 16:55 / sf
Potassium	4	mg/L		1		E200.7	04/14/14 16:55 / sf
Sodium	126	mg/L		1		E200.7	04/14/14 16:55 / sf
Sulfate	322	mg/L	D	2		E300.0	04/10/14 15:11 / wc
PHYSICAL PROPERTIES							
Conductivity @ 25 C	1650	umhos/cm		1		A2510 B	04/09/14 15:34 / alp
pH	7.66	s.u.	H	0.01		A4500-H B	04/09/14 15:34 / alp
Solids, Total Dissolved TDS @ 180 C	1090	mg/L	D	10		A2540 C	04/10/14 15:24 / tmm
METALS - DISSOLVED							
Arsenic	0.027	mg/L		0.001		E200.8	04/10/14 22:18 / clm
Iron	ND	mg/L		0.03		E200.7	04/14/14 16:55 / sf
Molybdenum	0.01	mg/L		0.01		E200.8	04/10/14 22:18 / clm
Selenium	0.010	mg/L		0.001		E200.8	04/10/14 22:18 / clm
Uranium	0.382	mg/L		0.0003		E200.8	04/10/14 22:18 / clm
DATA QUALITY							
A/C Balance (± 5)	-0.73	%				A1030 E	04/17/14 06:54 / kbh
Anions	17.5	meq/L				A1030 E	04/17/14 06:54 / kbh
Cations	17.2	meq/L				A1030 E	04/17/14 06:54 / kbh
Solids, Total Dissolved Calculated	1000	mg/L				A1030 E	04/17/14 06:54 / kbh
TDS Balance (0.80 - 1.20)	1.05					A1030 E	04/17/14 06:54 / kbh

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
H - Analysis performed past recommended holding time.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility
Lab ID: C14040293-019
Client Sample ID: 7188

Report Date: 04/23/14
Collection Date: 04/05/14 14:05
DateReceived: 04/08/14
Matrix: Groundwater

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Carbonate as CO3	ND	mg/L		5		A2320 B	04/09/14 21:56 / jba
Bicarbonate as HCO3	203	mg/L		5		A2320 B	04/09/14 21:56 / jba
Calcium	108	mg/L		1		E200.7	04/14/14 17:19 / sf
Chloride	138	mg/L		1		E300.0	04/10/14 15:28 / wc
Magnesium	34	mg/L		1		E200.7	04/14/14 17:19 / sf
Potassium	4	mg/L		1		E200.7	04/14/14 17:19 / sf
Sodium	45	mg/L		1		E200.7	04/14/14 17:19 / sf
Sulfate	163	mg/L	D	2		E300.0	04/10/14 15:28 / wc
PHYSICAL PROPERTIES							
Conductivity @ 25 C	1070	umhos/cm		1		A2510 B	04/09/14 15:37 / alp
pH	7.68	s.u.	H	0.01		A4500-H B	04/09/14 15:37 / alp
Solids, Total Dissolved TDS @ 180 C	653	mg/L		10		A2540 C	04/10/14 15:24 / tmm
METALS - DISSOLVED							
Arsenic	0.012	mg/L		0.001		E200.8	04/10/14 22:40 / clm
Iron	ND	mg/L		0.03		E200.7	04/14/14 17:19 / sf
Molybdenum	ND	mg/L		0.01		E200.8	04/10/14 22:40 / clm
Selenium	0.010	mg/L		0.001		E200.8	04/10/14 22:40 / clm
Uranium	0.0129	mg/L		0.0003		E200.8	04/10/14 22:40 / clm
DATA QUALITY							
A/C Balance (± 5)	-3.38	%				A1030 E	04/17/14 06:54 / kbh
Anions	10.9	meq/L				A1030 E	04/17/14 06:54 / kbh
Cations	10.2	meq/L				A1030 E	04/17/14 06:54 / kbh
Solids, Total Dissolved Calculated	630	mg/L				A1030 E	04/17/14 06:54 / kbh
TDS Balance (0.80 - 1.20)	1.04					A1030 E	04/17/14 06:54 / kbh

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
H - Analysis performed past recommended holding time.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility
Lab ID: C14040293-020
Client Sample ID: 7189

Report Date: 04/23/14
Collection Date: 04/05/14 15:25
DateReceived: 04/08/14
Matrix: Groundwater

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Carbonate as CO3	ND	mg/L		5		A2320 B	04/09/14 22:04 / jba
Bicarbonate as HCO3	197	mg/L		5		A2320 B	04/09/14 22:04 / jba
Calcium	110	mg/L		1		E200.7	04/14/14 17:23 / sf
Chloride	142	mg/L		1		E300.0	04/10/14 15:46 / wc
Magnesium	35	mg/L		1		E200.7	04/14/14 17:23 / sf
Potassium	4	mg/L		1		E200.7	04/14/14 17:23 / sf
Sodium	49	mg/L		1		E200.7	04/14/14 17:23 / sf
Sulfate	170	mg/L	D	2		E300.0	04/10/14 15:46 / wc
PHYSICAL PROPERTIES							
Conductivity @ 25 C	1100	umhos/cm		1		A2510 B	04/09/14 15:40 / alp
pH	7.65	s.u.	H	0.01		A4500-H B	04/09/14 15:40 / alp
Solids, Total Dissolved TDS @ 180 C	674	mg/L		10		A2540 C	04/10/14 15:25 / tmm
METALS - DISSOLVED							
Arsenic	0.013	mg/L		0.001		E200.8	04/10/14 22:44 / clm
Iron	ND	mg/L		0.03		E200.7	04/14/14 17:23 / sf
Molybdenum	ND	mg/L		0.01		E200.8	04/10/14 22:44 / clm
Selenium	0.009	mg/L		0.001		E200.8	04/10/14 22:44 / clm
Uranium	0.0160	mg/L		0.0003		E200.8	04/10/14 22:44 / clm
DATA QUALITY							
A/C Balance (± 5)	-2.55	%				A1030 E	04/17/14 06:54 / kbh
Anions	11.1	meq/L				A1030 E	04/17/14 06:54 / kbh
Cations	10.6	meq/L				A1030 E	04/17/14 06:54 / kbh
Solids, Total Dissolved Calculated	640	mg/L				A1030 E	04/17/14 06:54 / kbh
TDS Balance (0.80 - 1.20)	1.05					A1030 E	04/17/14 06:54 / kbh

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
H - Analysis performed past recommended holding time.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility
Lab ID: C14040293-021
Client Sample ID: 7190

Report Date: 04/23/14
Collection Date: 04/05/14 16:00
DateReceived: 04/08/14
Matrix: Groundwater

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Carbonate as CO3	ND	mg/L		5		A2320 B	04/09/14 22:12 / jba
Bicarbonate as HCO3	222	mg/L		5		A2320 B	04/09/14 22:12 / jba
Calcium	118	mg/L		1		E200.7	04/14/14 17:26 / sf
Chloride	153	mg/L		1		E300.0	04/10/14 16:03 / wc
Magnesium	37	mg/L		1		E200.7	04/14/14 17:26 / sf
Potassium	3	mg/L		1		E200.7	04/14/14 17:26 / sf
Sodium	61	mg/L		1		E200.7	04/14/14 17:26 / sf
Sulfate	189	mg/L	D	2		E300.0	04/10/14 16:03 / wc
PHYSICAL PROPERTIES							
Conductivity @ 25 C	1190	umhos/cm		1		A2510 B	04/09/14 15:55 / alp
pH	7.58	s.u.	H	0.01		A4500-H B	04/09/14 15:55 / alp
Solids, Total Dissolved TDS @ 180 C	729	mg/L		10		A2540 C	04/10/14 15:25 / tmm
METALS - DISSOLVED							
Arsenic	0.021	mg/L		0.001		E200.8	04/10/14 22:47 / clm
Iron	ND	mg/L		0.03		E200.7	04/14/14 17:26 / sf
Molybdenum	ND	mg/L		0.01		E200.8	04/10/14 22:47 / clm
Selenium	0.008	mg/L		0.001		E200.8	04/10/14 22:47 / clm
Uranium	0.0192	mg/L		0.0003		E200.8	04/10/14 22:47 / clm
DATA QUALITY							
A/C Balance (± 5)	-2.18	%				A1030 E	04/17/14 06:54 / kbh
Anions	12.3	meq/L				A1030 E	04/17/14 06:54 / kbh
Cations	11.7	meq/L				A1030 E	04/17/14 06:54 / kbh
Solids, Total Dissolved Calculated	710	mg/L				A1030 E	04/17/14 06:54 / kbh
TDS Balance (0.80 - 1.20)	1.03					A1030 E	04/17/14 06:54 / kbh

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
H - Analysis performed past recommended holding time.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility
Lab ID: C14040293-022
Client Sample ID: 7175

Report Date: 04/23/14
Collection Date: 04/05/14 16:10
DateReceived: 04/08/14
Matrix: Groundwater

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Carbonate as CO3	ND	mg/L		5		A2320 B	04/09/14 22:21 / jba
Bicarbonate as HCO3	27	mg/L		5		A2320 B	04/09/14 22:21 / jba
Calcium	8	mg/L		1		E200.7	04/14/14 17:30 / sf
Chloride	4	mg/L		1		E300.0	04/10/14 16:21 / wc
Magnesium	3	mg/L		1		E200.7	04/14/14 17:30 / sf
Potassium	ND	mg/L		1		E200.7	04/14/14 17:30 / sf
Sodium	3	mg/L		1		E200.7	04/14/14 17:30 / sf
Sulfate	11	mg/L		1		E300.0	04/10/14 16:21 / wc
PHYSICAL PROPERTIES							
Conductivity @ 25 C	85	umhos/cm		1		A2510 B	04/09/14 15:58 / alp
pH	7.12	s.u.	H	0.01		A4500-H B	04/09/14 15:58 / alp
Solids, Total Dissolved TDS @ 180 C	39	mg/L	D	10		A2540 C	04/10/14 15:25 / tmm
METALS - DISSOLVED							
Arsenic	ND	mg/L		0.001		E200.8	04/10/14 22:50 / clm
Iron	ND	mg/L		0.03		E200.7	04/14/14 17:30 / sf
Molybdenum	ND	mg/L		0.01		E200.8	04/10/14 22:50 / clm
Selenium	ND	mg/L		0.001		E200.8	04/10/14 22:50 / clm
Uranium	ND	mg/L		0.0003		E200.8	04/10/14 22:50 / clm
DATA QUALITY							
A/C Balance (± 5)	-2.88	%				A1030 E	04/17/14 06:55 / kbh
Anions	0.80	meq/L				A1030 E	04/17/14 06:55 / kbh
Cations	0.76	meq/L				A1030 E	04/17/14 06:55 / kbh
Solids, Total Dissolved Calculated	51	mg/L				A1030 E	04/17/14 06:55 / kbh
TDS Balance (0.80 - 1.20)	0.76					A1030 E	04/17/14 06:55 / kbh

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
H - Analysis performed past recommended holding time.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility
Lab ID: C14040293-023
Client Sample ID: 7176

Report Date: 04/23/14
Collection Date: 04/05/14 16:15
DateReceived: 04/08/14
Matrix: Groundwater

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Acidity, Total as CaCO3	30800	mg/L	D	20		A2310 B	04/15/14 09:33 / jba
Carbonate as CO3	ND	mg/L		5		A2320 B	04/09/14 22:24 / jba
Bicarbonate as HCO3	ND	mg/L		5		A2320 B	04/09/14 22:24 / jba
Calcium	414	mg/L		1		E200.7	04/17/14 14:54 / sf
Chloride	103	mg/L	D	10		E300.0	04/17/14 20:24 / wc
Magnesium	826	mg/L		1		E200.7	04/17/14 14:54 / sf
Potassium	18	mg/L		1		E200.7	04/17/14 14:54 / sf
Sodium	83	mg/L	D	4		E200.7	04/17/14 14:54 / sf
Sulfate	18000	mg/L	D	40		E300.0	04/17/14 20:24 / wc
PHYSICAL PROPERTIES							
Conductivity @ 25 C	11300	umhos/cm		1		A2510 B	04/09/14 16:01 / alp
pH	3.74	s.u.	H	0.01		A4500-H B	04/09/14 16:01 / alp
Solids, Total Dissolved TDS @ 180 C	22900	mg/L		100		A2540 C	04/11/14 16:22 / alp
METALS - DISSOLVED							
Arsenic	0.065	mg/L		0.001		E200.8	04/10/14 22:53 / clm
Iron	239	mg/L		0.03		E200.7	04/14/14 17:34 / sf
Molybdenum	0.27	mg/L		0.01		E200.8	04/10/14 22:53 / clm
Selenium	0.137	mg/L	D	0.003		E200.8	04/10/14 22:53 / clm
Uranium	19.2	mg/L	D	0.001		E200.8	04/10/14 22:53 / clm
DATA QUALITY							
A/C Balance (± 5)	30.2	%				A1030 E	04/21/14 16:04 / kbh
Anions	379	meq/L				A1030 E	04/21/14 16:04 / kbh
Cations	708	meq/L				A1030 E	04/21/14 16:04 / kbh
Solids, Total Dissolved Calculated	20000	mg/L				A1030 E	04/21/14 16:04 / kbh
TDS Balance (0.80 - 1.20)	1.17					A1030 E	04/21/14 16:04 / kbh

- The Anion / Cation balance was confirmed by re-analysis.
- The ion balance was affected by major analytes not requested for analysis.

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
H - Analysis performed past recommended holding time.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility
Lab ID: C14040293-024
Client Sample ID: 7177

Report Date: 04/23/14
Collection Date: 04/05/14 16:35
DateReceived: 04/08/14
Matrix: Groundwater

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Acidity, Total as CaCO3	32000	mg/L	D	20		A2310 B	04/15/14 09:49 / jba
Carbonate as CO3	ND	mg/L		5		A2320 B	04/09/14 22:27 / jba
Bicarbonate as HCO3	ND	mg/L		5		A2320 B	04/09/14 22:27 / jba
Calcium	414	mg/L		1		E200.7	04/17/14 14:58 / sf
Chloride	111	mg/L	D	10		E300.0	04/17/14 21:16 / wc
Magnesium	829	mg/L		1		E200.7	04/17/14 14:58 / sf
Potassium	19	mg/L		1		E200.7	04/17/14 14:58 / sf
Sodium	82	mg/L	D	4		E200.7	04/17/14 14:58 / sf
Sulfate	18300	mg/L	D	40		E300.0	04/17/14 21:16 / wc
PHYSICAL PROPERTIES							
Conductivity @ 25 C	11500	umhos/cm		1		A2510 B	04/09/14 16:04 / alp
pH	3.73	s.u.	H	0.01		A4500-H B	04/09/14 16:04 / alp
Solids, Total Dissolved TDS @ 180 C	23400	mg/L		100		A2540 C	04/11/14 16:23 / alp
METALS - DISSOLVED							
Arsenic	0.065	mg/L		0.001		E200.8	04/10/14 22:56 / clm
Iron	241	mg/L		0.03		E200.7	04/14/14 17:37 / sf
Molybdenum	0.42	mg/L		0.01		E200.8	04/10/14 22:56 / clm
Selenium	0.136	mg/L	D	0.003		E200.8	04/10/14 22:56 / clm
Uranium	18.9	mg/L	D	0.001		E200.8	04/10/14 22:56 / clm
DATA QUALITY							
A/C Balance (± 5)	30.9	%				A1030 E	04/21/14 16:05 / kbh
Anions	386	meq/L				A1030 E	04/21/14 16:05 / kbh
Cations	732	meq/L				A1030 E	04/21/14 16:05 / kbh
Solids, Total Dissolved Calculated	20000	mg/L				A1030 E	04/21/14 16:05 / kbh
TDS Balance (0.80 - 1.20)	1.18					A1030 E	04/21/14 16:05 / kbh

- The Anion / Cation balance was confirmed by re-analysis.
- The ion balance was affected by major analytes not requested for analysis.

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
H - Analysis performed past recommended holding time.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility
Lab ID: C14040293-025
Client Sample ID: 7178

Report Date: 04/23/14
Collection Date: 04/05/14 17:25
DateReceived: 04/08/14
Matrix: Groundwater

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Acidity, Total as CaCO3	36500	mg/L	D	20		A2310 B	04/15/14 10:07 / jba
Carbonate as CO3	ND	mg/L		5		A2320 B	04/09/14 22:50 / jba
Bicarbonate as HCO3	ND	mg/L		5		A2320 B	04/09/14 22:50 / jba
Calcium	418	mg/L		1		E200.7	04/17/14 15:01 / sf
Chloride	102	mg/L	D	10		E300.0	04/17/14 21:34 / wc
Magnesium	782	mg/L		1		E200.7	04/17/14 15:01 / sf
Potassium	8	mg/L		1		E200.7	04/17/14 15:01 / sf
Sodium	91	mg/L	D	4		E200.7	04/17/14 15:01 / sf
Sulfate	21100	mg/L	D	40		E300.0	04/17/14 21:34 / wc
PHYSICAL PROPERTIES							
Conductivity @ 25 C	12300	umhos/cm		1		A2510 B	04/09/14 16:07 / alp
pH	3.47	s.u.	H	0.01		A4500-H B	04/09/14 16:07 / alp
Solids, Total Dissolved TDS @ 180 C	26400	mg/L		100		A2540 C	04/11/14 16:23 / alp
METALS - DISSOLVED							
Arsenic	0.104	mg/L		0.001		E200.8	04/10/14 23:09 / clm
Iron	186	mg/L		0.03		E200.7	04/14/14 17:40 / sf
Molybdenum	0.94	mg/L		0.01		E200.8	04/10/14 23:09 / clm
Selenium	0.144	mg/L	D	0.003		E200.8	04/10/14 23:09 / clm
Uranium	20.7	mg/L	D	0.001		E200.8	04/10/14 23:09 / clm
DATA QUALITY							
A/C Balance (± 5)	29.9	%				A1030 E	04/21/14 16:06 / kbh
Anions	442	meq/L				A1030 E	04/21/14 16:06 / kbh
Cations	819	meq/L				A1030 E	04/21/14 16:06 / kbh
Solids, Total Dissolved Calculated	22000	mg/L				A1030 E	04/21/14 16:06 / kbh
TDS Balance (0.80 - 1.20)	1.17					A1030 E	04/21/14 16:06 / kbh

- The Anion / Cation balance was confirmed by re-analysis.
- The ion balance was affected by major analytes not requested for analysis.

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
H - Analysis performed past recommended holding time.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility
Lab ID: C14040293-026
Client Sample ID: 7179

Report Date: 04/23/14
Collection Date: 04/05/14 17:30
DateReceived: 04/08/14
Matrix: Groundwater

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Acidity, Total as CaCO3	38100	mg/L	D	20		A2310 B	04/15/14 10:26 / jba
Carbonate as CO3	ND	mg/L		5		A2320 B	04/09/14 22:55 / jba
Bicarbonate as HCO3	ND	mg/L		5		A2320 B	04/09/14 22:55 / jba
Calcium	418	mg/L		1		E200.7	04/17/14 15:04 / sf
Chloride	112	mg/L	D	10		E300.0	04/17/14 21:51 / wc
Magnesium	782	mg/L		1		E200.7	04/17/14 15:04 / sf
Potassium	8	mg/L		1		E200.7	04/17/14 15:04 / sf
Sodium	90	mg/L	D	4		E200.7	04/17/14 15:04 / sf
Sulfate	21200	mg/L	D	40		E300.0	04/17/14 21:51 / wc
PHYSICAL PROPERTIES							
Conductivity @ 25 C	12300	umhos/cm		1		A2510 B	04/09/14 16:10 / alp
pH	3.47	s.u.	H	0.01		A4500-H B	04/09/14 16:10 / alp
Solids, Total Dissolved TDS @ 180 C	26300	mg/L		100		A2540 C	04/11/14 16:24 / alp
METALS - DISSOLVED							
Arsenic	0.105	mg/L		0.001		E200.8	04/10/14 23:12 / clm
Iron	182	mg/L		0.03		E200.7	04/14/14 17:44 / sf
Molybdenum	0.95	mg/L		0.01		E200.8	04/10/14 23:12 / clm
Selenium	0.140	mg/L	D	0.003		E200.8	04/10/14 23:12 / clm
Uranium	20.8	mg/L	D	0.001		E200.8	04/10/14 23:12 / clm
DATA QUALITY							
A/C Balance (± 5)	31.2	%				A1030 E	04/21/14 16:05 / kbh
Anions	446	meq/L				A1030 E	04/21/14 16:05 / kbh
Cations	851	meq/L				A1030 E	04/21/14 16:05 / kbh
Solids, Total Dissolved Calculated	23000	mg/L				A1030 E	04/21/14 16:05 / kbh
TDS Balance (0.80 - 1.20)	1.16					A1030 E	04/21/14 16:05 / kbh

- The Anion / Cation balance was confirmed by re-analysis.
- The ion balance was affected by major analytes not requested for analysis.

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
H - Analysis performed past recommended holding time.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility
Lab ID: C14040293-027
Client Sample ID: 7180

Report Date: 04/23/14
Collection Date: 04/06/14 08:50
DateReceived: 04/08/14
Matrix: Groundwater

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Carbonate as CO3	ND	mg/L		5		A2320 B	04/09/14 23:06 / jba
Bicarbonate as HCO3	257	mg/L		5		A2320 B	04/09/14 23:06 / jba
Calcium	124	mg/L		1		E200.7	04/17/14 15:08 / sf
Chloride	76	mg/L		1		E300.0	04/17/14 22:08 / wc
Magnesium	61	mg/L		1		E200.7	04/17/14 15:08 / sf
Potassium	15	mg/L		1		E200.7	04/17/14 15:08 / sf
Sodium	425	mg/L		1		E200.7	04/17/14 15:08 / sf
Sulfate	1370	mg/L	D	4		E300.0	04/17/14 22:08 / wc
PHYSICAL PROPERTIES							
Conductivity @ 25 C	2900	umhos/cm		1		A2510 B	04/09/14 16:13 / alp
pH	7.58	s.u.	H	0.01		A4500-H B	04/09/14 16:13 / alp
Solids, Total Dissolved TDS @ 180 C	2190	mg/L		19		A2540 C	04/10/14 15:26 / tmm
METALS - DISSOLVED							
Arsenic	0.001	mg/L		0.001		E200.8	04/10/14 23:15 / clm
Iron	ND	mg/L		0.03		E200.7	04/14/14 17:47 / sf
Molybdenum	ND	mg/L		0.01		E200.8	04/10/14 23:15 / clm
Selenium	ND	mg/L		0.001		E200.8	04/10/14 23:15 / clm
Uranium	0.0054	mg/L		0.0003		E200.8	04/10/14 23:15 / clm
DATA QUALITY							
A/C Balance (± 5)	-7.74	%				A1030 E	04/23/14 09:21 / kbh
Anions	35.1	meq/L				A1030 E	04/23/14 09:21 / kbh
Cations	30.1	meq/L				A1030 E	04/23/14 09:21 / kbh
Solids, Total Dissolved Calculated	2200	mg/L				A1030 E	04/23/14 09:21 / kbh
TDS Balance (0.80 - 1.20)	0.99					A1030 E	04/23/14 09:21 / kbh

- The Anion / Cation balance was confirmed by re-analysis.

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
H - Analysis performed past recommended holding time.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility
Lab ID: C14040293-028
Client Sample ID: 7191

Report Date: 04/23/14
Collection Date: 04/06/14 09:10
DateReceived: 04/08/14
Matrix: Groundwater

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Carbonate as CO3	ND	mg/L		5		A2320 B	04/09/14 23:15 / jba
Bicarbonate as HCO3	439	mg/L		5		A2320 B	04/09/14 23:15 / jba
Calcium	106	mg/L		1		E200.7	04/15/14 15:11 / sf
Chloride	93	mg/L		1		E300.0	04/10/14 19:15 / wc
Magnesium	23	mg/L		1		E200.7	04/15/14 15:11 / sf
Potassium	4	mg/L		1		E200.7	04/15/14 15:11 / sf
Sodium	137	mg/L		1		E200.7	04/15/14 15:11 / sf
Sulfate	171	mg/L	D	2		E300.0	04/10/14 19:15 / wc
PHYSICAL PROPERTIES							
Conductivity @ 25 C	1230	umhos/cm		1		A2510 B	04/09/14 16:16 / alp
pH	7.72	s.u.	H	0.01		A4500-H B	04/09/14 16:16 / alp
Solids, Total Dissolved TDS @ 180 C	775	mg/L		10		A2540 C	04/10/14 15:26 / tmm
METALS - DISSOLVED							
Arsenic	0.004	mg/L		0.001		E200.8	04/11/14 00:10 / clm
Iron	ND	mg/L		0.03		E200.7	04/15/14 15:11 / sf
Molybdenum	0.07	mg/L		0.01		E200.8	04/11/14 00:10 / clm
Selenium	0.003	mg/L		0.001		E200.8	04/11/14 00:10 / clm
Uranium	0.136	mg/L		0.0003		E200.8	04/11/14 00:10 / clm
DATA QUALITY							
A/C Balance (± 5)	-1.26	%				A1030 E	04/17/14 06:55 / kbh
Anions	13.5	meq/L				A1030 E	04/17/14 06:55 / kbh
Cations	13.2	meq/L				A1030 E	04/17/14 06:55 / kbh
Solids, Total Dissolved Calculated	780	mg/L				A1030 E	04/17/14 06:55 / kbh
TDS Balance (0.80 - 1.20)	1.00					A1030 E	04/17/14 06:55 / kbh

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
H - Analysis performed past recommended holding time.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility
Lab ID: C14040293-029
Client Sample ID: 7170

Report Date: 04/23/14
Collection Date: 04/04/14 16:30
DateReceived: 04/08/14
Matrix: Groundwater

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Carbonate as CO3	ND	mg/L		5		A2320 B	04/09/14 23:23 / jba
Bicarbonate as HCO3	239	mg/L		5		A2320 B	04/09/14 23:23 / jba
Calcium	113	mg/L		1		E200.7	04/15/14 15:14 / sf
Chloride	98	mg/L		1		E300.0	04/10/14 19:32 / wc
Magnesium	30	mg/L		1		E200.7	04/15/14 15:14 / sf
Potassium	4	mg/L		1		E200.7	04/15/14 15:14 / sf
Sodium	64	mg/L		1		E200.7	04/15/14 15:14 / sf
Sulfate	186	mg/L	D	2		E300.0	04/10/14 19:32 / wc
PHYSICAL PROPERTIES							
Conductivity @ 25 C	1130	umhos/cm		1		A2510 B	04/09/14 16:19 / alp
pH	7.62	s.u.	H	0.01		A4500-H B	04/09/14 16:19 / alp
Solids, Total Dissolved TDS @ 180 C	727	mg/L	D	10		A2540 C	04/10/14 15:27 / tmm
METALS - DISSOLVED							
Arsenic	0.013	mg/L		0.001		E200.8	04/11/14 00:19 / clm
Iron	ND	mg/L		0.03		E200.7	04/15/14 15:14 / sf
Molybdenum	ND	mg/L		0.01		E200.8	04/11/14 00:19 / clm
Selenium	0.011	mg/L		0.001		E200.8	04/11/14 00:19 / clm
Uranium	0.0154	mg/L		0.0003		E200.8	04/11/14 00:19 / clm
DATA QUALITY							
A/C Balance (± 5)	-3.39	%				A1030 E	04/17/14 06:55 / kbh
Anions	11.7	meq/L				A1030 E	04/17/14 06:55 / kbh
Cations	11.0	meq/L				A1030 E	04/17/14 06:55 / kbh
Solids, Total Dissolved Calculated	700	mg/L				A1030 E	04/17/14 06:55 / kbh
TDS Balance (0.80 - 1.20)	1.03					A1030 E	04/17/14 06:55 / kbh

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
H - Analysis performed past recommended holding time.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility
Lab ID: C14040293-030
Client Sample ID: 7171

Report Date: 04/23/14
Collection Date: 04/04/14 17:05
DateReceived: 04/08/14
Matrix: Groundwater

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Carbonate as CO3	ND	mg/L		5		A2320 B	04/09/14 23:31 / jba
Bicarbonate as HCO3	236	mg/L		5		A2320 B	04/09/14 23:31 / jba
Calcium	171	mg/L		1		E200.7	04/15/14 15:25 / sf
Chloride	143	mg/L		1		E300.0	04/10/14 19:50 / wc
Magnesium	43	mg/L		1		E200.7	04/15/14 15:25 / sf
Potassium	4	mg/L		1		E200.7	04/15/14 15:25 / sf
Sodium	95	mg/L		1		E200.7	04/15/14 15:25 / sf
Sulfate	215	mg/L	D	2		E300.0	04/10/14 19:50 / wc
PHYSICAL PROPERTIES							
Conductivity @ 25 C	1600	umhos/cm		1		A2510 B	04/09/14 16:22 / alp
pH	7.44	s.u.	H	0.01		A4500-H B	04/09/14 16:22 / alp
Solids, Total Dissolved TDS @ 180 C	1080	mg/L		10		A2540 C	04/10/14 15:27 / tmm
METALS - DISSOLVED							
Arsenic	0.019	mg/L		0.001		E200.8	04/11/14 00:23 / clm
Iron	ND	mg/L		0.03		E200.7	04/15/14 15:25 / sf
Molybdenum	ND	mg/L		0.01		E200.8	04/11/14 00:23 / clm
Selenium	0.014	mg/L		0.001		E200.8	04/11/14 00:23 / clm
Uranium	0.0215	mg/L		0.0003		E200.8	04/11/14 00:23 / clm
DATA QUALITY							
A/C Balance (± 5)	0.16	%				A1030 E	04/17/14 06:55 / kbh
Anions	16.2	meq/L				A1030 E	04/17/14 06:55 / kbh
Cations	16.3	meq/L				A1030 E	04/17/14 06:55 / kbh
Solids, Total Dissolved Calculated	1000	mg/L				A1030 E	04/17/14 06:55 / kbh
TDS Balance (0.80 - 1.20)	1.04					A1030 E	04/17/14 06:55 / kbh

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
H - Analysis performed past recommended holding time.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility
Lab ID: C14040293-031
Client Sample ID: 7172

Report Date: 04/23/14
Collection Date: 04/04/14 17:15
DateReceived: 04/08/14
Matrix: Groundwater

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Carbonate as CO3	ND	mg/L		5		A2320 B	04/09/14 23:40 / jba
Bicarbonate as HCO3	449	mg/L		5		A2320 B	04/09/14 23:40 / jba
Calcium	497	mg/L		1		E200.7	04/15/14 15:28 / sf
Chloride	1200	mg/L	D	2		E300.0	04/10/14 20:07 / wc
Magnesium	171	mg/L		1		E200.7	04/15/14 15:28 / sf
Potassium	18	mg/L		1		E200.7	04/15/14 15:28 / sf
Sodium	692	mg/L		1		E200.7	04/15/14 15:28 / sf
Sulfate	1380	mg/L	D	8		E300.0	04/10/14 20:07 / wc
PHYSICAL PROPERTIES							
Conductivity @ 25 C	5970	umhos/cm		1		A2510 B	04/09/14 16:28 / alp
pH	7.23	s.u.	H	0.01		A4500-H B	04/09/14 16:28 / alp
Solids, Total Dissolved TDS @ 180 C	4280	mg/L		39		A2540 C	04/10/14 15:27 / tmm
METALS - DISSOLVED							
Arsenic	0.002	mg/L		0.001		E200.8	04/11/14 00:26 / clm
Iron	ND	mg/L		0.03		E200.7	04/15/14 15:28 / sf
Molybdenum	ND	mg/L		0.01		E200.8	04/11/14 00:26 / clm
Selenium	0.010	mg/L		0.001		E200.8	04/11/14 00:26 / clm
Uranium	7.94	mg/L	D	0.0005		E200.8	04/11/14 00:26 / clm
DATA QUALITY							
A/C Balance (± 5)	-0.43	%				A1030 E	04/17/14 06:55 / kbh
Anions	70.0	meq/L				A1030 E	04/17/14 06:55 / kbh
Cations	69.4	meq/L				A1030 E	04/17/14 06:55 / kbh
Solids, Total Dissolved Calculated	4200	mg/L				A1030 E	04/17/14 06:55 / kbh
TDS Balance (0.80 - 1.20)	1.02					A1030 E	04/17/14 06:55 / kbh

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
H - Analysis performed past recommended holding time.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility
Lab ID: C14040293-032
Client Sample ID: 7173

Report Date: 04/23/14
Collection Date: 04/04/14 17:45
DateReceived: 04/08/14
Matrix: Groundwater

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Carbonate as CO3	ND	mg/L		5		A2320 B	04/09/14 23:48 / jba
Bicarbonate as HCO3	496	mg/L		5		A2320 B	04/09/14 23:48 / jba
Calcium	510	mg/L		1		E200.7	04/15/14 15:46 / sf
Chloride	1270	mg/L	D	2		E300.0	04/10/14 20:25 / wc
Magnesium	177	mg/L		1		E200.7	04/15/14 15:46 / sf
Potassium	20	mg/L		1		E200.7	04/15/14 15:46 / sf
Sodium	741	mg/L		1		E200.7	04/15/14 15:46 / sf
Sulfate	1470	mg/L	D	8		E300.0	04/10/14 20:25 / wc
PHYSICAL PROPERTIES							
Conductivity @ 25 C	6400	umhos/cm		1		A2510 B	04/09/14 16:31 / alp
pH	7.23	s.u.	H	0.01		A4500-H B	04/09/14 16:31 / alp
Solids, Total Dissolved TDS @ 180 C	4550	mg/L		100		A2540 C	04/10/14 15:27 / tmm
METALS - DISSOLVED							
Arsenic	0.003	mg/L		0.001		E200.8	04/11/14 00:29 / clm
Iron	0.41	mg/L		0.03		E200.7	04/15/14 15:46 / sf
Molybdenum	0.01	mg/L		0.01		E200.8	04/11/14 00:29 / clm
Selenium	0.008	mg/L		0.001		E200.8	04/14/14 22:02 / clm
Uranium	8.28	mg/L	D	0.0005		E200.8	04/11/14 00:29 / clm
DATA QUALITY							
A/C Balance (± 5)	-1.35	%				A1030 E	04/17/14 06:56 / kbh
Anions	74.8	meq/L				A1030 E	04/17/14 06:56 / kbh
Cations	72.8	meq/L				A1030 E	04/17/14 06:56 / kbh
Solids, Total Dissolved Calculated	4400	mg/L				A1030 E	04/17/14 06:56 / kbh
TDS Balance (0.80 - 1.20)	1.02					A1030 E	04/17/14 06:56 / kbh

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
H - Analysis performed past recommended holding time.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility
Lab ID: C14040293-033
Client Sample ID: 7174

Report Date: 04/23/14
Collection Date: 04/04/14 18:00
DateReceived: 04/08/14
Matrix: Groundwater

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Carbonate as CO3	4320	mg/L		5		A2320 B	04/10/14 14:08 / jba
Bicarbonate as HCO3	5970	mg/L		5		A2320 B	04/10/14 14:08 / jba
Calcium	4	mg/L		1		E200.7	04/15/14 15:50 / sf
Chloride	1090	mg/L	D	20		E300.0	04/10/14 20:42 / wc
Magnesium	22	mg/L		1		E200.7	04/15/14 15:50 / sf
Potassium	14	mg/L		1		E200.7	04/15/14 15:50 / sf
Sodium	11600	mg/L	D	5		E200.7	04/15/14 15:50 / sf
Sulfate	7570	mg/L	D	80		E300.0	04/10/14 20:42 / wc
PHYSICAL PROPERTIES							
Conductivity @ 25 C	28800	umhos/cm		1		A2510 B	04/09/14 16:34 / alp
pH	9.48	s.u.	H	0.01		A4500-H B	04/09/14 16:34 / alp
Solids, Total Dissolved TDS @ 180 C	25600	mg/L		200		A2540 C	04/10/14 15:28 / tmm
METALS - DISSOLVED							
Arsenic	2.24	mg/L	D	0.003		E200.8	04/11/14 00:32 / clm
Iron	0.07	mg/L		0.03		E200.7	04/16/14 18:55 / sf
Molybdenum	39.0	mg/L		0.01		E200.8	04/11/14 00:32 / clm
Selenium	0.036	mg/L	D	0.007		E200.8	04/11/14 00:32 / clm
Uranium	79.7	mg/L	D	0.003		E200.8	04/11/14 00:32 / clm
DATA QUALITY							
A/C Balance (± 5)	7.96	%				A1030 E	04/21/14 15:55 / kbh
Anions	431	meq/L				A1030 E	04/21/14 15:55 / kbh
Cations	506	meq/L				A1030 E	04/21/14 15:55 / kbh
Solids, Total Dissolved Calculated	28000	mg/L				A1030 E	04/21/14 15:55 / kbh
TDS Balance (0.80 - 1.20)	0.93					A1030 E	04/21/14 15:55 / kbh

- The Anion / Cation balance was confirmed by re-analysis.

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
H - Analysis performed past recommended holding time.

QA/QC Summary Report

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC **Report Date:** 04/23/14

Project: Lisbon, UT Facility **Work Order:** C14040293

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: A2310 B										Batch: R185479
Sample ID: MBLK		Method Blank				Run: MANTECH_140415A				04/15/14 08:46
Acidity, Total as CaCO3		3	mg/L	0.9						
Sample ID: C14040216-017ADUP		Sample Duplicate				Run: MANTECH_140415A				04/15/14 09:01
Acidity, Total as CaCO3		455	mg/L	5.0				11	20	

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

QA/QC Summary Report

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC **Report Date:** 04/23/14

Project: Lisbon, UT Facility **Work Order:** C14040293

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: A2320 B									Batch: R185301	
Sample ID: MBLK	3	Method Blank				Run: MANTECH_140409A			04/09/14 15:23	
Alkalinity, Total as CaCO3		0.7	mg/L	0.6						
Carbonate as CO3		ND	mg/L	1						
Bicarbonate as HCO3		ND	mg/L	1						
Sample ID: LCS_131219		Laboratory Control Sample				Run: MANTECH_140409A			04/09/14 15:37	
Alkalinity, Total as CaCO3		259	mg/L	5.0	103	90	110			
Sample ID: C14040293-005ADUP	3	Sample Duplicate				Run: MANTECH_140409A			04/09/14 19:38	
Alkalinity, Total as CaCO3		418	mg/L	5.0				3.0	10	
Carbonate as CO3		ND	mg/L	5.0					10	
Bicarbonate as HCO3		510	mg/L	5.0				3.0	10	
Sample ID: C14040293-006AMS		Sample Matrix Spike				Run: MANTECH_140409A			04/09/14 19:56	
Alkalinity, Total as CaCO3		634	mg/L	5.0	91	80	120			
Method: A2320 B									Batch: 140410_1_ALK-W	
Sample ID: MBLK1_140410_	3	Method Blank				Run: TTR-ALK_140410A			04/10/14 11:09	
Alkalinity, Total as CaCO3		1	mg/L	1						
Carbonate as CO3		ND	mg/L	1						
Bicarbonate as HCO3		2	mg/L	1						
Sample ID: LCS_131219		Laboratory Control Sample				Run: TTR-ALK_140410A			04/10/14 11:21	
Alkalinity, Total as CaCO3		1280	mg/L	5.0	102	90	110			
Sample ID: C14040216-033ADUP	3	Sample Duplicate				Run: TTR-ALK_140410A			04/10/14 11:47	
Alkalinity, Total as CaCO3		3900	mg/L	5.0				0.0	10	
Carbonate as CO3		180	mg/L	5.0				29	10	R
Bicarbonate as HCO3		4390	mg/L	5.0				2.8	10	
Sample ID: C14040216-033AMS		Sample Matrix Spike				Run: TTR-ALK_140410A			04/10/14 11:54	
Alkalinity, Total as CaCO3		6400	mg/L	5.0	100	80	120			

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

R - RPD exceeds advisory limit.

QA/QC Summary Report

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC **Report Date:** 04/23/14

Project: Lisbon, UT Facility **Work Order:** C14040293

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: A2510 B									Analytical Run: PHSC_101-C_140409A	
Sample ID: CCV - SC 1413		Continuing Calibration Verification Standard							04/09/14 11:18	
Conductivity @ 25 C		1360	umhos/cm	5.0	96	90	110			
Sample ID: CCV - SC 1413		Continuing Calibration Verification Standard							04/09/14 15:49	
Conductivity @ 25 C		1360	umhos/cm	5.0	96	90	110			
Method: A2510 B									Batch: R185257	
Sample ID: SC 2ND 1413		Laboratory Control Sample				Run: PHSC_101-C_140409A			04/09/14 08:50	
Conductivity @ 25 C		1360	umhos/cm	5.0	96	90	110			
Sample ID: MBLK		Method Blank				Run: PHSC_101-C_140409A			04/09/14 10:17	
Conductivity @ 25 C		2	umhos/cm	0.8						
Sample ID: C14040293-009ADUP		Sample Duplicate				Run: PHSC_101-C_140409A			04/09/14 15:07	
Conductivity @ 25 C		1530	umhos/cm	5.0				0.3	10	
Sample ID: C14040293-020ADUP		Sample Duplicate				Run: PHSC_101-C_140409A			04/09/14 15:43	
Conductivity @ 25 C		1100	umhos/cm	5.0				0.2	10	
Sample ID: C14040293-030ADUP		Sample Duplicate				Run: PHSC_101-C_140409A			04/09/14 16:25	
Conductivity @ 25 C		1610	umhos/cm	5.0				0.0	10	
Sample ID: C14040293-033ADUP		Sample Duplicate				Run: PHSC_101-C_140409A			04/09/14 16:37	
Conductivity @ 25 C		28900	umhos/cm	5.0				0.3	10	

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

QA/QC Summary Report

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC **Report Date:** 04/23/14

Project: Lisbon, UT Facility **Work Order:** C14040293

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: A2540 C										Batch: TDS140409A
Sample ID: MB-1_140409A		Method Blank				Run: BAL-19_140409C				04/09/14 15:32
Solids, Total Dissolved TDS @ 180 C		ND	mg/L	7						
Sample ID: LCS-2_140409A		Laboratory Control Sample				Run: BAL-19_140409C				04/09/14 15:32
Solids, Total Dissolved TDS @ 180 C		1970	mg/L	20	98	90	110			
Sample ID: C14040278-003A MS		Sample Matrix Spike				Run: BAL-19_140409C				04/09/14 15:48
Solids, Total Dissolved TDS @ 180 C		1580	mg/L	11	97	90	110			
Sample ID: C14040293-006A DUP		Sample Duplicate				Run: BAL-19_140409C				04/09/14 15:53
Solids, Total Dissolved TDS @ 180 C		2270	mg/L	18				0.4	5	
Method: A2540 C										Batch: TDS140410B
Sample ID: MB-1_140410B		Method Blank				Run: BAL-19_140410A				04/10/14 15:22
Solids, Total Dissolved TDS @ 180 C		ND	mg/L	7						
Sample ID: LCS-2_140410B		Laboratory Control Sample				Run: BAL-19_140410A				04/10/14 15:22
Solids, Total Dissolved TDS @ 180 C		1990	mg/L	20	100	90	110			
Sample ID: C14040293-014A DUP		Sample Duplicate				Run: BAL-19_140410A				04/10/14 15:23
Solids, Total Dissolved TDS @ 180 C		1730	mg/L	19				0.2	5	
Sample ID: C14040293-015A MS		Sample Matrix Spike				Run: BAL-19_140410A				04/10/14 15:23
Solids, Total Dissolved TDS @ 180 C		3550	mg/L	20	99	90	110			
Method: A2540 C										Batch: TDS140411A
Sample ID: MB-1_140411A		Method Blank				Run: BAL-19_140411A				04/11/14 16:22
Solids, Total Dissolved TDS @ 180 C		ND	mg/L	7						
Sample ID: LCS-2_140411A		Laboratory Control Sample				Run: BAL-19_140411A				04/11/14 16:22
Solids, Total Dissolved TDS @ 180 C		1940	mg/L	20	97	90	110			
Sample ID: C14040293-023A DUP		Sample Duplicate				Run: BAL-19_140411A				04/11/14 16:23
Solids, Total Dissolved TDS @ 180 C		22200	mg/L	100				3.1	5	
Sample ID: C14040293-024A MS		Sample Matrix Spike				Run: BAL-19_140411A				04/11/14 16:23
Solids, Total Dissolved TDS @ 180 C		31700	mg/L	100	83	90	110			S

- Matrix spike recoveries outside the acceptance range are considered matrix-related.

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

S - Spike recovery outside of advisory limits.

QA/QC Summary Report

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC **Report Date:** 04/23/14

Project: Lisbon, UT Facility **Work Order:** C14040293

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: A4500-H B									Analytical Run: PHSC_101-C_140409A	
Sample ID: pH 6.86	Initial Calibration Verification Standard								04/09/14 08:35	
pH		6.88	s.u.	0.010	100	98	102			
Sample ID: CCV - pH 7	Continuing Calibration Verification Standard								04/09/14 11:15	
pH		7.00	s.u.	0.010	100	98	102			
Sample ID: pH 6.86	Initial Calibration Verification Standard								04/09/14 14:34	
pH		6.88	s.u.	0.010	100	98	102			
Sample ID: CCV - pH 7	Continuing Calibration Verification Standard								04/09/14 15:46	
pH		7.00	s.u.	0.010	100	98	102			
Method: A4500-H B									Batch: R185257	
Sample ID: C14040293-009ADUP	Sample Duplicate					Run: PHSC_101-C_140409A			04/09/14 15:07	
pH		7.70	s.u.	0.010				0.1	3	
Sample ID: C14040293-020ADUP	Sample Duplicate					Run: PHSC_101-C_140409A			04/09/14 15:43	
pH		7.65	s.u.	0.010				0.0	3	
Sample ID: C14040293-030ADUP	Sample Duplicate					Run: PHSC_101-C_140409A			04/09/14 16:25	
pH		7.46	s.u.	0.010				0.3	3	
Sample ID: C14040293-033ADUP	Sample Duplicate					Run: PHSC_101-C_140409A			04/09/14 16:37	
pH		9.48	s.u.	0.010				0.0	3	

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

QA/QC Summary Report

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC **Report Date:** 04/23/14

Project: Lisbon, UT Facility **Work Order:** C14040293

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E200.7									Analytical Run: ICP2-C_140416A	
Sample ID: ICV		Initial Calibration Verification Standard							04/16/14 11:23	
Iron		5.12	mg/L	0.030	102	95	105			
Sample ID: ICSA		Interference Check Sample A							04/16/14 11:51	
Iron		187	mg/L	0.030	93	80	120			
Sample ID: ICSAB		Interference Check Sample AB							04/16/14 11:55	
Iron		189	mg/L	0.030	95	80	120			
Method: E200.7									Batch: R185564	
Sample ID: MB-140416A		Method Blank				Run: ICP2-C_140416A			04/16/14 12:20	
Iron		0.002	mg/L	0.001						
Sample ID: LFB-140416A		Laboratory Fortified Blank				Run: ICP2-C_140416A			04/16/14 12:24	
Iron		0.980	mg/L	0.030	98	85	115			
Sample ID: C14040293-033BMS2		Sample Matrix Spike				Run: ICP2-C_140416A			04/16/14 18:59	
Iron		10.1	mg/L	0.030	98	70	130			
Sample ID: C14040293-033BMSD2		Sample Matrix Spike Duplicate				Run: ICP2-C_140416A			04/16/14 19:03	
Iron		9.98	mg/L	0.030	97	70	130	1.3	20	

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

QA/QC Summary Report

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC **Report Date:** 04/23/14

Project: Lisbon, UT Facility **Work Order:** C14040293

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E200.7									Analytical Run: ICP4-C_140411A	
Sample ID: ICV	5	Initial Calibration Verification Standard							04/11/14 12:29	
Calcium		49.5	mg/L	0.50	99	95	105			
Iron		4.93	mg/L	0.030	99	95	105			
Magnesium		49.9	mg/L	0.50	100	95	105			
Potassium		49.3	mg/L	0.50	99	95	105			
Sodium		49.9	mg/L	0.50	100	95	105			
Sample ID: ICSA	5	Interference Check Sample A							04/11/14 12:43	
Calcium		475	mg/L	0.50	95	80	120			
Iron		180	mg/L	0.030	90	80	120			
Magnesium		510	mg/L	0.50	102	80	120			
Potassium		0.0229	mg/L	0.50						
Sodium		-0.233	mg/L	0.50						
Sample ID: ICSAB	5	Interference Check Sample AB							04/11/14 12:47	
Calcium		472	mg/L	0.50	94	80	120			
Iron		179	mg/L	0.030	90	80	120			
Magnesium		505	mg/L	0.50	101	80	120			
Potassium		-0.0240	mg/L	0.50						
Sodium		-0.289	mg/L	0.50						
Method: E200.7									Batch: R185404	
Sample ID: MB-140411A	5	Method Blank				Run: ICP4-C_140411A			04/11/14 13:05	
Calcium		ND	mg/L	0.02						
Iron		ND	mg/L	0.002						
Magnesium		ND	mg/L	0.02						
Potassium		ND	mg/L	0.04						
Sodium		ND	mg/L	0.2						
Sample ID: LFB-140411A	5	Laboratory Fortified Blank				Run: ICP4-C_140411A			04/11/14 13:08	
Calcium		47.1	mg/L	0.50	94	85	115			
Iron		0.948	mg/L	0.030	95	85	115			
Magnesium		47.8	mg/L	0.50	96	85	115			
Potassium		49.1	mg/L	0.50	98	85	115			
Sodium		48.6	mg/L	0.50	97	85	115			
Sample ID: C14040329-001BMS2	5	Sample Matrix Spike				Run: ICP4-C_140411A			04/11/14 18:54	
Calcium		113	mg/L	1.0	97	70	130			
Iron		2.03	mg/L	0.030	97	70	130			
Magnesium		102	mg/L	1.0	97	70	130			
Potassium		109	mg/L	1.0	99	70	130			
Sodium		283	mg/L	1.0	94	70	130			
Sample ID: C14040329-001BMSD2	5	Sample Matrix Spike Duplicate				Run: ICP4-C_140411A			04/11/14 18:58	
Calcium		112	mg/L	1.0	96	70	130	0.7	20	
Iron		2.03	mg/L	0.030	97	70	130	0.1	20	
Magnesium		102	mg/L	1.0	96	70	130	0.3	20	

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

QA/QC Summary Report

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC **Report Date:** 04/23/14

Project: Lisbon, UT Facility **Work Order:** C14040293

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: **E200.7**										Batch: R185404
Sample ID: **C14040329-001BMSD2**	5	Sample Matrix Spike Duplicate				Run: ICP4-C_140411A				04/11/14 18:58
Potassium		108	mg/L	1.0	97	70	130	1.2	20	
Sodium		280	mg/L	1.0	91	70	130	0.9	20	

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

QA/QC Summary Report

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC **Report Date:** 04/23/14

Project: Lisbon, UT Facility **Work Order:** C14040293

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E200.7									Analytical Run: ICP4-C_140414A	
Sample ID: ICV	5	Initial Calibration Verification Standard							04/14/14 15:11	
Calcium		49.5	mg/L	0.50	99	95	105			
Iron		4.93	mg/L	0.030	99	95	105			
Magnesium		49.2	mg/L	0.50	98	95	105			
Potassium		49.0	mg/L	0.50	98	95	105			
Sodium		49.4	mg/L	0.50	99	95	105			
Sample ID: ICSA	5	Interference Check Sample A							04/14/14 15:25	
Calcium		467	mg/L	0.50	93	80	120			
Iron		179	mg/L	0.030	90	80	120			
Magnesium		495	mg/L	0.50	99	80	120			
Potassium		-0.0257	mg/L	0.50						
Sodium		-0.183	mg/L	0.50						
Sample ID: ICSAB	5	Interference Check Sample AB							04/14/14 15:29	
Calcium		473	mg/L	0.50	95	80	120			
Iron		182	mg/L	0.030	91	80	120			
Magnesium		500	mg/L	0.50	100	80	120			
Potassium		-0.0191	mg/L	0.50						
Sodium		-0.0369	mg/L	0.50						
Method: E200.7										Batch: R185466
Sample ID: MB-140414A	5	Method Blank				Run: ICP4-C_140414A			04/14/14 15:47	
Calcium		ND	mg/L	0.02						
Iron		ND	mg/L	0.002						
Magnesium		ND	mg/L	0.02						
Potassium		ND	mg/L	0.04						
Sodium		ND	mg/L	0.2						
Sample ID: LFB-140414A	5	Laboratory Fortified Blank				Run: ICP4-C_140414A			04/14/14 15:51	
Calcium		48.4	mg/L	0.50	97	85	115			
Iron		0.964	mg/L	0.030	96	85	115			
Magnesium		48.2	mg/L	0.50	96	85	115			
Potassium		50.3	mg/L	0.50	101	85	115			
Sodium		49.8	mg/L	0.50	100	85	115			
Sample ID: C14040293-018BMS2	5	Sample Matrix Spike				Run: ICP4-C_140414A			04/14/14 16:58	
Calcium		250	mg/L	1.0	88	70	130			
Iron		1.87	mg/L	0.030	92	70	130			
Magnesium		138	mg/L	1.0	93	70	130			
Potassium		99.9	mg/L	1.0	94	70	130			
Sodium		219	mg/L	1.0	90	70	130			
Sample ID: C14040293-018BMSD2	5	Sample Matrix Spike Duplicate				Run: ICP4-C_140414A			04/14/14 17:02	
Calcium		249	mg/L	1.0	87	70	130	0.5	20	
Iron		1.87	mg/L	0.030	91	70	130	0.3	20	
Magnesium		138	mg/L	1.0	92	70	130	0.5	20	

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

QA/QC Summary Report

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC **Report Date:** 04/23/14

Project: Lisbon, UT Facility **Work Order:** C14040293

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E200.7									Batch: R185466	
Sample ID: C14040293-018BMSD2	5	Sample Matrix Spike Duplicate				Run: ICP4-C_140414A			04/14/14 17:02	
Potassium		98.9	mg/L	1.0	93	70	130	0.9	20	
Sodium		217	mg/L	1.0	89	70	130	0.7	20	
Sample ID: C14040293-027BMS2	5	Sample Matrix Spike				Run: ICP4-C_140414A			04/14/14 18:30	
Calcium		206	mg/L	1.0	79	70	130			
Iron		1.77	mg/L	0.030	87	70	130			
Magnesium		149	mg/L	1.0	85	70	130			
Potassium		101	mg/L	1.0	83	70	130			
Sodium		491	mg/L	1.0		70	130			A
Sample ID: C14040293-027BMSD2	5	Sample Matrix Spike Duplicate				Run: ICP4-C_140414A			04/14/14 18:34	
Calcium		201	mg/L	1.0	74	70	130	2.6	20	
Iron		1.73	mg/L	0.030	85	70	130	1.8	20	
Magnesium		145	mg/L	1.0	81	70	130	2.7	20	
Potassium		98.3	mg/L	1.0	81	70	130	2.9	20	
Sodium		477	mg/L	1.0		70	130	2.8	20	A

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

A - The analyte level was greater than four times the spike level. In accordance with the method % recovery is not calculated.

QA/QC Summary Report

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC **Report Date:** 04/23/14

Project: Lisbon, UT Facility **Work Order:** C14040293

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E200.7									Analytical Run: ICP4-C_140415A	
Sample ID: ICV	5	Initial Calibration Verification Standard							04/15/14 14:24	
Calcium		51.6	mg/L	0.50	103	95	105			
Iron		5.11	mg/L	0.030	102	95	105			
Magnesium		51.1	mg/L	0.50	102	95	105			
Potassium		51.7	mg/L	0.50	103	95	105			
Sodium		51.8	mg/L	0.50	104	95	105			
Sample ID: ICSA	5	Interference Check Sample A							04/15/14 14:38	
Calcium		479	mg/L	0.50	96	80	120			
Iron		183	mg/L	0.030	92	80	120			
Magnesium		510	mg/L	0.50	102	80	120			
Potassium		0.0116	mg/L	0.50						
Sodium		-0.0840	mg/L	0.50						
Sample ID: ICSAB	5	Interference Check Sample AB							04/15/14 14:42	
Calcium		470	mg/L	0.50	94	80	120			
Iron		180	mg/L	0.030	90	80	120			
Magnesium		501	mg/L	0.50	100	80	120			
Potassium		-0.0274	mg/L	0.50						
Sodium		-0.126	mg/L	0.50						
Method: E200.7									Batch: R185512	
Sample ID: MB-140415A	5	Method Blank				Run: ICP4-C_140415A			04/15/14 15:00	
Calcium		ND	mg/L	0.02						
Iron		ND	mg/L	0.002						
Magnesium		ND	mg/L	0.02						
Potassium		0.04	mg/L	0.04						
Sodium		ND	mg/L	0.2						
Sample ID: LFB-140415A	5	Laboratory Fortified Blank				Run: ICP4-C_140415A			04/15/14 15:04	
Calcium		48.9	mg/L	0.50	98	85	115			
Iron		0.976	mg/L	0.030	98	85	115			
Magnesium		48.5	mg/L	0.50	97	85	115			
Potassium		49.9	mg/L	0.50	100	85	115			
Sodium		49.0	mg/L	0.50	98	85	115			
Sample ID: C14040293-029BMS2	5	Sample Matrix Spike				Run: ICP4-C_140415A			04/15/14 15:18	
Calcium		209	mg/L	1.0	94	70	130			
Iron		1.95	mg/L	0.030	96	70	130			
Magnesium		127	mg/L	1.0	96	70	130			
Potassium		103	mg/L	1.0	98	70	130			
Sodium		162	mg/L	1.0	96	70	130			
Sample ID: C14040293-029BMSD2	5	Sample Matrix Spike Duplicate				Run: ICP4-C_140415A			04/15/14 15:21	
Calcium		207	mg/L	1.0	92	70	130	0.9	20	
Iron		1.92	mg/L	0.030	94	70	130	1.5	20	
Magnesium		126	mg/L	1.0	95	70	130	0.9	20	

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

QA/QC Summary Report

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC **Report Date:** 04/23/14

Project: Lisbon, UT Facility **Work Order:** C14040293

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E200.7										Batch: R185512
Sample ID: C14040293-029BMSD2	5	Sample Matrix Spike Duplicate				Run: ICP4-C_140415A				04/15/14 15:21
Potassium		102	mg/L	1.0	97	70	130	1.1	20	
Sodium		160	mg/L	1.0	94	70	130	1.3	20	
Method: E200.7										Analytical Run: ICP4-C_140416A
Sample ID: ICV	4	Initial Calibration Verification Standard								04/16/14 14:02
Calcium		50.3	mg/L	0.50	101	95	105			
Magnesium		50.2	mg/L	0.50	100	95	105			
Potassium		49.6	mg/L	0.50	99	95	105			
Sodium		49.9	mg/L	0.50	100	95	105			
Sample ID: ICSA	4	Interference Check Sample A								04/16/14 14:16
Calcium		453	mg/L	0.50	91	80	120			
Magnesium		489	mg/L	0.50	98	80	120			
Potassium		-0.00472	mg/L	0.50						
Sodium		-0.158	mg/L	0.50						
Sample ID: ICSAB	4	Interference Check Sample AB								04/16/14 14:20
Calcium		468	mg/L	0.50	94	80	120			
Magnesium		501	mg/L	0.50	100	80	120			
Potassium		-0.0513	mg/L	0.50						
Sodium		-0.137	mg/L	0.50						
Method: E200.7										Batch: R185561
Sample ID: MB-140416A	4	Method Blank				Run: ICP4-C_140416A				04/16/14 14:38
Calcium		0.03	mg/L	0.02						
Magnesium		0.06	mg/L	0.01						
Potassium		ND	mg/L	0.04						
Sodium		ND	mg/L	0.2						
Sample ID: LFB-140416A	4	Laboratory Fortified Blank				Run: ICP4-C_140416A				04/16/14 14:42
Calcium		48.6	mg/L	0.50	97	85	115			
Magnesium		48.1	mg/L	0.50	96	85	115			
Potassium		49.1	mg/L	0.50	98	85	115			
Sodium		48.7	mg/L	0.50	97	85	115			
Sample ID: C14040293-010BMS2	4	Sample Matrix Spike				Run: ICP4-C_140416A				04/16/14 14:56
Calcium		181	mg/L	1.0	88	70	130			
Magnesium		119	mg/L	1.0	91	70	130			
Potassium		95.7	mg/L	1.0	91	70	130			
Sodium		284	mg/L	1.0	81	70	130			
Sample ID: C14040293-010BMSD2	4	Sample Matrix Spike Duplicate				Run: ICP4-C_140416A				04/16/14 14:59
Calcium		181	mg/L	1.0	88	70	130	0.1	20	
Magnesium		118	mg/L	1.0	91	70	130	0.3	20	
Potassium		95.4	mg/L	1.0	90	70	130	0.3	20	
Sodium		284	mg/L	1.0	81	70	130	0.1	20	

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

QA/QC Summary Report

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC **Report Date:** 04/23/14

Project: Lisbon, UT Facility **Work Order:** C14040293

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E200.7									Analytical Run: ICP4-C_140417A	
Sample ID: ICV	4	Initial Calibration Verification Standard							04/17/14 14:08	
Calcium		48.5	mg/L	0.50	97	95	105			
Magnesium		48.3	mg/L	0.50	97	95	105			
Potassium		47.6	mg/L	0.50	95	95	105			
Sodium		48.0	mg/L	0.50	96	95	105			
Sample ID: ICSA	4	Interference Check Sample A							04/17/14 14:22	
Calcium		451	mg/L	0.50	90	80	120			
Magnesium		484	mg/L	0.50	97	80	120			
Potassium		0.0132	mg/L	0.50						
Sodium		-0.455	mg/L	0.50						
Sample ID: ICSAB	4	Interference Check Sample AB							04/17/14 14:26	
Calcium		456	mg/L	0.50	91	80	120			
Magnesium		489	mg/L	0.50	98	80	120			
Potassium		0.0406	mg/L	0.50						
Sodium		-0.403	mg/L	0.50						
Method: E200.7									Batch: R185616	
Sample ID: MB-140417A	4	Method Blank				Run: ICP4-C_140417A			04/17/14 14:44	
Calcium		ND	mg/L	0.02						
Magnesium		ND	mg/L	0.02						
Potassium		0.06	mg/L	0.04						
Sodium		ND	mg/L	0.2						
Sample ID: LFB-140417A	4	Laboratory Fortified Blank				Run: ICP4-C_140417A			04/17/14 14:47	
Calcium		47.4	mg/L	0.50	95	85	115			
Magnesium		47.2	mg/L	0.50	94	85	115			
Potassium		48.4	mg/L	0.50	97	85	115			
Sodium		48.0	mg/L	0.50	96	85	115			
Sample ID: C14040293-027BMS2	4	Sample Matrix Spike				Run: ICP4-C_140417A			04/17/14 15:11	
Calcium		352	mg/L	1.0	89	70	130			
Magnesium		291	mg/L	1.0	90	70	130			
Potassium		241	mg/L	1.0	88	70	130			
Sodium		649	mg/L	1.0	88	70	130			
Sample ID: C14040293-027BMSD2	4	Sample Matrix Spike Duplicate				Run: ICP4-C_140417A			04/17/14 15:29	
Calcium		351	mg/L	1.0	89	70	130	0.4	20	
Magnesium		290	mg/L	1.0	90	70	130	0.4	20	
Potassium		239	mg/L	1.0	88	70	130	0.8	20	
Sodium		646	mg/L	1.0	87	70	130	0.5	20	

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

QA/QC Summary Report

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC **Report Date:** 04/23/14

Project: Lisbon, UT Facility **Work Order:** C14040293

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E200.8									Analytical Run: ICPMS2-C_140410B	
Sample ID: ICV	4	Initial Calibration Verification Standard							04/10/14 20:19	
Arsenic		0.0506	mg/L	0.0010	101	90	110			
Molybdenum		0.0486	mg/L	0.0010	97	90	110			
Selenium		0.0516	mg/L	0.0010	103	90	110			
Uranium		0.0500	mg/L	0.00030	100	90	110			
Method: E200.8									Batch: R185357	
Sample ID: LRB	4	Method Blank				Run: ICPMS2-C_140410B			04/10/14 14:13	
Arsenic		ND	mg/L	0.00010						
Molybdenum		ND	mg/L	4E-05						
Selenium		ND	mg/L	0.0002						
Uranium		ND	mg/L	1E-05						
Sample ID: LFB	4	Laboratory Fortified Blank				Run: ICPMS2-C_140410B			04/10/14 14:16	
Arsenic		0.0504	mg/L	0.0010	101	85	115			
Molybdenum		0.0510	mg/L	0.0010	102	85	115			
Selenium		0.0493	mg/L	0.0010	99	85	115			
Uranium		0.0507	mg/L	0.00030	101	85	115			
Sample ID: C14040293-008BMS4	4	Sample Matrix Spike				Run: ICPMS2-C_140410B			04/10/14 21:30	
Arsenic		0.0931	mg/L	0.0010	111	70	130			
Molybdenum		0.268	mg/L	0.0010		70	130			A
Selenium		0.0646	mg/L	0.0010	109	70	130			
Uranium		1.27	mg/L	0.00030		70	130			A
Sample ID: C14040293-008BMSD4	4	Sample Matrix Spike Duplicate				Run: ICPMS2-C_140410B			04/10/14 21:33	
Arsenic		0.0927	mg/L	0.0010	110	70	130	0.4	20	
Molybdenum		0.265	mg/L	0.0010		70	130	1.1	20	A
Selenium		0.0644	mg/L	0.0010	108	70	130	0.4	20	
Uranium		1.26	mg/L	0.00030		70	130	0.2	20	A
Sample ID: C14040293-018BMS4	4	Sample Matrix Spike				Run: ICPMS2-C_140410B			04/10/14 22:31	
Arsenic		0.0830	mg/L	0.0010	113	70	130			
Molybdenum		0.0648	mg/L	0.0010	109	70	130			
Selenium		0.0650	mg/L	0.0010	109	70	130			
Uranium		0.444	mg/L	0.00030		70	130			A
Sample ID: C14040293-018BMSD4	4	Sample Matrix Spike Duplicate				Run: ICPMS2-C_140410B			04/10/14 22:34	
Arsenic		0.0824	mg/L	0.0010	112	70	130	0.7	20	
Molybdenum		0.0638	mg/L	0.0010	108	70	130	1.4	20	
Selenium		0.0650	mg/L	0.0010	109	70	130	0.1	20	
Uranium		0.444	mg/L	0.00030		70	130	0.0	20	A

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

A - The analyte level was greater than four times the spike level. In accordance with the method % recovery is not calculated.

QA/QC Summary Report

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC **Report Date:** 04/23/14

Project: Lisbon, UT Facility **Work Order:** C14040293

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: **E200.8**									Analytical Run: ICPMS2-C_140414A	
Sample ID: **ICV**		Initial Calibration Verification Standard							04/14/14 20:41	
Selenium		0.0493	mg/L	0.0010	99	90	110			
Method: **E200.8**									Batch: R185448	
Sample ID: **LRB**		Method Blank				Run: ICPMS2-C_140414A			04/14/14 12:56	
Selenium		ND	mg/L	0.0002						
Sample ID: **LFB**		Laboratory Fortified Blank				Run: ICPMS2-C_140414A			04/14/14 12:59	
Selenium		0.0494	mg/L	0.0010	99	85	115			
Sample ID: **C14040293-032BMS4**		Sample Matrix Spike				Run: ICPMS2-C_140414A			04/14/14 22:15	
Selenium		0.246	mg/L	0.0013	95	70	130			
Sample ID: **C14040293-032BMSD4**		Sample Matrix Spike Duplicate				Run: ICPMS2-C_140414A			04/14/14 22:18	
Selenium		0.248	mg/L	0.0013	96	70	130	0.8	20	

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

QA/QC Summary Report

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC **Report Date:** 04/23/14

Project: Lisbon, UT Facility **Work Order:** C14040293

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E300.0									Analytical Run: IC2-C_140409A	
Sample ID: CCV-040914-03	2	Continuing Calibration Verification Standard							04/09/14 22:01	
Chloride		9.86	mg/L	1.0	99	90	110			
Sulfate		39.5	mg/L	1.0	99	90	110			
Sample ID: CCV-040914-04	2	Continuing Calibration Verification Standard							04/10/14 02:05	
Chloride		9.92	mg/L	1.0	99	90	110			
Sulfate		39.7	mg/L	1.0	99	90	110			
Sample ID: CCV-040914-05	2	Continuing Calibration Verification Standard							04/10/14 12:52	
Chloride		9.92	mg/L	1.0	99	90	110			
Sulfate		39.9	mg/L	1.0	100	90	110			
Sample ID: CCV-040914-06	2	Continuing Calibration Verification Standard							04/10/14 16:56	
Chloride		10.3	mg/L	1.0	103	90	110			
Sulfate		41.0	mg/L	1.0	103	90	110			
Method: E300.0									Batch: R185343	
Sample ID: ICB	2	Method Blank				Run: IC2-C_140409A			04/09/14 13:36	
Chloride		0.07	mg/L	0.04						
Sulfate		0.08	mg/L	0.04						
Sample ID: LFB-040914-01	2	Laboratory Fortified Blank				Run: IC2-C_140409A			04/09/14 13:53	
Chloride		10.3	mg/L	1.0	102	90	110			
Sulfate		41.3	mg/L	1.0	103	90	110			
Sample ID: C14040293-004AMS	2	Sample Matrix Spike				Run: IC2-C_140409A			04/10/14 09:40	
Chloride		476	mg/L	1.0	96	90	110			
Sulfate		1160	mg/L	4.2	99	90	110			
Sample ID: C14040293-004AMSD	2	Sample Matrix Spike Duplicate				Run: IC2-C_140409A			04/10/14 09:57	
Chloride		479	mg/L	1.0	99	90	110	0.7	20	
Sulfate		1180	mg/L	4.2	105	90	110	2.0	20	

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

QA/QC Summary Report

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC **Report Date:** 04/23/14

Project: Lisbon, UT Facility **Work Order:** C14040293

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E300.0									Analytical Run: IC2-C_140418A	
Sample ID: CCV-041714-03	2	Continuing Calibration Verification Standard							04/17/14 19:49	
Chloride		9.76	mg/L	1.0	98	90	110			
Sulfate		39.1	mg/L	1.0	98	90	110			
Method: E300.0									Batch: R185605	
Sample ID: ICB	2	Method Blank				Run: IC2-C_140418A			04/17/14 09:20	
Chloride		ND	mg/L	0.04						
Sulfate		0.07	mg/L	0.04						
Sample ID: LFB-041714	2	Laboratory Fortified Blank				Run: IC2-C_140418A			04/17/14 09:38	
Chloride		10.2	mg/L	1.0	102	90	110			
Sulfate		41.0	mg/L	1.0	102	90	110			
Sample ID: C14040293-023AMS	2	Sample Matrix Spike				Run: IC2-C_140418A			04/17/14 20:41	
Chloride		1160	mg/L	10	105	90	110			
Sulfate		21500	mg/L	42		90	110			A
Sample ID: C14040293-023AMSD	2	Sample Matrix Spike Duplicate				Run: IC2-C_140418A			04/17/14 20:59	
Chloride		1160	mg/L	10	106	90	110	0.4	20	
Sulfate		21200	mg/L	42		90	110	1.6	20	A

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

A - The analyte level was greater than four times the spike level. In accordance with the method % recovery is not calculated.

Workorder Receipt Checklist

Rio Algom Mining Corporation LLC C14040293

Login completed by: Tessa Parke
Date Received: 4/8/2014
Reviewed by: BL2000\khelm
Received by: dw
Reviewed Date: 4/10/2014
Carrier name: Next Day Air

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on all shipping container(s)/cooler(s)?	Yes ☐	No ☐	Not Present ☑
Custody seals intact on all sample bottles?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time? (Exclude analyses that are considered field parameters such as pH, DO, Res Cl, Sulfite, Ferrous Iron, etc.)	Yes ☑	No ☐	
Temp Blank received in all shipping container(s)/cooler(s)?	Yes ☑	No ☐	Not Applicable ☐
Container/Temp Blank temperature:	1.1°C On Ice		
Water - VOA vials have zero headspace?	Yes ☐	No ☐	No VOA vials submitted ☑
Water - pH acceptable upon receipt?	Yes ☑	No ☐	Not Applicable ☐

Standard Reporting Procedures:

Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH, Dissolved Oxygen and Residual Chlorine, are qualified as being analyzed outside of recommended holding time.

Solid/soil samples are reported on a wet weight basis (as received) unless specifically indicated. If moisture corrected, data units are typically noted as –dry. For agricultural and mining soil parameters/characteristics, all samples are dried and ground prior to sample analysis.

Contact and Corrective Action Comments:

Two coolers were received on 4/8/14 and one was received 4/9/14. All analysis is still within the EPA recommmended holding time and cooler temperatures were within guidelines.

Chain of Custody and Analytical Request Record

PLEASE PRINT- Provide as much information as possible.

Company Name:	Project Name, PWS, Permit, Etc.	Sample Origin	EPA/State Compliance:
Rio Algom Mining Corp	Lisbon, UT Facility	State: UT	Yes ☐ No ☐
Report Mail Address: Montgomery and Associates Results retrieved from Energy Source	**Contact Name:** John Laney **Phone/Fax:** (520) 425-2219	**Email:** jlaney@clmontgomery.com	**Sampler: (Please Print)** Braden Myers
Invoice Address: Email invoice to Gail PO Box 218 Grants, NM 87020	**Invoice Contact & Phone:** Gail Alexander (505) 287-8851	**Purchase Order:**	**Quote/Bottle Order:** C3636

Special Report/Formats – ELI must be notified prior to sample submittal for the following:

☐ DW ☐ A2LA
☐ GSA ☐ EDD/EDT (Electronic Data)
☐ POTW/WWTP Format:_____
☐ State: _____ ☐ LEVEL IV
☐ Other: _____ ☐ NELAC

Number of Containers
Sample Type: A W S V B O
Air Water Soils/Solids
Vegetation Bioassay Other

ANALYSIS REQUESTED

SEE ATTACHED

Normal Turnaround (TAT)

RUSH

Contact ELI prior to **RUSH** sample submittal for charges and scheduling – See Instruction Page

Comments: metals preserved + filtered in field

Shipped by: FedEx E

Cooler ID(s): 3562 4156

Receipt Temp 1.6 / 20 °C / 1.6

On Ice: (Yes) No

Custody Seal Intact: Y N
Signature Match: Y N

SAMPLE IDENTIFICATION (Name, Location, Interval, etc.)	Collection Date	Collection Time	MATRIX	C3636
1 7136	05APR2014	850	W	X
2 7137		915	W	X
3 7138		945	W	X
4 7139		925	W	X
5 7140		1005	W	X
6 7072		1010	W	X
7 7073		1035	W	X
8 7074		1100	W	X
9 7075		1130	W	X
10 7076		1135	W	X

LABORATORY USE ONLY C1404102913

Custody Record MUST be Signed

	Relinquished by (print):	Date/Time:	Signature:	Received by (print):	Date/Time:	Signature:
	B. Myers	4/4/14 1300				
	Relinquished by (print):	Date/Time:	Signature:	Received by (print):	Date/Time:	Signature:
				Received by Laboratory:	Date/Time:	Signature:
					4-8-14	950

Sample Disposal: Return to Client: _____ Lab Disposal: _____

In certain circumstances, samples submitted to Energy Laboratories, Inc. may be subcontracted to other certified laboratories in order to complete the analysis requested. This serves as notice of this possibility. All sub-contract data will be clearly notated on your analytical report.
Visit our web site at www.energylab.com for additional information, downloadable fee schedule, forms, and links.

Chain of Custody and Analytical Request Record

PLEASE PRINT- Provide as much information as possible.

Company Name: Rio Algom Mining Corp	Project Name, PWS, Permit, Etc.: Lisbon, UT Facility	Sample Origin State: UT	EPA/State Compliance: Yes ☐ No ☐
Report Mail Address: Montgomery and Associates; Results retrieved from Energy Source	Contact Name: John Laney; Phone/Fax: (520) 425-2219; Email: jlaney@clmontgomery.com		Sampler: (Please Print) B. Myers
Invoice Address: Email invoice to Gail, PO Box 218, Grants, NM 87020	Invoice Contact & Phone: Gail Alexander (505) 287-8851	Purchase Order:	Quote/Bottle Order: C3636

Special Report/Formats – ELI must be notified prior to sample submittal for the following:

☐ DW ☐ A2LA
☐ GSA ☐ EDD/EDT (Electronic Data)
☐ POTW/WWTP Format: _____
☐ State: _____ ☐ LEVEL IV
☐ Other: _____ ☐ NELAC

Number of Containers; Sample Type: A Air, W Water, S Soils/Solids, V Vegetation, B Bioassay, O Other

SAMPLE IDENTIFICATION (Name, Location, Interval, etc.)	Collection Date	Collection Time	MATRIX	ANALYSIS REQUESTED: C3636	SEE ATTACHED	Normal Turnaround (TAT)
1 7077	05/APR/2014	1110	W	X		
2 7078		1155	W	X		
3 7079		1150	W	X		
4 7080		1220	W	X		
5 7181		1310	W	X		
6 7182		1320	W	X		
7 7184		1355	W	X		
8 7186		1455	W	X		
9 7188		1405	W	X		
10 7189		~~1~~525	W	X		

RUSH

Contact ELI prior to **RUSH** sample submittal for charges and scheduling – See Instruction Page

Comments: Metals preserved + filtered in field

Shipped by: Fedex E

Cooler ID(s): 3562, 4156

Receipt Temp: 1.6/2.0 °C / 1.1

On Ice: (Yes) No

Custody Seal Y N; Intact Y N; Signature Match Y N

LABORATORY USE ONLY

Custody Record MUST be Signed

Relinquished by (print): B Myers	Date/Time: 4/7/14 1500	Signature:	Received by (print): / Date/Time: / Signature:
Relinquished by (print):	Date/Time:	Signature:	Received by (print): / Date/Time: / Signature:
			Received by Laboratory: [illegible] Date/Time: 4-8-14 950 Signature:

Sample Disposal: Return to Client: _____ Lab Disposal: _____

In certain circumstances, samples submitted to Energy Laboratories, Inc. may be subcontracted to other certified laboratories in order to complete the analysis requested.
This serves as notice of this possibility. All sub-contract data will be clearly notated on your analytical report.
Visit our web site at www.energylab.com for additional information, downloadable fee schedule, forms, and links.

Chain of Custody and Analytical Request Record

Page 4 of 4

PLEASE PRINT- Provide as much information as possible.

Company Name: Rio Algom Mining Corp	Project Name, PWS, Permit, Etc.: Lisbon, UT Facility	Sample Origin State: UT	EPA/State Compliance: Yes ☐ No ☐
Report Mail Address: Montgomery and Associates Results retrieved from Energy Source	Contact Name: John Laney Phone/Fax: (520) 425-2219 Email: jlaney@clmontgomery.com cc B. Myers		Sampler: (Please Print)
Invoice Address: Email invoice to Gail PO Box 218 Grants, NM 87020	Invoice Contact & Phone: Gail Alexander (505) 287-8851	Purchase Order:	Quote/Bottle Order: C3636

Special Report/Formats – ELI must be notified prior to sample submittal for the following:

☐ DW ☐ A2LA
☐ GSA ☐ EDD/EDT (Electronic Data)
☐ POTW/WWTP Format: _____
☐ State: _____ ☐ LEVEL IV
☐ Other: _____ ☐ NELAC

Number of Containers
Sample Type: A W S V B O
Air Water Soils/Solids Vegetation Bioassay Other

ANALYSIS REQUESTED

SEE ATTACHED

Normal Turnaround (TAT)

RUSH

Contact ELI prior to **RUSH** sample submittal for charges and scheduling – See Instruction Page

Comments: metals Preserved + filtered in field

Shipped by:

Cooler ID(s): 3562 4156

Receipt Temp 1.6 °C 12.0 / 11.1

On Ice: (Yes) No

Custody Seal Intact Signature Match: Y N

	SAMPLE IDENTIFICATION (Name, Location, Interval, etc.)	Collection Date	Collection Time	MATRIX	C3636
1	7190	05APR2014	1600	W	X
2	7175		1610	W	X
3	7176		1615	W	X
4	7177		~~1635~~	W	X
5	7178		1725 ~~1730~~	W	X
6	7179		1730	W	X
7	7180	06APR2014	850	W	X
8	7191	"	910	W	X
9					
10					

LABORATORY USE ONLY

Custody Record MUST be Signed

Relinquished by (print): B. Myers	Date/Time: 4/7/14 1020	Signature:	Received by (print):	Date/Time:	Signature:
Relinquished by (print):	Date/Time:	Signature:	Received by (print):	Date/Time:	Signature:
			Received by Laboratory:	Date/Time: 4-8-14	Signature: 950

Sample Disposal: Return to Client: _____ Lab Disposal: _____

In certain circumstances, samples submitted to Energy Laboratories, Inc. may be subcontracted to other certified laboratories in order to complete the analysis requested.
This serves as notice of this possibility. All sub-contract data will be clearly notated on your analytical report.
Visit our web site at www.energylab.com for additional information, downloadable fee schedule, forms, and links.

Chain of Custody and Analytical Request Record

Page _____ of _____

ENERGY LABORATORIES

PLEASE PRINT (Provide as much information as possible.)

Company Name: Rio Algom Mining

Report Mail Address (Required):

❑ No Hard Copy Email:

Invoice Address (Required):

❑ No Hard Copy Email:

Project Name, PWS, Permit, Etc.: Lisbon, UT Facility

Contact Name: John Laney

Phone/Fax: 520 425-2219

Invoice Contact & Phone:

Sample Origin State:

Cell:

EPA/State Compliance: Yes ☐ No ☐

Sampler: (Please Print)

Purchase Order:

Quote/Bottle Order:

Special Report/Formats:
- ☐ DW
- ☐ POTW/WWTP
- ☐ State: _____
- ☐ Other: _____
- ☐ EDD/EDT (Electronic Data) Format: _____
- ☐ LEVEL IV
- ☐ NELAC

ANALYSIS REQUESTED

Number of Containers
Sample Type: A W S V B O DW
Air Water Soils/Solids Vegetation Bioassay Other DW - Drinking Water

SAMPLE IDENTIFICATION (Name, Location, Interval, etc.)	Collection Date	Collection Time	MATRIX											SEE ATTACHED
1 7170	4-4-14	1630		6	3	6								
2 7171		1705												
3 7172		1715												
4 7173		1745												
5 7174		1800												
6														
7														
8														
9														
10														

Standard Turnaround (TAT)

R U S H

Contact ELI prior to **RUSH** sample submittal for charges and scheduling – See Instruction Page

Comments: Filled at cust at lab by PSW

Shipped by: Fedex E

Cooler ID(s): 3894

Receipt Temp: 1.7 °C

On Ice: (Y) N

Custody Seal: On Bottle Y (N) / On Cooler Y (N)

Intact: Y N

Signature Match: Y N

LABORATORY USE ONLY

Custody Record MUST be Signed

Relinquished by (print): Date/Time: Signature:

Relinquished by (print): Date/Time: Signature:

Received by (print): Date/Time: Signature:

Received by (print): Date/Time: Signature:

Received by Laboratory: Date/Time: 4-8-14 950 Signature:

Sample Disposal: Return to Client: _____ Lab Disposal: _____

In certain circumstances, samples submitted to Energy Laboratories, Inc. may be subcontracted to other certified laboratories in order to complete the analysis requested. All sub-contract data will be clearly notated on your analytical report.

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Analytical Report

April 22, 2014

Report to:
John Laney
Montgomery and Associates
P.O. Box 218
Grants, NM 87020

Bill to:
Accounts Payable
Montgomery and Associates
1550 E. Prince Rd.
Tucson, AZ 85719

Project ID: 1350.21
ACZ Project ID: L17651

John Laney:

Enclosed are the analytical results for sample(s) submitted to ACZ Laboratories, Inc. (ACZ) on April 08, 2014. This project has been assigned to ACZ's project number, L17651. Please reference this number in all future inquiries.

All analyses were performed according to ACZ's Quality Assurance Plan. The enclosed results relate only to the samples received under L17651. Each section of this report has been reviewed and approved by the appropriate Laboratory Supervisor, or a qualified substitute.

Except as noted, the test results for the methods and parameters listed on ACZ's current NELAC certificate letter (#ACZ) meet all requirements of NELAC.

This report shall be used or copied only in its entirety. ACZ is not responsible for the consequences arising from the use of a partial report.

All samples and sub-samples associated with this project will be disposed of after October 19, 2014. If the samples are determined to be hazardous, additional charges apply for disposal (typically $11/sample). If you would like the samples to be held longer than ACZ's stated policy or to be returned, please contact your Project Manager or Customer Service Representative for further details and associated costs. ACZ retains analytical raw data reports for ten years.

If you have any questions or other needs, please contact your Project Manager.

Montgomery and Associates
Project ID: 1350.21
Sample ID: 7183

ACZ Sample ID: ***L17651-01***
Date Sampled: *04/05/14 13:20*
Date Received: *04/08/14*
Sample Matrix: *Ground Water*

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Arsenic, dissolved	M200.8 ICP-MS	1	0.0178			mg/L	0.0002	0.001	04/17/14 5:20	msh
Calcium, dissolved	M200.7 ICP	1	126			mg/L	0.1	0.5	04/10/14 19:10	aeb
Iron, dissolved	M200.7 ICP	1		U		mg/L	0.02	0.05	04/10/14 19:10	aeb
Magnesium, dissolved	M200.7 ICP	1	36.9			mg/L	0.2	1	04/10/14 19:10	aeb
Molybdenum, dissolved	M200.8 ICP-MS	1	0.0077			mg/L	0.0005	0.003	04/17/14 5:20	msh
Potassium, dissolved	M200.7 ICP	1	3.3			mg/L	0.2	1	04/10/14 19:10	aeb
Selenium, dissolved	M200.8 ICP-MS	1	0.0063			mg/L	0.0001	0.0003	04/17/14 5:20	msh
Sodium, dissolved	M200.7 ICP	1	59.3			mg/L	0.2	1	04/10/14 19:10	aeb
Uranium, dissolved	M200.8 ICP-MS	1	0.0125			mg/L	0.0001	0.0005	04/17/14 5:20	msh

Wet Chemistry

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Alkalinity as CaCO3	SM2320B - Titration									
Bicarbonate as CaCO3		1	161			mg/L	2	20	04/09/14 0:00	dcw
Carbonate as CaCO3		1		U		mg/L	2	20	04/09/14 0:00	dcw
Hydroxide as CaCO3		1		U		mg/L	2	20	04/09/14 0:00	dcw
Total Alkalinity		1	161		*	mg/L	2	20	04/09/14 0:00	dcw
Cation-Anion Balance	Calculation									
Cation-Anion Balance			0.0			%			04/22/14 10:22	calc
Sum of Anions			12			meq/L	0.1	0.5	04/22/14 10:22	calc
Sum of Cations			12			meq/L	0.1	0.5	04/22/14 10:22	calc
Chloride	SM4500Cl-E	10	160		*	mg/L	10	50	04/15/14 16:09	mpb
Conductivity @25C	SM2510B	1	1170			umhos/cm	1	10	04/09/14 3:03	dcw
pH (lab)	SM4500H+ B									
pH		1	8.2	H		units	0.1	0.1	04/09/14 0:00	dcw
pH measured at		1	19			C	0.1	0.1	04/09/14 0:00	dcw
Residue, Filterable (TDS) @180C	SM2540C	1	780			mg/L	10	20	04/09/14 13:58	id
Sulfate	D516-02 - Turbidimetric	5	192		*	mg/L	5	25	04/15/14 11:59	tcd
TDS (calculated)	Calculation		674			mg/L	10	50	04/22/14 10:22	calc
TDS (ratio - measured/calculated)	Calculation		1.16						04/22/14 10:22	calc

Arizona license number: AZ0102

Montgomery and Associates
Project ID: 1350.21
Sample ID: 7185

ACZ Sample ID: ***L17651-02***
Date Sampled: *04/05/14 13:55*
Date Received: *04/08/14*
Sample Matrix: *Ground Water*

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Arsenic, dissolved	M200.8 ICP-MS	1	0.0158			mg/L	0.0002	0.001	04/17/14 5:31	msh
Calcium, dissolved	M200.7 ICP	1	125			mg/L	0.1	0.5	04/10/14 19:19	aeb
Iron, dissolved	M200.7 ICP	1		U		mg/L	0.02	0.05	04/10/14 19:19	aeb
Magnesium, dissolved	M200.7 ICP	1	37			mg/L	0.2	1	04/10/14 19:19	aeb
Molybdenum, dissolved	M200.8 ICP-MS	1	0.0116			mg/L	0.0005	0.003	04/17/14 5:31	msh
Potassium, dissolved	M200.7 ICP	1	3.3			mg/L	0.2	1	04/10/14 19:19	aeb
Selenium, dissolved	M200.8 ICP-MS	1	0.0065			mg/L	0.0001	0.0003	04/17/14 5:31	msh
Sodium, dissolved	M200.7 ICP	1	59.4			mg/L	0.2	1	04/10/14 19:19	aeb
Uranium, dissolved	M200.8 ICP-MS	1	0.0141			mg/L	0.0001	0.0005	04/17/14 5:31	msh

Wet Chemistry

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Alkalinity as CaCO3	SM2320B - Titration									
Bicarbonate as CaCO3		1	145			mg/L	2	20	04/09/14 0:00	dcw
Carbonate as CaCO3		1		U		mg/L	2	20	04/09/14 0:00	dcw
Hydroxide as CaCO3		1		U		mg/L	2	20	04/09/14 0:00	dcw
Total Alkalinity		1	145		*	mg/L	2	20	04/09/14 0:00	dcw
Cation-Anion Balance	Calculation									
Cation-Anion Balance			4.3			%			04/22/14 10:22	calc
Sum of Anions			11			meq/L	0.1	0.5	04/22/14 10:22	calc
Sum of Cations			12			meq/L	0.1	0.5	04/22/14 10:22	calc
Chloride	SM4500Cl-E	10	160		*	mg/L	10	50	04/15/14 16:09	mpb
Conductivity @25C	SM2510B	1	1170			umhos/cm	1	10	04/09/14 3:12	dcw
pH (lab)	SM4500H+ B									
pH		1	8.2	H		units	0.1	0.1	04/09/14 0:00	dcw
pH measured at		1	19			C	0.1	0.1	04/09/14 0:00	dcw
Residue, Filterable (TDS) @180C	SM2540C	1	690			mg/L	10	20	04/11/14 16:37	dcw
Sulfate	D516-02 - Turbidimetric	5	192		*	mg/L	5	25	04/15/14 11:59	tcd
TDS (calculated)	Calculation		664			mg/L	10	50	04/22/14 10:22	calc
TDS (ratio - measured/calculated)	Calculation		1.04						04/22/14 10:22	calc

Arizona license number: AZ0102

Montgomery and Associates
Project ID: 1350.21
Sample ID: 7187

ACZ Sample ID: ***L17651-03***
Date Sampled: *04/05/14 14:55*
Date Received: *04/08/14*
Sample Matrix: *Ground Water*

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Arsenic, dissolved	M200.8 ICP-MS	1	0.0242			mg/L	0.0002	0.001	04/17/14 5:34	msh
Calcium, dissolved	M200.7 ICP	1	168			mg/L	0.1	0.5	04/10/14 19:29	aeb
Iron, dissolved	M200.7 ICP	1		U		mg/L	0.02	0.05	04/10/14 19:29	aeb
Magnesium, dissolved	M200.7 ICP	1	44.5			mg/L	0.2	1	04/10/14 19:29	aeb
Molybdenum, dissolved	M200.8 ICP-MS	1	0.0089			mg/L	0.0005	0.003	04/17/14 5:34	msh
Potassium, dissolved	M200.7 ICP	1	4.2			mg/L	0.2	1	04/10/14 19:29	aeb
Selenium, dissolved	M200.8 ICP-MS	1	0.0087			mg/L	0.0001	0.0003	04/17/14 5:34	msh
Sodium, dissolved	M200.7 ICP	1	129			mg/L	0.2	1	04/10/14 19:29	aeb
Uranium, dissolved	M200.8 ICP-MS	5	0.3705			mg/L	0.0005	0.003	04/18/14 12:11	las

Wet Chemistry

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Alkalinity as CaCO3	SM2320B - Titration									
Bicarbonate as CaCO3		1	210			mg/L	2	20	04/09/14 0:00	dcw
Carbonate as CaCO3		1		U		mg/L	2	20	04/09/14 0:00	dcw
Hydroxide as CaCO3		1		U		mg/L	2	20	04/09/14 0:00	dcw
Total Alkalinity		1	210		*	mg/L	2	20	04/09/14 0:00	dcw
Cation-Anion Balance	Calculation									
Cation-Anion Balance			2.9			%			04/22/14 10:23	calc
Sum of Anions			17			meq/L	0.1	0.5	04/22/14 10:23	calc
Sum of Cations			18			meq/L	0.1	0.5	04/22/14 10:23	calc
Chloride	SM4500Cl-E	10	210		*	mg/L	10	50	04/15/14 16:09	mpb
Conductivity @25C	SM2510B	1	1680			umhos/cm	1	10	04/09/14 3:21	dcw
pH (lab)	SM4500H+ B									
pH		1	8.2	H		units	0.1	0.1	04/09/14 0:00	dcw
pH measured at		1	19			C	0.1	0.1	04/09/14 0:00	dcw
Residue, Filterable (TDS) @180C	SM2540C	1	1070			mg/L	10	20	04/11/14 16:39	dcw
Sulfate	D516-02 - Turbidimetric	20	348		*	mg/L	20	100	04/15/14 12:13	tcd
TDS (calculated)	Calculation		1030			mg/L	10	50	04/22/14 10:23	calc
TDS (ratio - measured/calculated)	Calculation		1.04						04/22/14 10:23	calc

Arizona license number: AZ0102

Report Header Explanations

Batch	A distinct set of samples analyzed at a specific time
Found	Value of the QC Type of interest
Limit	Upper limit for RPD, in %.
Lower	Lower Recovery Limit, in % (except for LCSS, mg/Kg)
MDL	Method Detection Limit. Same as Minimum Reporting Limit. Allows for instrument and annual fluctuations.
PCN/SCN	A number assigned to reagents/standards to trace to the manufacturer's certificate of analysis
PQL	Practical Quantitation Limit, typically 5 times the MDL.
QC	True Value of the Control Sample or the amount added to the Spike
Rec	Recovered amount of the true value or spike added, in % (except for LCSS, mg/Kg)
RPD	Relative Percent Difference, calculation used for Duplicate QC Types
Upper	Upper Recovery Limit, in % (except for LCSS, mg/Kg)
Sample	Value of the Sample of interest

QC Sample Types

AS	Analytical Spike (Post Digestion)	*LCSWD*	Laboratory Control Sample - Water Duplicate
ASD	Analytical Spike (Post Digestion) Duplicate	*LFB*	Laboratory Fortified Blank
CCB	Continuing Calibration Blank	*LFM*	Laboratory Fortified Matrix
CCV	Continuing Calibration Verification standard	*LFMD*	Laboratory Fortified Matrix Duplicate
DUP	Sample Duplicate	*LRB*	Laboratory Reagent Blank
ICB	Initial Calibration Blank	*MS*	Matrix Spike
ICV	Initial Calibration Verification standard	*MSD*	Matrix Spike Duplicate
ICSAB	Inter-element Correction Standard - A plus B solutions	*PBS*	Prep Blank - Soil
LCSS	Laboratory Control Sample - Soil	*PBW*	Prep Blank - Water
LCSSD	Laboratory Control Sample - Soil Duplicate	*PQV*	Practical Quantitation Verification standard
LCSW	Laboratory Control Sample - Water	*SDL*	Serial Dilution

QC Sample Type Explanations

Blanks	Verifies that there is no or minimal contamination in the prep method or calibration procedure.
Control Samples	Verifies the accuracy of the method, including the prep procedure.
Duplicates	Verifies the precision of the instrument and/or method.
Spikes/Fortified Matrix	Determines sample matrix interferences, if any.
Standard	Verifies the validity of the calibration.

ACZ Qualifiers (Qual)

B	Analyte concentration detected at a value between MDL and PQL. The associated value is an estimated quantity.
H	Analysis exceeded method hold time. pH is a field test with an immediate hold time.
L	Target analyte response was below the laboratory defined negative threshold.
U	The material was analyzed for, but was not detected above the level of the associated value. The associated value is either the sample quantitation limit or the sample detection limit.

Method References

(1) EPA 600/4-83-020. Methods for Chemical Analysis of Water and Wastes, March 1983.
(2) EPA 600/R-93-100. Methods for the Determination of Inorganic Substances in Environmental Samples, August 1993.
(3) EPA 600/R-94-111. Methods for the Determination of Metals in Environmental Samples - Supplement I, May 1994.
(4) EPA SW-846. Test Methods for Evaluating Solid Waste.
(5) Standard Methods for the Examination of Water and Wastewater.

Comments

(1) QC results calculated from raw data. Results may vary slightly if the rounded values are used in the calculations.
(2) Soil, Sludge, and Plant matrices for Inorganic analyses are reported on a dry weight basis.
(3) Animal matrices for Inorganic analyses are reported on an "as received" basis.
(4) An asterisk in the "XQ" column indicates there is an extended qualifier and/or certification qualifier associated with the result.
(5) If the MDL equals the PQL or the MDL column is omitted, the PQL is the reporting limit.

For a complete list of ACZ's Extended Qualifiers, please click: http://www.acz.com/public/extquallist.pdf

Montgomery and Associates

ACZ Project ID: ***L17651***

Alkalinity as CaCO3 SM2320B - Titration

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG361957													
WG361957PBW1	PBW	04/08/14 16:33				6.7	mg/L		-20	20			
WG361957LCSW3	LCSW	04/08/14 16:52	WC140402-	820.0001		886.4	mg/L	108.1	90	110			
WG361957LCSW6	LCSW	04/08/14 19:44	WC140402-	820.0001		838.9	mg/L	102.3	90	110			
WG361957PBW2	PBW	04/08/14 19:53				2.9	mg/L		-20	20			
WG361957LCSW9	LCSW	04/08/14 23:01	WC140402-	820.0001		837.5	mg/L	102.1	90	110			
WG361957PBW3	PBW	04/08/14 23:11				2.9	mg/L		-20	20			
WG361957LCSW12	LCSW	04/09/14 2:19	WC140402-	820.0001		847.2	mg/L	103.3	90	110			
WG361957PBW4	PBW	04/09/14 2:29				3	mg/L		-20	20			
L17652-05DUP	DUP	04/09/14 4:01			13	12.6	mg/L				3.1	20	RA
WG361957LCSW15	LCSW	04/09/14 5:48	WC140402-	820.0001		856	mg/L	104.4	90	110			

Arsenic, dissolved M200.8 ICP-MS

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG362442													
WG362442ICV	ICV	04/17/14 4:19	MS140331-9	.05		.05161	mg/L	103.2	90	110			
WG362442ICB	ICB	04/17/14 4:22				U	mg/L		-0.0006	0.0006			
WG362442LFB	LFB	04/17/14 4:25	MS140331-2	.0501		.04743	mg/L	94.7	85	115			
L17651-01AS	AS	04/17/14 5:24	MS140331-2	.0501	.0178	.06871	mg/L	101.6	70	130			
L17651-01ASD	ASD	04/17/14 5:27	MS140331-2	.0501	.0178	.06961	mg/L	103.4	70	130	1.3	20	

Calcium, dissolved M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG362083													
WG362083ICV	ICV	04/10/14 18:33	II140220-1	100		99.07	mg/L	99.1	95	105			
WG362083ICB	ICB	04/10/14 18:39				U	mg/L		-0.3	0.3			
WG362083LFB	LFB	04/10/14 18:51	II140317-2	67.98099		71.56	mg/L	105.3	85	115			
L17651-01AS	AS	04/10/14 19:13	II140317-2	67.98099	126	193	mg/L	98.6	85	115			
L17651-01ASD	ASD	04/10/14 19:16	II140317-2	67.98099	126	193.3	mg/L	99	85	115	0.16	20	

Chloride SM4500Cl-E

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG362352													
WG362352ICB	ICB	04/15/14 14:51				U	mg/L		-3	3			
WG362352ICV	ICV	04/15/14 14:51	WI130722-5	54.945		58.6	mg/L	106.7	90	110			
WG362352LFB1	LFB	04/15/14 15:51	WI131010-1	30		32.4	mg/L	108	90	110			
L17657-01DUP	DUP	04/15/14 15:53			11	11.4	mg/L				3.6	20	
WG362352LFB2	LFB	04/15/14 15:55	WI131010-1	30		32.7	mg/L	109	90	110			
L17524-01AS	AS	04/15/14 16:02	10XCL	30	250	273	mg/L	76.7	90	110			M3
L17524-02DUP	DUP	04/15/14 16:03			340	334	mg/L				1.8	20	
L17651-03AS	AS	04/15/14 16:09	10XCL	30	210	234	mg/L	80	90	110			M3

Montgomery and Associates

ACZ Project ID: ***L17651***

Conductivity @25C SM2510B

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG361957													
WG361957LCSW2	LCSW	04/08/14 16:38	PCN43577	1408.8		1438.6	umhos/cm	102.1	90	110			
WG361957LCSW5	LCSW	04/08/14 19:29	PCN43577	1408.8		1423.2	umhos/cm	101	90	110			
WG361957LCSW8	LCSW	04/08/14 22:47	PCN43577	1408.8		1401.8	umhos/cm	99.5	90	110			
WG361957LCSW11	LCSW	04/09/14 2:05	PCN43577	1408.8		1389.5	umhos/cm	98.6	90	110			
L17652-05DUP	DUP	04/09/14 4:01			613	611	umhos/cm				0.3	20	
WG361957LCSW14	LCSW	04/09/14 5:33	PCN43577	1408.8		1374.1	umhos/cm	97.5	90	110			

Iron, dissolved M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG362083													
WG362083ICV	ICV	04/10/14 18:33	II140220-1	2		1.994	mg/L	99.7	95	105			
WG362083ICB	ICB	04/10/14 18:39				U	mg/L		-0.06	0.06			
WG362083LFB	LFB	04/10/14 18:51	II140317-2	1.0014		1.036	mg/L	103.5	85	115			
L17651-01AS	AS	04/10/14 19:13	II140317-2	1.0014	U	1.028	mg/L	102.7	85	115			
L17651-01ASD	ASD	04/10/14 19:16	II140317-2	1.0014	U	1.028	mg/L	102.7	85	115	0	20	

Magnesium, dissolved M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG362083													
WG362083ICV	ICV	04/10/14 18:33	II140220-1	100		96.8	mg/L	96.8	95	105			
WG362083ICB	ICB	04/10/14 18:39				U	mg/L		-0.6	0.6			
WG362083LFB	LFB	04/10/14 18:51	II140317-2	50.00131		50.41	mg/L	100.8	85	115			
L17651-01AS	AS	04/10/14 19:13	II140317-2	50.00131	36.9	86.77	mg/L	99.7	85	115			
L17651-01ASD	ASD	04/10/14 19:16	II140317-2	50.00131	36.9	87.21	mg/L	100.6	85	115	0.51	20	

Molybdenum, dissolved M200.8 ICP-MS

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG362442													
WG362442ICV	ICV	04/17/14 4:19	MS140331-9	.01998		.01858	mg/L	93	90	110			
WG362442ICB	ICB	04/17/14 4:22				U	mg/L		-0.0015	0.0015			
WG362442LFB	LFB	04/17/14 4:25	MS140331-2	.05		.04523	mg/L	90.5	85	115			
L17651-01AS	AS	04/17/14 5:24	MS140331-2	.05	.0077	.05326	mg/L	91.1	70	130			
L17651-01ASD	ASD	04/17/14 5:27	MS140331-2	.05	.0077	.05376	mg/L	92.1	70	130	0.93	20	

pH (lab) SM4500H+ B

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG361957													
WG361957LCSW1	LCSW	04/08/14 16:36	PCN45265	5.99		6	units	100.2	5.89	6.09			
WG361957LCSW4	LCSW	04/08/14 19:28	PCN45265	5.99		6.02	units	100.5	5.89	6.09			
WG361957LCSW7	LCSW	04/08/14 22:45	PCN45265	5.99		6.02	units	100.5	5.89	6.09			
WG361957LCSW10	LCSW	04/09/14 2:03	PCN45265	5.99		6.03	units	100.7	5.89	6.09			
L17652-05DUP	DUP	04/09/14 4:01			7.5	7.55	units				0.7	20	
WG361957LCSW13	LCSW	04/09/14 5:31	PCN45265	5.99		6.03	units	100.7	5.89	6.09			

Montgomery and Associates

ACZ Project ID: ***L17651***

Potassium, dissolved M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG362083													
WG362083ICV	ICV	04/10/14 18:33	II140220-1	20		19.72	mg/L	98.6	95	105			
WG362083ICB	ICB	04/10/14 18:39				U	mg/L		-0.6	0.6			
WG362083LFB	LFB	04/10/14 18:51	II140317-2	99.99364		102.4	mg/L	102.4	85	115			
L17651-01AS	AS	04/10/14 19:13	II140317-2	99.99364	3.3	107.6	mg/L	104.3	85	115			
L17651-01ASD	ASD	04/10/14 19:16	II140317-2	99.99364	3.3	108	mg/L	104.7	85	115	0.37	20	

Residue, Filterable (TDS) @180C SM2540C

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG362018													
WG362018PBW	PBW	04/09/14 13:16				16	mg/L		-20	20			
WG362018LCSW	LCSW	04/09/14 13:17	PCN45552	260		276	mg/L	106.2	80	120			
L17651-01DUP	DUP	04/09/14 14:00			780	740	mg/L				5.3	10	
WG362177													
WG362177PBW	PBW	04/11/14 15:45				16	mg/L		-20	20			
WG362177LCSW	LCSW	04/11/14 15:47	PCN45554	260		244	mg/L	93.8	80	120			
L17652-01DUP	DUP	04/11/14 16:45			1680	1690	mg/L				0.6	10	

Selenium, dissolved M200.8 ICP-MS

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG362442													
WG362442ICV	ICV	04/17/14 4:19	MS140331-9	.05		.05064	mg/L	101.3	90	110			
WG362442ICB	ICB	04/17/14 4:22				U	mg/L		-0.0003	0.0003			
WG362442LFB	LFB	04/17/14 4:25	MS140331-2	.05005		.04694	mg/L	93.8	85	115			
L17651-01AS	AS	04/17/14 5:24	MS140331-2	.05005	.0063	.05792	mg/L	103.1	70	130			
L17651-01ASD	ASD	04/17/14 5:27	MS140331-2	.05005	.0063	.05839	mg/L	104.1	70	130	0.81	20	

Sodium, dissolved M200.7 ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG362083													
WG362083ICV	ICV	04/10/14 18:33	II140220-1	100		98.79	mg/L	98.8	95	105			
WG362083ICB	ICB	04/10/14 18:39				U	mg/L		-0.6	0.6			
WG362083LFB	LFB	04/10/14 18:51	II140317-2	100.0393		102.1	mg/L	102.1	85	115			
L17651-01AS	AS	04/10/14 19:13	II140317-2	100.0393	59.3	161.3	mg/L	102	85	115			
L17651-01ASD	ASD	04/10/14 19:16	II140317-2	100.0393	59.3	161.4	mg/L	102.1	85	115	0.06	20	

Sulfate D516-02 - Turbidimetric

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG362329													
WG362329ICB	ICB	04/15/14 11:32				U	mg/L		-3	3			
WG362329ICV	ICV	04/15/14 11:32	WI140402-2	20		19.7	mg/L	98.5	90	110			
WG362329LFB	LFB	04/15/14 11:48	WI140327-1	10.01		9	mg/L	89.9	90	110			
L17651-02DUP	DUP	04/15/14 11:59			192	191	mg/L				0.5	20	
L17524-01DUP	DUP	04/15/14 12:03			197	198	mg/L				0.5	20	RA
L17524-02AS	AS	04/15/14 12:03	SO4TURB20	10	297	304	mg/L	70	90	110			M3
L17651-03AS	AS	04/15/14 12:13	SO4TURB20	10	348	352	mg/L	40	90	110			M3

Montgomery and Associates

ACZ Project ID: ***L17651***

Uranium, dissolved M200.8 ICP-MS

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec	Lower	Upper	RPD	Limit	Qual
WG362442													
WG362442ICV	ICV	04/17/14 4:19	MS140331-9	.05		.05173	mg/L	103.5	90	110			
WG362442ICB	ICB	04/17/14 4:22				U	mg/L		-0.0003	0.0003			
WG362442LFB	LFB	04/17/14 4:25	MS140331-2	.05		.05068	mg/L	101.4	85	115			
L17651-01AS	AS	04/17/14 5:24	MS140331-2	.05	.0125	.06678	mg/L	108.6	70	130			
L17651-01ASD	ASD	04/17/14 5:27	MS140331-2	.05	.0125	.06768	mg/L	110.4	70	130	1.34	20	
WG362504													
WG362504ICV	ICV	04/18/14 11:12	MS140331-9	.05		.05292	mg/L	105.8	90	110			
WG362504ICB	ICB	04/18/14 11:16				U	mg/L		-0.0003	0.0003			
WG362504LFB	LFB	04/18/14 11:19	MS140331-2	.05		.0554	mg/L	110.8	85	115			
L17667-08AS	AS	04/18/14 12:28	MS140331-2	.05	U	.05762	mg/L	115.2	70	130			
L17667-08ASD	ASD	04/18/14 12:38	MS140331-2	.05	U	.05895	mg/L	117.9	70	130	2.28	20	

Inorganic Extended Qualifier Report

Montgomery and Associates ACZ Project ID: ***L17651***

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L17651-01	WG362352	Chloride	SM4500Cl-E	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG362329	Sulfate	D516-02 - Turbidimetric	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
			D516-02 - Turbidimetric	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
	WG361957	Total Alkalinity	SM2320B - Titration	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
L17651-02	WG362352	Chloride	SM4500Cl-E	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG362329	Sulfate	D516-02 - Turbidimetric	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG361957	Total Alkalinity	SM2320B - Titration	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).
L17651-03	WG362352	Chloride	SM4500Cl-E	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG362329	Sulfate	D516-02 - Turbidimetric	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG361957	Total Alkalinity	SM2320B - Titration	RA	Relative Percent Difference (RPD) was not used for data validation because the sample concentration is too low for accurate evaluation (< 10x MDL).

Certification Qualifiers

Montgomery and Associates ACZ Project ID: ***L17651***

No certification qualifiers associated with this analysis

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Sample Receipt

Montgomery and Associates
*** PO REQUIRED ***

ACZ Project ID: L17651
Date Received: 04/08/2014 09:38
Received By: mtb
Date Printed: 4/8/2014

Receipt Verification

	YES	NO	NA
1) Is a foreign soil permit included for applicable samples?			X
2) Is the Chain of Custody or other directive shipping papers present?	X		
3) Does this project require special handling procedures such as CLP protocol?			X
4) Are any samples NRC licensable material?			X
5) If samples are received past hold time, proceed with requested short hold time analyses?	X		
6) Is the Chain of Custody complete and accurate?	X		
7) Were any changes made to the Chain of Custody prior to ACZ receiving the samples?		X	
8) Is the sampler attestation statement signed?		X	

Samples/Containers

	YES	NO	NA
9) Are all containers intact and with no leaks?	X		
10) Are all labels on containers and are they intact and legible?	X		
11) Do the sample labels and Chain of Custody match for Sample ID, Date, and Time?	X		
12) For preserved bottle types, was the pH checked and within limits?	X		
13) Is there sufficient sample volume to perform all requested work?	X		
14) Is the custody seal intact on all containers?			X
15) Are samples that require zero headspace acceptable?			X
16) Are all sample containers appropriate for analytical requirements?	X		
17) Is there an Hg-1631 trip blank present?			X
18) Is there a VOA trip blank present?			X
19) Were all samples received within hold time?	X		

Chain of Custody Related Remarks

The sample authenticity statement on ACZ's COC was not signed by the sampler. The State of Nevada requires this statement to be signed for any samples used to determine compliance with regulations. If this presents a problem for the intended data use, please contact your project manager immediately. ACZ will continue with scheduled analyses unless directed otherwise.

Client Contact Remarks

Shipping Containers

Cooler Id	Temp (°C)	Rad (µR/Hr)	Custody Seal Intact?
3928	4.5	13	Yes

Was ice present in the shipment container(s)?

Yes - Wet ice was present in the shipment container(s).

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Sample Receipt

Montgomery and Associates
*** PO REQUIRED ***

ACZ Project ID:	L17651
Date Received:	04/08/2014 09:38
Received By:	mtb
Date Printed:	4/8/2014

Client must contact an ACZ Project Manager if analysis should not proceed for samples received outside of their thermal preservation acceptance criteria.

ACZ Laboratories, Inc. L17651

2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

CHAIN of CUSTODY

Report to:

Name: John Laney	Address:
Company: Montgomery & Associates	
E-mail: JLaney@elmontgomery.com	Telephone: 320-425-2219

Copy of Report to:

Name:	E-mail:
Company:	Telephone:

Invoice to:

Name: Gail Alexander	Address: Po Box 218
Company: Montgomery & Associates	Grants, NM 87020
E-mail: GAlexander@elmontgomery.com	Telephone: 505-287-8851

If sample(s) received past holding time (HT), or if insufficient HT remains to complete analysis before expiration, shall ACZ proceed with requested short HT analyses? YES ☐ NO ☐

If "NO" then ACZ will contact client for further instruction. If neither "YES" nor "NO" is indicated, ACZ will proceed with the requested analyses, even if HT is expired, and data will be qualified

Are samples for SDWA Compliance Monitoring? Yes ☐ No ☐

If yes, please include state forms. Results will be reported to PQL for Colorado.

Sampler's Name: B. Myers **Sampler's site Information** **State:**_____ **Zip code**_____ **Time Zone**_____

Check box if observe Daylight Savings Time X

PROJECT INFORMATION

Quote #:

PO#:

Reporting state for compliance testing:

Check box if samples include NRC licensed material?

ANALYSES REQUESTED *(attach list or use quote number)*

SAMPLE IDENTIFICATION	DATE:TIME	Matrix	# of Containers								
7183	05APR2014 1320	GW	3								
7185	05APR2014 1355	GW	3								
7187	05APR2014 1455	GW	3								

Matrix: SW (Surface Water) · GW (Ground Water) · WW (Waste Water) · DW (Drinking Water) · SL (Sludge) · SO (Soil) · OL (Oil) · Other (Specify)

REMARKS

-

Please refer to ACZ's terms & conditions located on the reverse side of this COC.

RELINQUISHED BY:	DATE:TIME	RECEIVED BY:	DATE:TIME
B. Myers	4/7/14 1330	MPL	4.8.14 0938

L17651-1404221515

FRMAD050.12.12.12 White - Return with sample. Yellow - Retain for your records.

L17651 Chain of Custody

Purging And Sampling Data Sheet

Job#: 1350.15	**Sampler:** J Kerns, B Myers	**Client:** Montgomery & Associates
Well ID: EF-8	**Date** (DDOct2012): 06APR2014	**Site:** Rio Algom Mining, Lisbon, UT
Weather Conditions: cold	**Sampler Signature:**	
Well diam: 1/4" 1" 2" 3" (4") 6" Other:	**DTW:** ~~73.49~~	**Total Depth:**
Purge equip: ES - diam: (Bladder) Peri Waterra Positive Air Displacement Ext. System		
disp bailer teflon bailer other:	**Tubing:** OD: New (Dedicated) NA	
Purge method: 3-5 Case Volume (Micro/Low-Flow) Extraction Other:		
Pump depth/ intake: —	**Multipliers:** 1"= 0.04 2"= 0.16 3"= 0.37 4"= 0.65 5"=1.02 6"= 1.47 Radius² X 0.163	
(TD - DTW X Multiplier = 1 Volume	80% Recovery (TD - DTW X 0.20 + DTW)	

1 Volume = _____ X _____ = _____ (Total Purge) 80%= _____

Time	Temp (°C / °F)	pH	SP Cond (mS / µS)	Turbidity (NTU)	Purge Rate (gal or mL / min)	Volume Removed (gal / L)	DO (mg/l)	ORP (mv)	DTW	Notes
1022	9.8	~~7.7~~ 7.3	2484	7	300	1	10.0	186	73.62	
1025	10.9	7.5	2278	5		1.9	13.3	194	73.67	
1028	10.9	7.5	2272	4		2.8	12.2	201	73.70	
1031	10.8	7.6	2275	4		3.7	9.4	207	73.70	
1034	10.8	7.6	2275	3		4.6	9.4	210	73.70	
1037	10.7	7.6	2274	3	—	5.5	9.5	212	73.70	

Did well dewater? YES (NO)	Total volume removed: 5.5 (gal / L)	
Sample method: Disp Bailer Hydrasleeve New Tubing Ext. Port Other: (dedi. Pump)		
Sample date: 06APR2014	Sample time: 1040	DTW at sample: 73.70
Sample ID: 7193	Lab: Energy Labs	Number of bottles: 2
Analysis: 500 ml NP poly - Alkalinity, Cl, SO4, TDS, EC, pH 250 ml HNO3 poly *field filtered - Dissolved Metals		
Equipment blank ID @	Field blank ID @	
* Duplicate ID: 7194 @ 1045	Pre-purge DO:	Post purge DO:
Fe^{2+}:	Pre-purge ORP:	Post purge ORP:
NAPL depth:	Volume of NAPL:	Volume removed: ml

Confluence Environmental, Inc
3308 El Camino Ave, Suite 300 #148, Sacramento, CA 95821, 916-760-7641

Job#: 1350.15	**Sampler:** J Kerns - B Myers	**Client:** Montgomery & Associates
Well ID: RL-1	**Date** (DDOct2012): 06APR2014	**Site:** Rio Algom Mining, Lisbon, UT
Weather Conditions: cold / wind		**Sampler Signature:**
Well diam: 1/4" 1" 2" 3" (4") 6" Other:		**DTW:** 115.93 **Total Depth:** —
Purge equip: ES - diam: (Bladder) Peri Waterra Positive Air Displacement Ext. System		
disp bailer teflon bailer other:		**Tubing:** OD: New Dedicated NA
Purge method: 3-5 Case Volume (Micro/Low-Flow) Extraction Other:		
Pump depth/ intake: —	**Multipliers:** 1"= 0.04 2"= 0.16 3"= 0.37 4"= 0.65 5"=1.02 6"= 1.47 Radius	

(TD - DTW X Multiplier = 1 Volume	80% Recovery (TD - DTW X 0.20 + DTW)
1 Volume = _____ X _____ = _____ (Total Purge)	80%=

Time	Temp (°C)	pH	SP Cond (mS / µS)	Turbidity (NTU)	Purge Rate (gal or mL/ min)	Volume Removed (gal / L)	DO (mg/l)	ORP (mv)	DTW	Notes
947	11.4	7.2	10987	8	200	1	9.0	224	116.13	
950	11.9	7.2	10977	5		1.6	8.9	222	116.15	
953	11.7	7.1	10966	4		2.2	5.5	222	116.21	
956	11.9	7.1	11026	3		2.8	5.6	221	116.22	
959	11.9	7.1	11050	3		3.4	5.4	220	116.22	
1002	11.9	7.1	11063	3		4	5.3	219	116.22	

Did well dewater? YES (NO)	Total volume removed: 4 (gal / L)
Sample method: Disp Bailer Hydrasleeve New Tubing Ext. Port Other: (Dedi. Pump)	
Sample date: 06APR2014	Sample time: 1005 DTW at sample: 116.22
Sample ID: 7192	Lab: Energy Labs Number of bottles: 2
Analysis: 500 ml NP poly - Alkalinity, Cl, SO4, TDS, EC, pH 250 ml HNO3 poly *field filtered - Dissolved Metals	
Equipment blank ID @	Field blank ID @
Duplicate ID:	Pre-purge DO: Post purge DO:
Fe^{2+}:	Pre-purge ORP: Post purge ORP:
NAPL depth:	Volume of NAPL: Volume removed: ml

Confluence Environmental, Inc.
3308 El Camino Ave., Suite 300 #148, Sacramento, CA 95821

ANALYTICAL SUMMARY REPORT

April 15, 2014

Rio Algom Mining Corporation LLC
Hwy 605 and 509
Grants, NM 87020

Work Order: C14040265 Quote ID: C3636 - Groundwater

Project Name: Lisbon, UT Facility

Energy Laboratories, Inc. Casper WY received the following 3 samples for Rio Algom Mining Corporation LLC on 4/8/2014 for analysis.

Lab ID	Client Sample ID	Collect Date	Receive Date	Matrix	Test
C14040265-001	7192	04/06/14 10:05	04/08/14	Aqueous	Metals by ICP/ICPMS, Dissolved Alkalinity Anion - Cation Balance Conductivity E300.0 Anions pH Solids, Total Dissolved Solids, Total Dissolved - Calculated
C14040265-002	7193	04/06/14 10:40	04/08/14	Aqueous	Same As Above
C14040265-003	7194	04/06/14 10:45	04/08/14	Aqueous	Same As Above

The results as reported relate only to the item(s) submitted for testing. The analyses presented in this report were performed at Energy Laboratories, Inc., 2393 Salt Creek Hwy., Casper, WY 82601, unless otherwise noted. Radiochemistry analyses were performed at Energy Laboratories, Inc., 2325 Kerzell Lane, Casper, WY 82601, unless otherwise noted. Any exceptions or problems with the analyses are noted in the Laboratory Analytical Report, the QA/QC Summary Report, or the Case Narrative.

If you have any questions regarding these test results, please call.

Report Approved By:

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility
Lab ID: C14040265-001
Client Sample ID: 7192

Report Date: 04/15/14
Collection Date: 04/06/14 10:05
DateReceived: 04/08/14
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Carbonate as CO3	ND	mg/L		5		A2320 B	04/09/14 16:49 / jba
Bicarbonate as HCO3	1290	mg/L		5		A2320 B	04/09/14 16:49 / jba
Calcium	542	mg/L		1		E200.7	04/11/14 16:19 / sf
Chloride	708	mg/L	D	10		E300.0	04/09/14 21:09 / wc
Magnesium	191	mg/L		1		E200.7	04/11/14 16:19 / sf
Potassium	19	mg/L		1		E200.7	04/11/14 16:19 / sf
Sodium	2060	mg/L	D	2		E200.7	04/11/14 16:19 / sf
Sulfate	4890	mg/L	D	40		E300.0	04/09/14 21:09 / wc
PHYSICAL PROPERTIES							
Conductivity @ 25 C	10600	umhos/cm		1		A2510 B	04/09/14 10:38 / alp
pH	7.17	s.u.	H	0.01		A4500-H B	04/09/14 10:38 / alp
Solids, Total Dissolved TDS @ 180 C	9460	mg/L		100		A2540 C	04/09/14 15:40 / alp
METALS - DISSOLVED							
Arsenic	0.006	mg/L		0.001		E200.8	04/10/14 20:35 / clm
Iron	ND	mg/L		0.03		E200.7	04/11/14 16:19 / sf
Molybdenum	11.7	mg/L		0.01		E200.8	04/10/14 20:35 / clm
Selenium	0.078	mg/L	D	0.003		E200.8	04/10/14 20:35 / clm
Uranium	50.6	mg/L	D	0.001		E200.8	04/10/14 20:35 / clm
DATA QUALITY							
A/C Balance (± 5)	-4.22	%				A1030 E	04/15/14 09:51 / kbh
Anions	145	meq/L				A1030 E	04/15/14 09:51 / kbh
Cations	133	meq/L				A1030 E	04/15/14 09:51 / kbh
Solids, Total Dissolved Calculated	9100	mg/L				A1030 E	04/15/14 09:51 / kbh
TDS Balance (0.80 - 1.20)	1.04					A1030 E	04/15/14 09:51 / kbh

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
H - Analysis performed past recommended holding time.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility
Lab ID: C14040265-002
Client Sample ID: 7193

Report Date: 04/15/14
Collection Date: 04/06/14 10:40
DateReceived: 04/08/14
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Carbonate as CO3	ND	mg/L		5		A2320 B	04/09/14 16:57 / jba
Bicarbonate as HCO3	426	mg/L		5		A2320 B	04/09/14 16:57 / jba
Calcium	220	mg/L		1		E200.7	04/11/14 16:37 / sf
Chloride	230	mg/L		1		E300.0	04/09/14 21:26 / wc
Magnesium	57	mg/L		1		E200.7	04/11/14 16:37 / sf
Potassium	5	mg/L		1		E200.7	04/11/14 16:37 / sf
Sodium	176	mg/L		1		E200.7	04/11/14 16:37 / sf
Sulfate	525	mg/L	D	2		E300.0	04/09/14 21:26 / wc
PHYSICAL PROPERTIES							
Conductivity @ 25 C	2180	umhos/cm		1		A2510 B	04/09/14 10:41 / alp
pH	7.64	s.u.	H	0.01		A4500-H B	04/09/14 10:41 / alp
Solids, Total Dissolved TDS @ 180 C	1570	mg/L		23		A2540 C	04/09/14 15:40 / alp
METALS - DISSOLVED							
Arsenic	0.035	mg/L		0.001		E200.8	04/10/14 20:48 / clm
Iron	0.06	mg/L		0.03		E200.7	04/11/14 16:37 / sf
Molybdenum	ND	mg/L		0.01		E200.8	04/10/14 20:48 / clm
Selenium	0.013	mg/L		0.001		E200.8	04/10/14 20:48 / clm
Uranium	0.849	mg/L		0.0003		E200.8	04/10/14 20:48 / clm
DATA QUALITY							
A/C Balance (± 5)	-2.91	%				A1030 E	04/15/14 09:51 / kbh
Anions	24.9	meq/L				A1030 E	04/15/14 09:51 / kbh
Cations	23.5	meq/L				A1030 E	04/15/14 09:51 / kbh
Solids, Total Dissolved Calculated	1500	mg/L				A1030 E	04/15/14 09:51 / kbh
TDS Balance (0.80 - 1.20)	1.07					A1030 E	04/15/14 09:51 / kbh

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
H - Analysis performed past recommended holding time.

LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Project: Lisbon, UT Facility
Lab ID: C14040265-003
Client Sample ID: 7194

Report Date: 04/15/14
Collection Date: 04/06/14 10:45
DateReceived: 04/08/14
Matrix: Aqueous

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
MAJOR IONS							
Carbonate as CO3	ND	mg/L		5		A2320 B	04/09/14 17:06 / jba
Bicarbonate as HCO3	427	mg/L		5		A2320 B	04/09/14 17:06 / jba
Calcium	216	mg/L		1		E200.7	04/11/14 16:48 / sf
Chloride	222	mg/L		1		E300.0	04/09/14 21:43 / wc
Magnesium	56	mg/L		1		E200.7	04/11/14 16:48 / sf
Potassium	5	mg/L		1		E200.7	04/11/14 16:48 / sf
Sodium	172	mg/L		1		E200.7	04/11/14 16:48 / sf
Sulfate	505	mg/L	D	2		E300.0	04/09/14 21:43 / wc
PHYSICAL PROPERTIES							
Conductivity @ 25 C	2190	umhos/cm		1		A2510 B	04/09/14 10:44 / alp
pH	7.65	s.u.	H	0.01		A4500-H B	04/09/14 10:44 / alp
Solids, Total Dissolved TDS @ 180 C	1550	mg/L		20		A2540 C	04/09/14 15:40 / alp
METALS - DISSOLVED							
Arsenic	0.037	mg/L		0.001		E200.8	04/10/14 20:51 / clm
Iron	0.11	mg/L		0.03		E200.7	04/11/14 16:48 / sf
Molybdenum	ND	mg/L		0.01		E200.8	04/10/14 20:51 / clm
Selenium	0.013	mg/L		0.001		E200.8	04/10/14 20:51 / clm
Uranium	0.859	mg/L		0.0003		E200.8	04/10/14 20:51 / clm
DATA QUALITY							
A/C Balance (± 5)	-2.60	%				A1030 E	04/15/14 09:51 / kbh
Anions	24.2	meq/L				A1030 E	04/15/14 09:51 / kbh
Cations	23.0	meq/L				A1030 E	04/15/14 09:51 / kbh
Solids, Total Dissolved Calculated	1400	mg/L				A1030 E	04/15/14 09:51 / kbh
TDS Balance (0.80 - 1.20)	1.08					A1030 E	04/15/14 09:51 / kbh

Report Definitions:
RL - Analyte reporting limit.
QCL - Quality control limit.
D - RL increased due to sample matrix.
MCL - Maximum contaminant level.
ND - Not detected at the reporting limit.
H - Analysis performed past recommended holding time.

QA/QC Summary Report

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Report Date: 04/15/14
Project: Lisbon, UT Facility
Work Order: C14040265

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: A2320 B										Batch: R185301
Lab ID: MBLK	3	Method Blank				Run: MANTECH_140409A				04/09/14 15:23
Alkalinity, Total as CaCO3		0.7	mg/L	0.6						
Carbonate as CO3		ND	mg/L	1						
Bicarbonate as HCO3		ND	mg/L	1						
Lab ID: LCS_131219		Laboratory Control Sample				Run: MANTECH_140409A				04/09/14 15:37
Alkalinity, Total as CaCO3		259	mg/L	5.0	103	90	110			
Lab ID: C14040219-001ADUP	3	Sample Duplicate				Run: MANTECH_140409A				04/09/14 15:58
Alkalinity, Total as CaCO3		180	mg/L	5.0				0.3	10	
Carbonate as CO3		1.34	mg/L	5.0					10	
Bicarbonate as HCO3		216	mg/L	5.0				1.3	10	
Lab ID: C14040243-001BMS		Sample Matrix Spike				Run: MANTECH_140409A				04/09/14 16:23
Alkalinity, Total as CaCO3		509	mg/L	5.0	103	80	120			

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

QA/QC Summary Report

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Report Date: 04/15/14
Project: Lisbon, UT Facility
Work Order: C14040265

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: A2510 B										Batch: R185257
Lab ID: SC 100	Initial Calibration Verification Standard					Run: PHSC_101-C_140409A				04/09/14 08:38
Conductivity @ 25 C		103	umhos/cm	5.0	103	90	110			
Lab ID: SC 2ND 1413	Laboratory Control Sample					Run: PHSC_101-C_140409A				04/09/14 08:50
Conductivity @ 25 C		1360	umhos/cm	5.0	96	90	110			
Lab ID: MBLK	Method Blank					Run: PHSC_101-C_140409A				04/09/14 10:17
Conductivity @ 25 C		2	umhos/cm	0.8						
Lab ID: C14040278-001ADUP	Sample Duplicate					Run: PHSC_101-C_140409A				04/09/14 10:53
Conductivity @ 25 C		639	umhos/cm	5.0				0.2	10	

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

QA/QC Summary Report

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Report Date: 04/15/14
Project: Lisbon, UT Facility
Work Order: C14040265

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: A2540 C									Batch: TDS140409A	
Lab ID: MB-1_140409A	Method Blank					Run: BAL-19_140409C			04/09/14 15:32	
Solids, Total Dissolved TDS @ 180 C		ND	mg/L	7						
Lab ID: LCS-2_140409A	Laboratory Control Sample					Run: BAL-19_140409C			04/09/14 15:32	
Solids, Total Dissolved TDS @ 180 C		1970	mg/L	20	98	90	110			
Lab ID: C14040278-002A DUP	Sample Duplicate					Run: BAL-19_140409C			04/09/14 15:47	
Solids, Total Dissolved TDS @ 180 C		281	mg/L	10				0.5	5	
Lab ID: C14040278-003A MS	Sample Matrix Spike					Run: BAL-19_140409C			04/09/14 15:48	
Solids, Total Dissolved TDS @ 180 C		1580	mg/L	11	97	90	110			

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

QA/QC Summary Report

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC **Report Date:** 04/15/14

Project: Lisbon, UT Facility **Work Order:** C14040265

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: **A4500-H B**									Analytical Run: PHSC_101-C_140409A	
Lab ID: **pH 6.86**	Initial Calibration Verification Standard								04/09/14 08:35	
pH		6.88	s.u.	0.010	100	98	102			
Method: **A4500-H B**									Batch: R185257	
Lab ID: **C14040278-001ADUP**	Sample Duplicate					Run: PHSC_101-C_140409A			04/09/14 10:53	
pH		7.79	s.u.	0.010				0.0	3	

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

QA/QC Summary Report

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC **Report Date:** 04/15/14

Project: Lisbon, UT Facility **Work Order:** C14040265

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E200.7									Analytical Run: ICP4-C_140411A	
Lab ID: ICV	5	Initial Calibration Verification Standard							04/11/14 12:29	
Calcium		49.5	mg/L	0.50	99	95	105			
Iron		4.93	mg/L	0.030	99	95	105			
Magnesium		49.9	mg/L	0.50	100	95	105			
Potassium		49.3	mg/L	0.50	99	95	105			
Sodium		49.9	mg/L	0.50	100	95	105			
Lab ID: ICSA	5	Interference Check Sample A							04/11/14 12:43	
Calcium		475	mg/L	0.50	95	80	120			
Iron		180	mg/L	0.030	90	80	120			
Magnesium		510	mg/L	0.50	102	80	120			
Potassium		0.0229	mg/L	0.50						
Sodium		-0.233	mg/L	0.50						
Lab ID: ICSAB	5	Interference Check Sample AB							04/11/14 12:47	
Calcium		472	mg/L	0.50	94	80	120			
Iron		179	mg/L	0.030	90	80	120			
Magnesium		505	mg/L	0.50	101	80	120			
Potassium		-0.0240	mg/L	0.50						
Sodium		-0.289	mg/L	0.50						
Method: E200.7									Batch: R185404	
Lab ID: MB-140411A	5	Method Blank				Run: ICP4-C_140411A			04/11/14 13:05	
Calcium		ND	mg/L	0.02						
Iron		ND	mg/L	0.002						
Magnesium		ND	mg/L	0.02						
Potassium		ND	mg/L	0.04						
Sodium		ND	mg/L	0.2						
Lab ID: LFB-140411A	5	Laboratory Fortified Blank				Run: ICP4-C_140411A			04/11/14 13:08	
Calcium		47.1	mg/L	0.50	94	85	115			
Iron		0.948	mg/L	0.030	95	85	115			
Magnesium		47.8	mg/L	0.50	96	85	115			
Potassium		49.1	mg/L	0.50	98	85	115			
Sodium		48.6	mg/L	0.50	97	85	115			
Lab ID: C14040265-002BMS2	5	Sample Matrix Spike				Run: ICP4-C_140411A			04/11/14 16:41	
Calcium		303	mg/L	1.0	81	70	130			
Iron		1.90	mg/L	0.030	90	70	130			
Magnesium		147	mg/L	1.0	88	70	130			
Potassium		96.8	mg/L	1.0	90	70	130			
Sodium		260	mg/L	1.0	82	70	130			
Lab ID: C14040265-002BMSD	5	Sample Matrix Spike Duplicate				Run: ICP4-C_140411A			04/11/14 16:44	
Calcium		303	mg/L	1.0	81	70	130	0.1	20	
Iron		1.91	mg/L	0.030	90	70	130	0.1	20	
Magnesium		147	mg/L	1.0	88	70	130	0.1	20	

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

QA/QC Summary Report

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Report Date: 04/15/14
Project: Lisbon, UT Facility
Work Order: C14040265

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: **E200.7**										Batch: R185404
Lab ID: **C14040265-002BMSD**	5	Sample Matrix Spike Duplicate				Run: ICP4-C_140411A				04/11/14 16:44
Potassium		96.7	mg/L	1.0	90	70	130	0.1	20	
Sodium		260	mg/L	1.0	82	70	130	0.0	20	

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

QA/QC Summary Report

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Report Date: 04/15/14
Project: Lisbon, UT Facility
Work Order: C14040265

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E200.8									Analytical Run: ICPMS2-C_140410B	
Lab ID: ICV	4	Initial Calibration Verification Standard							04/10/14 13:37	
Arsenic		0.0498	mg/L	0.0010	100	90	110			
Molybdenum		0.0478	mg/L	0.0010	96	90	110			
Selenium		0.0506	mg/L	0.0010	101	90	110			
Uranium		0.0501	mg/L	0.00030	100	90	110			
Method: E200.8									Batch: R185357	
Lab ID: LRB	4	Method Blank				Run: ICPMS2-C_140410B			04/10/14 14:13	
Arsenic		ND	mg/L	0.00010						
Molybdenum		ND	mg/L	4E-05						
Selenium		ND	mg/L	0.0002						
Uranium		ND	mg/L	1E-05						
Lab ID: LFB	4	Laboratory Fortified Blank				Run: ICPMS2-C_140410B			04/10/14 14:16	
Arsenic		0.0504	mg/L	0.0010	101	85	115			
Molybdenum		0.0510	mg/L	0.0010	102	85	115			
Selenium		0.0493	mg/L	0.0010	99	85	115			
Uranium		0.0507	mg/L	0.00030	101	85	115			
Lab ID: C14040030-006BMS4	4	Sample Matrix Spike				Run: ICPMS2-C_140410B			04/10/14 18:52	
Arsenic		0.0535	mg/L	0.0010	106	70	130			
Molybdenum		0.0535	mg/L	0.0010	104	70	130			
Selenium		0.0725	mg/L	0.0010	103	70	130			
Uranium		0.0644	mg/L	0.00030	113	70	130			
Lab ID: C14040030-006BMSD	4	Sample Matrix Spike Duplicate				Run: ICPMS2-C_140410B			04/10/14 18:55	
Arsenic		0.0521	mg/L	0.0010	103	70	130	2.6	20	
Molybdenum		0.0533	mg/L	0.0010	104	70	130	0.3	20	
Selenium		0.0705	mg/L	0.0010	99	70	130	2.8	20	
Uranium		0.0637	mg/L	0.00030	111	70	130	1.1	20	

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

QA/QC Summary Report

Prepared by Casper, WY Branch

Client: Rio Algom Mining Corporation LLC
Report Date: 04/15/14
Project: Lisbon, UT Facility
Work Order: C14040265

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: **E300.0**									Analytical Run: IC2-C_140409A	
Lab ID: **CCV-040914-02**	2	Continuing Calibration Verification Standard							04/09/14 17:57	
Chloride		9.87	mg/L	1.0	99	90	110			
Sulfate		39.6	mg/L	1.0	99	90	110			
Method: **E300.0**									Batch: R185343	
Lab ID: **ICB**	2	Method Blank				Run: IC2-C_140409A			04/09/14 13:36	
Chloride		0.07	mg/L	0.04						
Sulfate		0.08	mg/L	0.04						
Lab ID: **LFB-040914-01**	2	Laboratory Fortified Blank				Run: IC2-C_140409A			04/09/14 13:53	
Chloride		10.3	mg/L	1.0	102	90	110			
Sulfate		41.3	mg/L	1.0	103	90	110			
Lab ID: **C14040277-001AMS**	2	Sample Matrix Spike				Run: IC2-C_140409A			04/09/14 22:53	
Chloride		33.8	mg/L	1.0	98	90	110			
Sulfate		330	mg/L	1.0		90	110			A
Lab ID: **C14040277-001AMSD**	2	Sample Matrix Spike Duplicate				Run: IC2-C_140409A			04/09/14 23:11	
Chloride		34.0	mg/L	1.0	100	90	110	0.8	20	
Sulfate		331	mg/L	1.0		90	110	0.3	20	A

Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

A - The analyte level was greater than four times the spike level. In accordance with the method % recovery is not calculated.

Workorder Receipt Checklist

Rio Algom Mining Corporation LLC C14040265

Login completed by: Debra Williams
Date Received: 4/8/2014
Reviewed by: BL2000\khelm
Received by: dw
Reviewed Date: 4/9/2014
Carrier name: FedEx

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on all shipping container(s)/cooler(s)?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on all sample bottles?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time? (Exclude analyses that are considered field parameters such as pH, DO, Res Cl, Sulfite, Ferrous Iron, etc.)	Yes ☑	No ☐	
Temp Blank received in all shipping container(s)/cooler(s)?	Yes ☑	No ☐	Not Applicable ☐
Container/Temp Blank temperature:	1.6°C On Ice		
Water - VOA vials have zero headspace?	Yes ☐	No ☐	No VOA vials submitted ☑
Water - pH acceptable upon receipt?	Yes ☑	No ☐	Not Applicable ☐

Standard Reporting Procedures:

Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH, Dissolved Oxygen and Residual Chlorine, are qualified as being analyzed outside of recommended holding time.

Solid/soil samples are reported on a wet weight basis (as received) unless specifically indicated. If moisture corrected, data units are typically noted as –dry. For agricultural and mining soil parameters/characteristics, all samples are dried and ground prior to sample analysis.

Contact and Corrective Action Comments:

None

Chain of Custody and Analytical Request Record

Page 4 of 4

PLEASE PRINT- Provide as much information as possible.

Company Name: Rio Algom Mining Corp	Project Name, PWS, Permit, Etc.: Lisbon, UT Facility	Sample Origin State: UT	EPA/State Compliance: Yes ☐ No ☐
Report Mail Address: Montgomery and Associates Results retrieved from Energy Source	Contact Name: John Laney Phone/Fax: (520) 425-2219 Email: jlaney@clmontgomery.com		Sampler: (Please Print)
Invoice Address: Email invoice to Gail PO Box 218 Grants, NM 87020	Invoice Contact & Phone: Gail Alexander (505) 287-8851	Purchase Order:	Quote/Bottle Order: C3636

Special Report/Formats – ELI must be notified prior to sample submittal for the following:

☐ DW ☐ A2LA
☐ GSA ☐ EDD/EDT (Electronic Data)
☐ POTW/WWTP Format: _____
☐ State: _____ ☐ LEVEL IV
☐ Other: _____ ☐ NELAC

Number of Containers
Sample Type: A W S V B O
Air Water Soils/Solids Vegetation Bioassay Other

ANALYSIS REQUESTED

SEE ATTACHED

Normal Turnaround (TAT)

R U S H

Contact ELI prior to **RUSH** sample submittal for charges and scheduling – See Instruction Page

Comments: metals preserved + filtered in field

Shipped by: Fedex E
Cooler ID(s): 3562 4156
Receipt Temp: 1.6 °C
On Ice: (Yes) No
Custody Seal Y N
Intact Y N
Signature Match Y N

	SAMPLE IDENTIFICATION (Name, Location, Interval, etc.)	Collection Date	Collection Time	MATRIX	C3636
1	7192	06APR2014	1005	W	X
2	7193	"	1040	W	X
3	7194	"	1045	W	X
4					
5					
6					
7					
8					
9					
10					

LABORATORY USE ONLY
L14040265

Custody Record MUST be Signed

Relinquished by (print): B. Myers	Date/Time: 4/7/14 1500	Signature:	Received by (print):	Date/Time:	Signature:
Relinquished by (print):	Date/Time:	Signature:	Received by (print):	Date/Time:	Signature:
			Received by Laboratory: J. Willis	Date/Time: 4-8-14	Signature:

Sample Disposal: Return to Client: _____ Lab Disposal: _____

In certain circumstances, samples submitted to Energy Laboratories, Inc. may be subcontracted to other certified laboratories in order to complete the analysis requested. This serves as notice of this possibility. All sub-contract data will be clearly notated on your analytical report.
Visit our web site at www.energylab.com for additional information, downloadable fee schedule, forms, and links.

MONTGOMERY & ASSOCIATES

APPENDIX F

SLUG TEST GRAPHS AND FIELD DATA

MONTGOMERY & ASSOCIATES
Water Resource Consultants

1550 East Prince Road
Tucson, Arizona 85719
Phone: (520) 881-4912 Fax: (520) 881-1609
Email: info@elmontgomery.com

SLUG FIELD DATA SHEET

WELL ID EF-3A

Test Description Slug test

Measuring Point Top of conductor casing 1.80' AGS

AMBIENT WATER LEVEL/DATE/TIME 82.99 ft BMP

Method of Water Level Measurement: Sounder/Transducer

Total Well Depth

Well Diameter 6"

Perforated Interval

Slug ID

Slug Volume

Depth to Bottom of Slug

Depth to Top of Transducer

Date/Time	t (min)	Depth to Water (BMP-PD	Remarks (pH, Temp, EC)
10:14		82.99 - S	
10:55		82.988 - Sound	
10:56	Start 1	82.991 - Trans	Lower Slug C
11:02		82.990 - Trans	
11:03	Start 2		Pull Slug C
11:10		82.990 - Sounder	
11:14	Start 1	82.980	Lower Slug E
1142	Start 2	82.98	Pull SLUG E
1149		82.99 / 82.99	
1150	START 1	-	DROP SLUG B
1153	START 2	82.978	Pull slug B
12:00		82.99 / 82.99	
12:01			STOP LOG END TEST

SLUG C

SLUG E

SLUG B

MONTGOMERY & ASSOCIATES
Water Resource Consultants

1550 East Prince Road
Tucson, Arizona 85719
Phone: (520) 881-4912 Fax: (520) 881-1609
Email: info@elmontgomery.com

Date 8/27/2012
Project No. 1350
Observers JSL/TWB

SLUG FIELD DATA SHEET

WELL ID EF-6

Test Description SLUG TEST

Measuring Point TOC (Security casing) 2.55' AGS

AMBIENT WATER LEVEL/DATE/TIME 72.19' bmp

Method of Water Level Measurement: _____

Total Well Depth _____
Well Diameter 4"
Perforated Interval _____
Slug ID _____
Slug Volume _____

Depth to Bottom of Slug _____
Depth to Top of Transducer _____

Date/Time	t (min)	Depth to Water (ft bmp)	Remarks (pH, Temp, EC)
8/27			
12:39		72.19	Measure length of rope for SLUGS
1240			Set transducer S/N 320084 @ 100' bmp
1302		72.17/ -	
1308		72.17/72.16	Start log EF-6 @ 1 sec. intervals
1304	START 1		DROP SLUG A
1326		72.16/	
1340		72.17/72.16	
1341	START 2		PULL SLUG A
~~AM~~ 1513	START 1		Drop Slug B → Time is approximate
15:46		72.12/ -	
1609		72.13/ -	
1611	START 2		PULL SLUG B
1612		72.12/ -	
1745		72.10/ [illegible]	
1746			Lowered slug into position SLUG C
1747	START 1		DROP SLUG C
[illegible]			[illegible]
1836		72.13 [illegible]	[illegible]
1838			Download data will start a new log for overnight monitoring of SLUG C step 2
1844		-/72.13	Start new log EF-6-C2 @ 3 sec. intervals
18:45			PULL SLUG C
8/28 8:54		/72.05	Download data END TEST

MONTGOMERY & ASSOCIATES
Water Resource Consultants

1550 East Prince Road
Tucson, Arizona 85719
Phone: (520) 881-4912 Fax: (520) 881-1609
Email: info@elmontgomery.com

SLUG FIELD DATA SHEET

WELL ID EF-8

Test Description SLUG TEST

Measuring Point TOC (Security casing) ft bmp

AMBIENT WATER LEVEL/DATE/TIME 74.98

(TOC is 2' ALS per Guide Notes Oct. 2011)

Method of Water Level Measurement:

Total Well Depth
Well Diameter 4"
Perforated Interval
Slug ID
Slug Volume
Depth to Bottom of Slug
Depth to Top of Transducer

Date/Time	t (min)	Depth to Water (ft bmp)	Remarks (pH, Temp, EC)
8/27			
1350			Arrive @ EF-8 site, well has dedicated pump
1355			Removed pump and laid on plastic
1405			Well recovering from pump removal
1425			WL rising; set transducer S/N 318927 @ 90' bmp
1448			Measured out rope for slugs
1499		74.98 / 74.98	Start Log EF-8 @ 1 sec. intervals
1456	START 1		DROP SLUG A
1505		74.97 / 74.97	
1509		74.98 / 74.98	
1510	START 2		PULL SLUG A
1529		74.98 / 74.98	Large storm cloud passed; may have affected press; WL and PSI crossed on graph
1531			Lowered SLUG D in position
1532	START 1		DROP SLUG D
1554		- / 74.97	
1557	START 2		PULL SLUG D
1621		- / 74.97	
1624	START 1		DROP SLUG B
1642		- / 74.97	
1643	START 2		PULL SLUG B
1652		- / 74.97	
1655		- / 74.96	Stop Log END TEST
			Remove transducer;
			Replace pump in well; * Pump appears to have been sitting on bottom; screen intake is "crumpled"
			Anchor line had no tension on it when pump was pulled up; approx 4" of anchor line curled up around pump
1745			off site locked well, pump replace

SLUG A
SLUG D
SLUG B

MONTGOMERY & ASSOCIATES
Water Resource Consultants

1550 East Prince Road
Tucson, Arizona 85719
Phone: (520) 881-4912 Fax: (520) 881-1609
Email: info@elmontgomery.com

Page 1 of
Date 8/26
Project No. 1350
Observers

SLUG FIELD DATA SHEET

WELL ID H-63

Test Description SLUG TEST

Measuring Point TOC = 2.33' AGS (Top of security casing

AMBIENT WATER LEVEL/DATE/TIME 135.78

Method of Water Level Measurement: Sounder / Xducer

Total Well Depth
Well Diameter 5"
Perforated Interval
Slug ID
Slug Volume
Depth to Bottom of Slug
Depth to Top of Transducer

Sounder / Xducer

Date/Time	t (min)	Depth to Water (ft bmp)	Remarks (pH, Temp, EC)
8/26			
1504		135.78 / –	Measured out rope length for slugs
1525		/	Set transducer @ 150' bmp - S/N 320612
1530		135.79 / –	
1533		135.79 / –	Start log H-63 @ 1 sec. intervals
1536			Lower SLUG C into position
1538	START 1		DROP SLUG C
1542		135.79 / 135.76	
1551		135.79 / 135.79	
1552	START 2		PULL SLUG C
1717		135.76 / –	
1717			Lower SLUG D into position
1719	START 1		DROP SLUG D
1722		135.53 / –	
1733		135.76 / –	
1734	START 2		PULL SLUG D
1747		135.78 / –	
1748			Lower SLUG B into position
1750	START 1	– / –	DROP SLUG B
1751		135.40 / –	
1800		135.78 / –	
1802	START 2		PULL SLUG B
1809		135.78 / –	
1811			STOP LOG END TEST

SLUG C
SLUG A
SLUG B

MONTGOMERY & ASSOCIATES
Water Resource Consultants

1550 East Prince Road
Tucson, Arizona 85719
Phone: (520) 881-4912 Fax: (520) 881-1609
Email: info@elmontgomery.com

Date 8/27/2012
Project No. 1350
Observers JSL/TWB

SLUG FIELD DATA SHEET

WELL ID LW-1

Test Description SLUG TEST

Measuring Point TOC (Security casing) 2.11' AGS

AMBIENT WATER LEVEL/DATE/TIME 147.09

Method of Water Level Measurement:

Total Well Depth
Well Diameter 4"
Perforated Interval
Slug ID
Slug Volume
Depth to Bottom of Slug
Depth to Top of Transducer

Sounder / Xducer

Date/Time	t (min)	Depth to Water (ft bmp)	Remarks (pH, Temp, EC)
8/27			
7:44		147.09 / —	
7:54			Measured out length of rope for SLUGS
7:56			Set transducer S/N 320084 @ 162'
8:13		147.09 / 147.09	Start log LW-1 @ 1 sec. intervals
8:16		147.09 / 147.09	Lower SLUG B into position
8:17	START 1	—	DROP SLUG B
8:28		147.09 / 147.09	—
8:29	START 2		PULL SLUG B
8:36		147.09 / 147.09	~~Lower SLUG~~
8:41		147.09 / 147.09	
8:42		—	Lower SLUG C into position
8:43	START 1	—	Drop SLUG C
856		147.10 / 147.08	
859	START 2		PULL SLUG C
907		147.12 / 147.09	
915		147.09 / 147.09	
915			Lower SLUG D into position
916	START 1		DROP SLUG D
929		147.11 / 147.07	
935		147.09 / 147.08	
937	START 2		PULL SLUG D
956		147.10 / 147.07	
1000			Stop log END TEST
1005			Load gear; Lock well

SLUG B

SLUG C

SLUG D

MONTGOMERY & ASSOCIATES
Water Resource Consultants

1550 East Prince Road
Tucson, Arizona 85719
Phone: (520) 881-4912 Fax: (520) 881-1609
Email: info@elmontgomery.com

Date 8/26/2012
Project No. 1350
Observers JSL / TWB

SLUG FIELD DATA SHEET

WELL ID ML-1

Test Description SLUG TEST

Measuring Point (steel security casing) TOC 1.74' AGS

AMBIENT WATER LEVEL/DATE/TIME 40.63' BMP

Method of Water Level Measurement:

Total Well Depth
Well Diameter 4"
Perforated Interval
Slug ID
Slug Volume
Depth to Bottom of Slug
Depth to Top of Transducer

Date/Time	t (min)	Depth to Water (ft bmp)	Remarks (pH, Temp, EC)
8/26		/	Set up @ ML-1
1004		40.63/-	
1030			Installed transducer S/N 320612 @ 55' bmp
1035		40.63/40.63	Start log ML-1 1 sec. intervals
1038		-/-	Lowered SLUG C into position
1040	START 1	-/-	Drop SLUG C
1041		39.82/39.81	
1056		40.64/40.63	
1057	START 2	-/-	Pull SLUG C
1102		40.74/40.72	
1145		40.63 -	
1146	~~START 1~~	40.64/-	Lower SLUG B into position
1147	START 1	-/-	Drop SLUG B
1148		40.10/-	
1218		40.64/-	
1219	START 2	-/-	Pull SLUG B
1255		40.63/-	
1256		/-	Lower SLUG D into position
1257	START 1	39.64/-	Drop SLUG D
1314		40.64/-	
1318	START 2	-/-	Pull SLUG D
1326		40.61/-	
1329		40.61/40.61	
1347		40.62/40.60	
1349			STOP LOG END TEST
1357			Lock well

SLUG C
SLUG B
SLUG D

MONTGOMERY & ASSOCIATES
Water Resource Consultants

1550 East Prince Road
Tucson, Arizona 85719
Phone: (520) 881-4912 Fax: (520) 881-1609
Email: info@elmontgomery.com

Date 1350
Project No. 8/27/2012
Observers JSL/TWB

SLUG FIELD DATA SHEET

WELL ID ~~MW-5~~ ~~MW-6~~ MW-5

Test Description SLUG TEST

Measuring Point TOC (security casing) = 1.65' AGS

AMBIENT WATER LEVEL/DATE/TIME 154.30' bmp

Method of Water Level Measurement: sounder / transducer

Total Well Depth _____
Well Diameter 6"
Perforated Interval _____
Slug ID _____
Slug Volume _____

Depth to Bottom of Slug _____
Depth to Top of Transducer _____

Date/Time	t (min)	Depth to Water (ft bmp) sounder / xducer	Remarks (pH, Temp, EC)
8/27			
1034		154.30/-	
1037			Set transducer S/N 320612 @ 170'
1050			Measure out rope length for SLUGS
1102		154.26/154.24	Start log MW-5 @ 1 sec. intervals
1113			Lower SLUG-E into position
1114	START 1		DROP SLUG E
1120			Slow recovery
1147		153.55/-	
1157		153.60/153.63	
1801		—/154.18	Download data; stop log; will run new log overnight
1814			Start new log MW-5-E2 (*) Set up log w/ reference level 72.10 (Accident)
1815	START 2	—/72.10	PULL SLUG E
1821		—/73.41 (*)	PSI - 20.582 (*) Set up log using wrong reference water level; did not realize until after slug was pulled up; will continue w/ test because recovery is so slow; will use pressure meas. and relative change in WL to determine end of step
8/28	8/28		
SLUG D	7:21	154.30/72.10	Ready for next slug; Lower SLUG D into position
	7:25		DROP SLUG D
	17:16	-/72.14	
	17:19		PULL SLUG D; monitor over night
8/29	8/29		
	1140		Stop Log END TEST

MONTGOMERY & ASSOCIATES
Water Resource Consultants

1550 East Prince Road
Tucson, Arizona 85719
Phone: (520) 881-4912 Fax: (520) 881-1609
Email: info@elmontgomery.com

Date 8/26/2012
Project No. 1350
Observers JSL/TWB

SLUG FIELD DATA SHEET

WELL ID MW-13

Test Description SLUG TEST

Measuring Point TOC - 2.78' AGS (top of security casing)

AMBIENT WATER LEVEL/DATE/TIME 94.33

Method of Water Level Measurement: _____

Total Well Depth _____
Well Diameter 4"
Perforated Interval _____
Slug ID _____
Slug Volume _____

Depth to Bottom of Slug _____
Depth to Top of Transducer _____

sounder / Xducer

Date/Time	t (min)	Depth to Water ( )	Remarks (pH, Temp, EC)
8/26			
1610		94.33/-	Measured out length of rope for Slugs
			Set up slug lowering assembly
1627			St transducer @ 99' bmp, S/N 318927
1632		94.33/-	
1634			Start Log @ 1 sec. intervals; Log MW-13
1635		94.33/94.33	Lowered SLUG A into position
1637	START 1		Drop SLUG A
1639		94.33/94.33	Near immediate recovery
1640	START 2		PULL SLUG A
1641		94.33/94.33	Immediate recovery /w no oscillations
SLUG A			
1646			Lower SLUG B into position
1647	START 1		DROP SLUG B
1648		94.33/94.33	Near immediate recovery; same response as A SLUG
1649	START 2		PULL SLUG B
1650		94.33/94.33	Immediate recovery
SLUG B 1			
1653	START 1		DROP SLUG B again. Repeat test
1655		94.33/94.33	Same response as previous test
1656	START 2		PULL SLUG B
1657			Same response
1658			Stop Log END TEST
SLUG B 2			
1707			Clean up gear
			Lock well

MONTGOMERY & ASSOCIATES
Water Resource Consultants

1550 East Prince Road
Tucson, Arizona 85719
Phone: (520) 881-4912 Fax: (520) 881-1609
Email: info@elmontgomery.com

Page _____ of _____
Date _____
Project No. 1350.19
Observers EWP / Lucy

SLUG FIELD DATA SHEET

WELL ID MW-100

Test Description SLUG TEST

Measuring Point Top 4" PVC

AMBIENT WATER LEVEL/DATE/TIME

Nov. 3 2012

Method of Water Level Measurement: _____

Total Well Depth _____
Well Diameter _____
Perforated Interval _____
Slug ID _____
Slug Volume _____
Depth to Bottom of Slug _____
Depth to Top of Transducer _____

Date/Time	t (min)	Depth to Water (ft bmp)	Remarks (pH, Temp, EC)
14:45		146.98	
1447			Install transducer: S/N 320612 @ 175' bmp
1510		146.96	Log "MW-100" start @ 15:15
1520	START 1		SLUG F DROP
1534		146.94 / 146.948	
1535			SLUG F PULL
1539		146.99 / 146.946	
1551			SLUG C DROP C
1552		146.74 / 146.728	
1611		146.94 / 146.944	
1612			SLUG C PULL
1615		147.00 / 147.007	
1630		146.95 / 146.956	
1631		~~146.943~~	SLUG B DROP
1646		146.94 / 146.943	
1647			SLUG B PULL
1657		146.95 / 146.96	
1702			STOP LOG; Pull Gear De-Mose

MONTGOMERY & ASSOCIATES
Water Resource Consultants

1550 East Prince Road
Tucson, Arizona 85719
Phone: (520) 881-4912 Fax: (520) 881-1609
Email: info@elmontgomery.com

Page _____ of _____
Date 4-Nov-12
Project No. 1350.13
Observers _____

SLUG FIELD DATA SHEET

WELL ID MW-101
Test Description SLUG TEST
Measuring Point Top 4" PVC
AMBIENT WATER LEVEL/DATE/TIME _____

Method of Water Level Measurement: _____
Total Well Depth _____
Well Diameter _____
Perforated Interval _____
Slug ID _____
Slug Volume _____
Depth to Bottom of Slug _____
Depth to Top of Transducer _____

4-Nov 2012 Sounder/Xducer

Date/Time	t (min)	Depth to Water (ft bmp)	Remarks (pH, Temp, EC)
14:12		150.76	
14 23			Transducer 320084 Set at bottom ~161 ft BMP
14 40		150.76/150.76	Logger started 14:40
1444	start 1		SLUG A DROP
A ?		150.59/150.58	
1507	START 2		SLUG A PULL
1545		/150.749	
1547		150.76/150.752	
1549	START 1		SLUG G DROP
G 1610		150.75/150.72	
1612	START 2		SLUG G PULL
1652		150.76/150.747	
1654			Shut Down log

MONTGOMERY & ASSOCIATES
Water Resource Consultants

1550 East Prince Road
Tucson, Arizona 85719
Phone: (520) 881-4912 Fax: (520) 881-1609
Email: info@elmontgomery.com

Page _____ of _____
Date _____
Project No. 1330.18
Observers _____

SLUG FIELD DATA SHEET

WELL ID MW-102

Test Description SLUG TEST

Measuring Point Top 4" PVC

AMBIENT WATER LEVEL/DATE/TIME
2012
2012 Oct. 31 125.38 below Develop unit

Method of Water Level Measurement: _____

Total Well Depth _____
Well Diameter _____
Perforated Interval _____
Slug ID _____
Slug Volume _____
Depth to Bottom of Slug _____
Depth to Top of Transducer _____

Date/Time Nov. 3	t (min)	Depth to Water sounder (ft btoc) / transducer	Remarks (pH, Temp, EC)
0818		125.37	BTOC 4" PVC 0.81 below 8" vault 2.24' above
			concrete pad 0.28 AGS
			Transducer SN 320084 10.9 m. non-vented
1011		125.34	↑ set new bottom (~135?)
		sounder / Transducer	
1021		~~DROP~~	SLUG F DROP
1023		125.02/124.99	
1044		125.26/—	
1049		—/125.24	
1115		125.35/125.305	
1116			SLUG F PULL
1135		125.54/125.474	
1205		125.30/125.31	
1219		125.37/125.354	
1224			SLUG A DROP
1226		125.14/125.10	
1305		125.35/125.305	
1333		125.37/125.32	
~1340			SLUG A PULL
1407		125.41/125.376	
1422		125.36/125.354	
~1425			SHUT DOWN; Pull gear; off site

MONTGOMERY & ASSOCIATES
Water Resource Consultants

1550 East Prince Road
Tucson, Arizona 85719
Phone: (520) 881-4912 Fax: (520) 881-1609
Email: info@elmontgomery.com

Page _____ of _____
Date _____
Project No. 1350.19
Observers _____

SLUG FIELD DATA SHEET

WELL ID MW-102DB
Test Description SLUG TEST
Measuring Point Top 4" PVC
AMBIENT WATER LEVEL/DATE/TIME _____

Method of Water Level Measurement: _____
Total Well Depth _____
Well Diameter _____
Perforated Interval _____
Slug ID _____
Slug Volume _____
Depth to Bottom of Slug _____
Depth to Top of Transducer _____

2018 0.1.29 ~~REC~~. 13.2.08 before development

Date/Time Nov. 3	t (min)	Depth to Water (sounder / transducer)	Remarks (pH, Temp, EC)
8:24		124.28	BTOC 4" 0.01 below top 8" vault 3.57 above pad
			0.35 ACS
			SN 320612 Level Troll 300 10.9 m.
0912		124.19	Transducer depth not recorded: (~10 ft)
0917		124.19	T= 10.96° P: 23.11 DTW 124.19
0931		124 / 124.125	
A 0931.5	START 1	DROP	SLUG A DROP
949		124.10 / 124.11	
1003	START 2	~~PUT~~	SLUG A PULL
1008		124.22 / 124.22	
1033		124.15 / 124.16	
1035			Lower Slug G into position
G 1036	START 1	DROP	SLUG G DROP
1059		124.06 / 124.082	
1106	START 2		SLUG G Pull
1109		124.25 / 124.23	
1130		124.14	
	START		~~SLUG G DROP~~
1139		124.13 / 124.144	
B 1140	START 1	/	SLUG B Drop
1141		123.58 / 123.588	
1207		124.06 / —	
1215	START 2		Pull SLUG B
1234		124.14 / —	
1315			Shut down logger; Pull Probe; wash & rinse

sounder/transducer

MONTGOMERY & ASSOCIATES
Water Resource Consultants

1550 East Prince Road
Tucson, Arizona 85719
Phone: (520) 881-4912 Fax: (520) 881-1609
Email: info@elmontgomery.com

Page _____ of _____
Date _____
Project No. 1350.19.13
Observers _____

SLUG FIELD DATA SHEET

WELL ID MW-103
Test Description SLUG TEST
Measuring Point Top 4" PVC
AMBIENT WATER LEVEL/DATE/TIME _____

Method of Water Level Measurement: _____
Total Well Depth _____
Well Diameter _____
Perforated Interval _____
Slug ID _____
Slug Volume _____
Depth to Bottom of Slug _____
Depth to Top of Transducer _____

Nov 3 2012 8344 on Oct 31 Below Bentonite

Date/Time Nov 3	t (min)	Depth to Water (ft bmp)	Remarks (pH, Temp, EC)
11/3 0757		85.38/ -	
1315		85.22/ -	
1725		85.18/ -	
11/4 0655		85.12/ -	
715			set transducer S/N 320612 @ 110' bmp
726		85.08/ -	
744		85.11/85.09	
745	START 1		DROP SLUG A
813		84.96/---	move to nxt site
A			
10:15		85.09/85.045	
10 23	start 2		Pull SLUG A
1359		85.09/85.057	
1400			@ SLUG F Drop
1402		84.65/84.629	
F 1403			Leave Site
1632		84.99/84.949	
1635			SLUG F PULL ; De-rig ; Leave site
Nov 5			
07 25		85.01/84.878	Download Data ; Shop Log
			From Surveyor: "MW-13" Steel 6644.892 PVC 6644.463 gnd 6642.122
			stickup PVC 2.341 above pad

MONTGOMERY & ASSOCIATES
Water Resource Consultants
1550 East Prince Road
Tucson, Arizona 85719
Phone: (520) 881-4912 Fax: (520) 881-1609
Email: info@elmontgomery.com

Page ______ of ______
Date Nov 4 2012
Project No. 1350.13
Observers Ed / John

SLUG FIELD DATA SHEET

WELL ID MW-105

Test Description SLUG TEST

Measuring Point Top 4" PVC

AMBIENT WATER LEVEL/DATE/TIME ______

Method of Water Level Measurement: ______

Total Well Depth ______
Well Diameter ______
Perforated Interval ______
Slug ID ______
Slug Volume ______
Depth to Bottom of Slug ______
Depth to Top of Transducer ______

2012 Sounder/Xducer

	Date/Time Nov. 4	t (min)	Depth to Water (ft bmp)	Remarks (pH, Temp, EC)
	08 30		73.62	
	0845			Set transducer @ 95' BMP SN 320084
C	09 08	Start 1		SLUG C DROP
	909		73.61 / 73.60	
	917		73.61 / 73.59	
	918	start 2		SLUG C Pull
	925		73.61 / 73.585	
F+C	929	Start 1		SLUG F+C Drop
			~~73.62 / 76.627~~	
	937		73.62 / 76.567	
	941	Start 2		SLUG F+C Pull
	954		73.61 / 73.560	
	958		73.61 / 73.559	Pull sounder; Stop Log

MONTGOMERY & ASSOCIATES
Water Resource Consultants

1550 East Prince Road
Tucson, Arizona 85719
Phone: (520) 881-4912 Fax: (520) 881-1609
Email: info@elmontgomery.com

Page 1 of
Date 8/29/2012
Project No. 1350
Observers JSC/TWB

SLUG FIELD DATA SHEET

WELL ID OW-UT-9

Test Description SLUG TEST

Measuring Point TOC (PVC casing) 1.50' AGS

AMBIENT WATER LEVEL/DATE/TIME 122.96' bmp

Method of Water Level Measurement:

Total Well Depth
Well Diameter 6"
Perforated Interval
Slug ID
Slug Volume
Depth to Bottom of Slug
Depth to Top of Transducer

Sounder / Xducer

Date/Time	t (min)	Depth to Water (ft bmp)	Remarks (pH, Temp, EC)
8/29			
7:05		122.99	
7:20			Set transducer S/N 320084 @ 159' bmp
7:30			Measured rope for SLUGS
7:55			Start Log OW-UT-9 @ 1 sec intervals
7:57		122.99 / 122.98	Lower SLUG C into position
7:58	START 1		DROP SLUG C
8:32		122.99 / 122.98	
8:33	START 2		PULL SLUG C
8:55		122.98 / 122.97	
8:56			Lower SLUG B into position
8:57	START 1		DROP SLUG B
9:11		122.97 / 122.96	
9:16		122.99 / 122.97	
9:17	START 2		PULL SLUG B
9:36		— / 122.98	
9:44	START 1		DROP SLUG D
10:13		122.98 / 122.97	
10:14	START 2		PULL SLUG D
11:00		— / 122.98	
NTO			STOP LOG END TEST

SLUG C
SLUG B
SLUG D

MONTGOMERY & ASSOCIATES
Water Resource Consultants

1550 East Prince Road
Tucson, Arizona 85719
Phone: (520) 881-4912 Fax: (520) 881-1609
Email: info@elmontgomery.com

Date 8/28/2012
Project No. 1350
Observers JJC/TWB

SLUG FIELD DATA SHEET

WELL ID RL-1

Test Description SLUG TEST

Measuring Point TOC (Security casing) 1.64' AGS

AMBIENT WATER LEVEL/DATE/TIME 116.35

Method of Water Level Measurement:

Total Well Depth
Well Diameter 5"
Perforated Interval
Slug ID
Slug Volume
Depth to Bottom of Slug
Depth to Top of Transducer

Sounder/transducer

Date/Time	t (min)	Depth to Water ( )	Remarks (pH, Temp, EC)
8/28			
8.40		116.71 / —	Remove dedicated pump from well
13:11		116.35 / —	
1314			Set transducer S/N 320084 @ 125' bmp
1325			Measured out length of rope for SLUGS
1329			Start log RL-1 @ 1 sec interval
1336	START 1	116.34 / 116.33	DROP SLUG A
1415		— / 116.30	
1422		116.34 / 116.33	
1424	Start 2		Pull Slug A
1554		116.34 / 116.34	
1557	START 1		DROP SLUG B
1657		— / 116.33	
1655			Pull Slug B
1832		/ 116.33	Stop Log ~~[illegible]~~ will monitor overnight
1840			END TEST Replace pump

SLUG 2

SLUG 1

MONTGOMERY & ASSOCIATES
Water Resource Consultants

1550 East Prince Road
Tucson, Arizona 85719
Phone: (520) 881-4912 Fax: (520) 881-1609
Email: info@elmontgomery.com

Page _____ of _____
Date _____
Project No. 1350.13
Observers _____

SLUG FIELD DATA SHEET

WELL ID RL-3

Test Description SLUG TEST

Measuring Point Top of 5" PVC

AMBIENT WATER LEVEL/DATE/TIME _____

Method of Water Level Measurement: _____

Total Well Depth _____
Well Diameter _____
Perforated Interval _____
Slug ID _____
Slug Volume _____
Depth to Bottom of Slug _____
Depth to Top of Transducer _____

2 Nov 2012 Sondex/Levi Files in

Date/Time	t (min)	Depth to Water (/)	Remarks (pH, Temp, EC)
03:36		170.03 BMP	= Below top of 5" PVC 0.17' below top of
			6" steel 2.00' above concrete pad 0.20 ALS
	Install	@ 180' BMP	Transducer 320084 10.7 m non-vented
			Slugs A, G, + B
	Start	Baro - 2-Nov-2012	@ 16:00 in in readings
		Rope counter	reads 100' for 105.65' actual
	Measure 170 + ft rope (using Tape)		
	File Name	RL-3	Start @ 16:45
16:43	T=	11.82 P=16.96	Level DTW 170.03
Start 16:43 5	START 1	SLUG A	DROP SLUG A
16 51		169.95/169.96	
1700	START 2		PULL SLUG A
1709		170.06/170.05	
1715	START 1		DROP SLUG G
1719		169.94/169.93	
		170.02/170.007	
1726	START 2		Pull SLUG G
		170.09/170.064	
1738	START 1		Drop Slug B
1741		169.83/169.842	
1755	START 2		Pull Slug B
18:01		170.12/170.96	
1810			Pull Gear ; Stop log
1820	OFF	site	

MONTGOMERY & ASSOCIATES
Water Resource Consultants

1550 East Prince Road
Tucson, Arizona 85719
Phone: (520) 881-4912 Fax: (520) 881-1609
Email: info@elmontgomery.com

Date 8/26/2012
Project No. 1350
Observers JSL / TWB

SLUG FIELD DATA SHEET

WELL ID RL-4

Test Description SLUG TEST

Measuring Point TOC 1.83' AGS (STEEL SECURITY CASING)

AMBIENT WATER LEVEL/DATE/TIME _____

Method of Water Level Measurement: Sounder / Transducer

Total Well Depth _____
Well Diameter 5"
Perforated Interval _____
Slug ID _____
Slug Volume _____
Depth to Bottom of Slug _____
Depth to Top of Transducer _____

Date/Time	t (min)	Depth to Water (ft bmp) Sounder / transducer	Remarks (pH, Temp, EC)
8/26			
7:30		156.93 / —	Lowered SLUG C into position; ~~set down~~
7:31			Set transducer @ 171' bmp S/N 320084
7:52		156.94 / 156.94	Start Log RL-4
7:58	START 1	—	Drop SLUG C
8:02		156.73 / 156.72	
8:54		156.94 / 156.92	
8:56	START 2		Pull SLUG C ; remove from well
9:01			⊛ Bumped transducer when pulling SLUG out of well
9:16		156.99 / 156.94	
9:36		156.96 / 156.92	
9:39			Lowered SLUG D ; ready to stop SLUG C test
9:40	START 1	—	Drop SLUG D
9:42		156.55 / 156.51	
11:21		156.95 / —	
11:24	START 2		Pull SLUG D
11:27			⊛ Bumped transducer when pulling SLUG out of well;
12:36		156.94 / —	
12:38			Lowered SLUG B into position
12:40	START 1		Drop SLUG B
12:41		156.70 / —	
14:23	8	156.92 / —	~~Pull Slug~~
14:23	Start 2		Pull Slug B
14:29		157.06 / —	
18:25		— / —	Download data END TEST ; remove xducer

SLUG C
SLUG D
SLUG B

MONTGOMERY & ASSOCIATES
Water Resource Consultants

1550 East Prince Road
Tucson, Arizona 85719
Phone: (520) 881-4912 Fax: (520) 881-1609
Email: info@elmontgomery.com

SLUG FIELD DATA SHEET

WELL ID RL-5

Test Description Slug Test (Steel Security casing)

Measuring Point ~~TOC~~ TOC 1.81' AGS

AMBIENT WATER LEVEL/DATE/TIME 152.41' w/ sounder Before xducer

Method of Water Level Measurement: Sounder / Transducer

Total Well Depth 186.20 BMP

Well Diameter 9"

Perforated Interval

Slug ID B C D

Slug Volume

Depth to Bottom of Slug

Depth to Top of Transducer 167'

Date/Time	t (min)	Depth to Water (ft bmp) Sounder / Xducer	Remarks (pH, Temp, EC)
8/25 8:00		152.41/ –	Marked transducer cable length / rope length
9:30			Installed Xducer S/N 320084 on 200' cable; ducer @ 167' bmp
954		152.41/ –	Started Log for RL-5_B; 1 sec. intervals
1010			Started baro @ 1 min intervals
1027	START 1		Dropped SLUG B
1030		152.41/152.39	–
1031		152.42/152.39	–
1049	START 2		~~Removed~~ Pulled SLUG B; recovered within 5% of displacement
1058		152.44/152.41	
1140		END SLUG B TEST	Removed SLUG B from well; with 5% of displacement
1113			Installed SLUG C; prepared to drop
1115	START 1		Dropped SLUG C
1125		152.43/152.39	–
1126	START 2		Pulled SLUG C and removed from well
1139		152.43/152.39	–
1140			END SLUG C TEST
1142		152.39/152.32	Dropped SLUG D
1147			
1149			Pulled SLUG D; transducer showed "double curve" may have had slug in water before the drop; will restart.
1158		152.41/152.39	Recovered to initial level; ready to restart SLUG D Test
1159	START 1		Dropped SLUG D
1210		152.42/152.38	
12:11:00	START 2		Pulled SLUG D
1231		152.42/152.39	END SLUG D TEST
1248			Clean up site gear; move to next well

SLUG A
SLUG C
SLUG A

MONTGOMERY & ASSOCIATES
Water Resource Consultants

1550 East Prince Road
Tucson, Arizona 85719
Phone: (520) 881-4912 Fax: (520) 881-1609
Email: info@elmontgomery.com

Date 8/25/2012
Project No. 1350
Observers JSL/TWB

SLUG FIELD DATA SHEET

WELL ID RL-6

Test Description SLUG TEST

Measuring Point TOC - 2.33' AGS (STEEL SECURITY CASING)

AMBIENT WATER LEVEL/DATE/TIME 16.30' bmp

Method of Water Level Measurement: Sounder / Transducer

Total Well Depth 20.6' bmp

Well Diameter 5"

Perforated Interval

Slug ID

Slug Volume

Depth to Bottom of Slug

Depth to Top of Transducer

Sounder/Xducer

Date/Time	t (min)	Depth to Water (ft bmp)	Remarks (pH, Temp, EC)
8/25 1452		16.30	Measured rope; set transducer S/N 320884 @ 20' bmp
1519		16.30 / 16.31	Start Log RL-6
1523	START A		Drop SLUG A
1536	START B		Pull SLUG A
~~1547~~	START A		Drop SLUG B
1602	START B		Pull SLUG B
1610			Stop Log
1620			Cleaned up site; locked well; off site
			* Depth of well = 20.5' bmp
			well depth allowed use of SLUG A and
			SLUG B only

SLUG A
SLUG B

MONTGOMERY & ASSOCIATES
Water Resource Consultants

1550 East Prince Road
Tucson, Arizona 85719
Phone: (520) 881-4912 Fax: (520) 881-1609
Email: info@elmontgomery.com

Page _____ of _____
Date _____
Project No. 1350.13
Observers _____

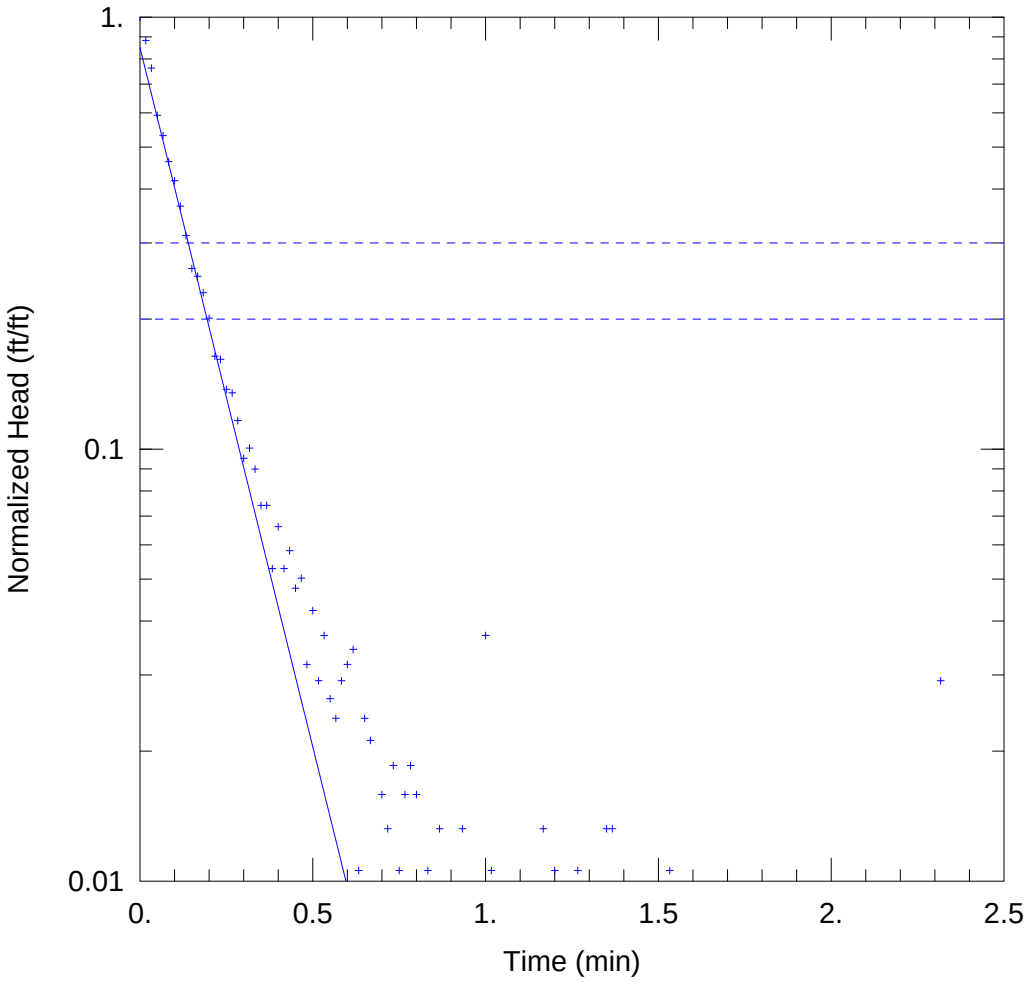
SLUG FIELD DATA SHEET

WELL ID unknown well UW-1
Test Description SLUG TEST
Measuring Point Top of 5" steel casing 3.0' AGS
AMBIENT WATER LEVEL/DATE/TIME _____

Method of Water Level Measurement: _____
Total Well Depth _____
Well Diameter _____
Perforated Interval _____
Slug ID _____
Slug Volume _____
Depth to Bottom of Slug _____
Depth to Top of Transducer _____

Nov. 4 2012 Sounder/Level

Date/Time	t (min)	Depth to Water (ft bmp)	Remarks (pH, Temp, EC)
10 43		105.42	
10 50			SN 320084 hung @ 125' BMP = 70c
11 05		105.36 / 105.361	
11 28	start 1		SLUG C Drop
1140		105.33 / 105.312	
1145	start 2		SLUG C Pull
1200		105.37 / 105.386	
1202			SLUG G Drop
12 18		105.31 / 105.351	
12 20			SLUG G PULL
1233		105.32 / 105.38	
1235			SLUG C + G Drop
1254		105.34 / 105.343	
1304			Slug C + G Pull
1316		105.42 / 105.430	
1328		105.32 / 105.373	
1331			Stop Logi Remote



WELL TEST ANALYSIS

Data Set: S:\...\EF-3A_SlugBFallingHead.aqt
Date: 02/19/13 Time: 12:58:36

PROJECT INFORMATION

Company: Rio Algom
Project: 1350.14
Location: Lisbon
Test Well: EF-3A
Test Date: 28 Aug 2012

AQUIFER DATA

Saturated Thickness: 121.9 ft Anisotropy Ratio (Kz/Kr): 1.

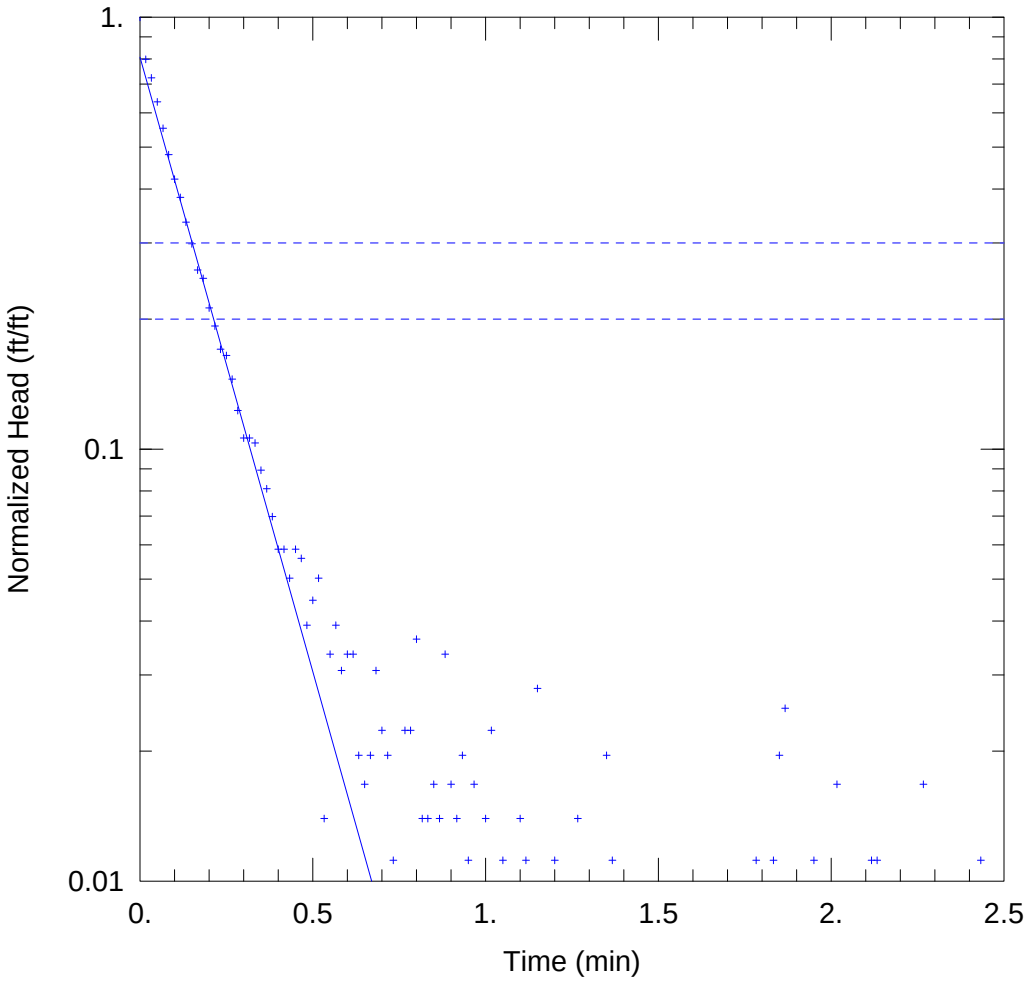
WELL DATA (EF-3A Slug B Falling Head)

Initial Displacement: 0.378 ft
Total Well Penetration Depth: 121.8 ft
Casing Radius: 0.25 ft
Static Water Column Height: 121.8 ft
Screen Length: 30. ft
Well Radius: 0.458 ft

SOLUTION

Aquifer Model: Unconfined Solution Method: Bouwer-Rice

K = 47.37 ft/day y0 = 0.3211 ft



WELL TEST ANALYSIS

Data Set: S:\...\EF-3A_SlugBRisingHead.aqt
Date: 02/19/13 Time: 12:58:24

PROJECT INFORMATION

Company: Rio Algom
Project: 1350.14
Location: Lisbon
Test Well: EF-3A
Test Date: 28 Aug 2012

AQUIFER DATA

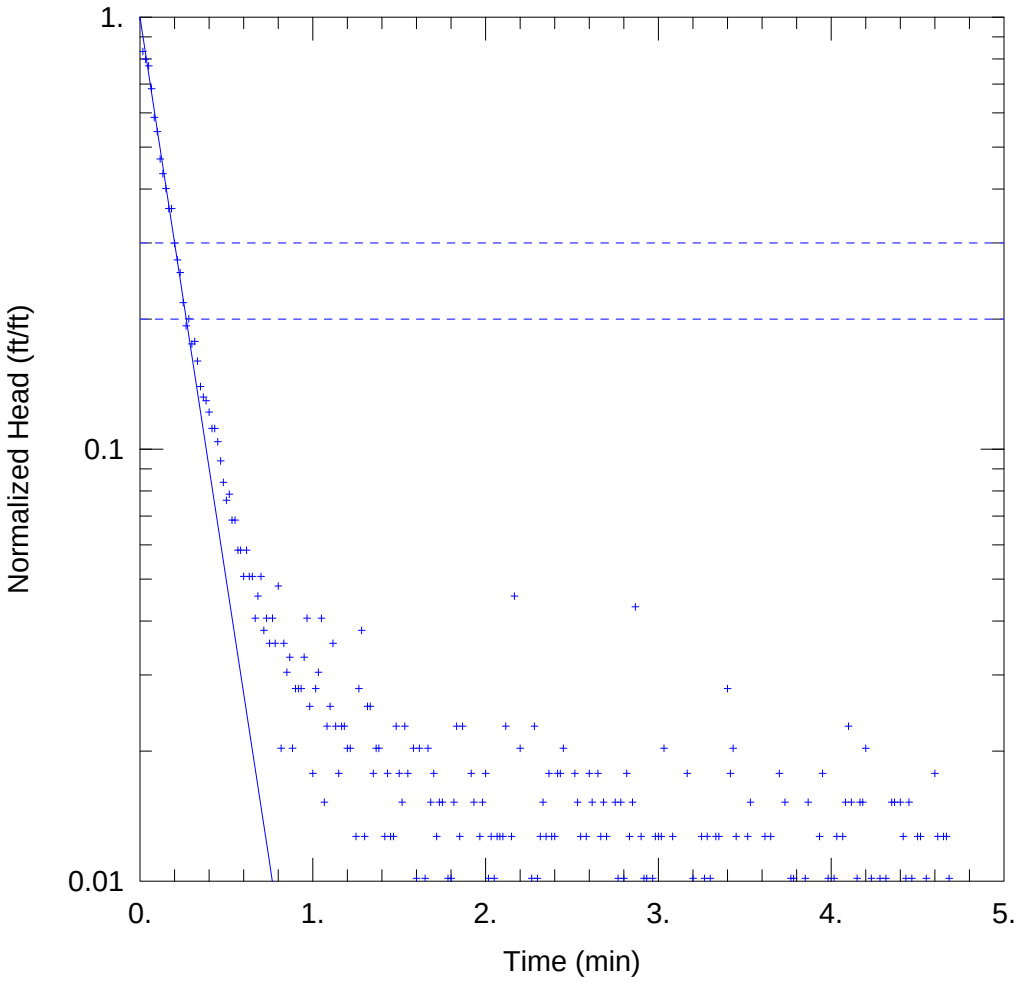
Saturated Thickness: 121.9 ft Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (EF-3A Slug B Rising Head)

Initial Displacement: 0.358 ft Static Water Column Height: 121.8 ft
Total Well Penetration Depth: 121.8 ft Screen Length: 30. ft
Casing Radius: 0.25 ft Well Radius: 0.458 ft

SOLUTION

Aquifer Model: Unconfined Solution Method: Bouwer-Rice
K = 41.64 ft/day y0 = 0.2892 ft



WELL TEST ANALYSIS

Data Set: S:\...\EF-3A_SlugCFallingHead.aqt
Date: 02/19/13 Time: 12:58:14

PROJECT INFORMATION

Company: Rio Algom
Project: 1350.14
Location: Lisbon
Test Well: EF-3A
Test Date: 28 Aug 2012

AQUIFER DATA

Saturated Thickness: 121.9 ft Anisotropy Ratio (Kz/Kr): 1.

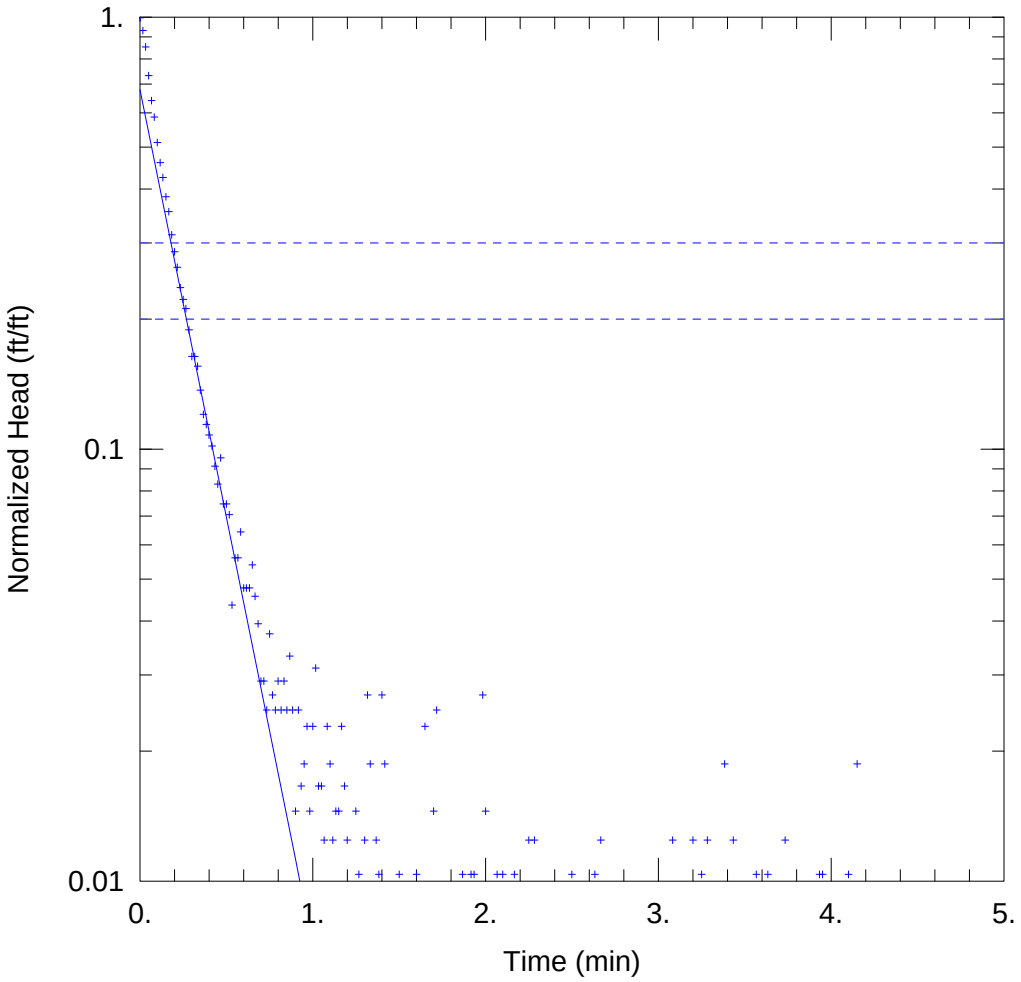
WELL DATA (EF-3A Slug C Falling Head)

Initial Displacement: 0.394 ft
Total Well Penetration Depth: 121.8 ft
Casing Radius: 0.25 ft
Static Water Column Height: 121.8 ft
Screen Length: 30. ft
Well Radius: 0.458 ft

SOLUTION

Aquifer Model: Unconfined Solution Method: Bouwer-Rice

K = 38.19 ft/day y0 = 0.3938 ft



WELL TEST ANALYSIS

Data Set: S:\...\EF-3A_SlugCRisingHead.aqt
Date: 02/19/13 Time: 12:58:00

PROJECT INFORMATION

Company: Rio Algom
Project: 1350.14
Location: Lisbon
Test Well: EF-3A
Test Date: 28 Aug 2012

AQUIFER DATA

Saturated Thickness: 121.9 ft Anisotropy Ratio (Kz/Kr): 1.

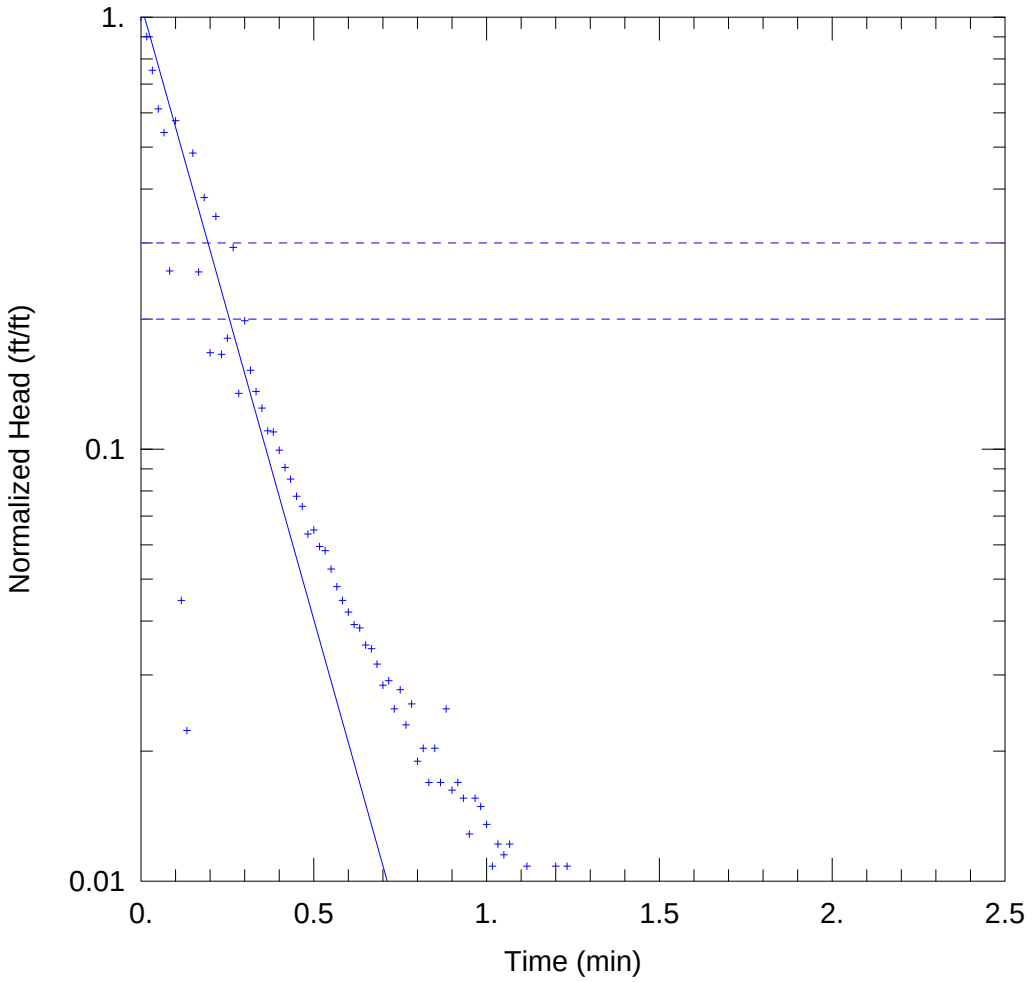
WELL DATA (EF-3A Slug C Rising Head)

Initial Displacement: 0.482 ft
Total Well Penetration Depth: 121.8 ft
Casing Radius: 0.25 ft
Static Water Column Height: 121.8 ft
Screen Length: 30. ft
Well Radius: 0.458 ft

SOLUTION

Aquifer Model: Unconfined Solution Method: Bouwer-Rice

K = 28.97 ft/day y0 = 0.3275 ft



WELL TEST ANALYSIS

Data Set: S:\...\EF-3A_SlugEFallingHead.aqt
Date: 02/19/13 Time: 12:57:51

PROJECT INFORMATION

Company: Rio Algom
Project: 1350.14
Location: Lisbon
Test Well: EF-3A
Test Date: 28 Aug 2012

AQUIFER DATA

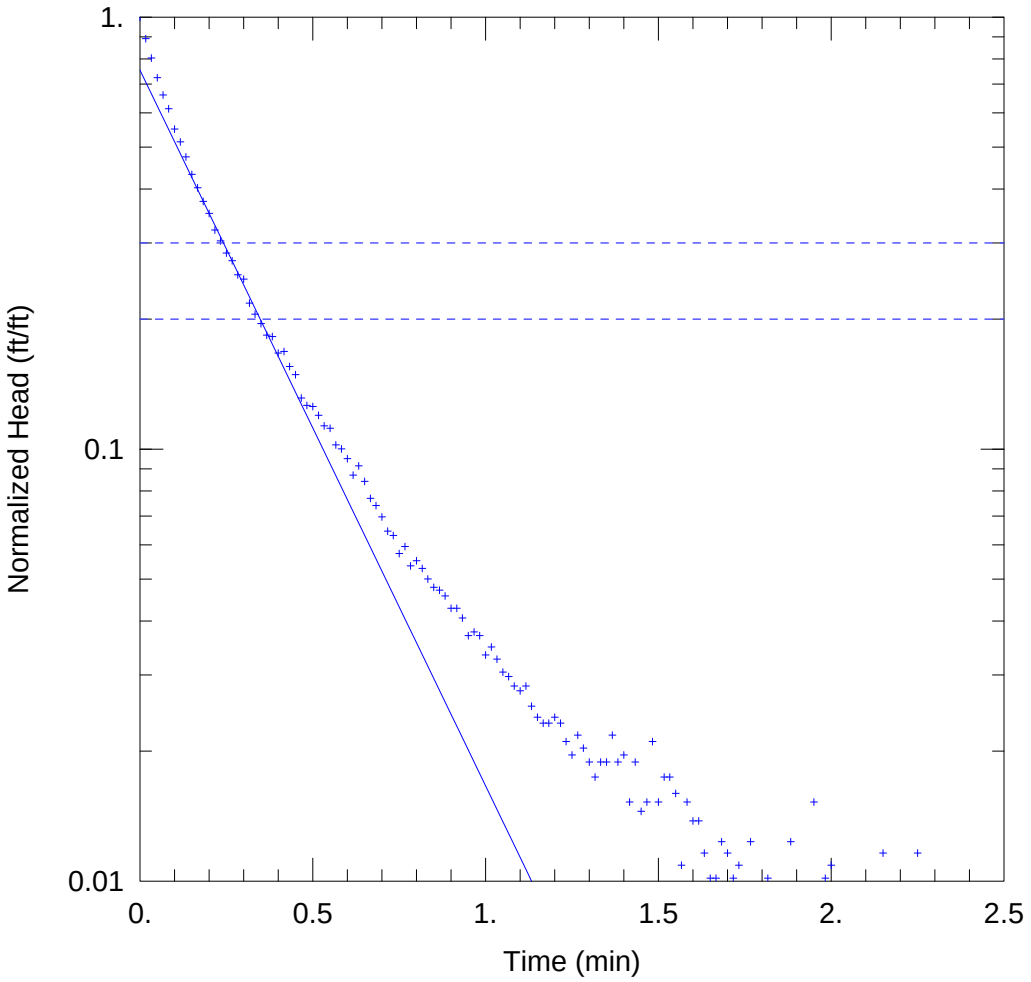
Saturated Thickness: 121.9 ft Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (EF-3A Slug E Falling Head)

Initial Displacement: 1.478 ft
Total Well Penetration Depth: 121.8 ft
Casing Radius: 0.25 ft
Static Water Column Height: 121.8 ft
Screen Length: 30. ft
Well Radius: 0.458 ft

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice
K = 41.69 ft/day
y0 = 1.583 ft



WELL TEST ANALYSIS

Data Set: S:\...\EF-3A_SlugERisingHead.aqt
Date: 02/19/13 Time: 12:57:36

PROJECT INFORMATION

Company: Rio Algom
Project: 1350.14
Location: Lisbon
Test Well: EF-3A
Test Date: 28 Aug 2012

AQUIFER DATA

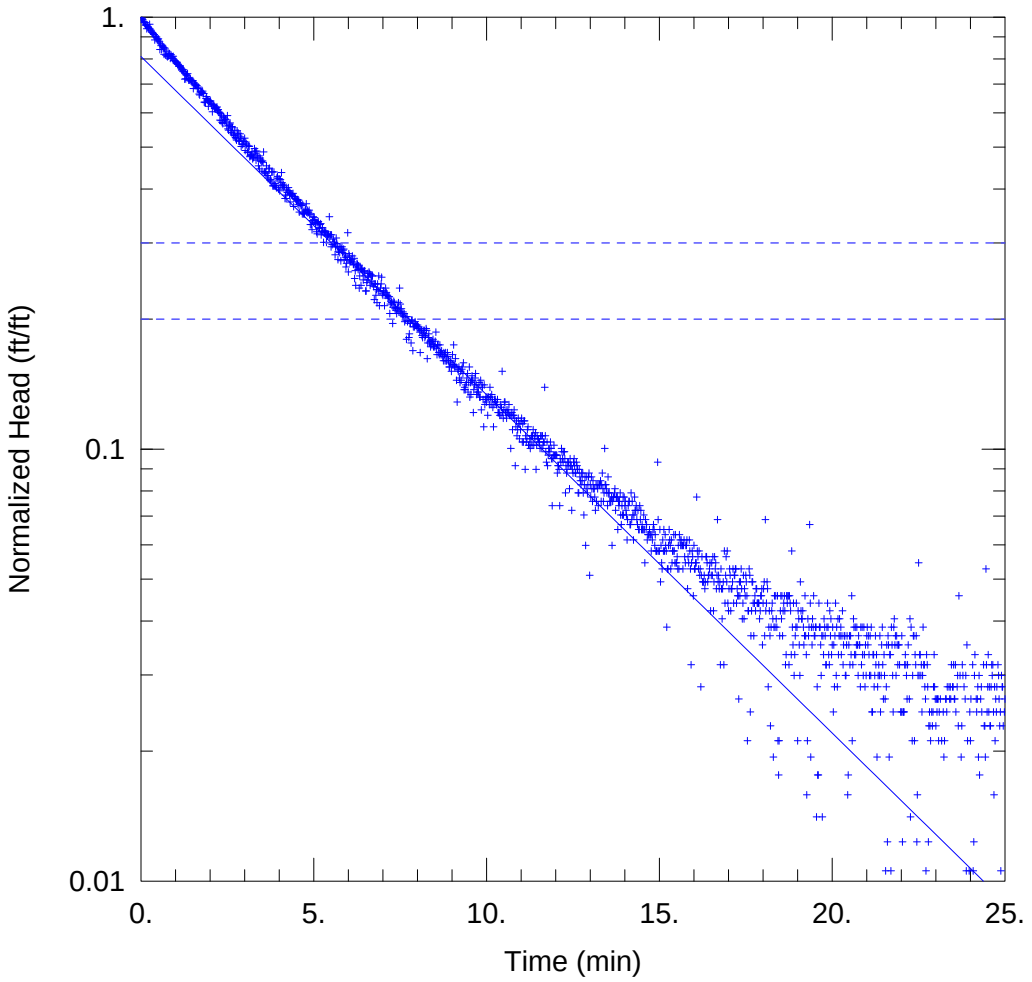
Saturated Thickness: 121.9 ft Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (EF-3A Slug E Rising Head)

Initial Displacement: 1.378 ft
Total Well Penetration Depth: 121.8 ft
Casing Radius: 0.25 ft
Static Water Column Height: 121.8 ft
Screen Length: 30. ft
Well Radius: 0.458 ft

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice
K = 24.25 ft/day
y0 = 1.039 ft



WELL TEST ANALYSIS

Data Set: S:\...\EF-6_SlugAFallingHead.aqt
Date: 02/19/13 Time: 12:59:58

PROJECT INFORMATION

Company: Rio Algom
Project: 1350.14
Location: Lisbon
Test Well: EF-6
Test Date: 27 Aug 2012

AQUIFER DATA

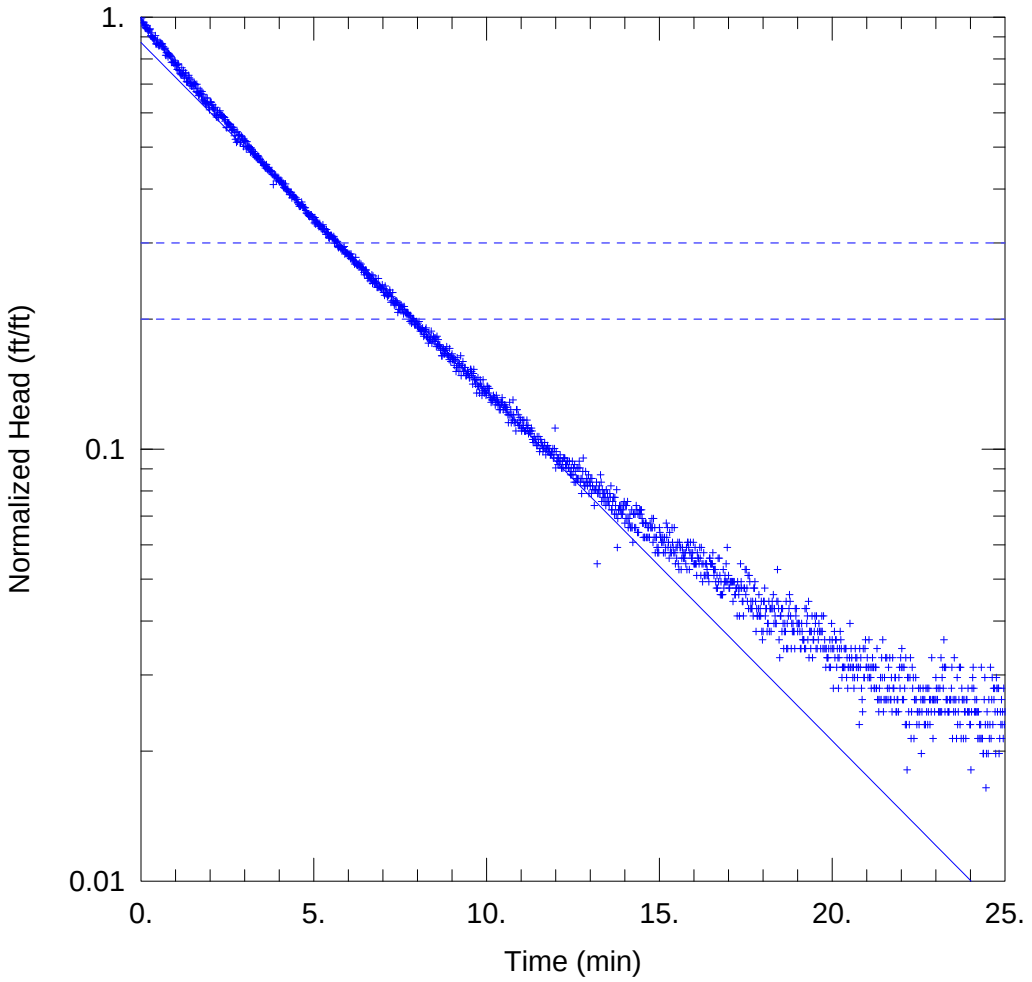
Saturated Thickness: 65.36 ft Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (EF-6 Slug A Falling Head)

Initial Displacement: 0.568 ft
Total Well Penetration Depth: 65.36 ft
Casing Radius: 0.167 ft
Static Water Column Height: 65.36 ft
Screen Length: 30. ft
Well Radius: 0.3281 ft

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice
K = 0.4786 ft/day
y0 = 0.4602 ft



WELL TEST ANALYSIS

Data Set: S:\...\EF-6_SlugARisingHead.aqt
Date: 02/19/13 Time: 12:59:52

PROJECT INFORMATION

Company: Rio Algom
Project: 1350.14
Location: Lisbon
Test Well: EF-6
Test Date: 27 Aug 2012

AQUIFER DATA

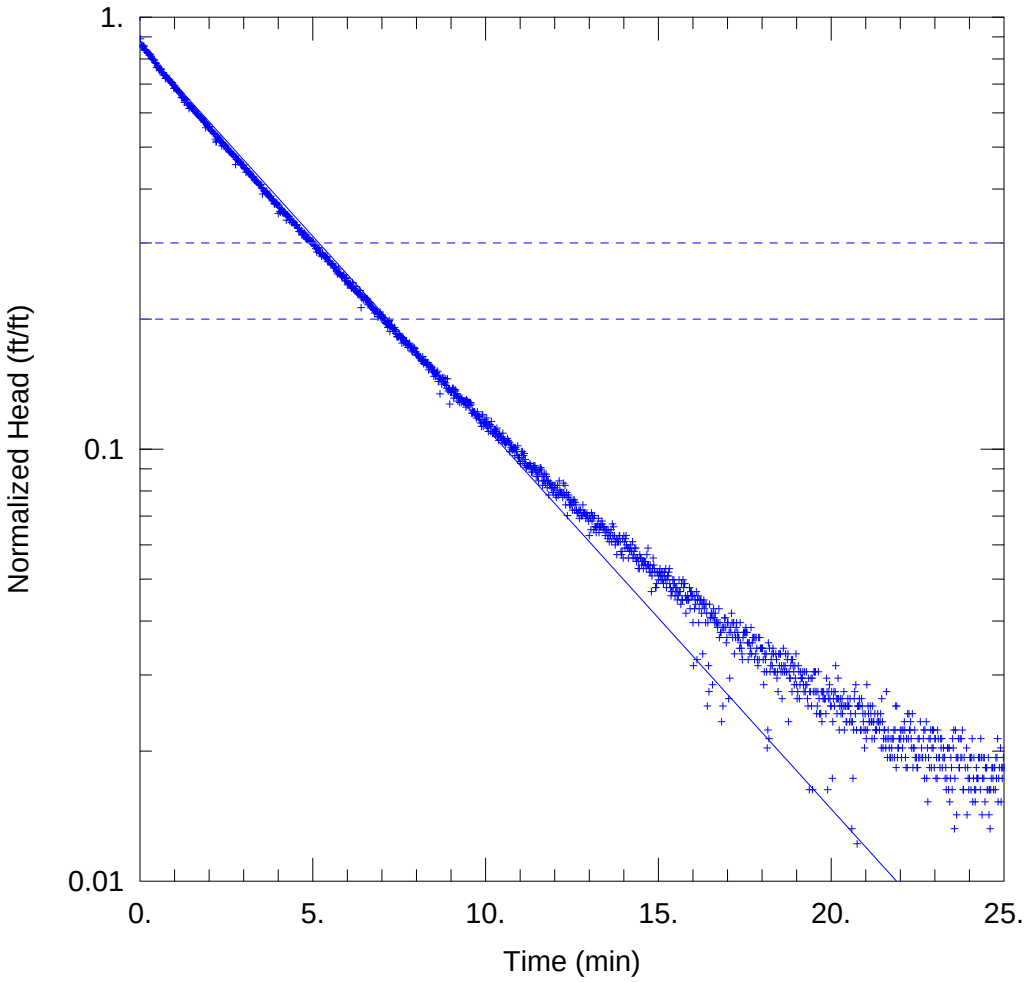
Saturated Thickness: 65.36 ft Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (EF-6 Slug A Rising Head)

Initial Displacement: 0.608 ft Static Water Column Height: 65.36 ft
Total Well Penetration Depth: 65.36 ft Screen Length: 30. ft
Casing Radius: 0.167 ft Well Radius: 0.3281 ft

SOLUTION

Aquifer Model: Unconfined Solution Method: Bouwer-Rice
K = 0.494 ft/day y0 = 0.5311 ft



WELL TEST ANALYSIS

Data Set: S:\...\EF-6_SlugBFallingHead.aqt
Date: 02/19/13 Time: 12:59:45

PROJECT INFORMATION

Company: Rio Algom
Project: 1350.14
Location: Lisbon
Test Well: EF-6
Test Date: 27 Aug 2012

AQUIFER DATA

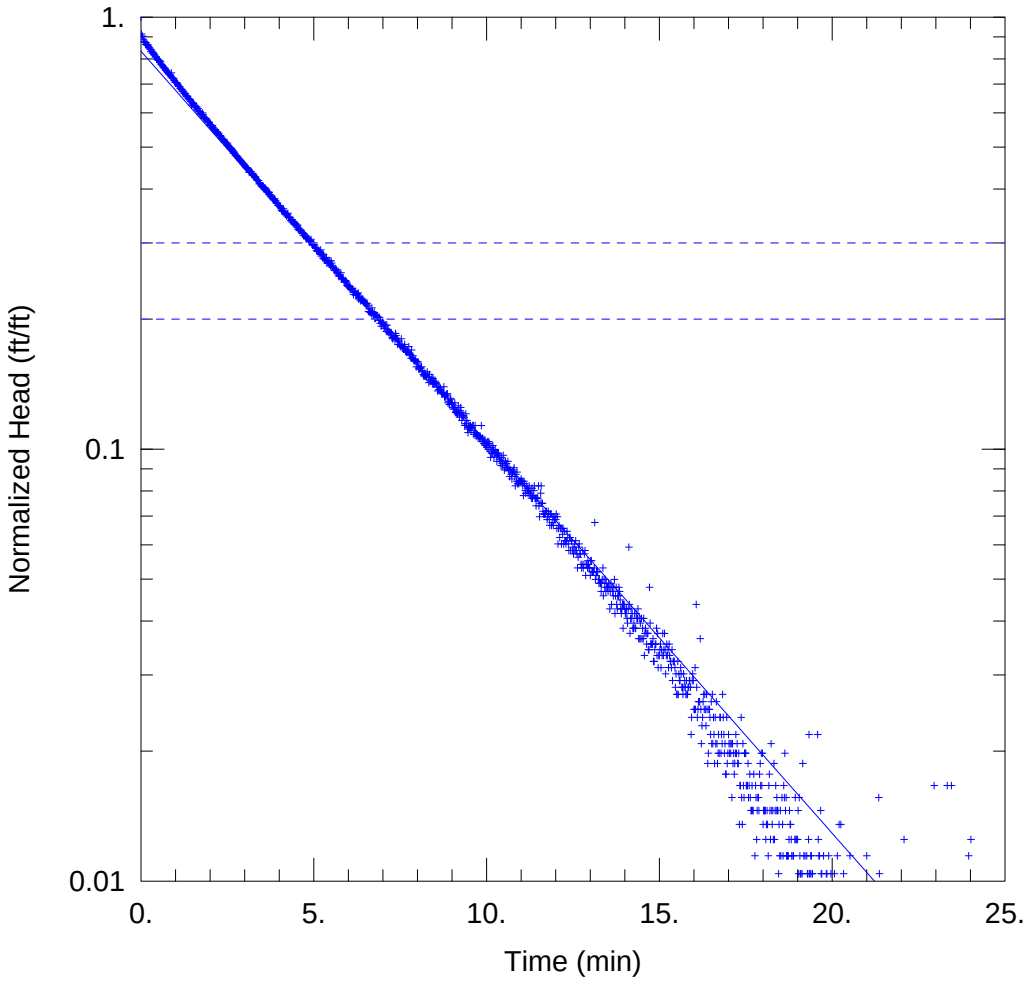
Saturated Thickness: 65.36 ft Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (EF-6 Slug B Falling Head)

Initial Displacement: 0.983 ft
Total Well Penetration Depth: 65.36 ft
Casing Radius: 0.167 ft
Static Water Column Height: 65.36 ft
Screen Length: 30. ft
Well Radius: 0.3281 ft

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice
K = 0.5403 ft/day
y0 = 0.8459 ft



WELL TEST ANALYSIS

Data Set: S:\...\EF-6_SlugBRisingHead.aqt
Date: 02/19/13 Time: 12:59:39

PROJECT INFORMATION

Company: Rio Algom
Project: 1350.14
Location: Lisbon
Test Well: EF-6
Test Date: 27 Aug 2012

AQUIFER DATA

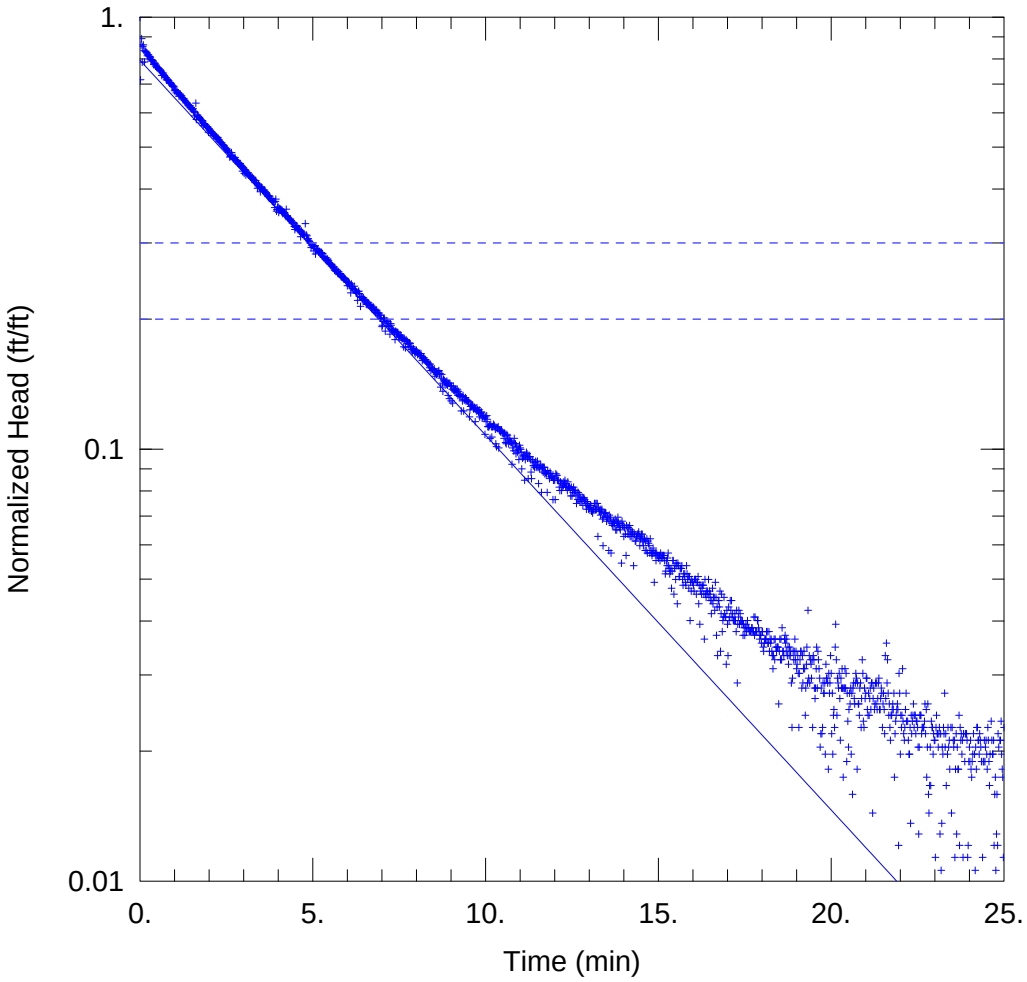
Saturated Thickness: 65.36 ft
Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (EF-6 Slug B Rising Head)

Initial Displacement: 0.961 ft
Static Water Column Height: 65.36 ft
Total Well Penetration Depth: 65.36 ft
Screen Length: 30. ft
Casing Radius: 0.167 ft
Well Radius: 0.3281 ft

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice
K = 0.5533 ft/day
y0 = 0.801 ft



WELL TEST ANALYSIS

Data Set: S:\...\EF-6_SlugCFallingHead.aqt
Date: 02/19/13 Time: 12:59:34

PROJECT INFORMATION

Company: Rio Algom
Project: 1350.14
Location: Lisbon
Test Well: EF-6
Test Date: 27 Aug 2012

AQUIFER DATA

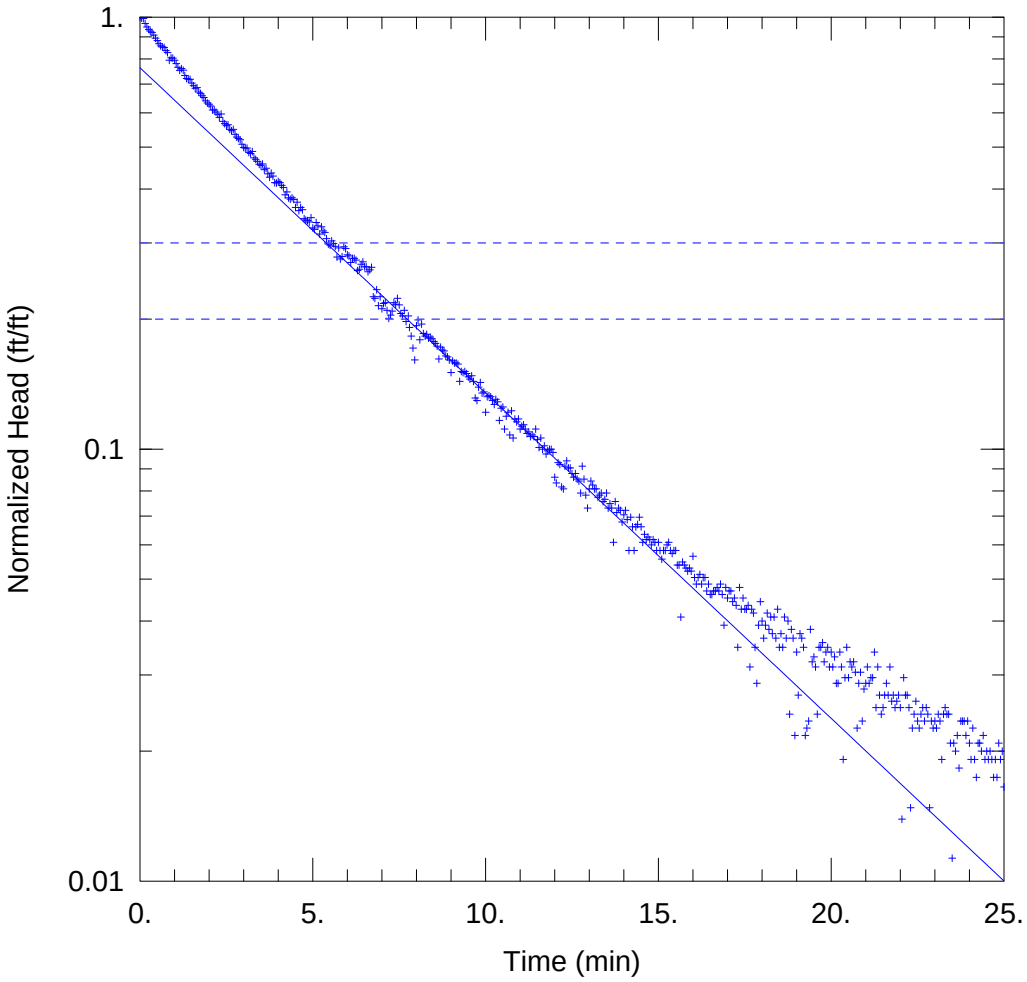
Saturated Thickness: 65.36 ft Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (EF-6 Slug C Falling Head)

Initial Displacement: 1.322 ft
Total Well Penetration Depth: 65.36 ft
Casing Radius: 0.167 ft
Static Water Column Height: 65.36 ft
Screen Length: 30. ft
Well Radius: 0.3281 ft

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice
K = 0.5305 ft/day
y0 = 1.05 ft



EF-6 SLUG C RISING HEAD

Data Set: S:\...\EF-6_SlugCRisingHead.aqt
Date: 02/19/13 Time: 12:59:30

PROJECT INFORMATION

Company: Rio Algom
Project: 1350.14
Location: Lisbon
Test Well: EF-6
Test Date: 27 Aug 2012

AQUIFER DATA

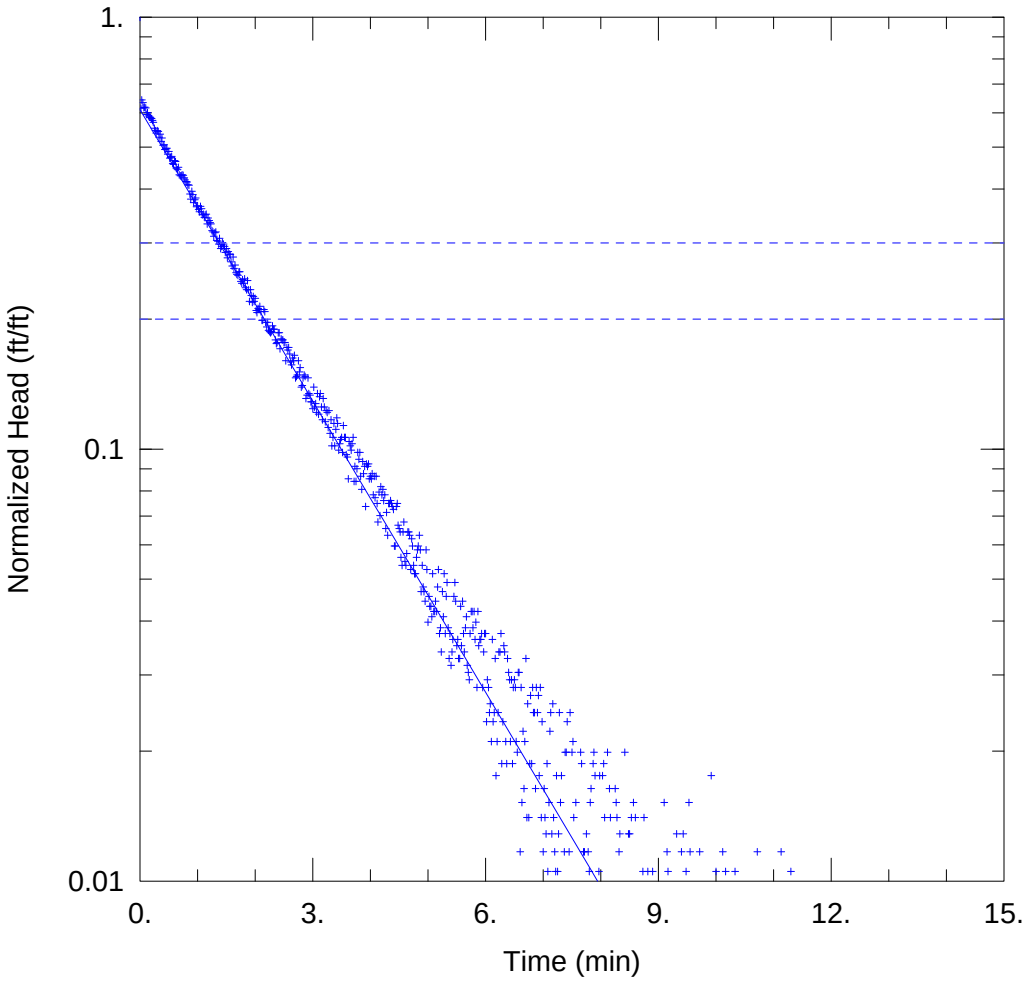
Saturated Thickness: 65.36 ft
Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (EF-6 Slug C Rising Head)

Initial Displacement: 1.15 ft
Total Well Penetration Depth: 65.36 ft
Casing Radius: 0.167 ft
Static Water Column Height: 65.36 ft
Screen Length: 30. ft
Well Radius: 0.3281 ft

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice
K = 0.4604 ft/day
y0 = 0.8781 ft



WELL TEST ANALYSIS

Data Set: S:\...\EF-8_SlugAFallingHead.aqt
Date: 02/19/13 Time: 13:03:36

PROJECT INFORMATION

Company: Rio Algom
Project: 1350.14
Location: Lisbon
Test Well: EF-8
Test Date: 27 Aug 2012

AQUIFER DATA

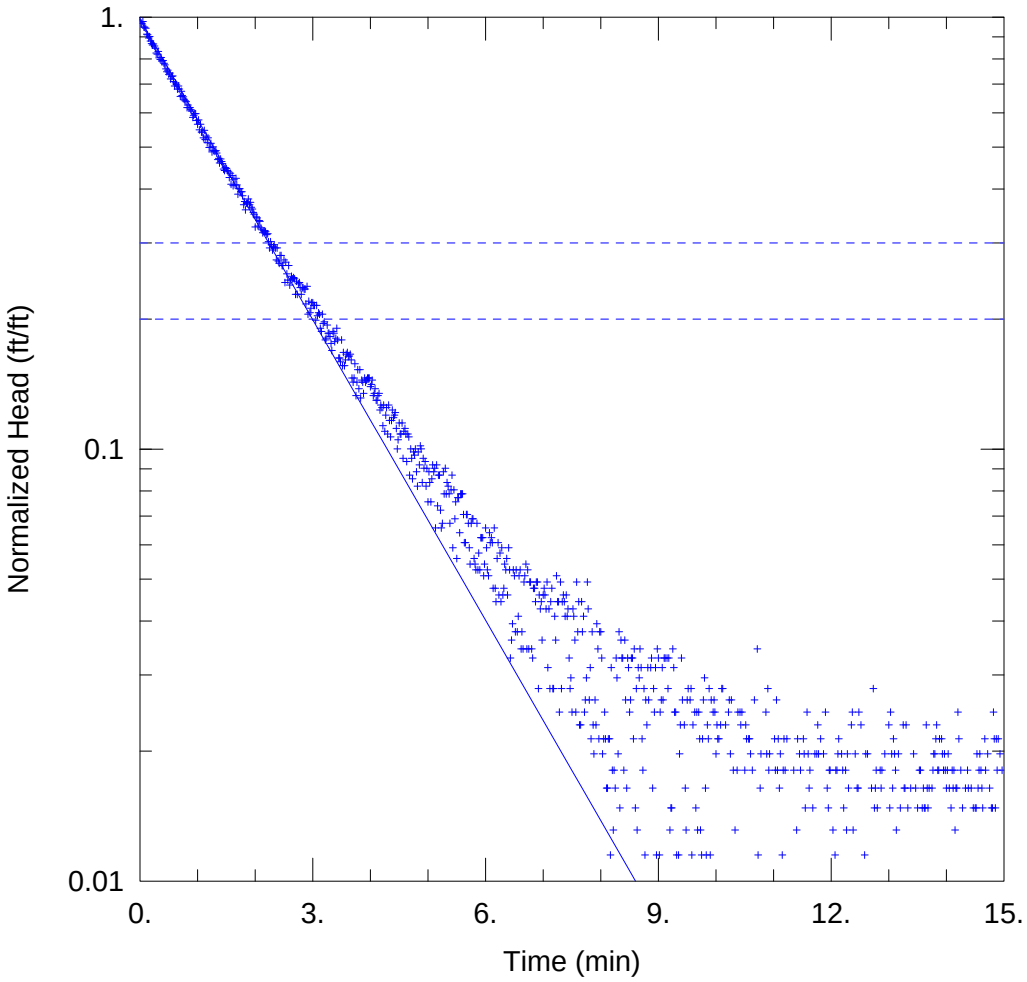
Saturated Thickness: 121. ft Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (EF-8 Slug A Falling Head)

Initial Displacement: 0.855 ft
Total Well Penetration Depth: 121. ft
Casing Radius: 0.167 ft
Static Water Column Height: 169. ft
Screen Length: 30. ft
Well Radius: 0.3281 ft

SOLUTION

Aquifer Model: Confined
Solution Method: Bouwer-Rice
K = 1.503 ft/day
y0 = 0.5219 ft



WELL TEST ANALYSIS

Data Set: S:\...\EF-8_SlugARisingHead.aqt
Date: 02/19/13 Time: 13:03:31

PROJECT INFORMATION

Company: Rio Algom
Project: 1350.14
Location: Lisbon
Test Well: EF-8
Test Date: 27 Aug 2012

AQUIFER DATA

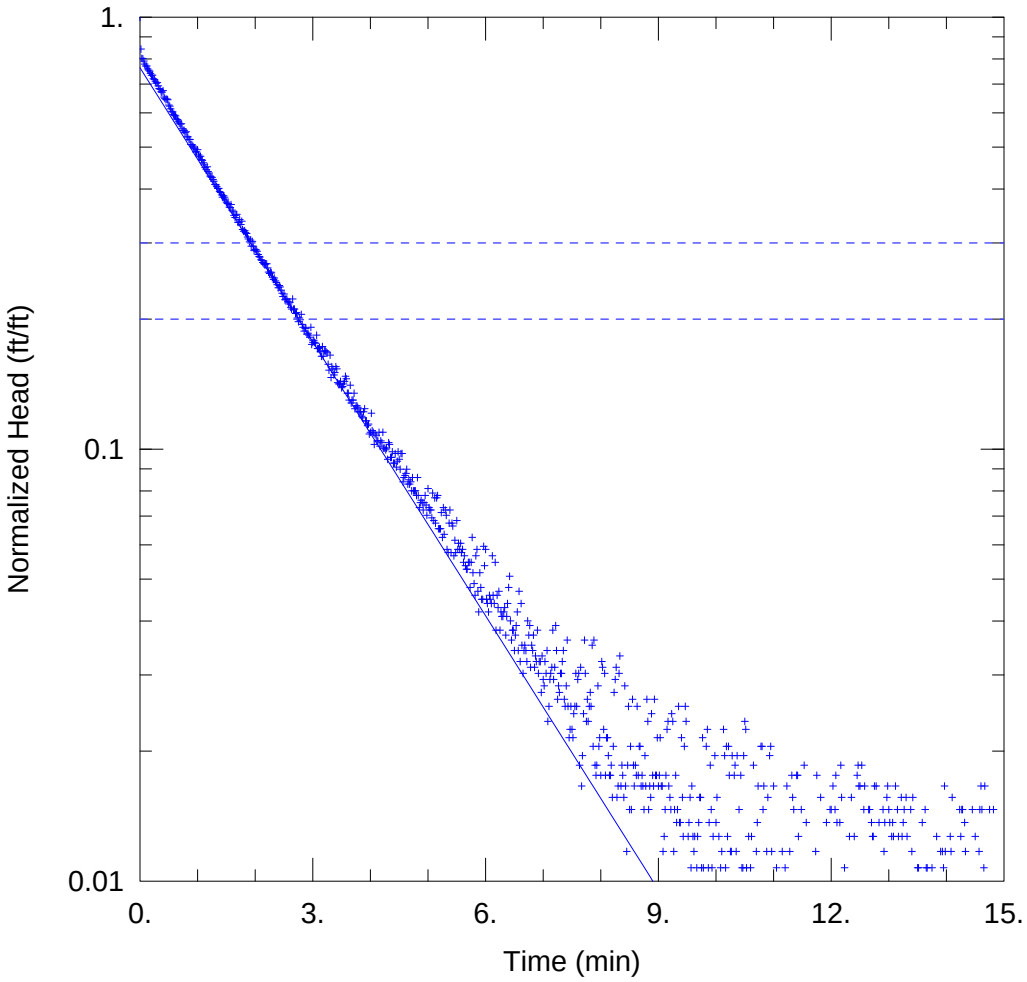
Saturated Thickness: 121. ft Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (EF-8 Slug A Rising Head)

Initial Displacement: 0.609 ft Static Water Column Height: 169. ft
Total Well Penetration Depth: 121. ft Screen Length: 30. ft
Casing Radius: 0.167 ft Well Radius: 0.3281 ft

SOLUTION

Aquifer Model: Confined Solution Method: Bouwer-Rice
K = 1.551 ft/day y0 = 0.6025 ft



WELL TEST ANALYSIS

Data Set: S:\...\EF-8_SlugBFallingHead.aqt
Date: 02/19/13 Time: 13:03:14

PROJECT INFORMATION

Company: Rio Algom
Project: 1350.14
Location: Lisbon
Test Well: EF-8
Test Date: 27 Aug 2012

AQUIFER DATA

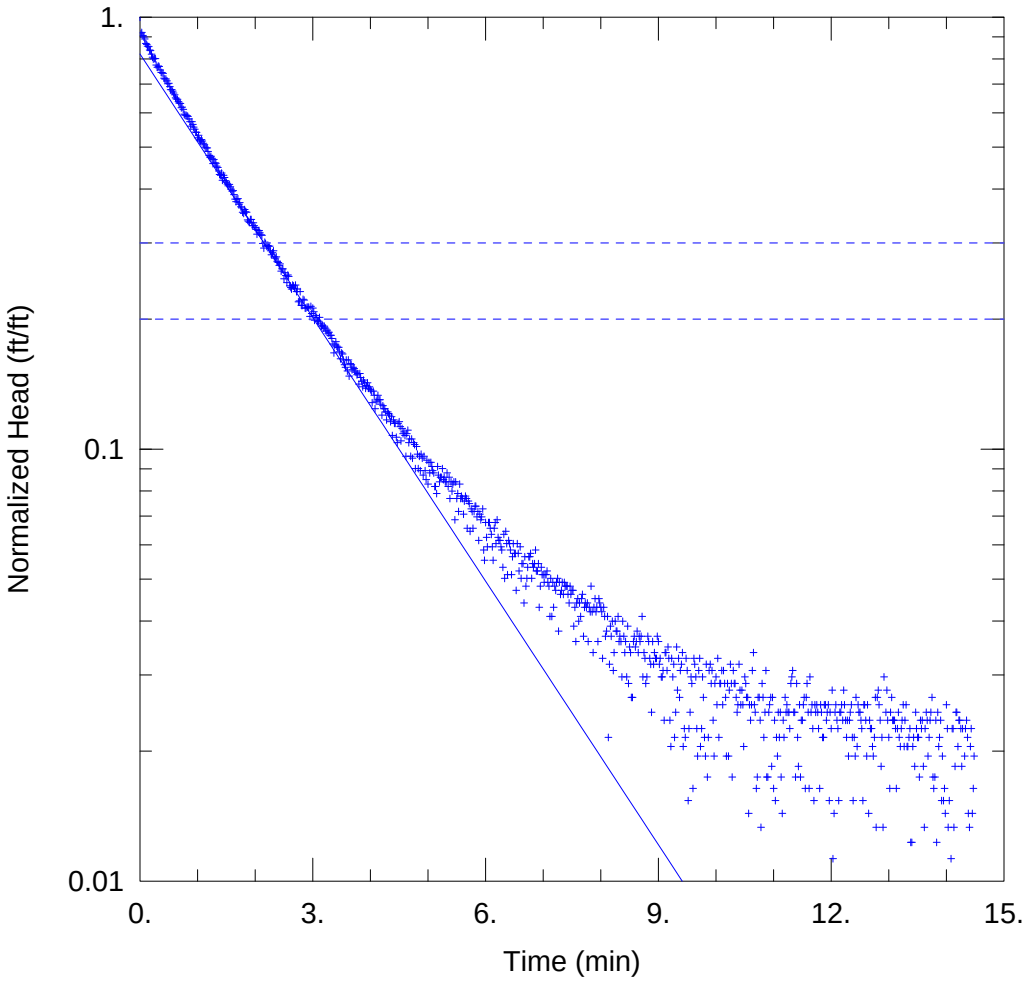
Saturated Thickness: 121. ft
Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (EF-8 Slug B Falling Head)

Initial Displacement: 1.024 ft
Total Well Penetration Depth: 121. ft
Casing Radius: 0.167 ft
Static Water Column Height: 169. ft
Screen Length: 30. ft
Well Radius: 0.3281 ft

SOLUTION

Aquifer Model: Confined
Solution Method: Bouwer-Rice
K = 1.414 ft/day
y0 = 0.7817 ft



WELL TEST ANALYSIS

Data Set: S:\...\EF-8_SlugBRisingHead.aqt
Date: 02/19/13 Time: 13:03:11

PROJECT INFORMATION

Company: Rio Algom
Project: 1350.14
Location: Lisbon
Test Well: EF-8
Test Date: 27 Aug 2012

AQUIFER DATA

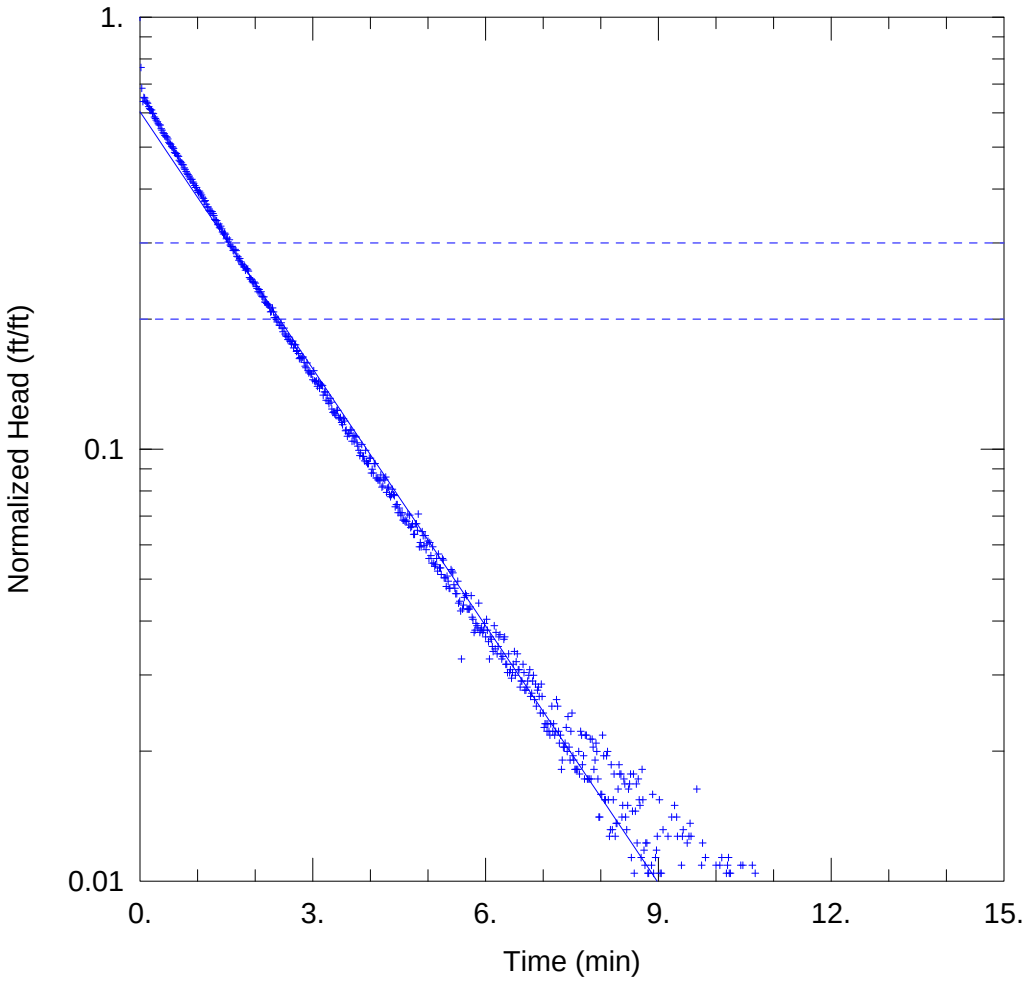
Saturated Thickness: 121. ft
Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (EF-8 Slug B Rising Head)

Initial Displacement: 0.976 ft
Static Water Column Height: 169. ft
Total Well Penetration Depth: 121. ft
Screen Length: 30. ft
Casing Radius: 0.167 ft
Well Radius: 0.3281 ft

SOLUTION

Aquifer Model: Confined
Solution Method: Bouwer-Rice
K = 1.36 ft/day
y0 = 0.8017 ft



WELL TEST ANALYSIS

Data Set: S:\...\EF-8_SlugDFallingHead.aqt
Date: 02/19/13 Time: 13:03:08

PROJECT INFORMATION

Company: Rio Algom
Project: 1350.14
Location: Lisbon
Test Well: EF-8
Test Date: 27 Aug 2012

AQUIFER DATA

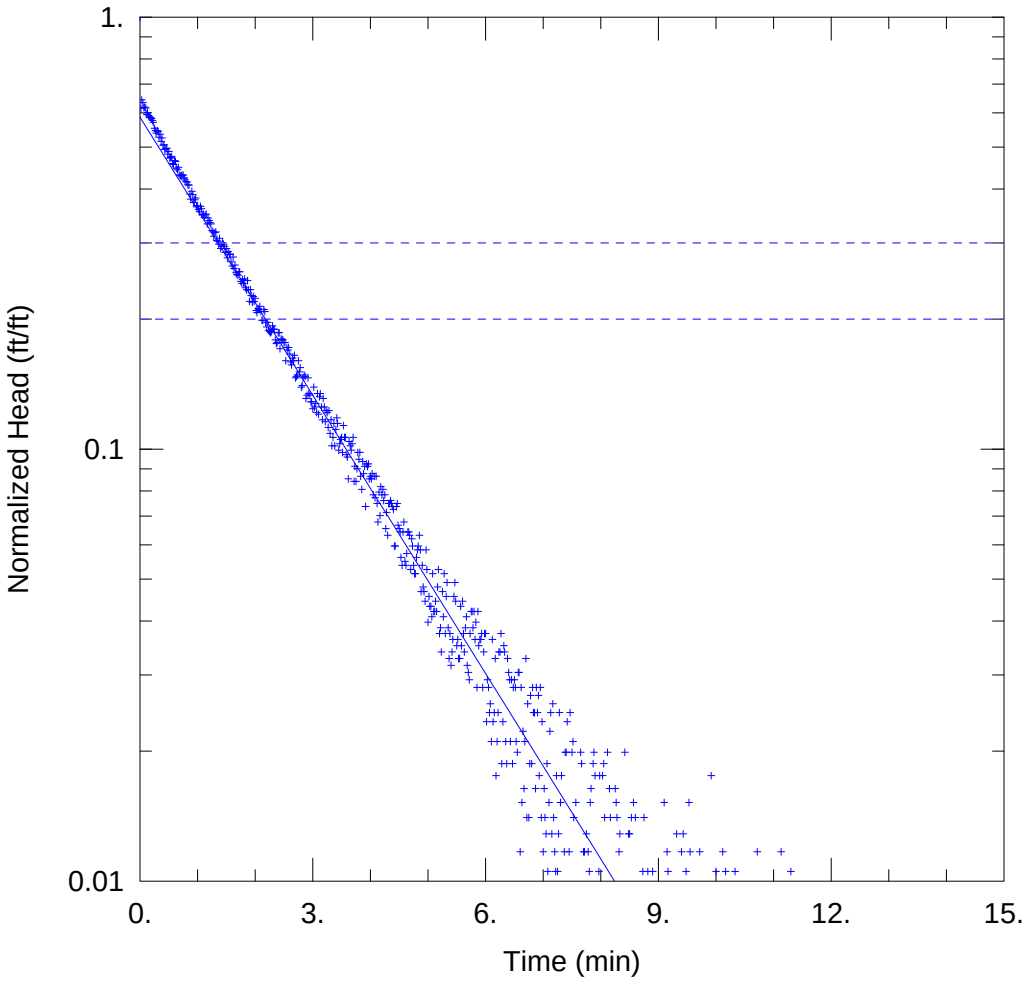
Saturated Thickness: 121. ft
Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (EF-8 Slug D Falling Head)

Initial Displacement: 2.204 ft
Total Well Penetration Depth: 121. ft
Casing Radius: 0.167 ft
Static Water Column Height: 169. ft
Screen Length: 30. ft
Well Radius: 0.3281 ft

SOLUTION

Aquifer Model: Confined
Solution Method: Bouwer-Rice
K = 1.326 ft/day
y0 = 1.331 ft



WELL TEST ANALYSIS

Data Set: S:\...\EF-8_SlugDRisingHead.aqt
Date: 02/19/13 Time: 13:03:04

PROJECT INFORMATION

Company: Rio Algom
Project: 1350.14
Location: Lisbon
Test Well: EF-8
Test Date: 27 Aug 2012

AQUIFER DATA

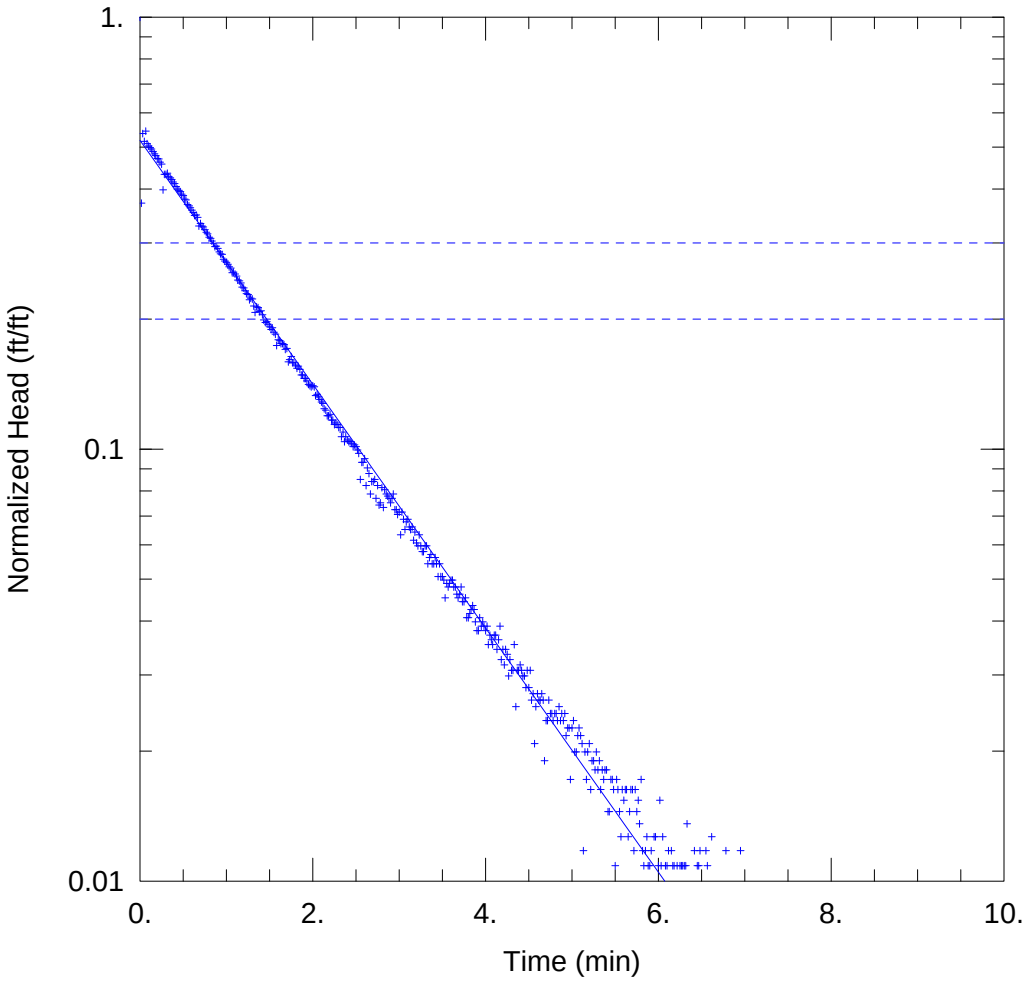
Saturated Thickness: 121. ft
Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (EF-8 Slug A Falling Head)

Initial Displacement: 0.855 ft
Total Well Penetration Depth: 121. ft
Casing Radius: 0.167 ft
Static Water Column Height: 169. ft
Screen Length: 30. ft
Well Radius: 0.3281 ft

SOLUTION

Aquifer Model: Confined
Solution Method: Bouwer-Rice
K = 1.435 ft/day
y0 = 0.5017 ft



WELL TEST ANALYSIS

Data Set: S:\...\H-63_SlugBFallingHead.aqt
Date: 02/19/13 Time: 13:04:20

PROJECT INFORMATION

Company: Rio Algom
Project: 1350.14
Location: Lisbon
Test Well: H-63
Test Date: 26 Aug 2012

AQUIFER DATA

Saturated Thickness: 36.55 ft Anisotropy Ratio (Kz/Kr): 1.

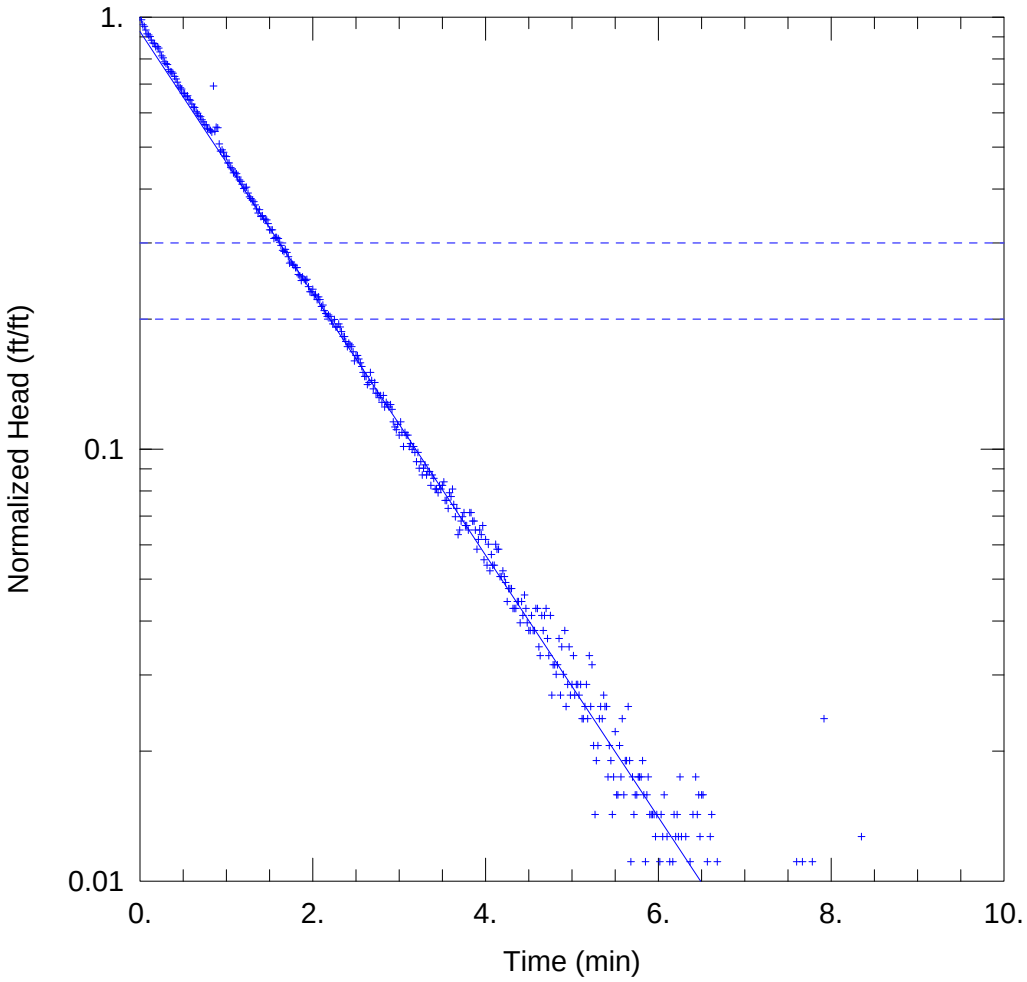
WELL DATA (H-63 Slug B Falling Head)

Initial Displacement: 1.105 ft
Static Water Column Height: 36.55 ft
Total Well Penetration Depth: 36.55 ft
Screen Length: 30. ft
Casing Radius: 0.167 ft
Well Radius: 0.3281 ft

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice

K = 1.566 ft/day
y0 = 0.5728 ft



WELL TEST ANALYSIS

Data Set: S:\...\H-63_SlugBRisingHead.aqt
Date: 02/19/13 Time: 13:04:18

PROJECT INFORMATION

Company: Rio Algom
Project: 1350.14
Location: Lisbon
Test Well: H-63
Test Date: 26 Aug 2012

AQUIFER DATA

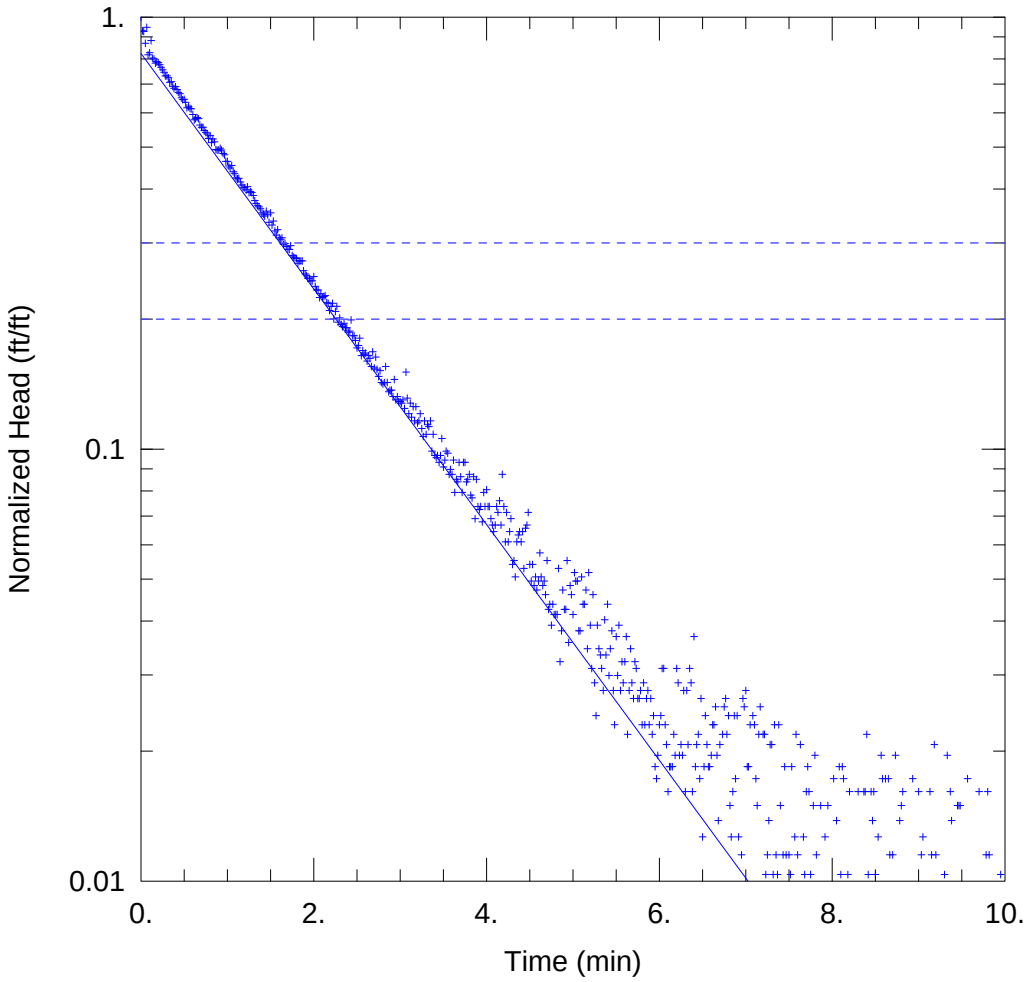
Saturated Thickness: 36.55 ft Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (H-63 Slug B Rising Headd)

Initial Displacement: 0.631 ft Static Water Column Height: 36.55 ft
Total Well Penetration Depth: 36.55 ft Screen Length: 30. ft
Casing Radius: 0.167 ft Well Radius: 0.3281 ft

SOLUTION

Aquifer Model: Unconfined Solution Method: Bouwer-Rice
K = 1.681 ft/day y0 = 0.5841 ft



WELL TEST ANALYSIS

Data Set: S:\...\H-63_SlugCFallingHead.aqt
Date: 02/19/13 Time: 13:04:13

PROJECT INFORMATION

Company: Rio Algom
Project: 1350.14
Location: Lisbon
Test Well: H-63
Test Date: 26 Aug 2012

AQUIFER DATA

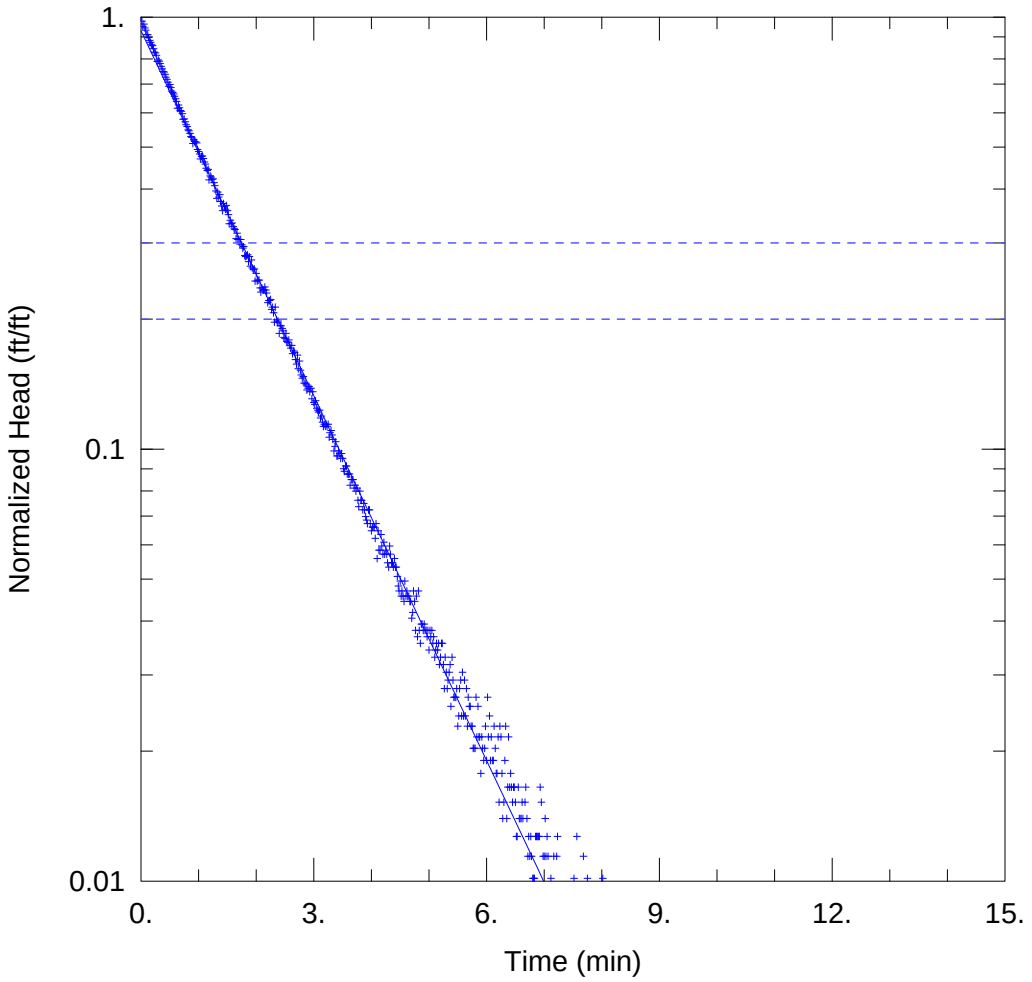
Saturated Thickness: 36.55 ft Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (H-63 Slug C Falling Head)

Initial Displacement: 0.869 ft Static Water Column Height: 36.55 ft
Total Well Penetration Depth: 36.55 ft Screen Length: 30. ft
Casing Radius: 0.167 ft Well Radius: 0.3281 ft

SOLUTION

Aquifer Model: Unconfined Solution Method: Bouwer-Rice
K = 1.513 ft/day y0 = 0.7161 ft



WELL TEST ANALYSIS

Data Set: S:\...\H-63_SlugCRisingHead.aqt
Date: 02/19/13 Time: 13:04:09

PROJECT INFORMATION

Company: Rio Algom
Project: 1350.14
Location: Lisbon
Test Well: H-63
Test Date: 26 Aug 2012

AQUIFER DATA

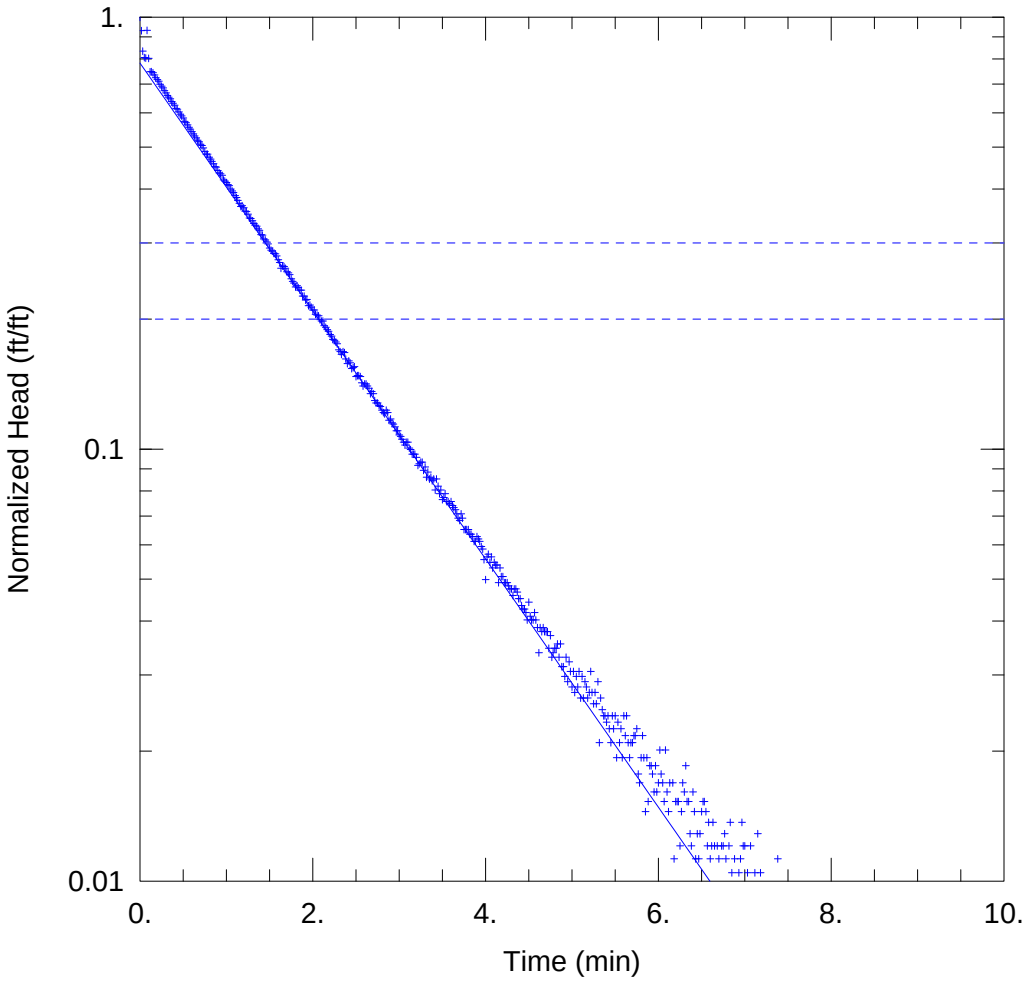
Saturated Thickness: 36.55 ft Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (H-63 Slug C Rising Head)

Initial Displacement: 0.788 ft Static Water Column Height: 36.55 ft
Total Well Penetration Depth: 36.55 ft Screen Length: 30. ft
Casing Radius: 0.167 ft Well Radius: 0.3281 ft

SOLUTION

Aquifer Model: Unconfined Solution Method: Bouwer-Rice
K = 1.562 ft/day y0 = 0.7324 ft



WELL TEST ANALYSIS

Data Set: S:\...\H-63_SlugDFallingHead.aqt
Date: 02/19/13 Time: 13:04:06

PROJECT INFORMATION

Company: Rio Algom
Project: 1350.14
Location: Lisbon
Test Well: H-63
Test Date: 26 Aug 2012

AQUIFER DATA

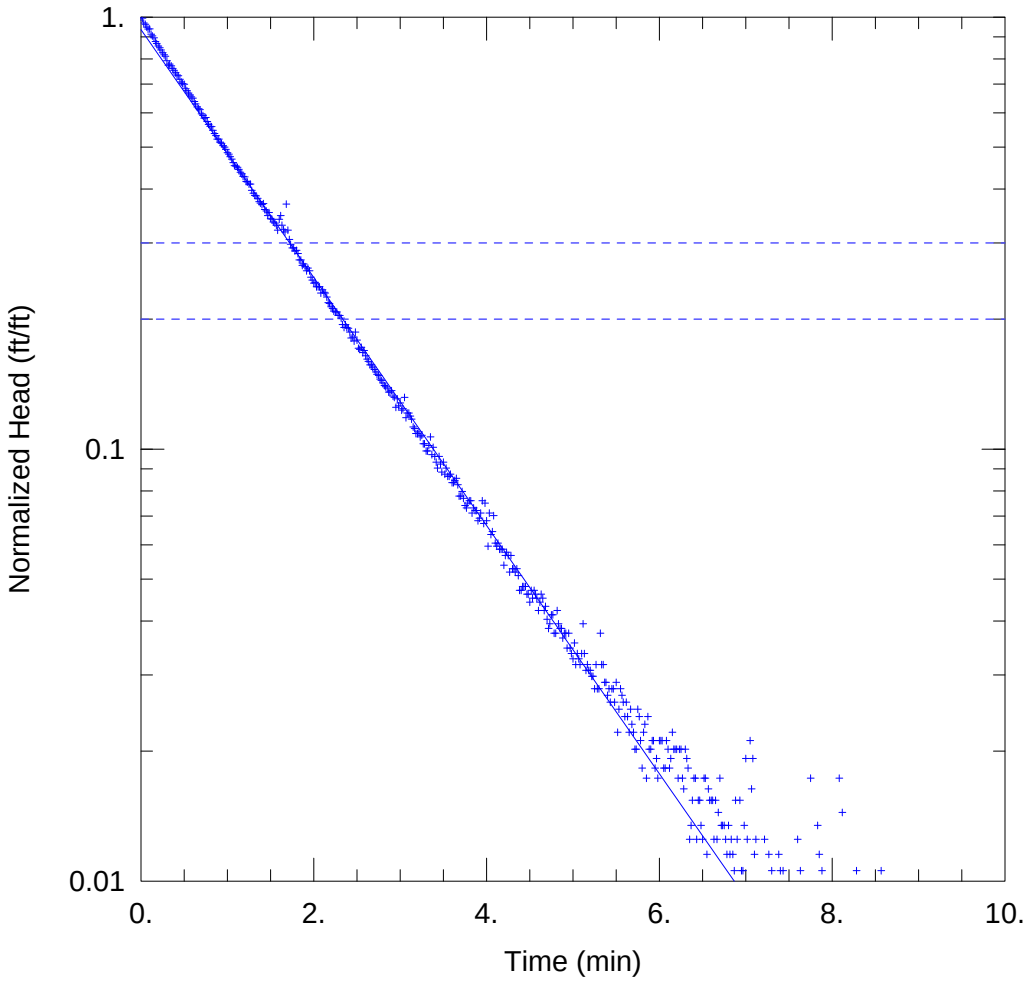
Saturated Thickness: 36.55 ft Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (H-63 Slug D Falling Head)

Initial Displacement: 1.243 ft
Total Well Penetration Depth: 36.55 ft
Casing Radius: 0.167 ft
Static Water Column Height: 36.55 ft
Screen Length: 30. ft
Well Radius: 0.3281 ft

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice
K = 1.593 ft/day
y0 = 0.973 ft



WELL TEST ANALYSIS

Data Set: S:\...\H-63_SlugDRisingHead.aqt
Date: 02/19/13 Time: 13:04:01

PROJECT INFORMATION

Company: Rio Algom
Project: 1350.14
Location: Lisbon
Test Well: H-63
Test Date: 26 Aug 2012

AQUIFER DATA

Saturated Thickness: 36.55 ft Anisotropy Ratio (Kz/Kr): 1.

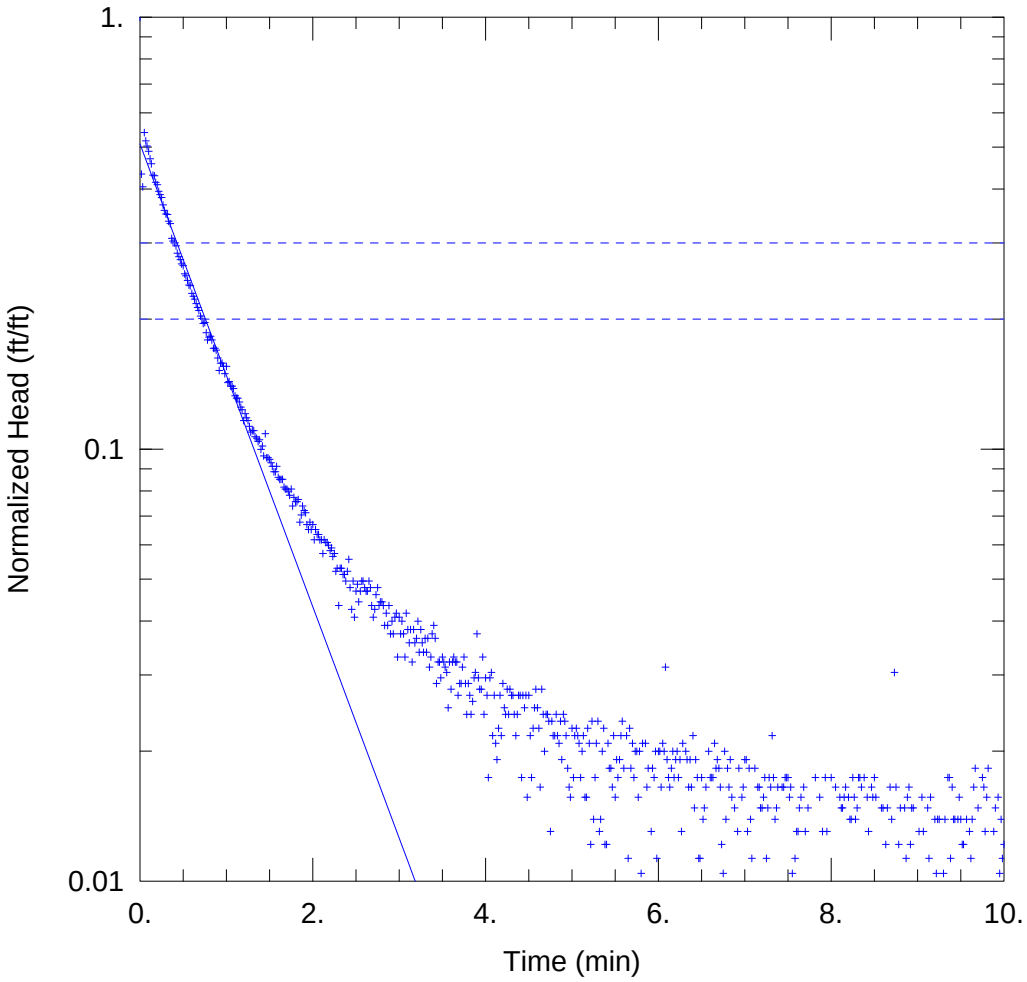
WELL DATA (H-63 Slug D Rising Head)

Initial Displacement: 1.04 ft
Static Water Column Height: 36.55 ft
Total Well Penetration Depth: 36.55 ft
Screen Length: 30. ft
Casing Radius: 0.167 ft
Well Radius: 0.3281 ft

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice

K = 1.593 ft/day
y0 = 0.973 ft



WELL TEST ANALYSIS

Data Set: S:\...\LW-1_SlugBFallingHead.aqt
Date: 02/19/13 Time: 13:05:16

PROJECT INFORMATION

Company: Rio Algom
Project: 1350.14
Location: Lisbon
Test Well: LW-1
Test Date: 27 Aug 2012

AQUIFER DATA

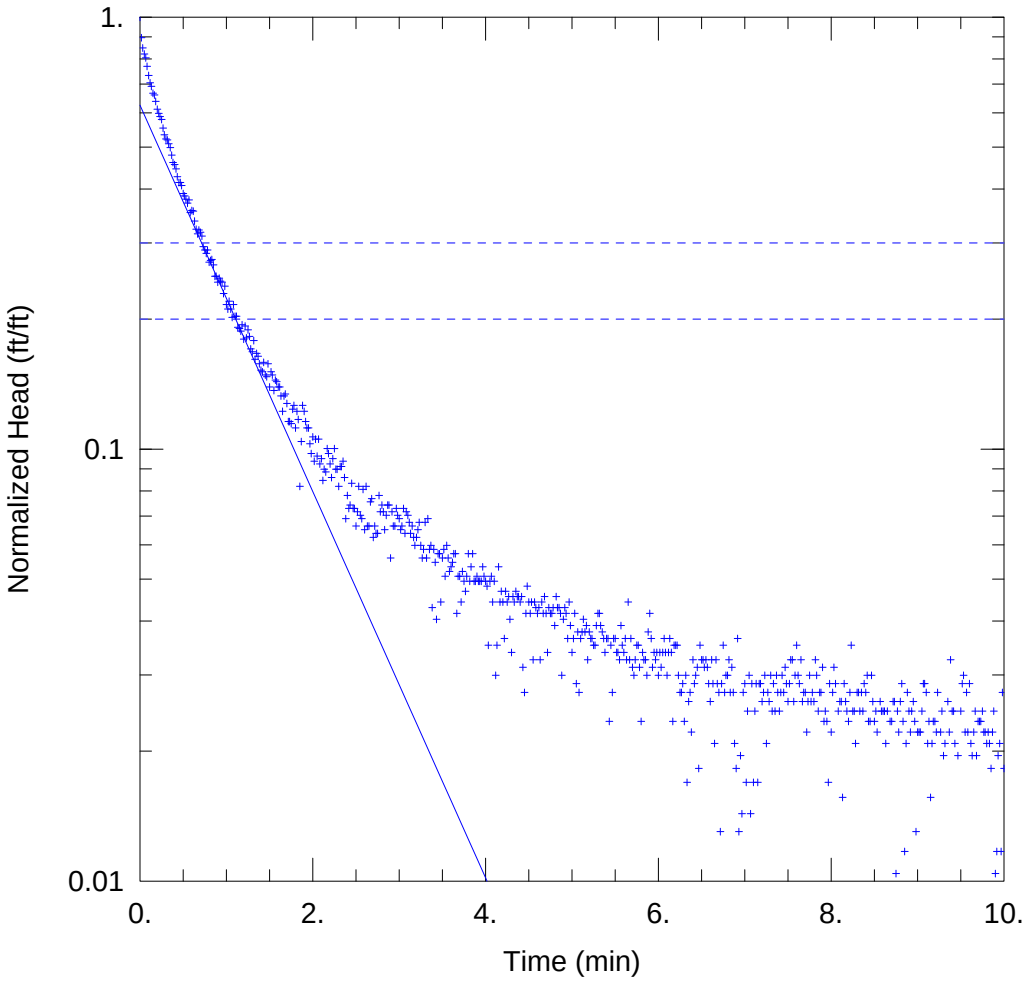
Saturated Thickness: 88.02 ft Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (LW-1 Slug B Falling Head)

Initial Displacement: 1.151 ft
Total Well Penetration Depth: 88.02 ft
Casing Radius: 0.159 ft
Static Water Column Height: 88.02 ft
Screen Length: 30. ft
Well Radius: 0.333 ft

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice
K = 3.095 ft/day
y0 = 0.5853 ft



WELL TEST ANALYSIS

Data Set: S:\...\LW-1_SlugBRisingHead.aqt
Date: 02/19/13 Time: 13:05:13

PROJECT INFORMATION

Company: Rio Algom
Project: 1350.14
Location: Lisbon
Test Well: LW-1
Test Date: 27 Aug 2012

AQUIFER DATA

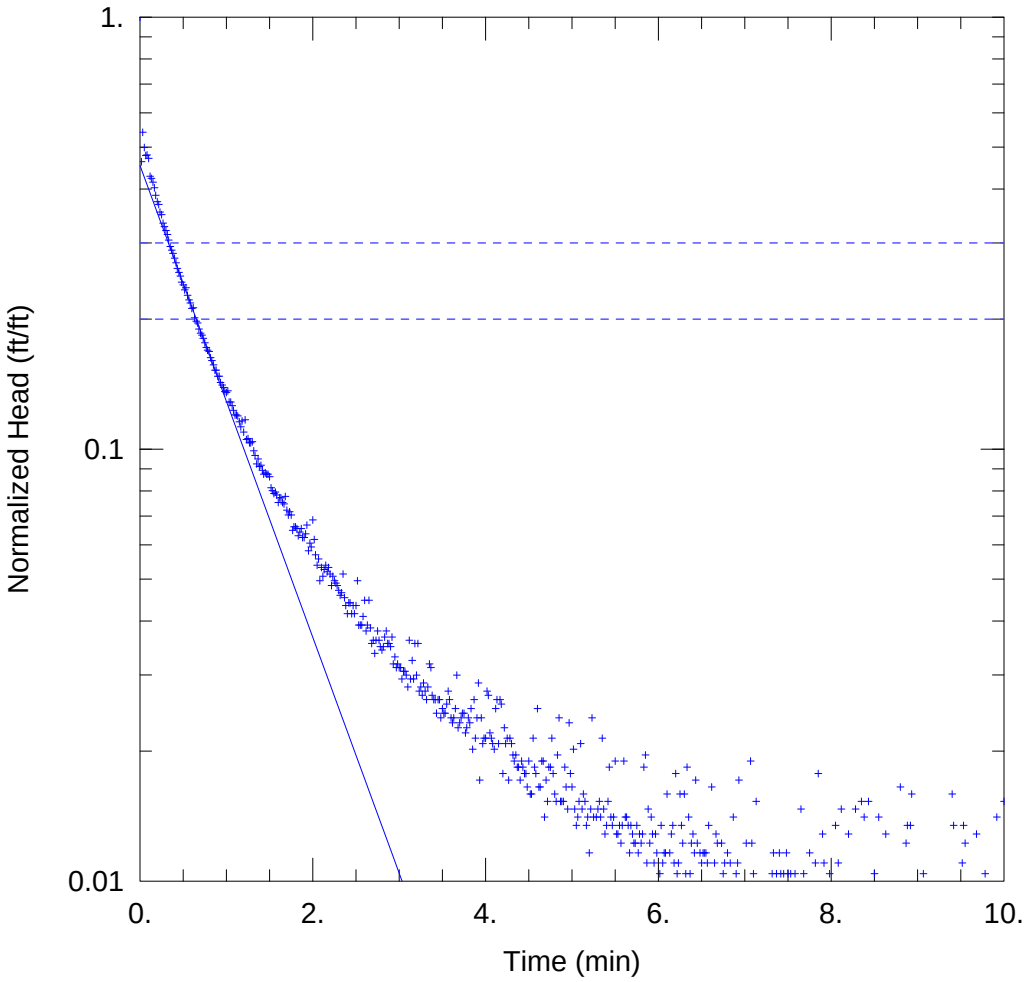
Saturated Thickness: 88.02 ft Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (LW-1 Slug B Rising Head)

Initial Displacement: 0.768 ft Static Water Column Height: 88.02 ft
Total Well Penetration Depth: 88.02 ft Screen Length: 30. ft
Casing Radius: 0.159 ft Well Radius: 0.333 ft

SOLUTION

Aquifer Model: Unconfined Solution Method: Bouwer-Rice
K = 2.584 ft/day y0 = 0.4802 ft



WELL TEST ANALYSIS

Data Set: S:\...\LW-1_SlugCFallingHead.aqt
Date: 02/19/13 Time: 13:05:09

PROJECT INFORMATION

Company: Rio Algom
Project: 1350.14
Location: Lisbon
Test Well: LW-1
Test Date: 27 Aug 2012

AQUIFER DATA

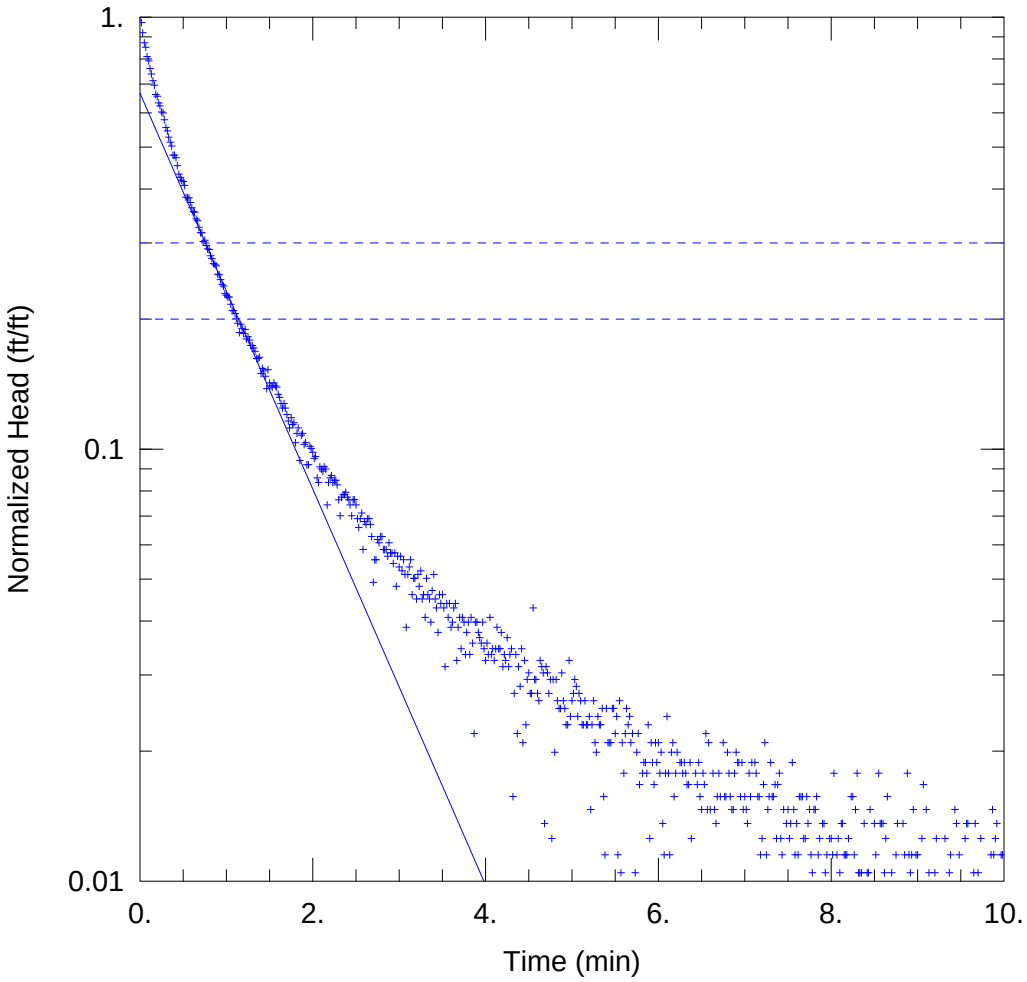
Saturated Thickness: 88.02 ft Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (LW-1 Slug C Rising Head)

Initial Displacement: 1.634 ft Static Water Column Height: 88.02 ft
Total Well Penetration Depth: 88.02 ft Screen Length: 30. ft
Casing Radius: 0.159 ft Well Radius: 0.333 ft

SOLUTION

Aquifer Model: Unconfined Solution Method: Bouwer-Rice
K = 3.155 ft/day y0 = 0.7409 ft



WELL TEST ANALYSIS

Data Set: S:\...\LW-1_SlugCRisingHead.aqt
Date: 02/19/13 Time: 13:05:06

PROJECT INFORMATION

Company: Rio Algom
Project: 1350.14
Location: Lisbon
Test Well: LW-1
Test Date: 27 Aug 2012

AQUIFER DATA

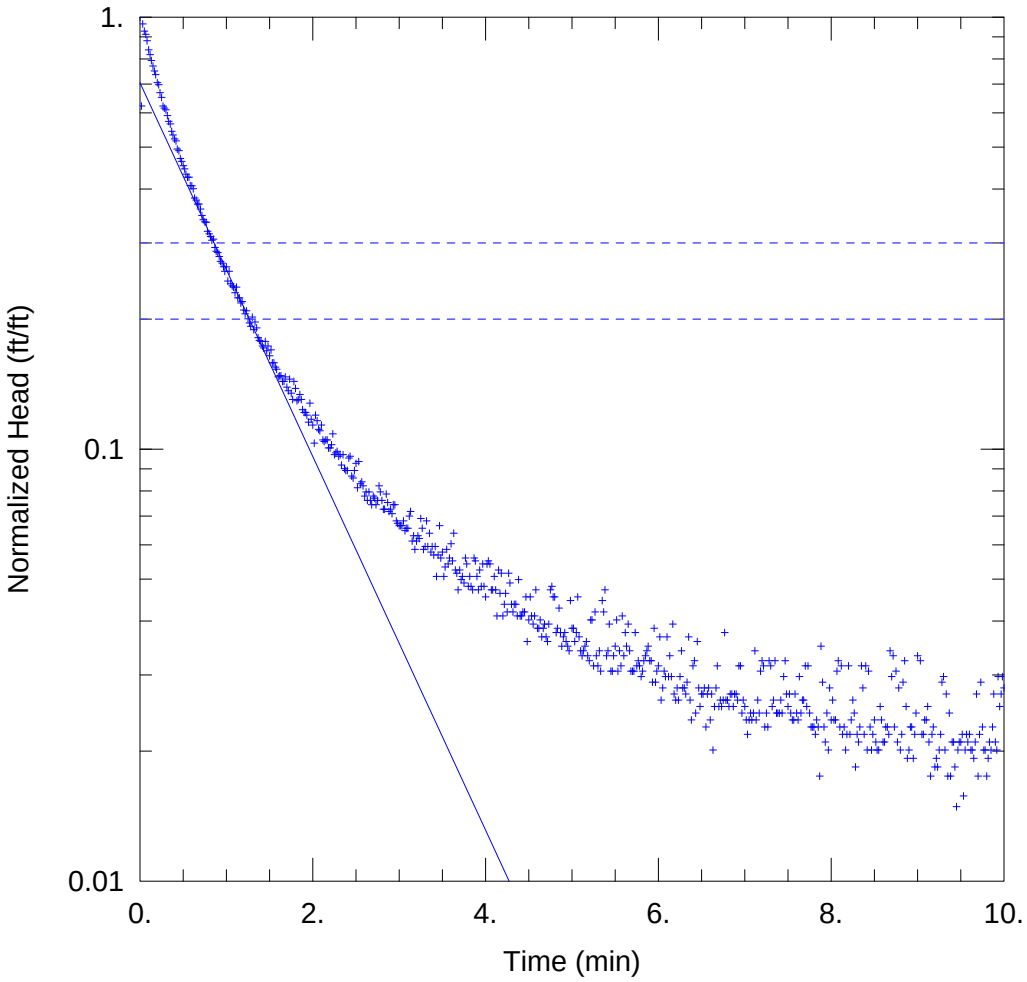
Saturated Thickness: 88.02 ft Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (LW-1 Slug C Rising Head)

Initial Displacement: 0.956 ft
Total Well Penetration Depth: 88.02 ft
Casing Radius: 0.159 ft
Static Water Column Height: 88.02 ft
Screen Length: 30. ft
Well Radius: 0.333 ft

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice
K = 2.648 ft/day
y0 = 0.6372 ft



WELL TEST ANALYSIS

Data Set: S:\...\LW-1_SlugDFallingHead.aqt
Date: 02/19/13 Time: 13:05:03

PROJECT INFORMATION

Company: Rio Algom
Project: 1350.14
Location: Lisbon
Test Well: LW-1
Test Date: 27 Aug 2012

AQUIFER DATA

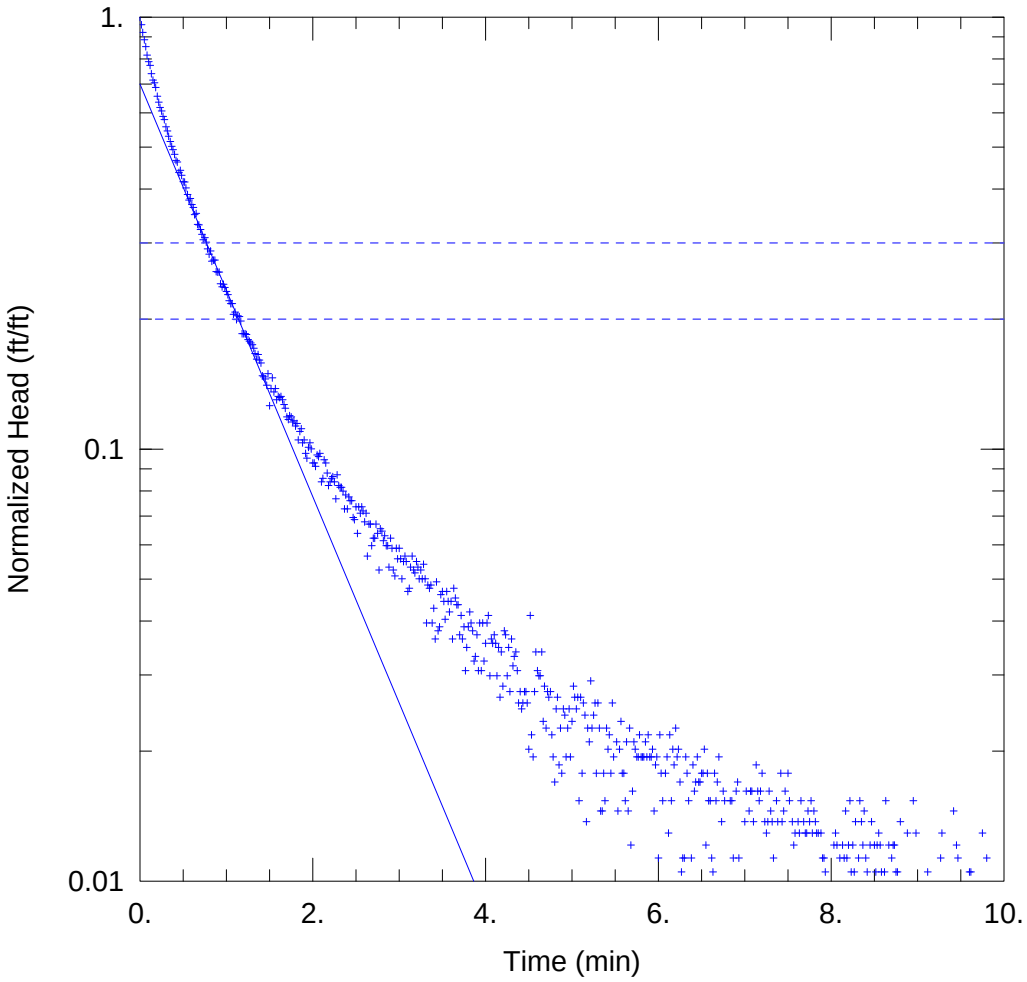
Saturated Thickness: 88.02 ft Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (LW-1 Slug D Falling Head)

Initial Displacement: 1.143 ft
Total Well Penetration Depth: 88.02 ft
Casing Radius: 0.159 ft
Static Water Column Height: 88.02 ft
Screen Length: 30. ft
Well Radius: 0.333 ft

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice
K = 2.499 ft/day
y0 = 0.8054 ft



WELL TEST ANALYSIS

Data Set: S:\...\LW-1_SlugDRisingHead.aqt
Date: 02/19/13 Time: 13:04:39

PROJECT INFORMATION

Company: Rio Algom
Project: 1350.14
Location: Lisbon
Test Well: LW-1
Test Date: 27 Aug 2012

AQUIFER DATA

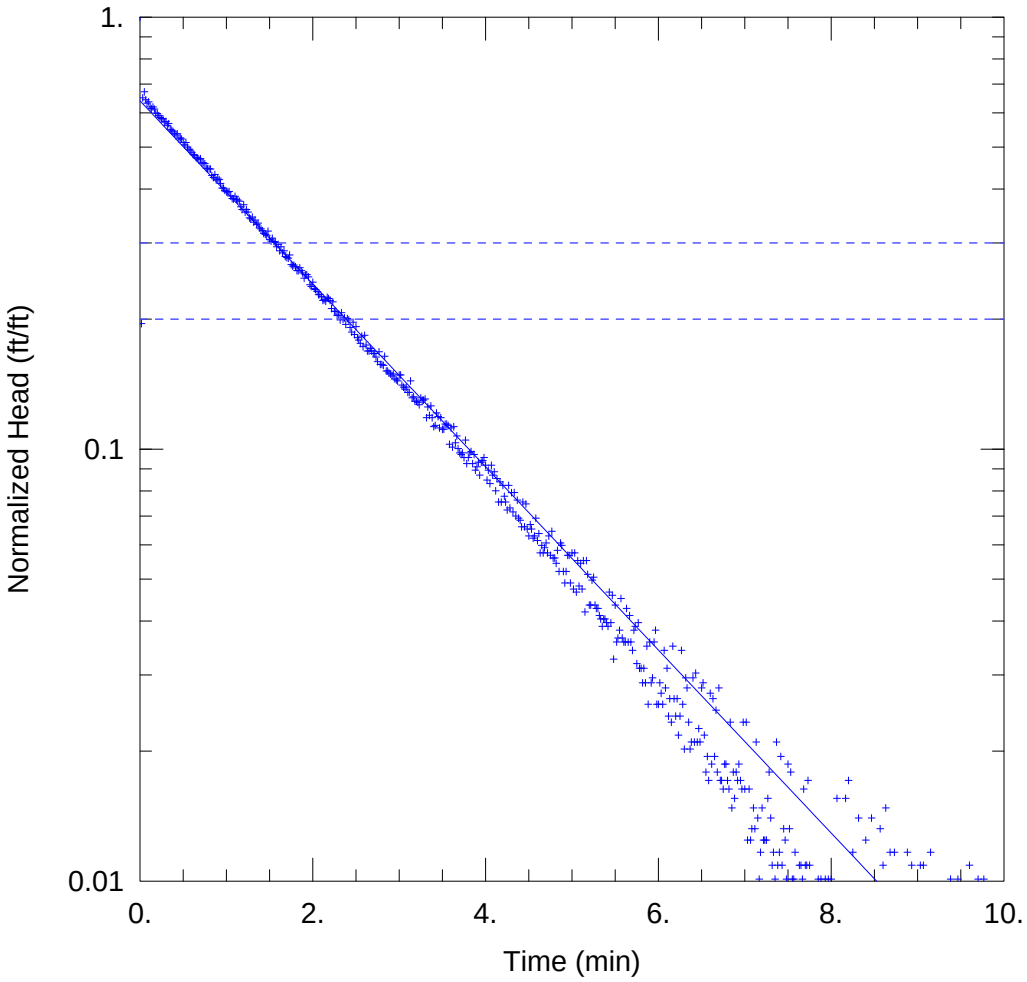
Saturated Thickness: 88.02 ft Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (LW-1 Slug D Rising Head)

Initial Displacement: 1.238 ft
Total Well Penetration Depth: 88.02 ft
Casing Radius: 0.159 ft
Static Water Column Height: 88.02 ft
Screen Length: 30. ft
Well Radius: 0.333 ft

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice
K = 2.76 ft/day
y0 = 0.8664 ft



ML-1 SLUG B FALLING HEAD

Data Set: S:\...\ML-1SlugBFallingHead.aqt
Date: 02/19/13 Time: 13:05:53

PROJECT INFORMATION

Company: Rio Algom
Project: 1350.14
Location: Lisbon
Test Well: ML-1
Test Date: 26 Aug 2012

AQUIFER DATA

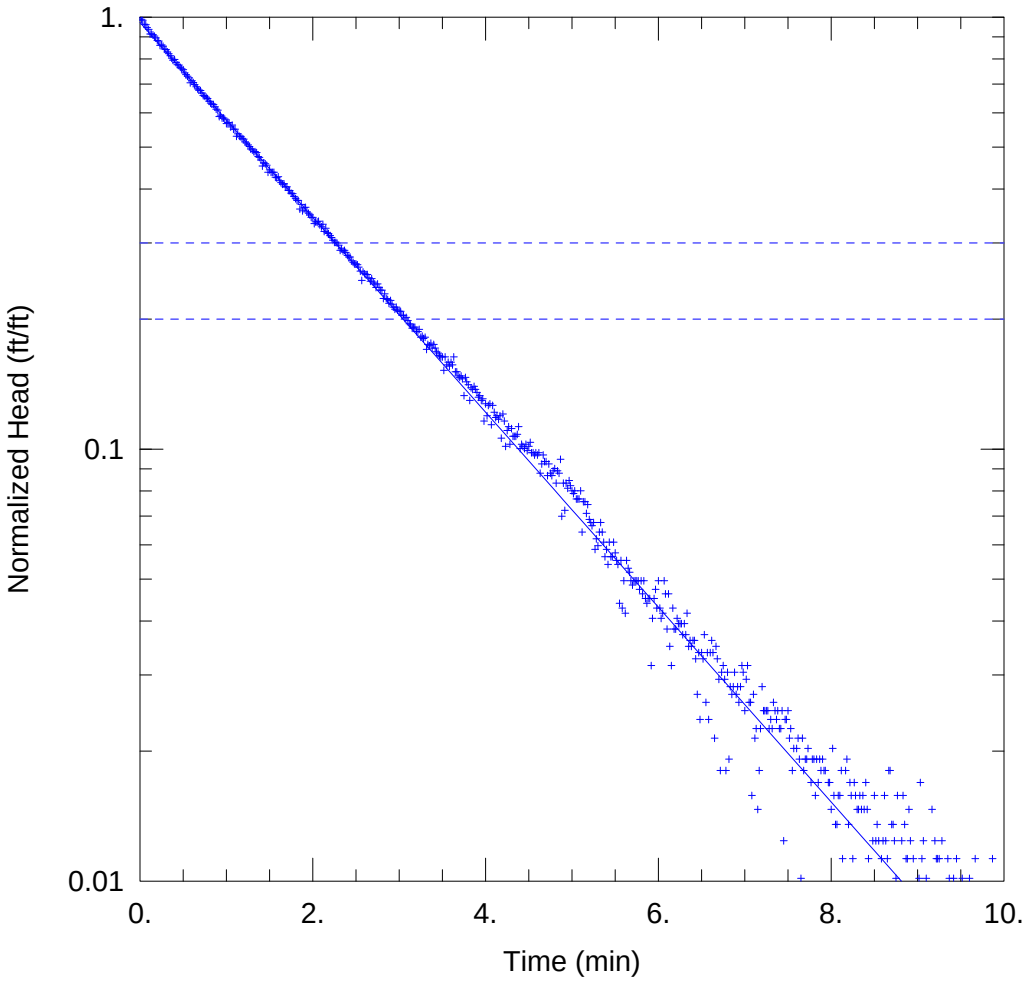
Saturated Thickness: 115.4 ft Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (ML-1)

Initial Displacement: 1.286 ft Static Water Column Height: 129.1 ft
Total Well Penetration Depth: 76.05 ft Screen Length: 19. ft
Casing Radius: 0.167 ft Well Radius: 0.328 ft

SOLUTION

Aquifer Model: Unconfined Solution Method: Bouwer-Rice
K = 1.701 ft/day y0 = 0.8229 ft



ML-1 SLUG B RISING HEAD

Data Set: S:\...\ML-1SlugBRisingHead.aqt
Date: 02/19/13 Time: 13:05:50

PROJECT INFORMATION

Company: Rio Algom
Project: 1350.14
Location: Lisbon
Test Well: ML-1
Test Date: 26 Aug 2012

AQUIFER DATA

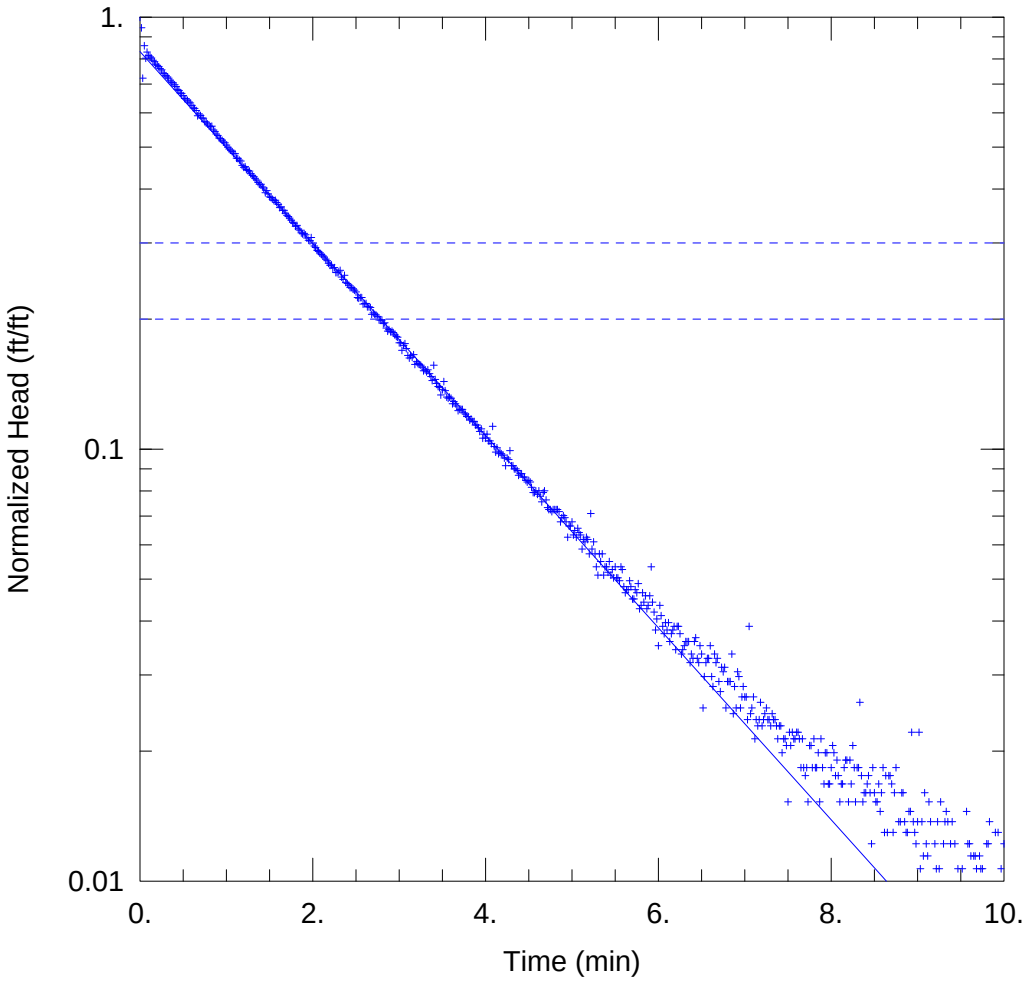
Saturated Thickness: 115.4 ft Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (ML-1)

Initial Displacement: 0.887 ft
Total Well Penetration Depth: 76.05 ft
Casing Radius: 0.167 ft
Static Water Column Height: 129.1 ft
Screen Length: 19. ft
Well Radius: 0.328 ft

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice
K = 1.811 ft/day
y0 = 0.8617 ft



ML-1 SLUG C FALLING HEAD

Data Set: S:\...\ML-1SlugCFallingHead.aqt
Date: 02/19/13 Time: 13:05:44

PROJECT INFORMATION

Company: Rio Algom
Project: 1350.14
Location: Lisbon
Test Well: ML-1
Test Date: 26 Aug 2012

AQUIFER DATA

Saturated Thickness: 115.4 ft Anisotropy Ratio (Kz/Kr): 1.

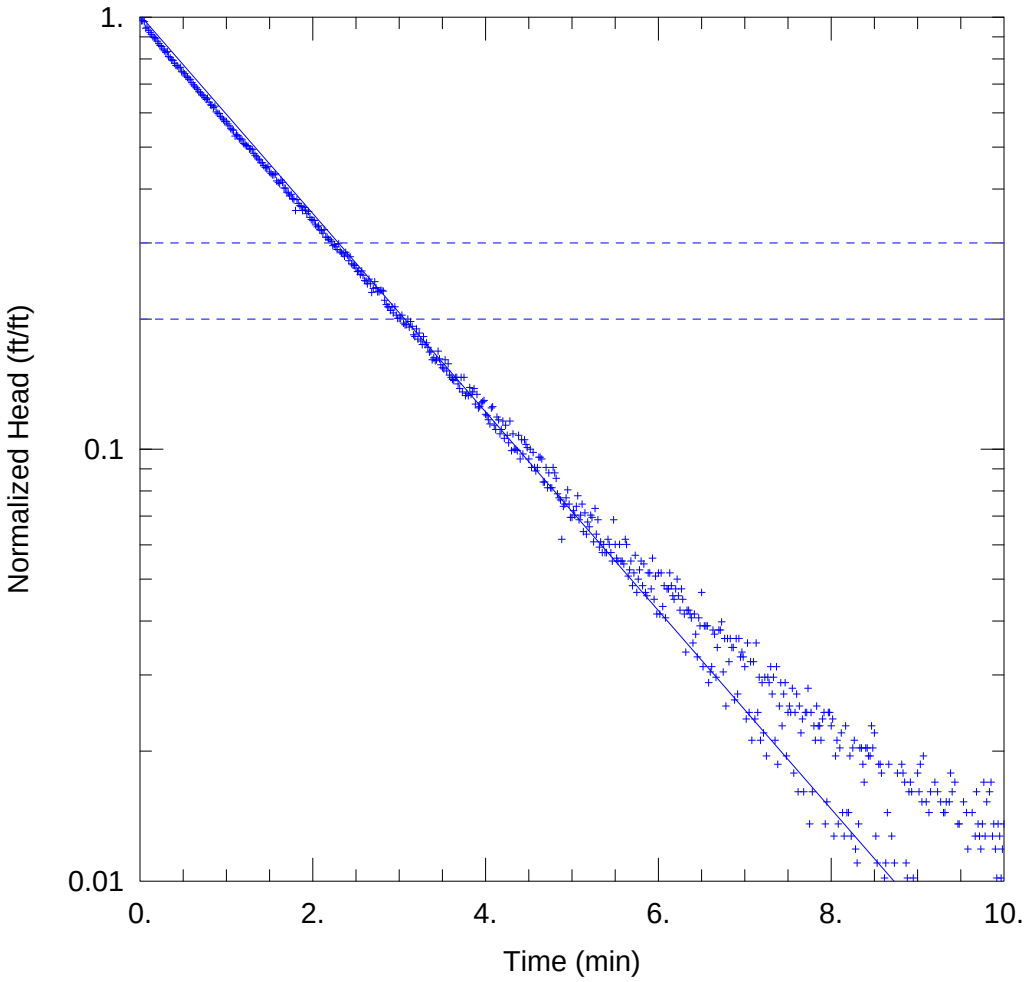
WELL DATA (ML-1)

Initial Displacement: 1.311 ft Static Water Column Height: 129.1 ft
Total Well Penetration Depth: 76.05 ft Screen Length: 19. ft
Casing Radius: 0.167 ft Well Radius: 0.328 ft

SOLUTION

Aquifer Model: Unconfined Solution Method: Bouwer-Rice

K = 1.785 ft/day y0 = 1.091 ft



ML-1 SLUG C RISING HEAD

Data Set: S:\...\ML-1SlugCRisingHead.aqt
Date: 02/19/13 Time: 13:05:40

PROJECT INFORMATION

Company: Rio Algom
Project: 1350.14
Location: Lisbon
Test Well: ML-1
Test Date: 26 Aug 2012

AQUIFER DATA

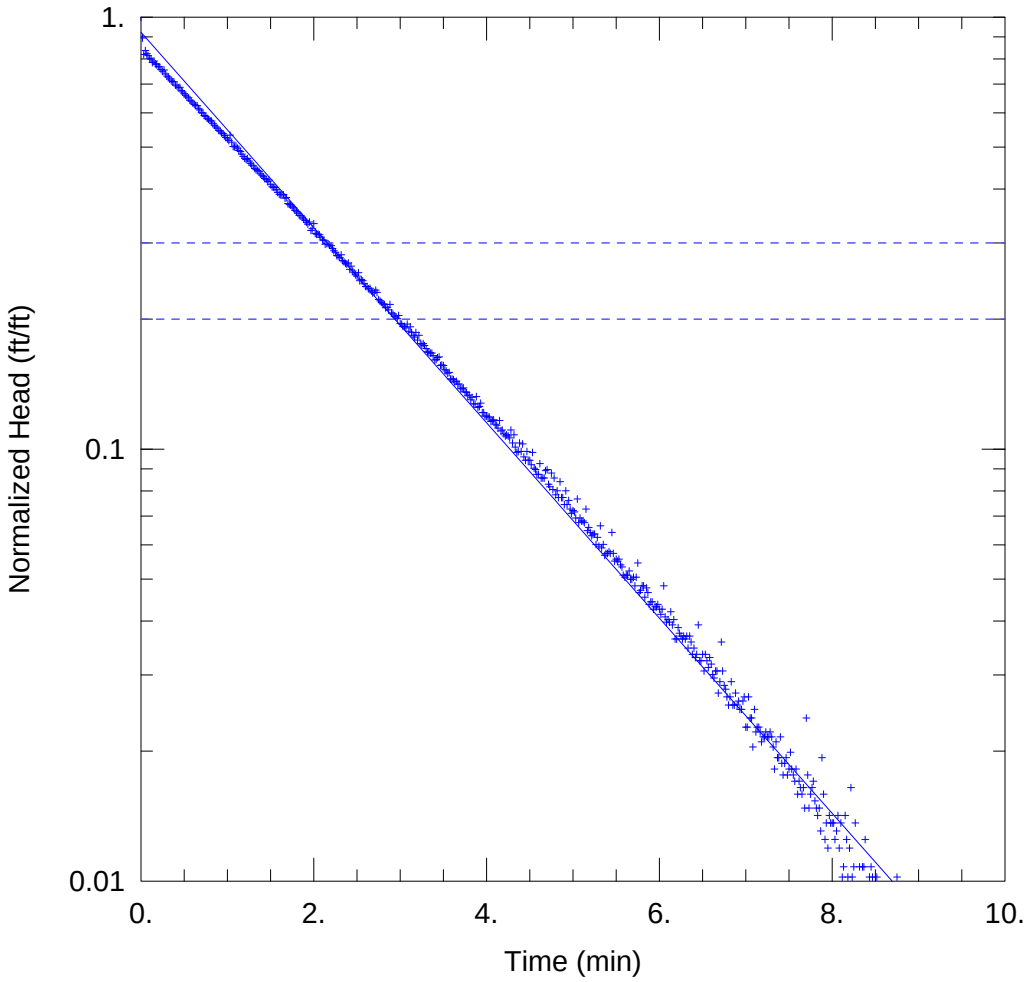
Saturated Thickness: 115.4 ft Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (ML-1)

Initial Displacement: 1.18 ft
Total Well Penetration Depth: 76.05 ft
Casing Radius: 0.167 ft
Static Water Column Height: 129.1 ft
Screen Length: 19. ft
Well Radius: 0.328 ft

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice
K = 1.844 ft/day
y0 = 1.193 ft



ML-1 SLUG D FALLING HEAD

Data Set: S:\...\ML-1SlugDFallingHead.aqt
Date: 02/19/13 Time: 13:05:38

PROJECT INFORMATION

Company: Rio Algom
Project: 1350.14
Location: Lisbon
Test Well: ML-1
Test Date: 26 Aug 2012

AQUIFER DATA

Saturated Thickness: 115.4 ft Anisotropy Ratio (Kz/Kr): 1.

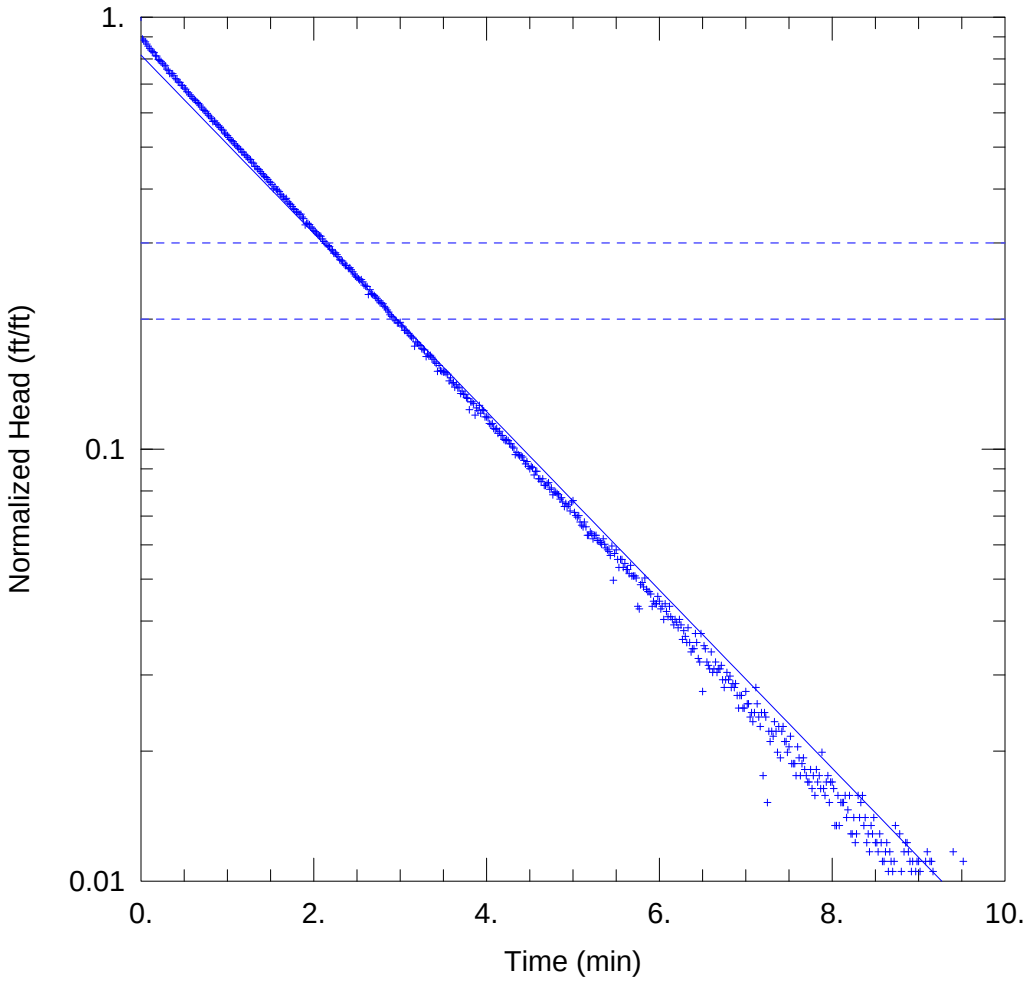
WELL DATA (ML-1)

Initial Displacement: 1.761 ft Static Water Column Height: 129.1 ft
Total Well Penetration Depth: 76.05 ft Screen Length: 19. ft
Casing Radius: 0.167 ft Well Radius: 0.328 ft

SOLUTION

Aquifer Model: Unconfined Solution Method: Bouwer-Rice

K = 1.815 ft/day y0 = 1.624 ft



ML-1 SLUG D RISING HEAD

Data Set: S:\...\ML-1SlugDRisingHead.aqt
Date: 02/19/13 Time: 13:05:35

PROJECT INFORMATION

Company: Rio Algom
Project: 1350.14
Location: Lisbon
Test Well: ML-1
Test Date: 26 Aug 2012

AQUIFER DATA

Saturated Thickness: 115.4 ft Anisotropy Ratio (Kz/Kr): 1.

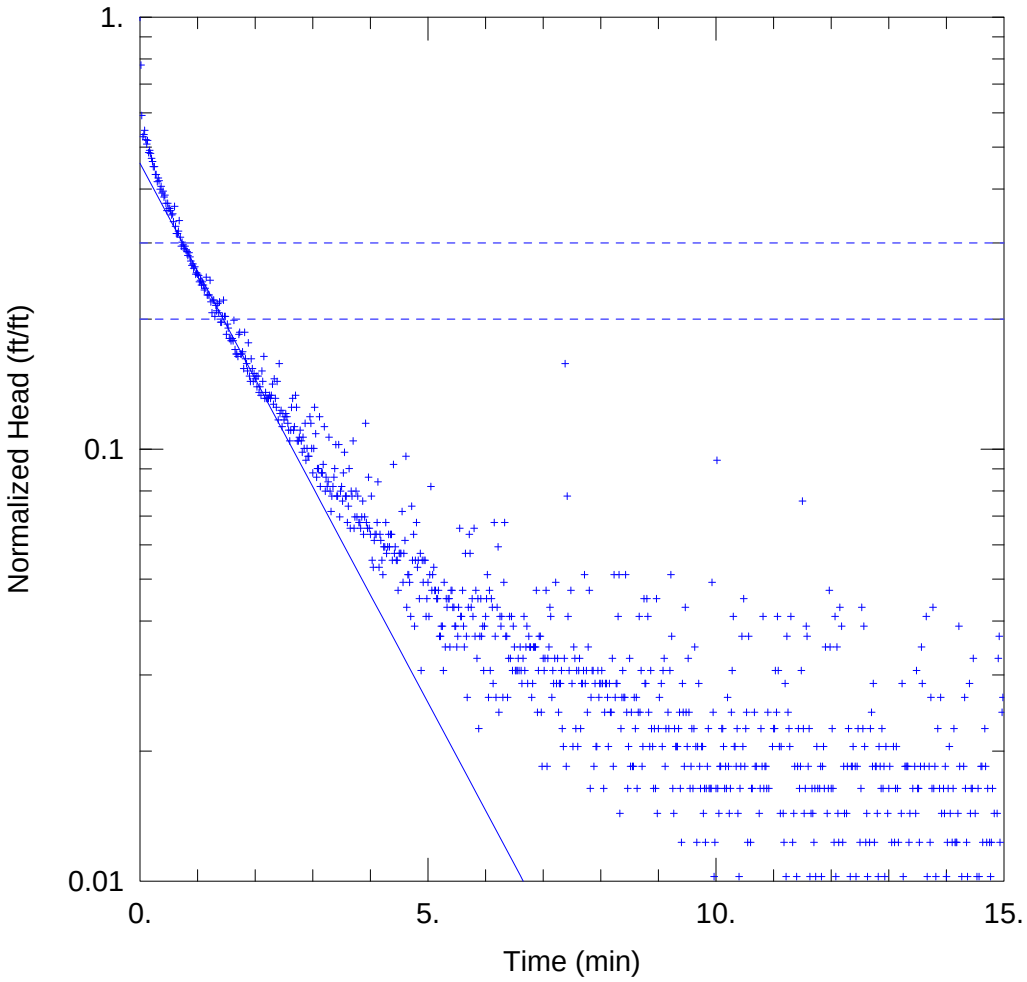
WELL DATA (ML-1)

Initial Displacement: 1.71 ft Static Water Column Height: 129.1 ft
Total Well Penetration Depth: 76.05 ft Screen Length: 19. ft
Casing Radius: 0.167 ft Well Radius: 0.328 ft

SOLUTION

Aquifer Model: Unconfined Solution Method: Bouwer-Rice

K = 1.657 ft/day y0 = 1.396 ft



MW-100 SLUG B FALLING HEAD

Data Set: S:\...\MW-100_SlugBFallingHead.aqt
Date: 02/19/13 Time: 13:07:38

PROJECT INFORMATION

Company: Rio Algom
Project: 1350.14
Location: Lisbon
Test Well: MW-100
Test Date: 3 Nov 2012

AQUIFER DATA

Saturated Thickness: 57.23 ft Anisotropy Ratio (Kz/Kr): 1.

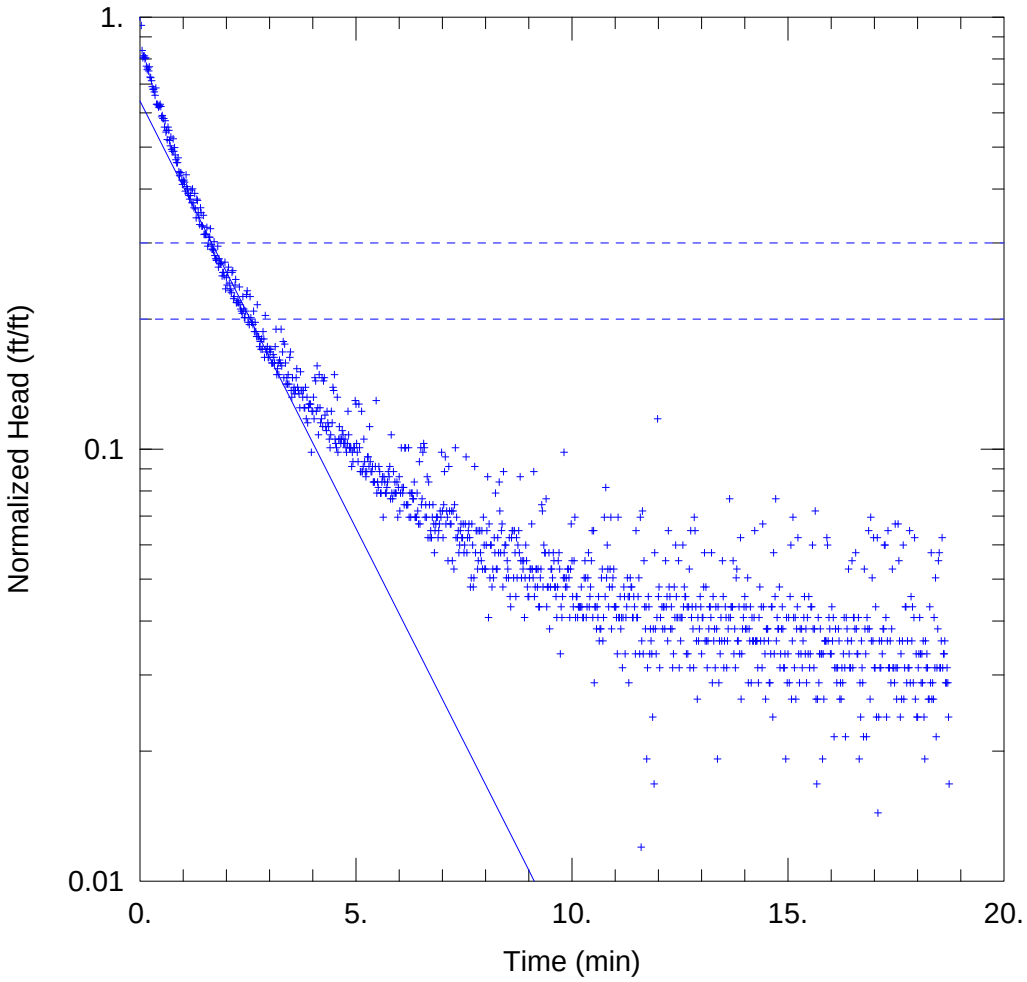
WELL DATA (MW-100)

Initial Displacement: 0.488 ft Static Water Column Height: 57.23 ft
Total Well Penetration Depth: 57.23 ft Screen Length: 57.23 ft
Casing Radius: 0.167 ft Well Radius: 0.333 ft

SOLUTION

Aquifer Model: Unconfined Solution Method: Bouwer-Rice

K = 0.806 ft/day y0 = 0.224 ft



MW-100 SLUG C FALLING HEAD

Data Set: S:\...\MW-100_SlugCFallingHead.aqt
Date: 02/19/13 Time: 13:07:32

PROJECT INFORMATION

Company: Rio Algom
Project: 1350.14
Location: Lisbon
Test Well: MW-100
Test Date: 3 Nov 2012

AQUIFER DATA

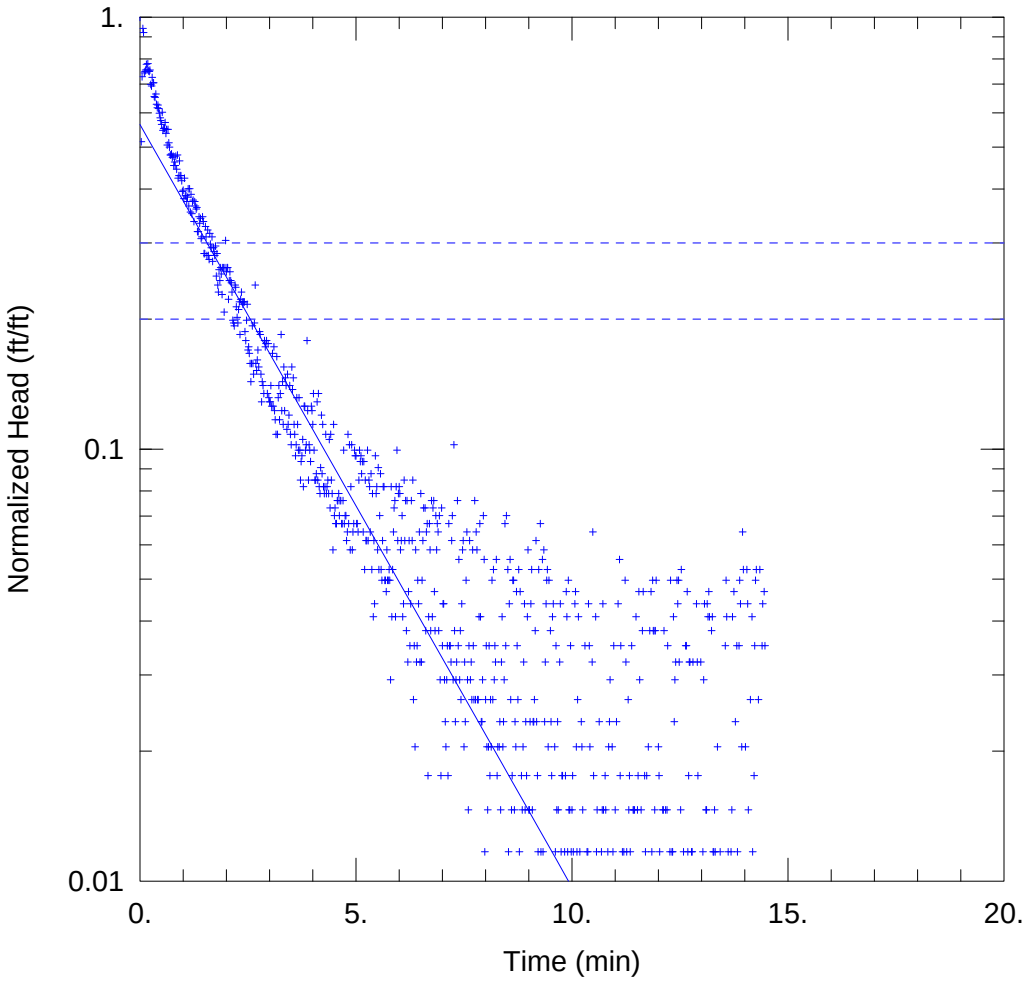
Saturated Thickness: 57.23 ft
Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (MW-100)

Initial Displacement: 0.417 ft
Total Well Penetration Depth: 57.23 ft
Casing Radius: 0.167 ft
Static Water Column Height: 57.23 ft
Screen Length: 57.23 ft
Well Radius: 0.333 ft

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice
K = 0.6385 ft/day
y0 = 0.2666 ft



MW-100 SLUG F FALLING HEAD

Data Set: S:\...\MW-100_SlugFFallingHead.aqt
Date: 02/19/13 Time: 13:07:26

PROJECT INFORMATION

Company: Rio Algom
Project: 1350.14
Location: Lisbon
Test Well: MW-100
Test Date: 3 Nov 2012

AQUIFER DATA

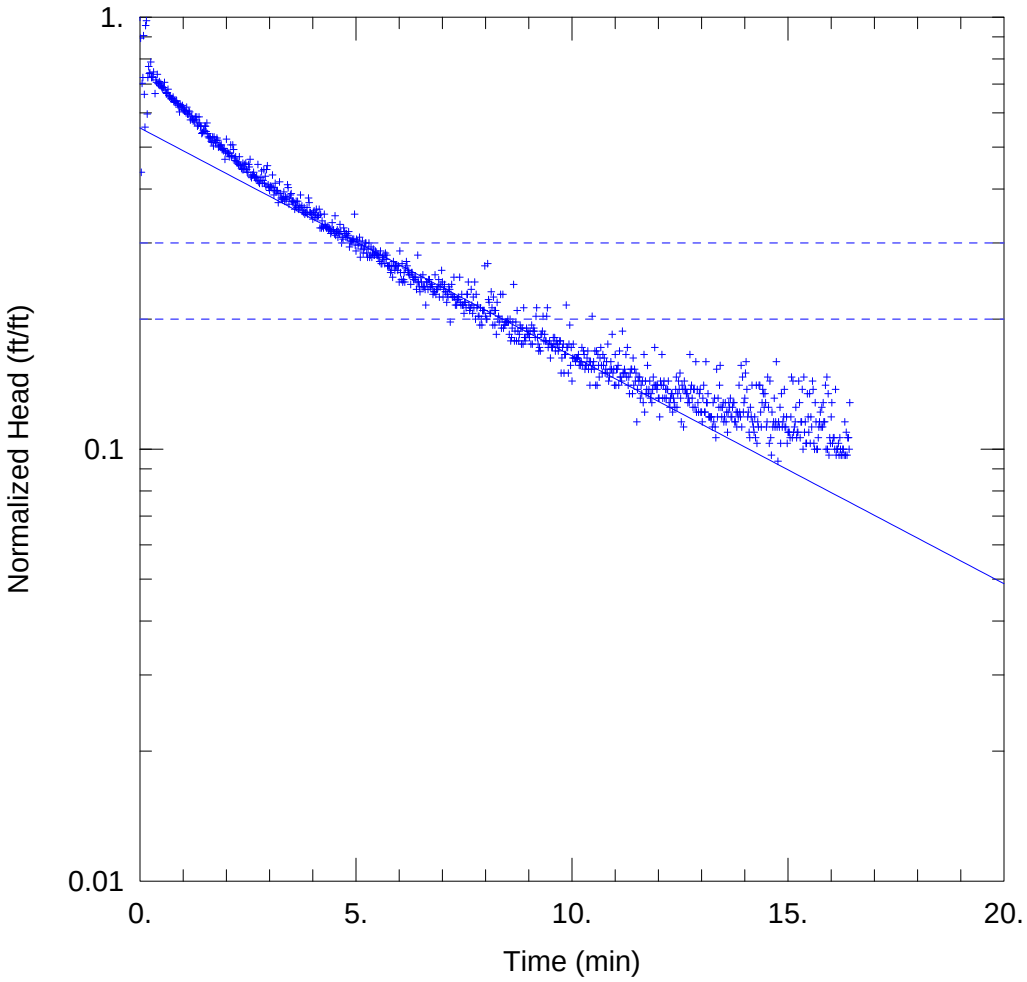
Saturated Thickness: 57.23 ft
Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (MW-100)

Initial Displacement: 0.342 ft
Total Well Penetration Depth: 57.23 ft
Casing Radius: 0.167 ft
Static Water Column Height: 57.23 ft
Screen Length: 57.23 ft
Well Radius: 0.333 ft

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice
K = 0.5697 ft/day
y0 = 0.1929 ft



MW-101 SLUG A FALLING HEAD

Data Set: S:\...\MW-101_SlugAFallingHead.aqt
Date: 02/19/13 Time: 13:08:10

PROJECT INFORMATION

Company: Rio Algom
Project: 1350.14
Location: Lisbon
Test Well: MW-101
Test Date: 4 Nov 2012

AQUIFER DATA

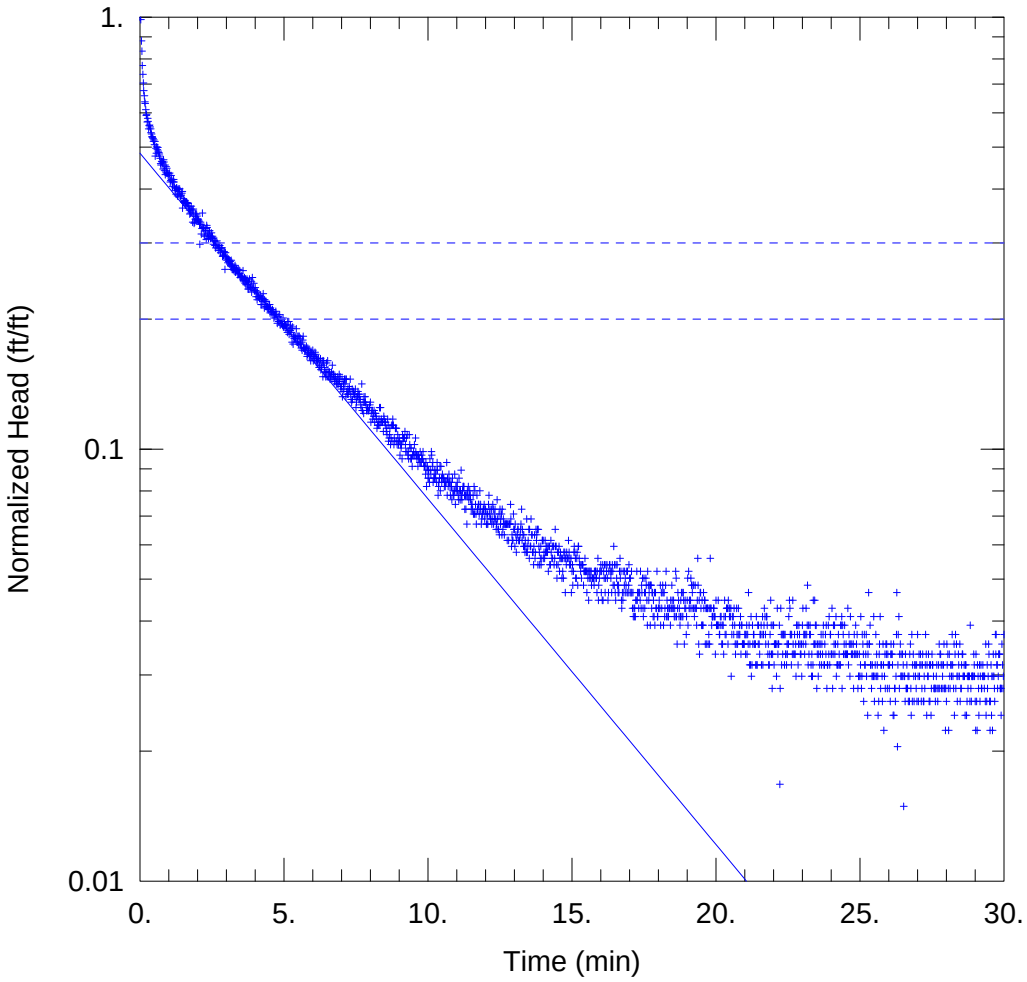
Saturated Thickness: 9.765 ft
Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (MW-101)

Initial Displacement: 0.32 ft
Total Well Penetration Depth: 9.765 ft
Casing Radius: 0.167 ft
Static Water Column Height: 9.765 ft
Screen Length: 9.765 ft
Well Radius: 0.333 ft

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice
K = 0.637 ft/day
y0 = 0.1772 ft



MW-101 SLUG A RISING HEAD

Data Set: S:\...\MW-101_SlugARisingHead.aqt
Date: 02/19/13 Time: 13:08:07

PROJECT INFORMATION

Company: Rio Algom
Project: 1350.14
Location: Lisbon
Test Well: MW-101
Test Date: 4 Nov 2012

AQUIFER DATA

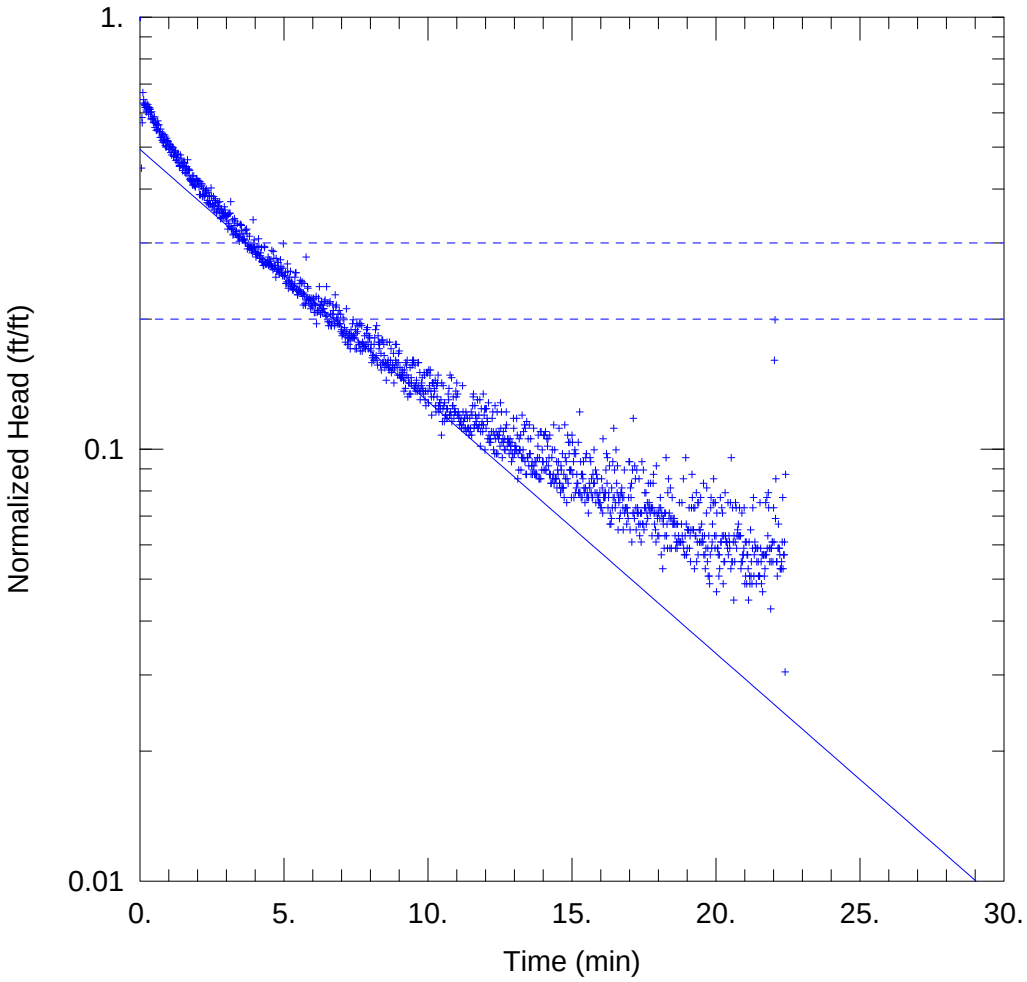
Saturated Thickness: 9.765 ft
Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (MW-101)

Initial Displacement: 0.537 ft
Total Well Penetration Depth: 9.765 ft
Casing Radius: 0.167 ft
Static Water Column Height: 9.765 ft
Screen Length: 9.765 ft
Well Radius: 0.333 ft

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice
K = 0.9664 ft/day
y0 = 0.26 ft



MW-101 SLUG G FALLING HEAD

Data Set: S:\...\MW-101_SlugGFallingHead.aqt
Date: 02/19/13 Time: 13:08:03

PROJECT INFORMATION

Company: Rio Algom
Project: 1350.14
Location: Lisbon
Test Well: MW-101
Test Date: 4 Nov 2012

AQUIFER DATA

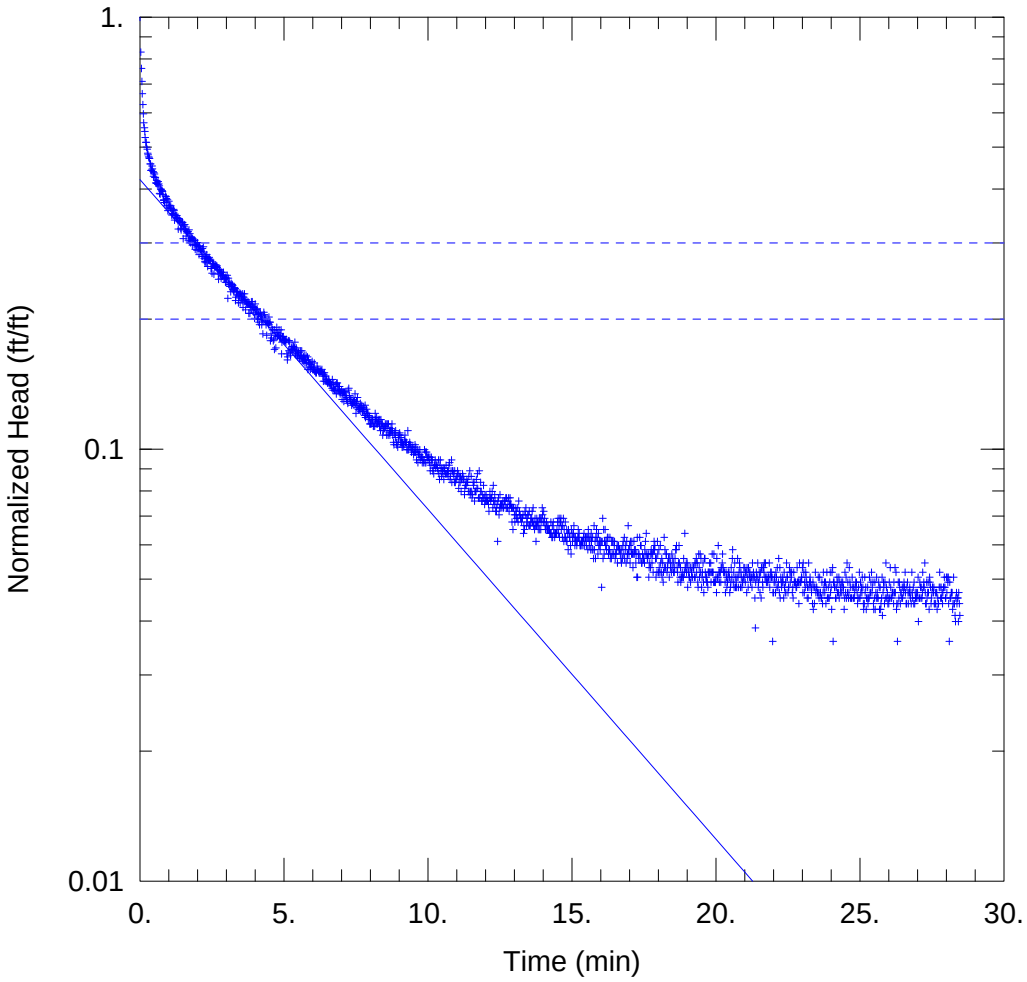
Saturated Thickness: 9.765 ft
Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (MW-101)

Initial Displacement: 0.492 ft
Total Well Penetration Depth: 9.765 ft
Casing Radius: 0.167 ft
Static Water Column Height: 9.765 ft
Screen Length: 9.765 ft
Well Radius: 0.333 ft

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice
K = 0.7047 ft/day
y0 = 0.2431 ft



MW-101 SLUG G RISING HEAD

Data Set: S:\...\MW-101_SlugGRisingHead.aqt
Date: 02/19/13 Time: 13:07:59

PROJECT INFORMATION

Company: Rio Algom
Project: 1350.14
Location: Lisbon
Test Well: MW-101
Test Date: 4 Nov 2012

AQUIFER DATA

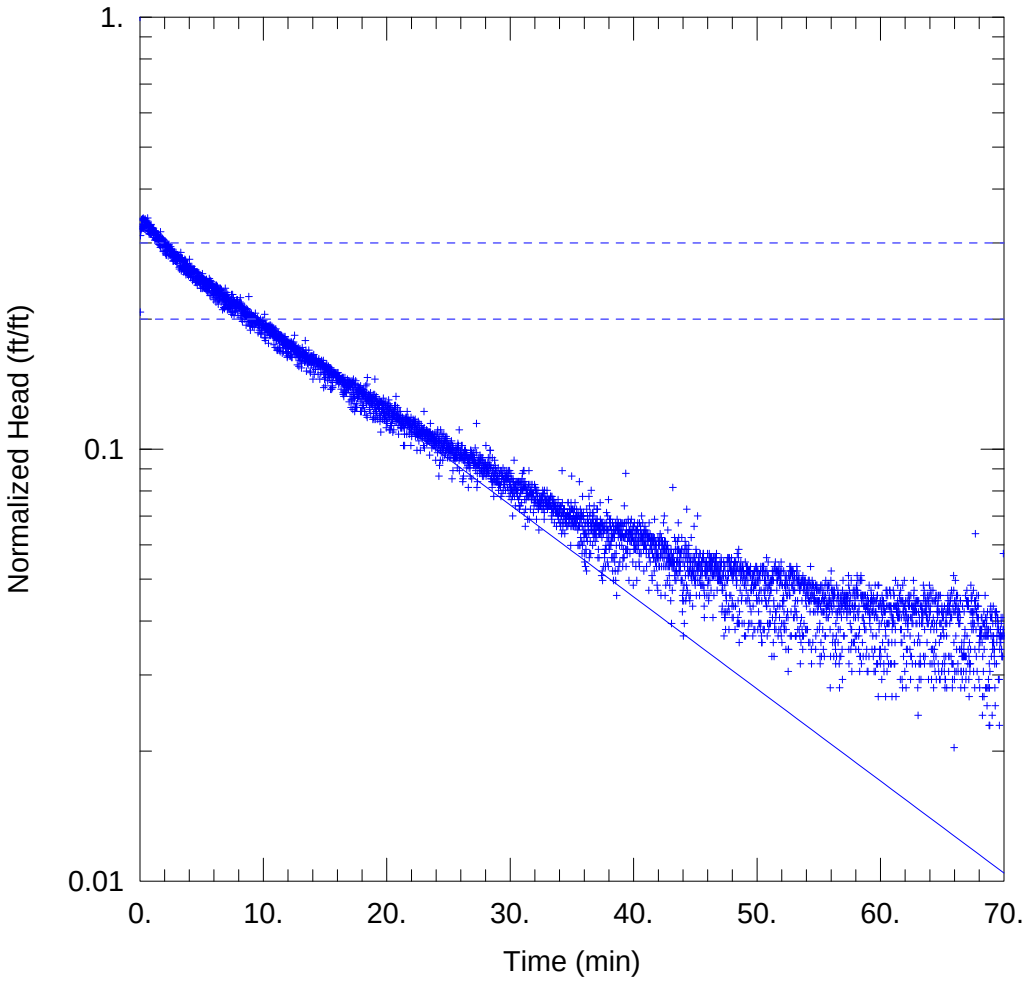
Saturated Thickness: 9.765 ft
Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (MW-101)

Initial Displacement: 0.752 ft
Total Well Penetration Depth: 9.765 ft
Casing Radius: 0.167 ft
Static Water Column Height: 9.765 ft
Screen Length: 9.765 ft
Well Radius: 0.333 ft

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice
K = 0.9221 ft/day
y0 = 0.3164 ft



MW-102 SLUG A FALLING HEAD

Data Set: S:\...\MW-102_SlugAFallingHead.aqt
Date: 02/19/13 Time: 13:08:40

PROJECT INFORMATION

Company: Rio Algom
Project: 1350.14
Location: Lisbon
Test Well: MW-102
Test Date: 3 Nov 2012

AQUIFER DATA

Saturated Thickness: 9.233 ft Anisotropy Ratio (Kz/Kr): 1.

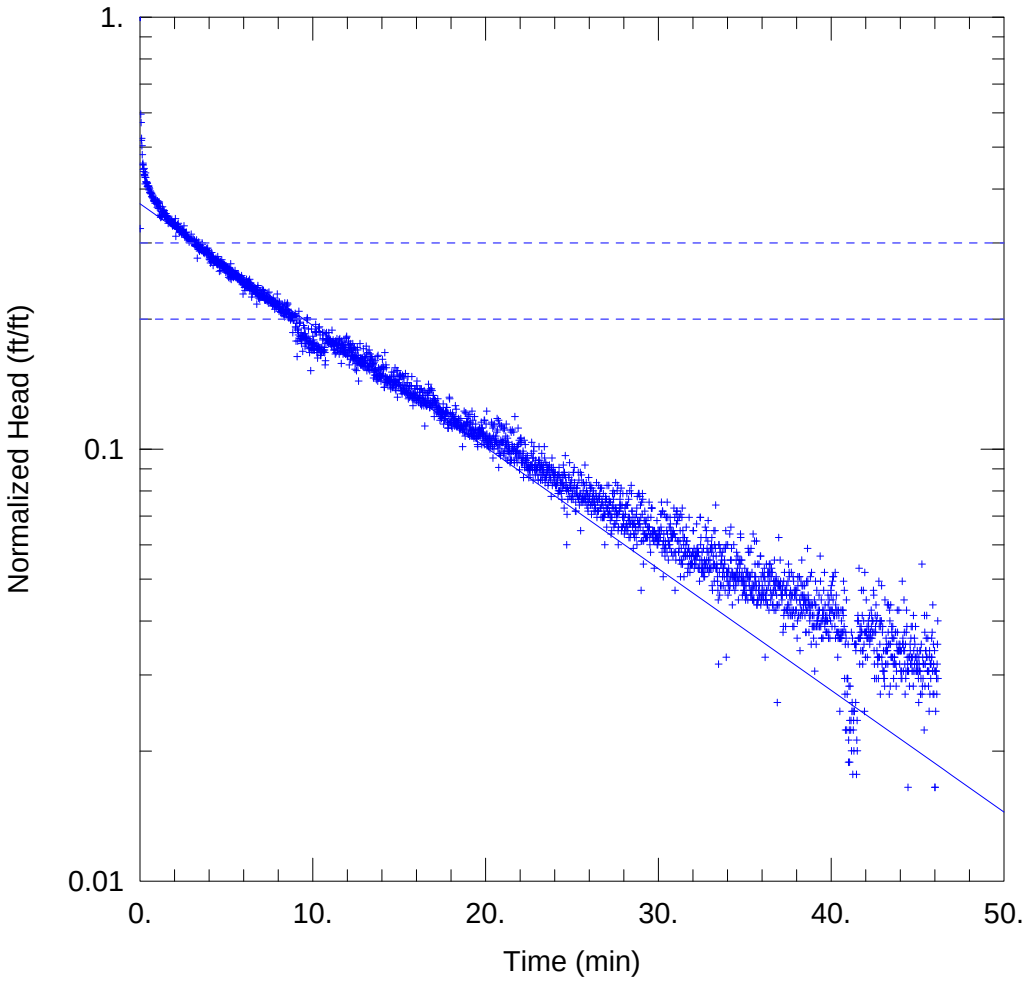
WELL DATA (MW-102)

Initial Displacement: 0.785 ft Static Water Column Height: 9.233 ft
Total Well Penetration Depth: 9.233 ft Screen Length: 9.233 ft
Casing Radius: 0.167 ft Well Radius: 0.333 ft

SOLUTION

Aquifer Model: Unconfined Solution Method: Bouwer-Rice

K = 0.2671 ft/day y0 = 0.2541 ft



MW-102 SLUG A RISING HEAD

Data Set: S:\...\MW-102_SlugARisingHead.aqt
Date: 02/19/13 Time: 13:08:36

PROJECT INFORMATION

Company: Rio Algom
Project: 1350.14
Location: Lisbon
Test Well: MW-102
Test Date: 3 Nov 2012

AQUIFER DATA

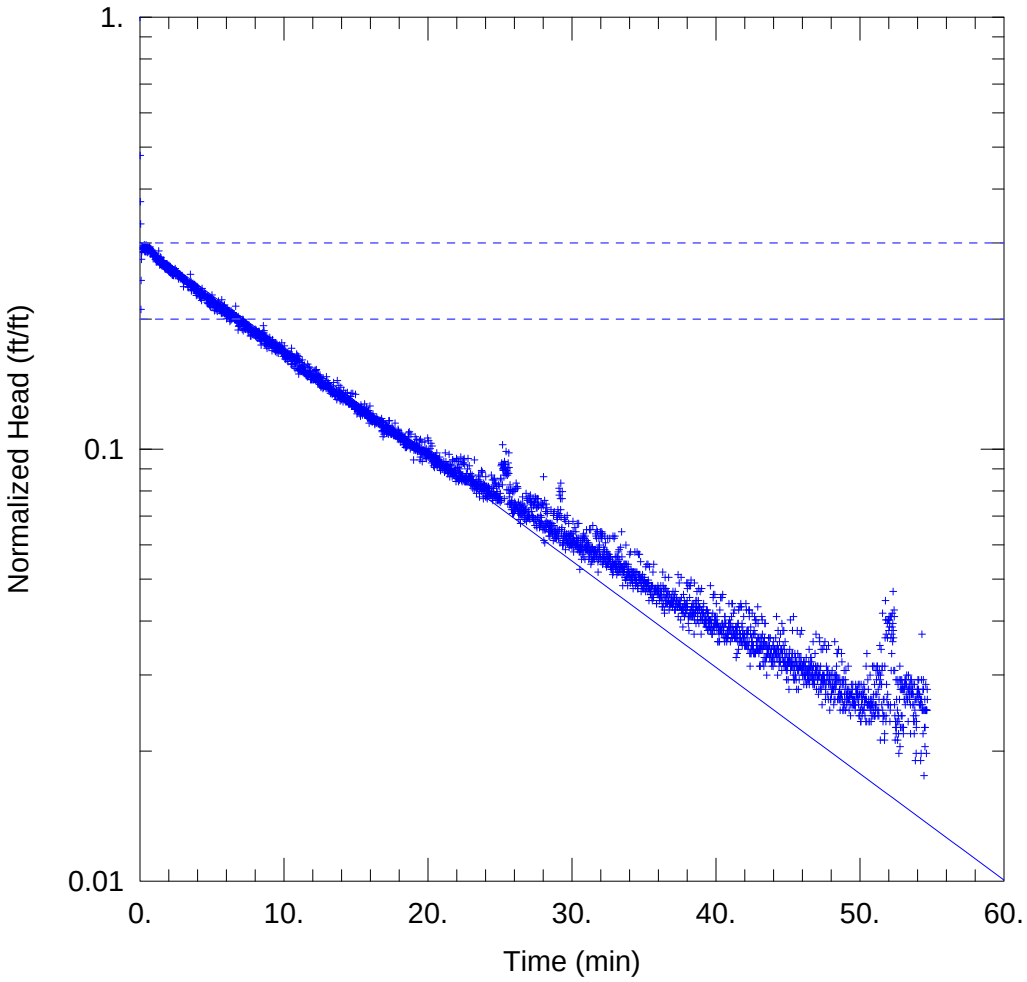
Saturated Thickness: 9.233 ft
Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (MW-102)

Initial Displacement: 0.849 ft
Total Well Penetration Depth: 9.233 ft
Casing Radius: 0.167 ft
Static Water Column Height: 9.233 ft
Screen Length: 9.233 ft
Well Radius: 0.333 ft

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice
K = 0.3529 ft/day
y0 = 0.3139 ft



MW-102 SLUG F FALLING HEAD

Data Set: S:\...\MW-102_SlugFFallingHead.aqt
Date: 02/19/13 Time: 13:08:32

PROJECT INFORMATION

Company: Rio Algom
Project: 1350.14
Location: Lisbon
Test Well: MW-102
Test Date: 3 Nov 2012

AQUIFER DATA

Saturated Thickness: 9.233 ft Anisotropy Ratio (Kz/Kr): 1.

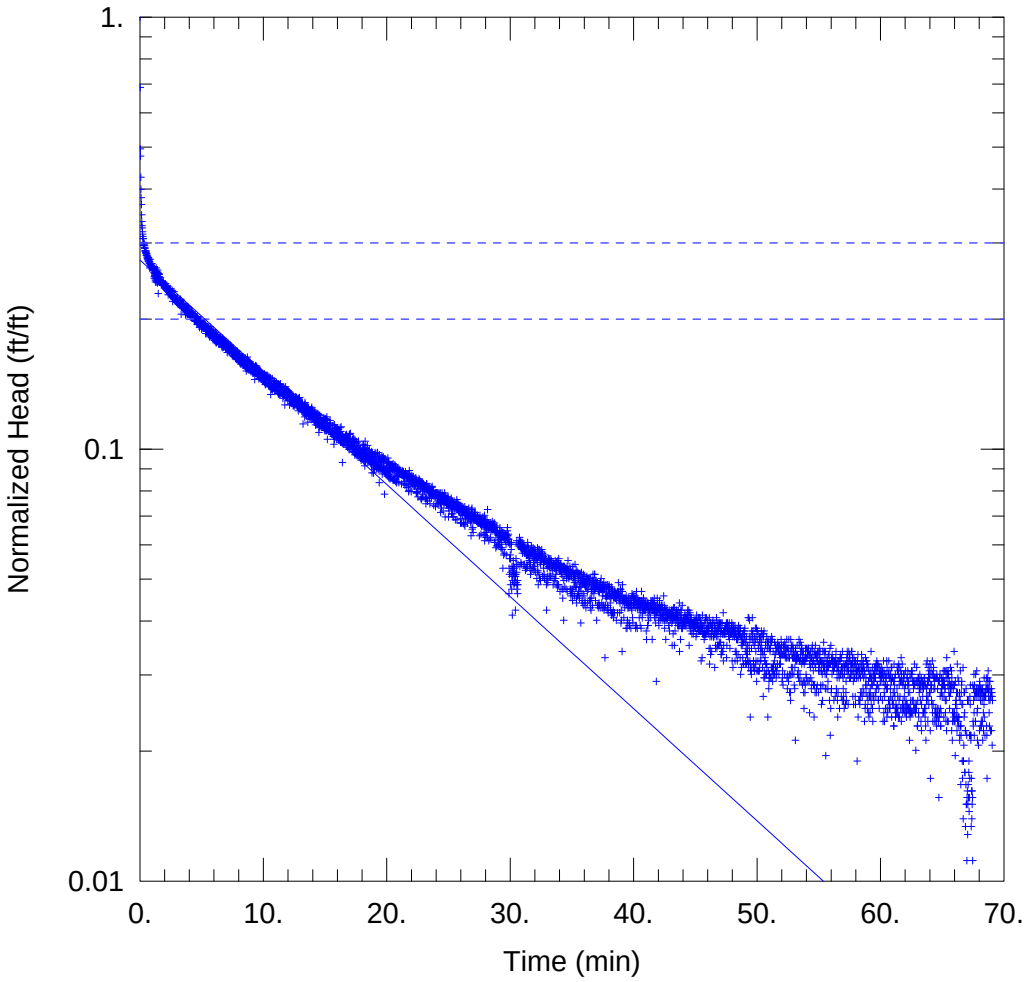
WELL DATA (MW-102)

Initial Displacement: 1.367 ft Static Water Column Height: 9.233 ft
Total Well Penetration Depth: 9.233 ft Screen Length: 9.233 ft
Casing Radius: 0.167 ft Well Radius: 0.333 ft

SOLUTION

Aquifer Model: Unconfined Solution Method: Bouwer-Rice

K = 0.3085 ft/day y0 = 0.412 ft



MW-102 SLUG F RISING HEAD

Data Set: S:\...\MW-102_SlugFRisingHead.aqt
Date: 02/19/13 Time: 13:08:27

PROJECT INFORMATION

Company: Rio Algom
Project: 1350.14
Location: Lisbon
Test Well: MW-102
Test Date: 3 Nov 2012

AQUIFER DATA

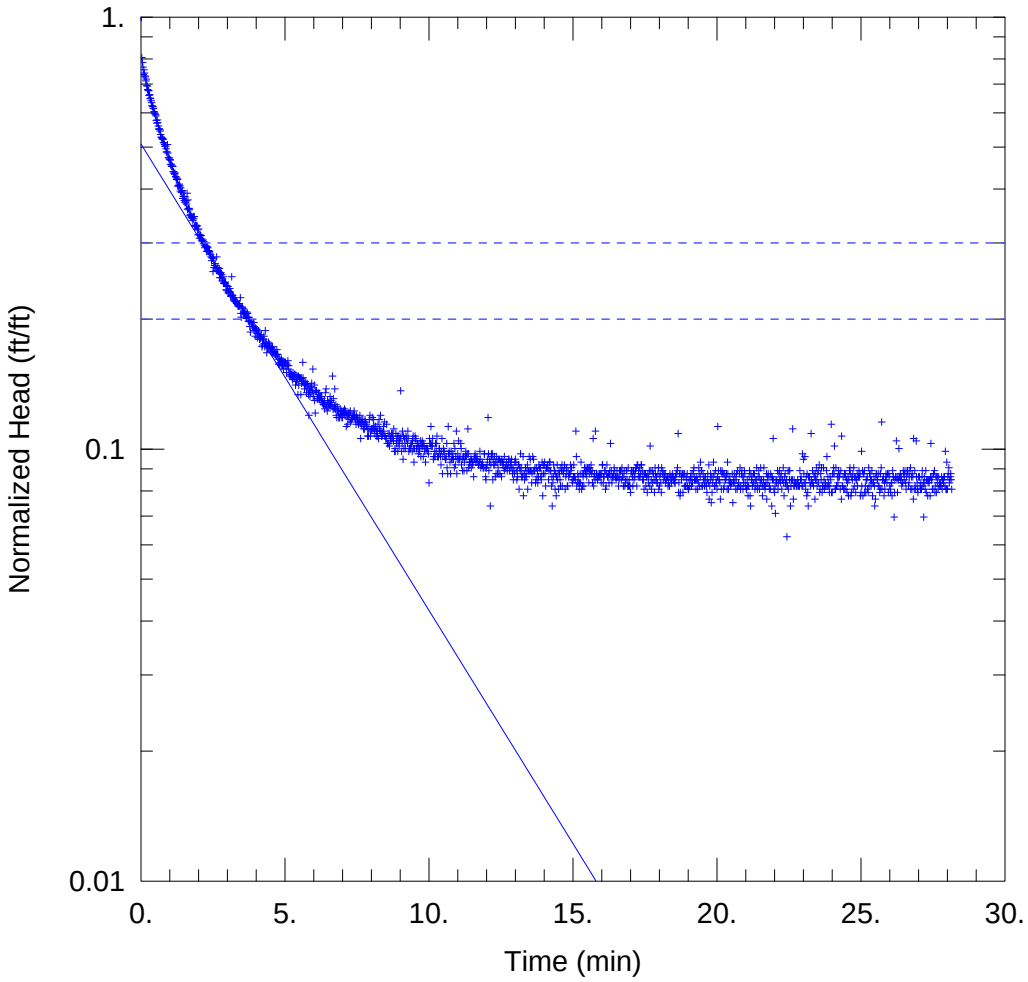
Saturated Thickness: 9.233 ft
Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (MW-102)

Initial Displacement: 1.793 ft
Total Well Penetration Depth: 9.233 ft
Casing Radius: 0.167 ft
Static Water Column Height: 9.233 ft
Screen Length: 9.233 ft
Well Radius: 0.333 ft

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice
K = 0.3254 ft/day
y0 = 0.491 ft



MW-102DB SLUG A FALLING HEAD

Data Set: S:\...\MW-102DB_SlugAFallingHead.aqt
Date: 02/19/13 Time: 13:09:25

PROJECT INFORMATION

Company: Rio Algom
Project: 1350.14
Location: Lisbon
Test Well: MW-102DB
Test Date: 3 Nov 2012

AQUIFER DATA

Saturated Thickness: 50.28 ft Anisotropy Ratio (Kz/Kr): 1.

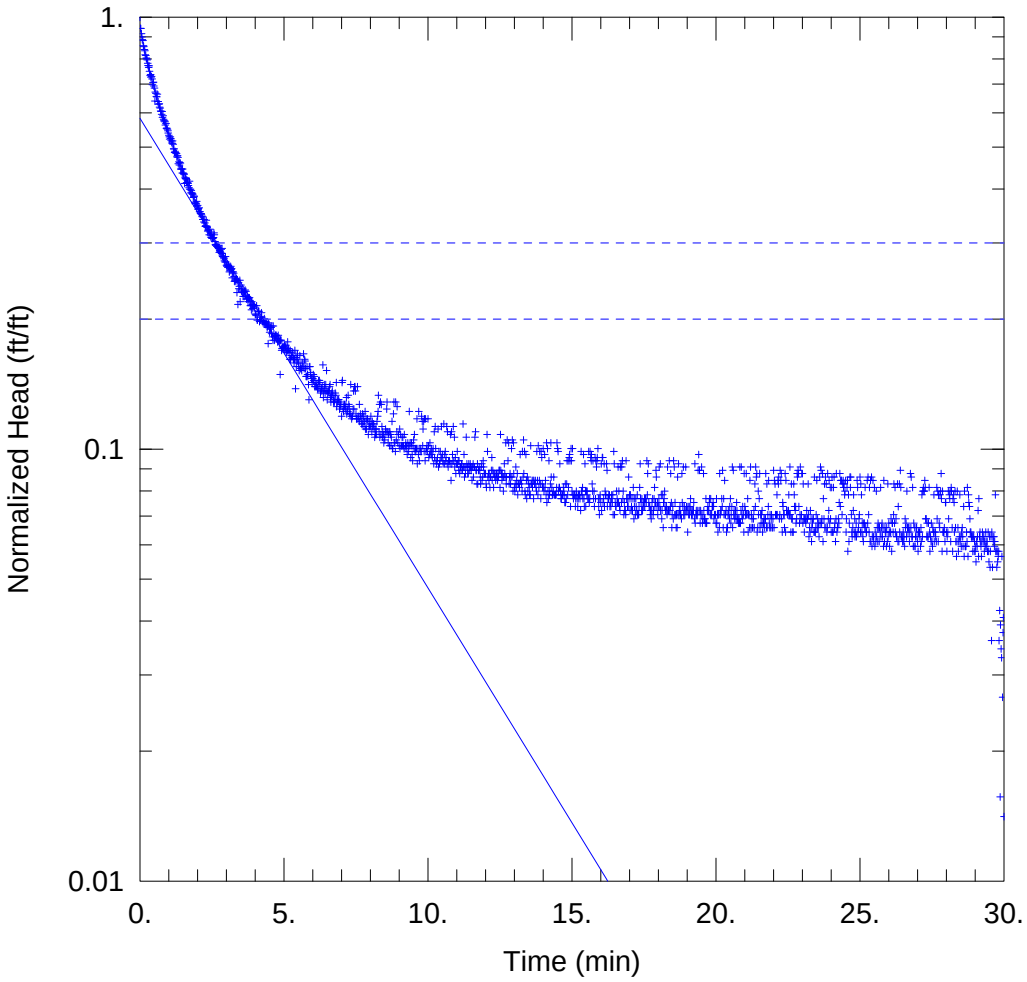
WELL DATA (MW-102DB)

Initial Displacement: 0.718 ft
Total Well Penetration Depth: 49.88 ft
Casing Radius: 0.167 ft
Static Water Column Height: 50.28 ft
Screen Length: 30. ft
Well Radius: 0.333 ft

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice

K = 0.6221 ft/day
y0 = 0.365 ft



MW-102DB SLUG A RISING HEAD

Data Set: S:\...\MW-102DB_SlugARisingHead.aqt
Date: 02/19/13 Time: 13:09:22

PROJECT INFORMATION

Company: Rio Algom
Project: 1350.14
Location: Lisbon
Test Well: MW-102DB
Test Date: 3 Nov 2012

AQUIFER DATA

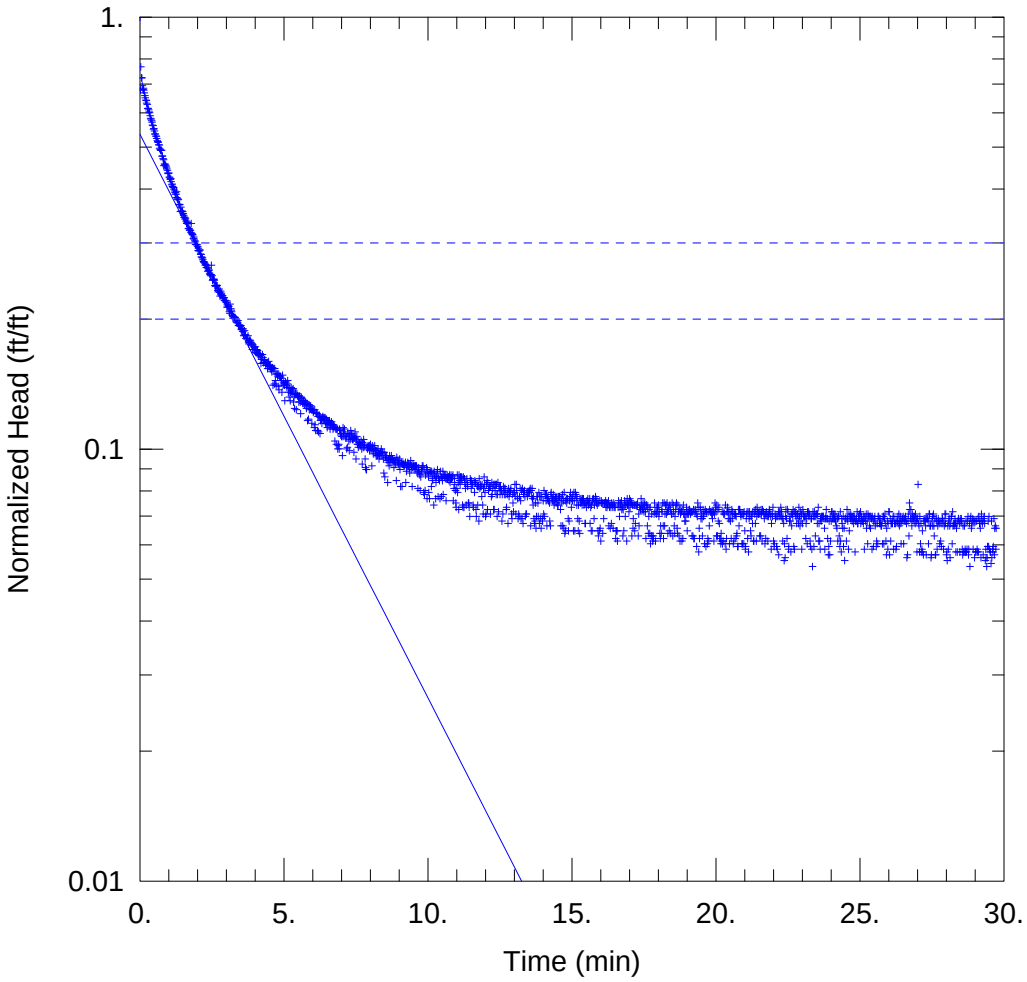
Saturated Thickness: 50.28 ft
Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (MW-102DB)

Initial Displacement: 0.638 ft
Total Well Penetration Depth: 49.88 ft
Casing Radius: 0.167 ft
Static Water Column Height: 50.28 ft
Screen Length: 30. ft
Well Radius: 0.333 ft

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice
K = 0.6265 ft/day
y0 = 0.3721 ft



MW-102DB SLUG B FALLING HEAD

Data Set: S:\...\MW-102DB_SlugBFallingHead.aqt
Date: 02/19/13 Time: 13:09:18

PROJECT INFORMATION

Company: Rio Algom
Project: 1350.14
Location: Lisbon
Test Well: MW-102DB
Test Date: 3 Nov 2012

AQUIFER DATA

Saturated Thickness: 50.28 ft Anisotropy Ratio (Kz/Kr): 1.

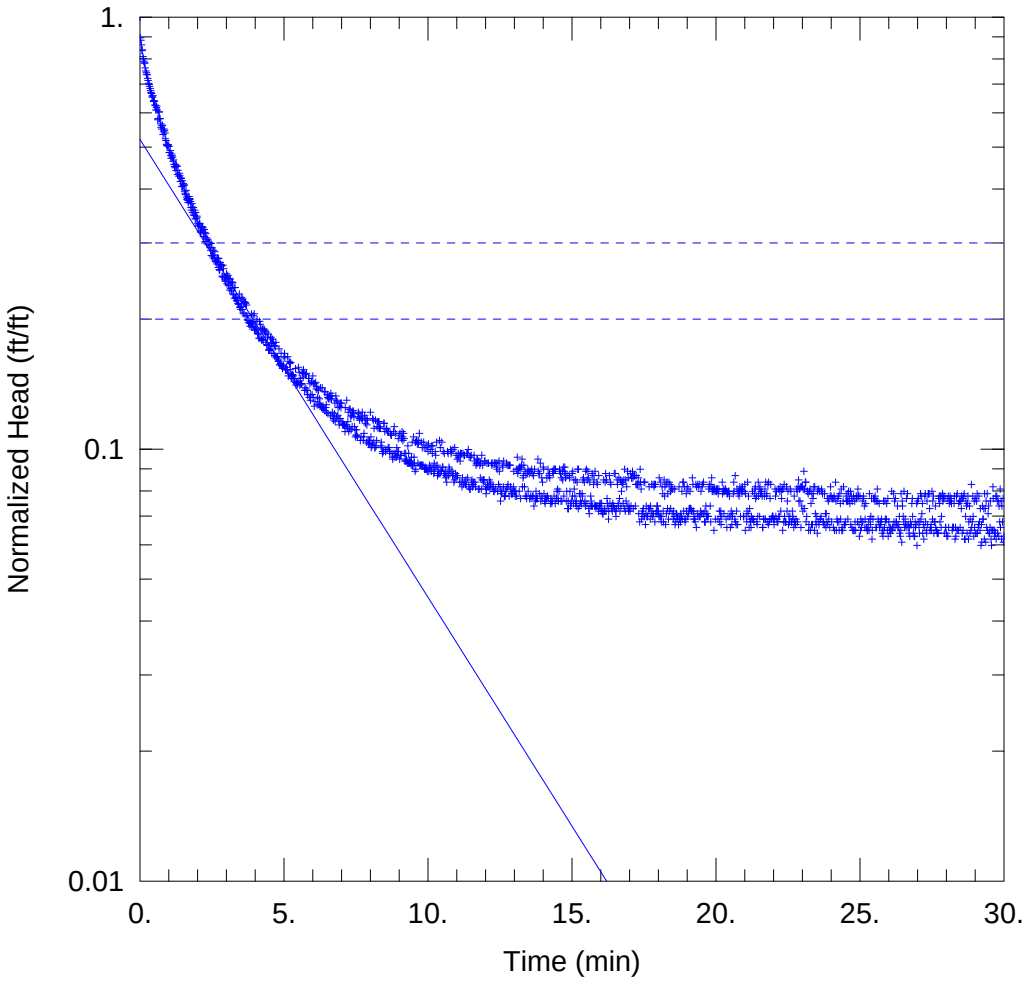
WELL DATA (MW-102DB)

Initial Displacement: 1.159 ft
Total Well Penetration Depth: 49.88 ft
Casing Radius: 0.167 ft
Static Water Column Height: 50.28 ft
Screen Length: 30. ft
Well Radius: 0.333 ft

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice

K = 0.7518 ft/day
y0 = 0.6204 ft



MW-102DB SLUG B RISING HEAD

Data Set: S:\...\MW-102DB_SlugBRisingHead.aqt
Date: 02/19/13 Time: 13:56:54

PROJECT INFORMATION

Company: Rio Algom
Project: 1350.14
Location: Lisbon
Test Well: MW-102DB
Test Date: 3 Nov 2012

AQUIFER DATA

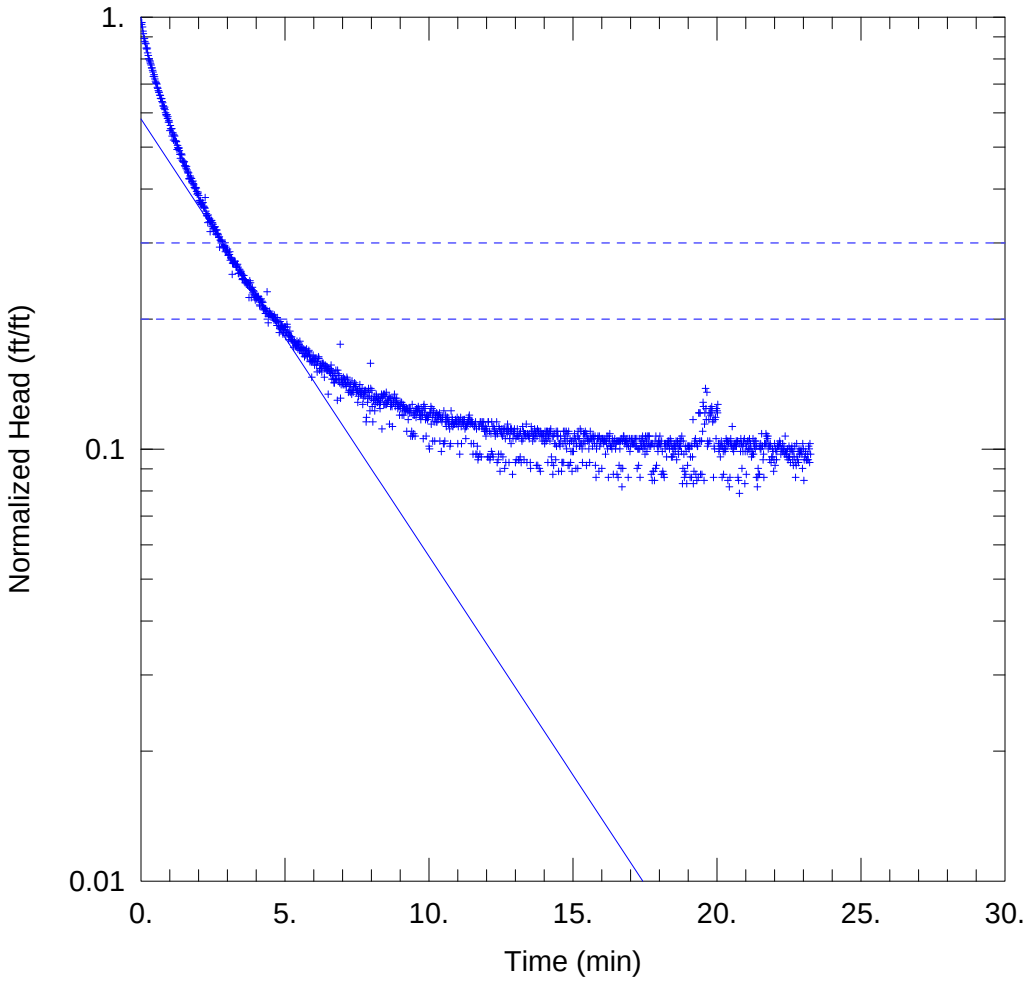
Saturated Thickness: 50.28 ft Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (MW-102DB)

Initial Displacement: 1.002 ft
Total Well Penetration Depth: 49.88 ft
Casing Radius: 0.167 ft
Static Water Column Height: 50.28 ft
Screen Length: 30. ft
Well Radius: 0.333 ft

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice
K = 0.6107 ft/day
y0 = 0.522 ft



MW-102DB SLUG G FALLING HEAD

Data Set: S:\...\MW-102DB_SlugGFallingHead.aqt
Date: 02/19/13 Time: 13:56:46

PROJECT INFORMATION

Company: Rio Algom
Project: 1350.14
Location: Lisbon
Test Well: MW-102DB
Test Date: 3 Nov 2012

AQUIFER DATA

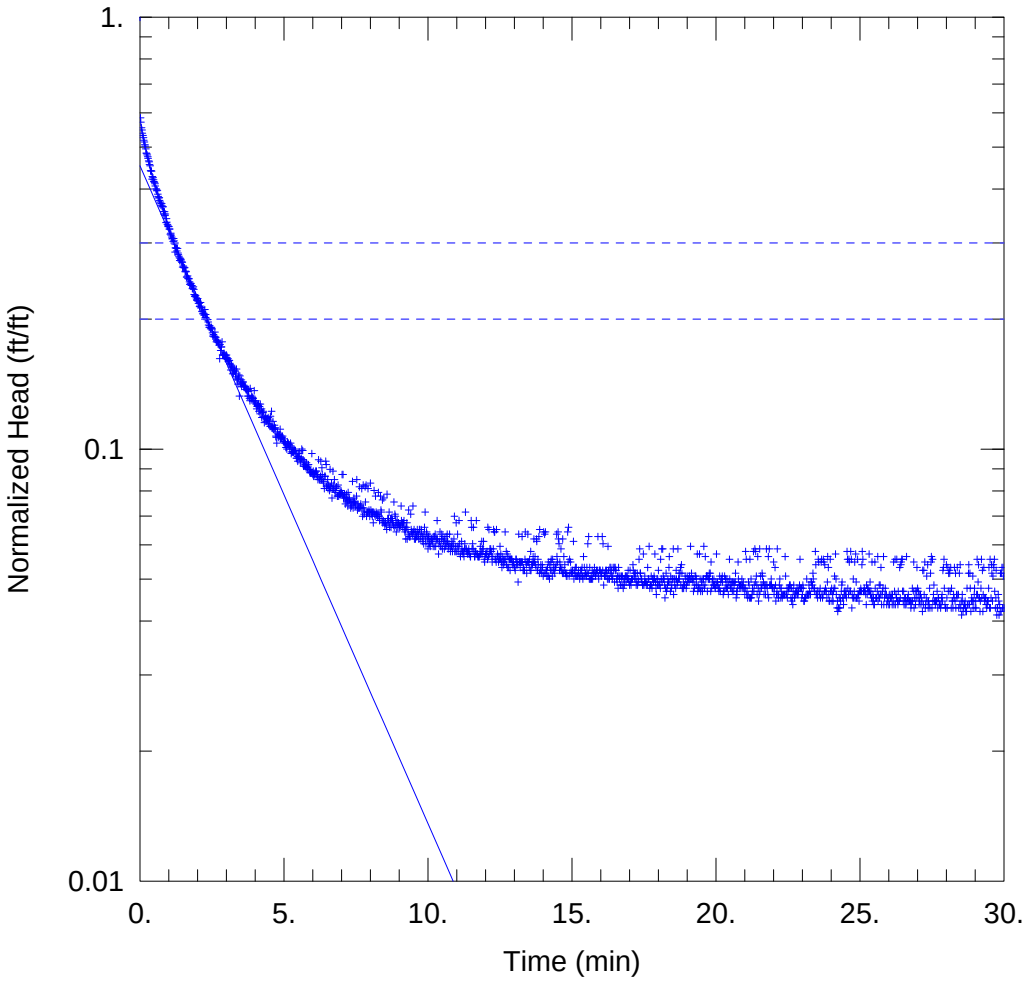
Saturated Thickness: 50.28 ft Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (MW-102DB)

Initial Displacement: 0.709 ft
Total Well Penetration Depth: 49.88 ft
Casing Radius: 0.167 ft
Static Water Column Height: 50.28 ft
Screen Length: 30. ft
Well Radius: 0.333 ft

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice
K = 0.5835 ft/day
y0 = 0.4122 ft



MW-102DB SLUG G RISING HEAD

Data Set: S:\...\MW-102DB_SlugGRisingHead.aqt
Date: 02/19/13 Time: 13:09:04

PROJECT INFORMATION

Company: Rio Algom
Project: 1350.14
Location: Lisbon
Test Well: MW-102DB
Test Date: 3 Nov 2012

AQUIFER DATA

Saturated Thickness: 50.28 ft Anisotropy Ratio (Kz/Kr): 1.

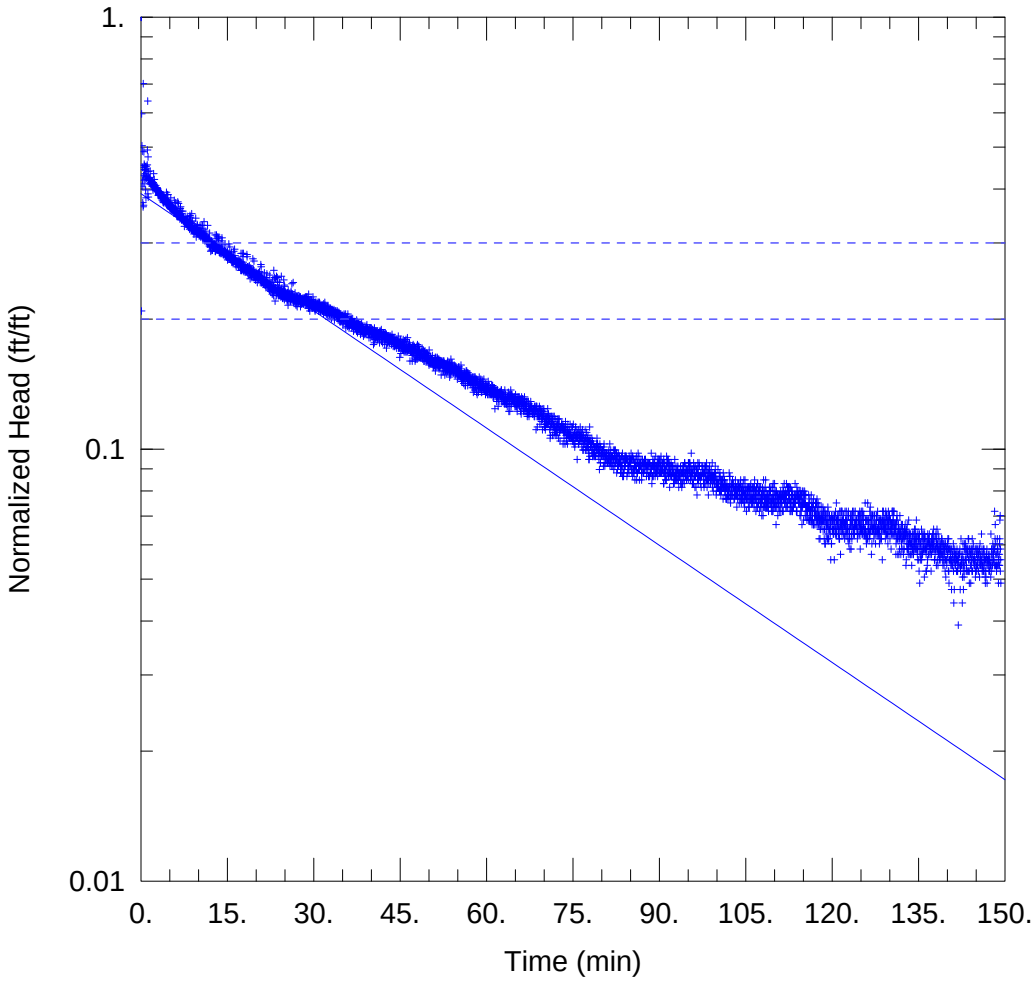
WELL DATA (MW-102DB)

Initial Displacement: 1.259 ft
Total Well Penetration Depth: 49.88 ft
Casing Radius: 0.167 ft
Static Water Column Height: 50.28 ft
Screen Length: 30. ft
Well Radius: 0.333 ft

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice

K = 0.8773 ft/day
y0 = 0.5698 ft



MW-103 SLUG A FALLING HEAD

Data Set: S:\...\MW-103_SlugAFallingHead.aqt
Date: 02/19/13 Time: 13:10:00

PROJECT INFORMATION

Company: Rio Algom
Project: 1350.14
Location: Lisbon
Test Well: MW-103
Test Date: 4 Nov 2012

AQUIFER DATA

Saturated Thickness: 27.75 ft Anisotropy Ratio (Kz/Kr): 1.

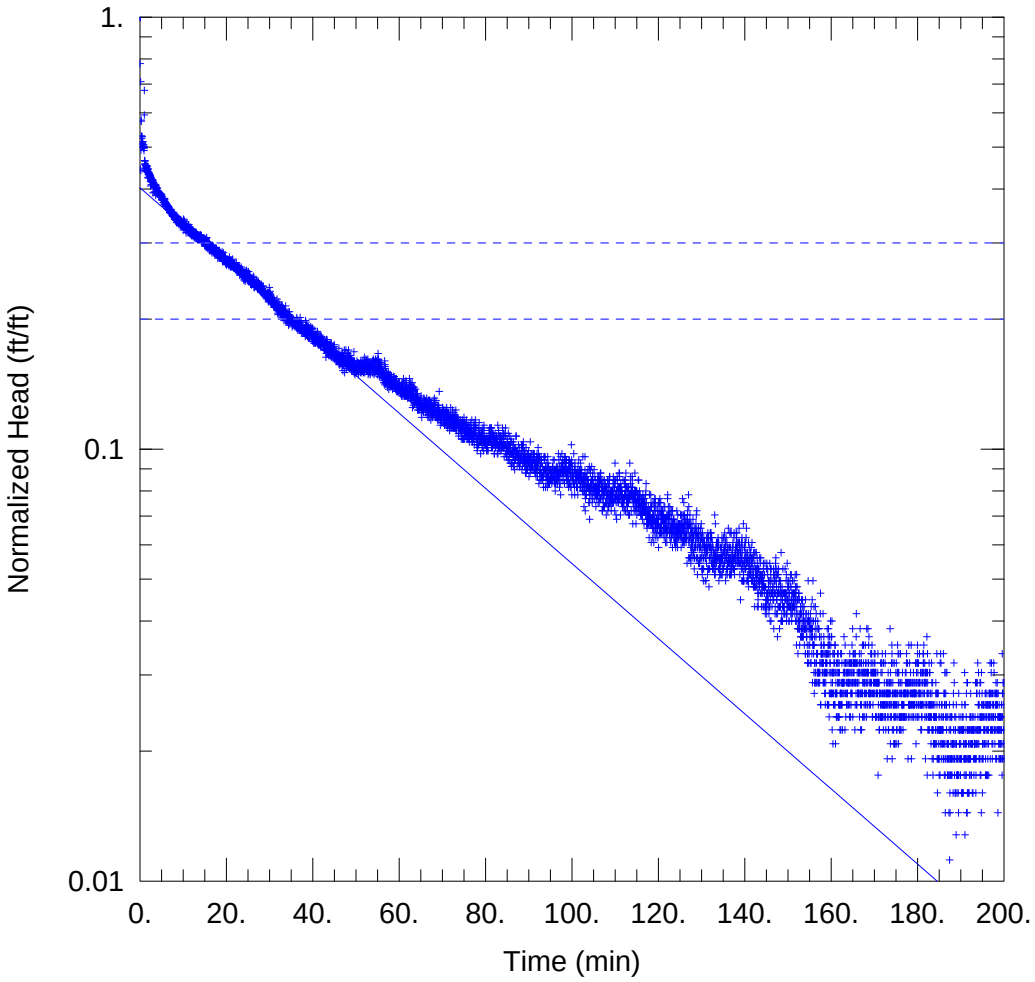
WELL DATA (MW-103)

Initial Displacement: 0.613 ft
Total Well Penetration Depth: 27.75 ft
Casing Radius: 0.167 ft
Static Water Column Height: 27.75 ft
Screen Length: 27.75 ft
Well Radius: 0.333 ft

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice

K = 0.05122 ft/day
y0 = 0.2392 ft



MW-103 SLUG A RISING HEAD

Data Set: S:\...\MW-103_SlugARisingHead.aqt
Date: 02/19/13 Time: 13:09:56

PROJECT INFORMATION

Company: Rio Algom
Project: 1350.14
Location: Lisbon
Test Well: MW-103
Test Date: 4 Nov 2012

AQUIFER DATA

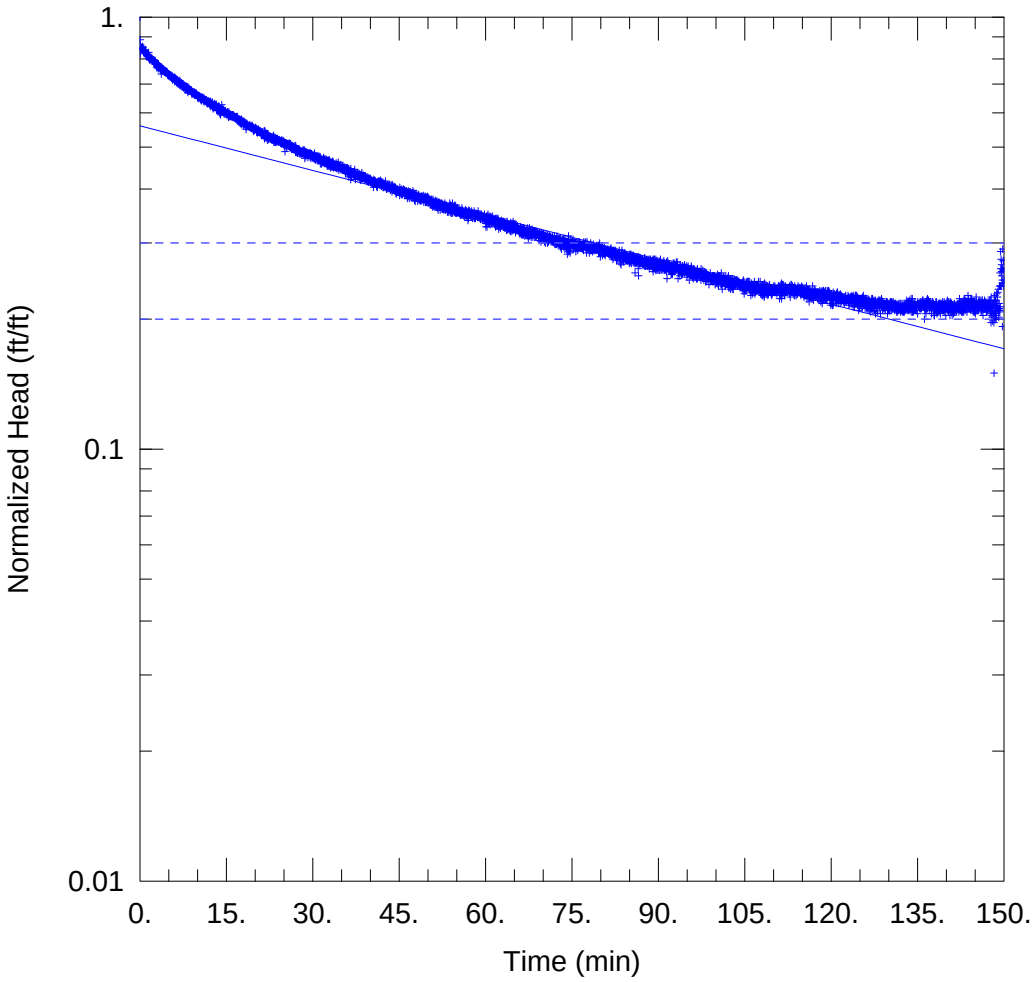
Saturated Thickness: 27.75 ft
Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (MW-103)

Initial Displacement: 0.625 ft
Total Well Penetration Depth: 27.75 ft
Casing Radius: 0.167 ft
Static Water Column Height: 27.75 ft
Screen Length: 27.75 ft
Well Radius: 0.333 ft

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice
K = 0.04926 ft/day
y0 = 0.2516 ft



MW-103 SLUG F FALLING HEAD

Data Set: S:\...\MW-103_SlugFFallingHead.aqt
Date: 02/19/13 Time: 13:09:51

PROJECT INFORMATION

Company: Rio Algom
Project: 1350.14
Location: Lisbon
Test Well: MW-103
Test Date: 4 Nov 2012

AQUIFER DATA

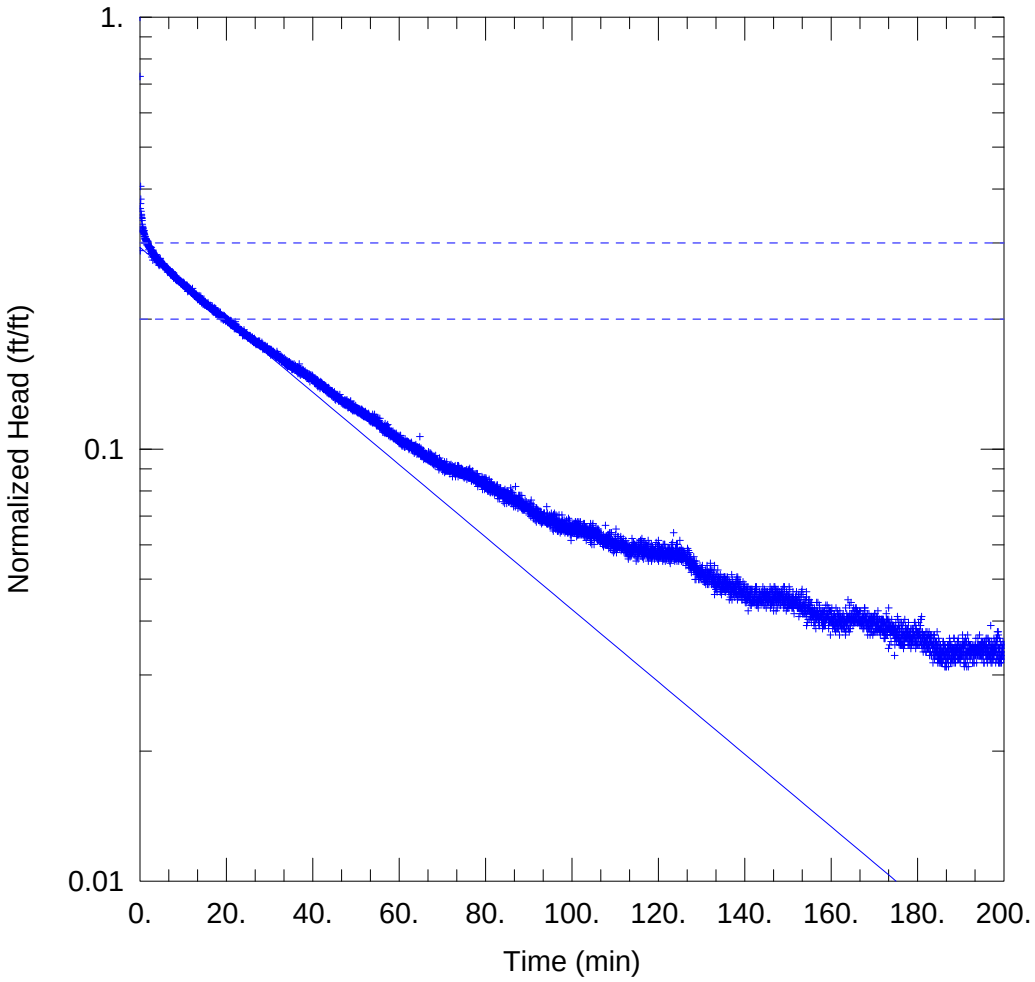
Saturated Thickness: 27.75 ft Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (MW-103)

Initial Displacement: 0.52 ft Static Water Column Height: 27.75 ft
Total Well Penetration Depth: 27.75 ft Screen Length: 27.75 ft
Casing Radius: 0.167 ft Well Radius: 0.333 ft

SOLUTION

Aquifer Model: Unconfined Solution Method: Bouwer-Rice
K = 0.01949 ft/day y0 = 0.2913 ft



MW-103 SLUG F RISING HEAD

Data Set: S:\...\MW-103_SlugFRisingHead.aqt
Date: 02/19/13 Time: 13:09:47

PROJECT INFORMATION

Company: Rio Algom
Project: 1350.14
Location: Lisbon
Test Well: MW-103
Test Date: 4 Nov 2012

AQUIFER DATA

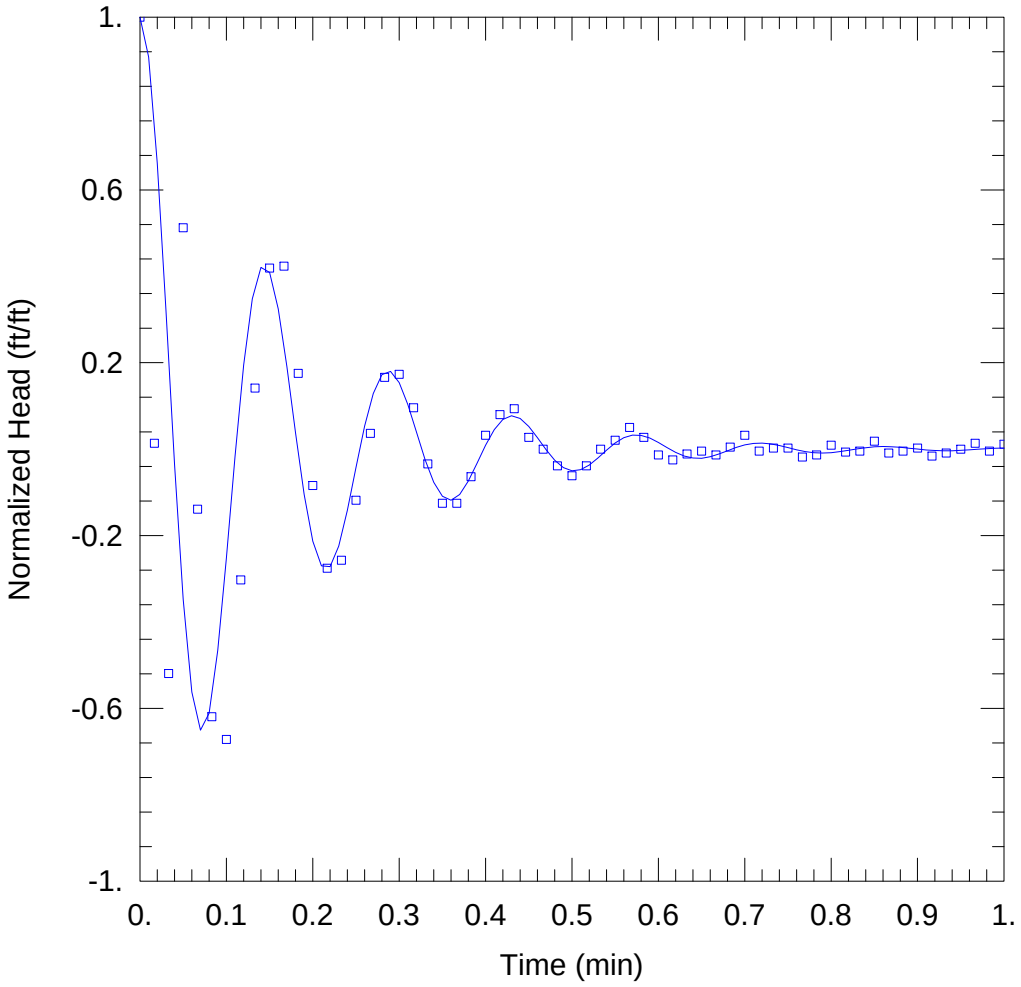
Saturated Thickness: 27.75 ft Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (MW-103)

Initial Displacement: 1.562 ft Static Water Column Height: 27.75 ft
Total Well Penetration Depth: 27.75 ft Screen Length: 27.75 ft
Casing Radius: 0.167 ft Well Radius: 0.333 ft

SOLUTION

Aquifer Model: Unconfined Solution Method: Bouwer-Rice
K = 0.04746 ft/day y0 = 0.4576 ft



WELL TEST ANALYSIS

Data Set: S:\...\MW-13_SlugAFallingHeadButler.aqt
Date: 07/09/14 Time: 10:22:15

PROJECT INFORMATION

Company: Rio Algom
Project: 1350.14
Location: Lisbon
Test Well: MW-13
Test Date: 26 Aug 2012

AQUIFER DATA

Saturated Thickness: 113.5 ft Anisotropy Ratio (Kz/Kr): 1.

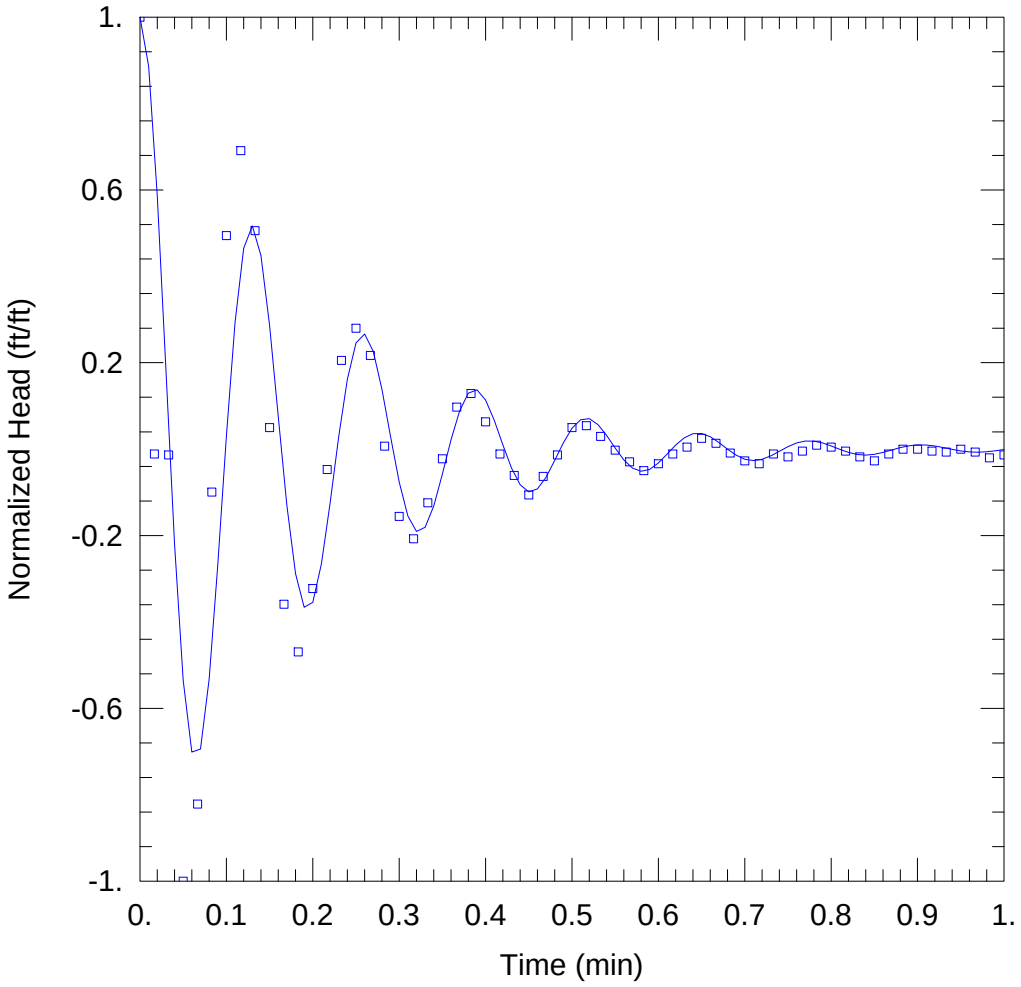
WELL DATA (MW-13 Slug A Falling Head)

Initial Displacement: 0.439 ft
Total Well Penetration Depth: 110.7 ft
Casing Radius: 0.167 ft
Static Water Column Height: 113.5 ft
Screen Length: 76.2 ft
Well Radius: 0.328 ft

SOLUTION

Aquifer Model: Confined
Solution Method: Butler

K = 235.6 ft/day
Le = 59.35 ft



WELL TEST ANALYSIS

Data Set: S:\...\MW-13_SlugARisingHeadButler.aqt
Date: 07/09/14 Time: 10:25:32

PROJECT INFORMATION

Company: Rio Algom
Project: 1350.14
Location: Lisbon
Test Well: MW-13
Test Date: 26 Aug 2012

AQUIFER DATA

Saturated Thickness: 113.5 ft Anisotropy Ratio (Kz/Kr): 1.

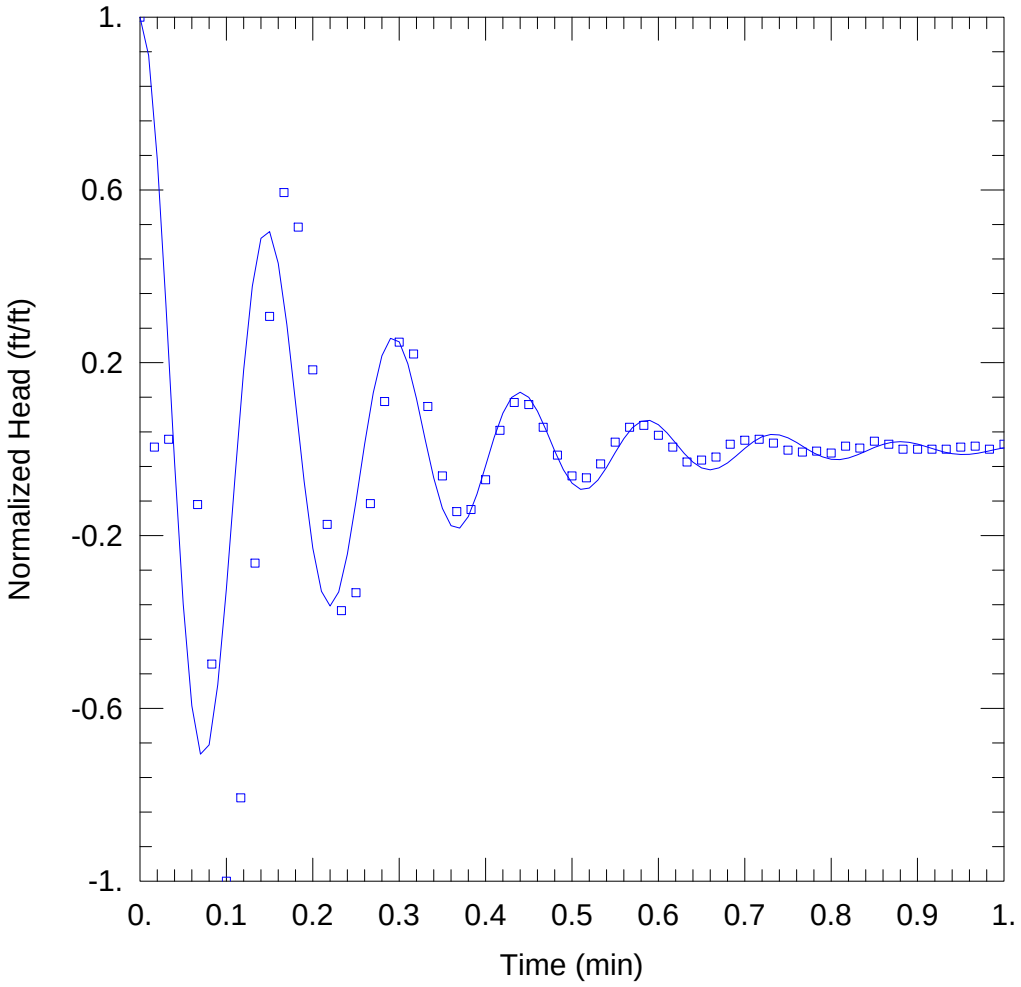
WELL DATA (MW-13 Slug A Rising Head)

Initial Displacement: 0.443 ft Static Water Column Height: 113.5 ft
Total Well Penetration Depth: 110.7 ft Screen Length: 76.2 ft
Casing Radius: 0.167 ft Well Radius: 0.328 ft

SOLUTION

Aquifer Model: Confined Solution Method: Butler

K = 336.6 ft/day Le = 48.37 ft



WELL TEST ANALYSIS

Data Set: S:\...\MW-13_SlugB1FalllingHeadButler.aqt
Date: 07/09/14 Time: 10:26:03

PROJECT INFORMATION

Company: Rio Algom
Project: 1350.14
Location: Lisbon
Test Well: MW-13
Test Date: 26 Aug 2012

AQUIFER DATA

Saturated Thickness: 113.5 ft Anisotropy Ratio (Kz/Kr): 1.

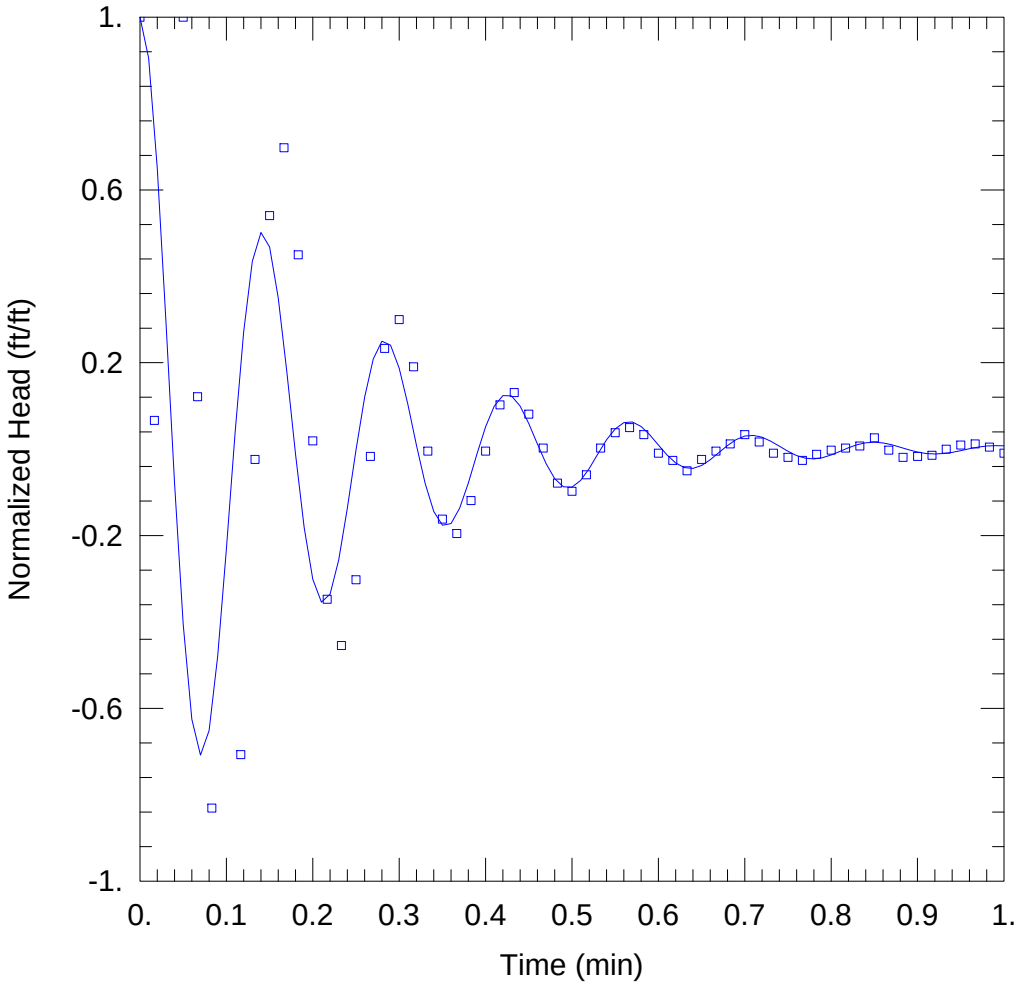
WELL DATA (MW-13 Slug B1 Falling Head)

Initial Displacement: 0.436 ft
Total Well Penetration Depth: 110.7 ft
Casing Radius: 0.167 ft
Static Water Column Height: 113.5 ft
Screen Length: 76.2 ft
Well Radius: 0.328 ft

SOLUTION

Aquifer Model: Confined
Solution Method: Butler

K = 289.4 ft/day
Le = 62.36 ft



WELL TEST ANALYSIS

Data Set: S:\...\MW-13_SlugB1RisingHeadButler.aqt
Date: 07/09/14 Time: 10:26:33

PROJECT INFORMATION

Company: Rio Algom
Project: 1350.14
Location: Lisbon
Test Well: MW-13
Test Date: 26 Aug 2012

AQUIFER DATA

Saturated Thickness: 113.5 ft Anisotropy Ratio (Kz/Kr): 1.

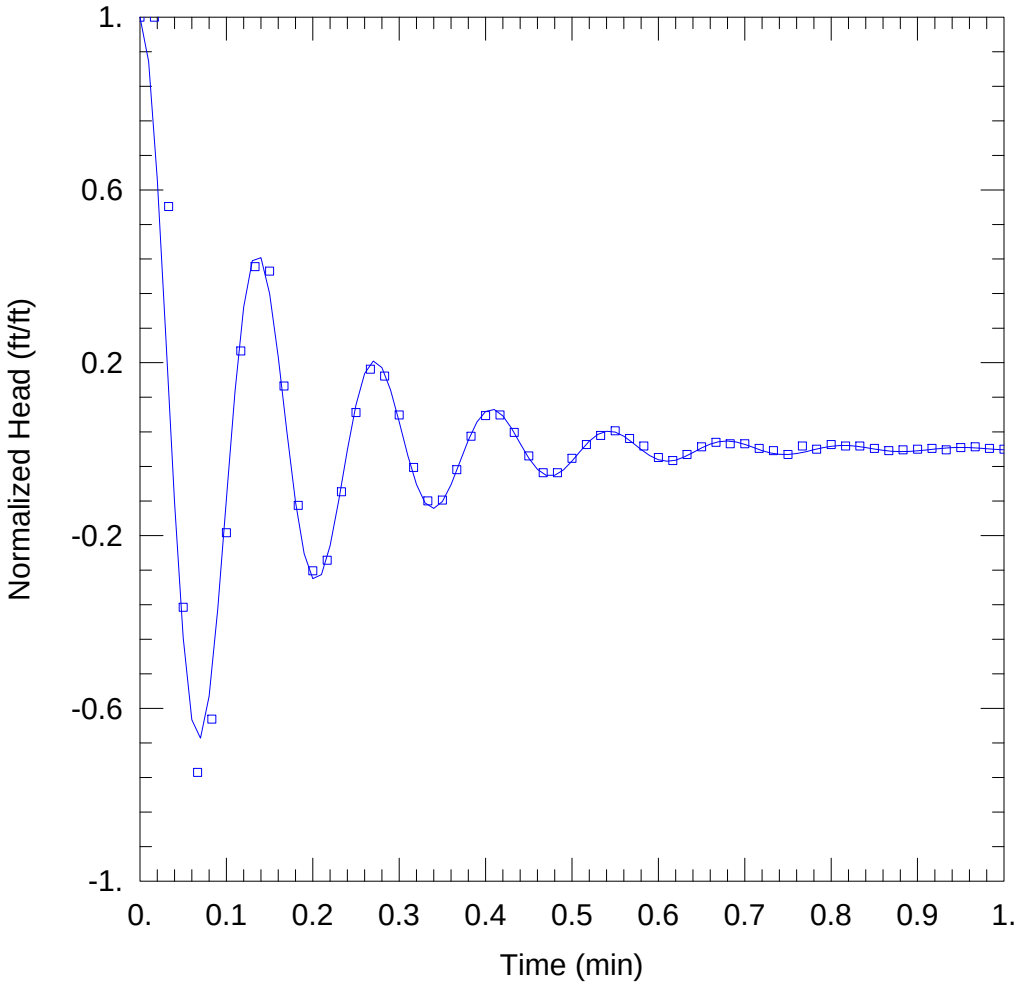
WELL DATA (MW-13 Slug B1 Rising Head)

Initial Displacement: 0.42 ft Static Water Column Height: 113.5 ft
Total Well Penetration Depth: 110.7 ft Screen Length: 76.2 ft
Casing Radius: 0.167 ft Well Radius: 0.328 ft

SOLUTION

Aquifer Model: Confined Solution Method: Butler

K = 294.3 ft/day Le = 58.08 ft



WELL TEST ANALYSIS

Data Set: S:\...\MW-13_SlugB2FallingHeadButler.aqt
Date: 07/09/14 Time: 10:26:49

PROJECT INFORMATION

Company: Rio Algom
Project: 1350.14
Location: Lisbon
Test Well: MW-13
Test Date: 26 Aug 2012

AQUIFER DATA

Saturated Thickness: 113.5 ft Anisotropy Ratio (Kz/Kr): 1.

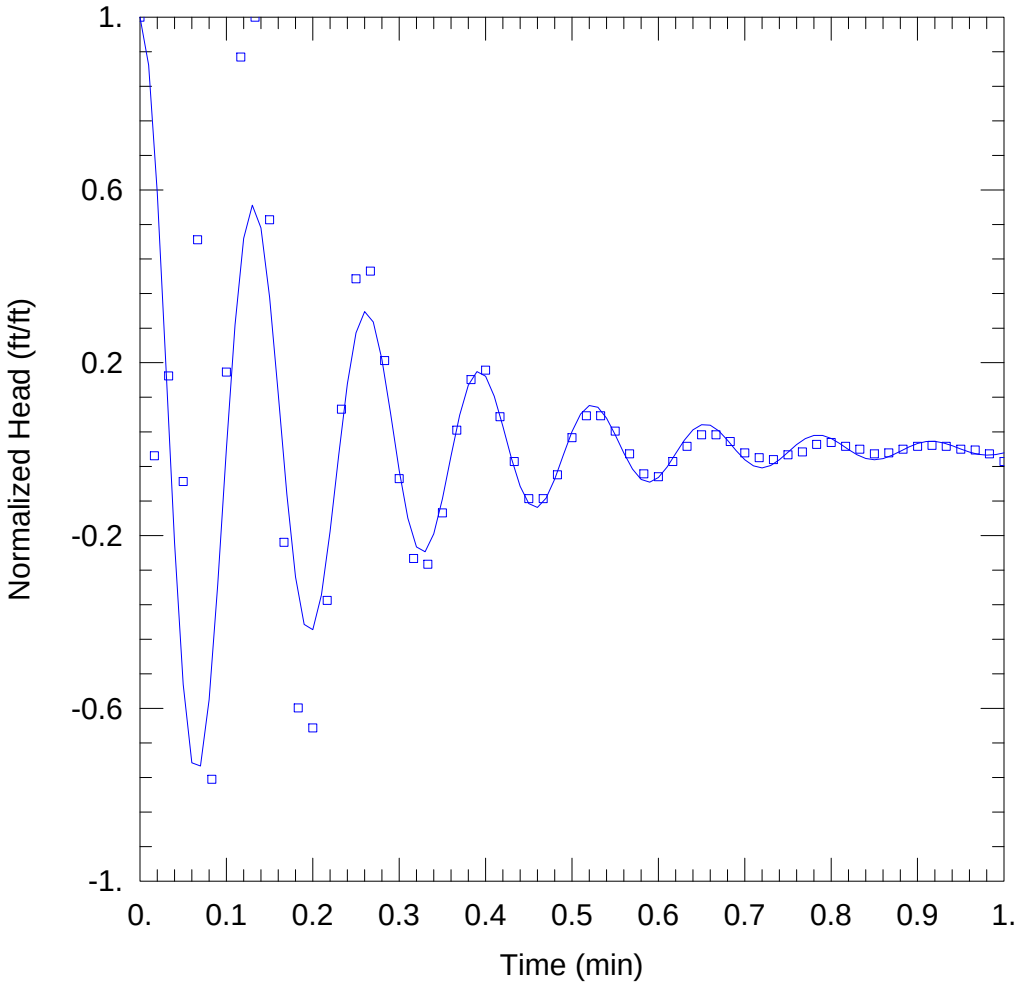
WELL DATA (MW-13 Slug B2 Falling Head)

Initial Displacement: 0.568 ft
Total Well Penetration Depth: 106.2 ft
Casing Radius: 0.167 ft
Static Water Column Height: 113.5 ft
Screen Length: 30. ft
Well Radius: 0.328 ft

SOLUTION

Aquifer Model: Confined
Solution Method: Butler

K = 562.9 ft/day
Le = 53.17 ft



WELL TEST ANALYSIS

Data Set: S:\...\MW-13_SlugB2RisingHeadButler.aqt
Date: 07/09/14 Time: 10:27:09

PROJECT INFORMATION

Company: Rio Algom
Project: 1350.14
Location: Lisbon
Test Well: MW-13
Test Date: 26 Aug 2012

AQUIFER DATA

Saturated Thickness: 113.5 ft Anisotropy Ratio (Kz/Kr): 1.

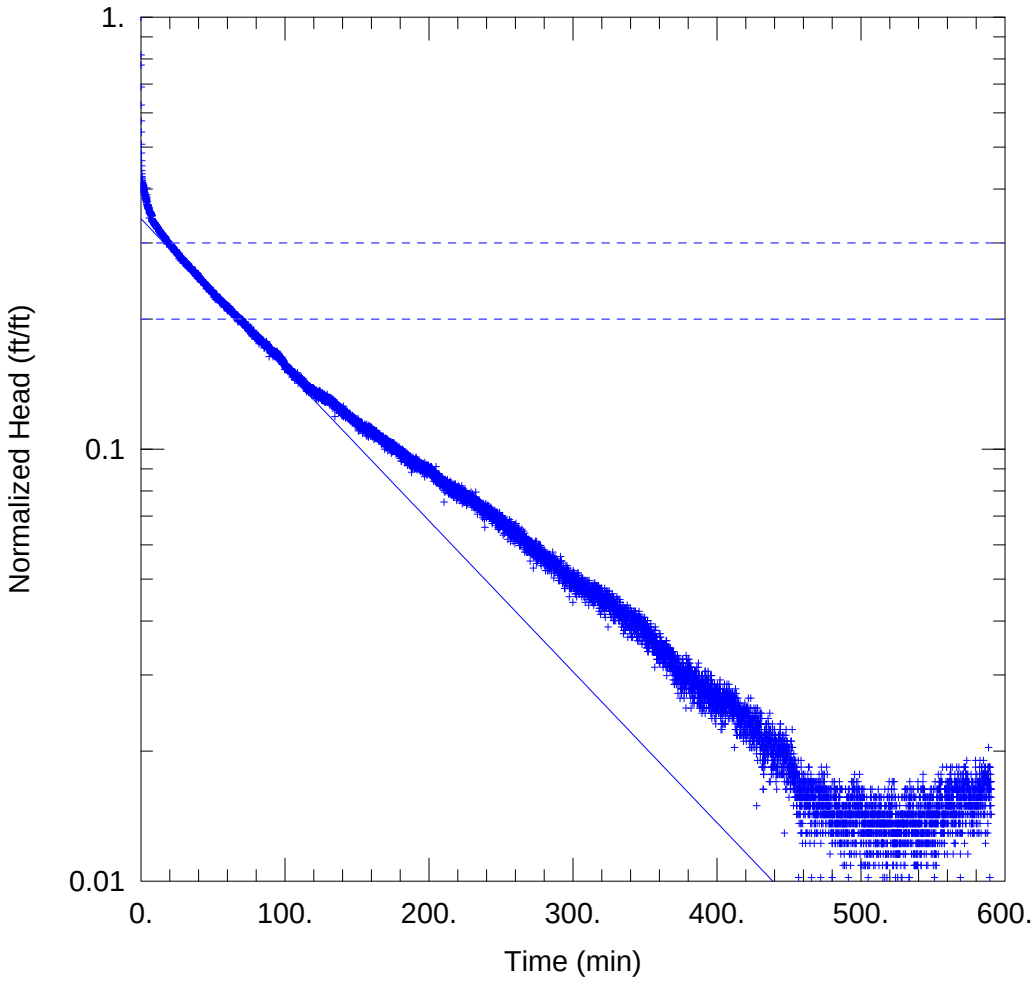
WELL DATA (MW-13 Slug B2 Rising Head)

Initial Displacement: 0.454 ft
Total Well Penetration Depth: 64.47 ft
Casing Radius: 0.167 ft
Static Water Column Height: 113.5 ft
Screen Length: 30. ft
Well Radius: 0.328 ft

SOLUTION

Aquifer Model: Confined
Solution Method: Butler

K = 806.1 ft/day
Le = 49.78 ft



WELL TEST ANALYSIS

Data Set: S:\...\MW-5_SlugDFalling Head.aqt
Date: 02/19/13 Time: 13:06:55

PROJECT INFORMATION

Company: Rio Algom
Project: 1350.14
Location: Lisbon
Test Well: MW-5
Test Date: 27 Aug 2012

AQUIFER DATA

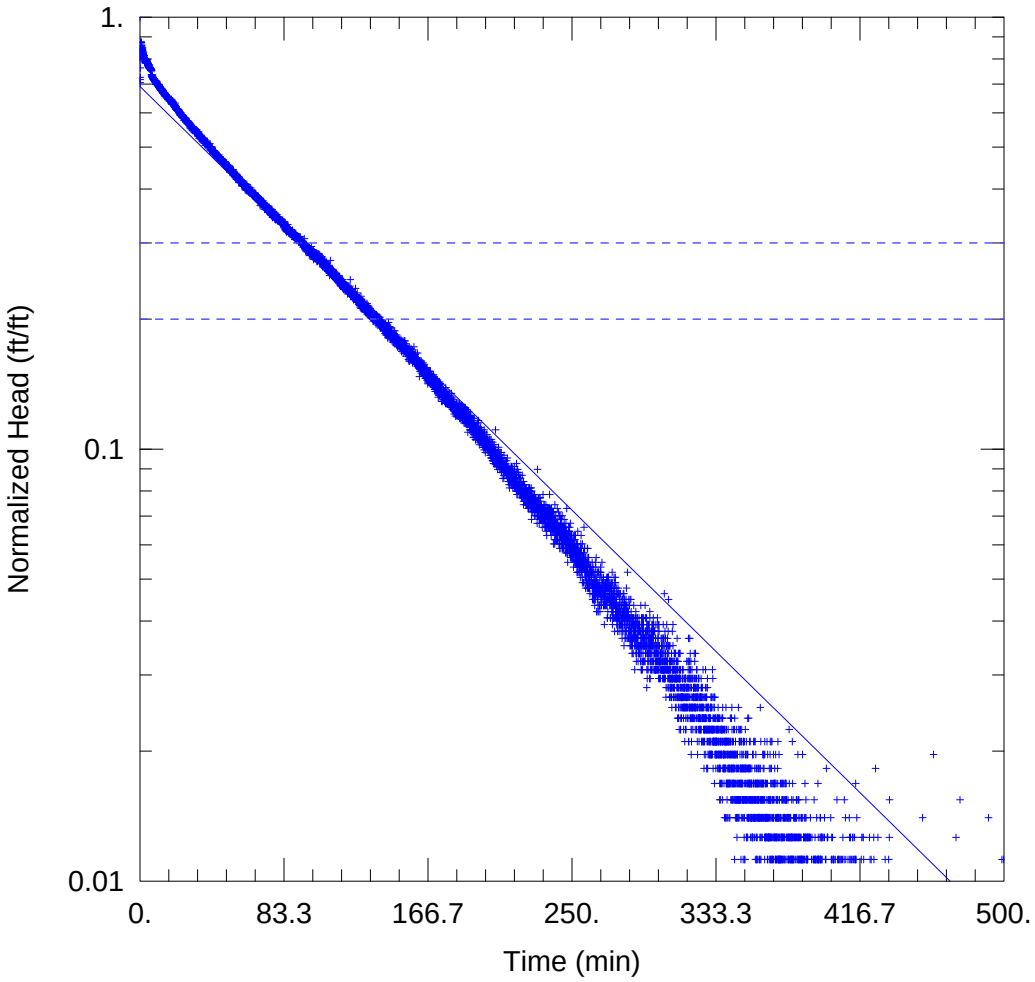
Saturated Thickness: 42.35 ft Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (MW-5 Slug D Falling Head)

Initial Displacement: 1.471 ft
Total Well Penetration Depth: 42.35 ft
Casing Radius: 0.167 ft
Static Water Column Height: 42.35 ft
Screen Length: 30. ft
Well Radius: 0.328 ft

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice
K = 0.0199 ft/day
y0 = 0.5023 ft



WELL TEST ANALYSIS

Data Set: S:\...\MW-5_SlugDRising Head.aqt
Date: 02/19/13 Time: 13:06:35

PROJECT INFORMATION

Company: Rio Algom
Project: 1350.14
Location: Lisbon
Test Well: MW-5
Test Date: 27 Aug 2012

AQUIFER DATA

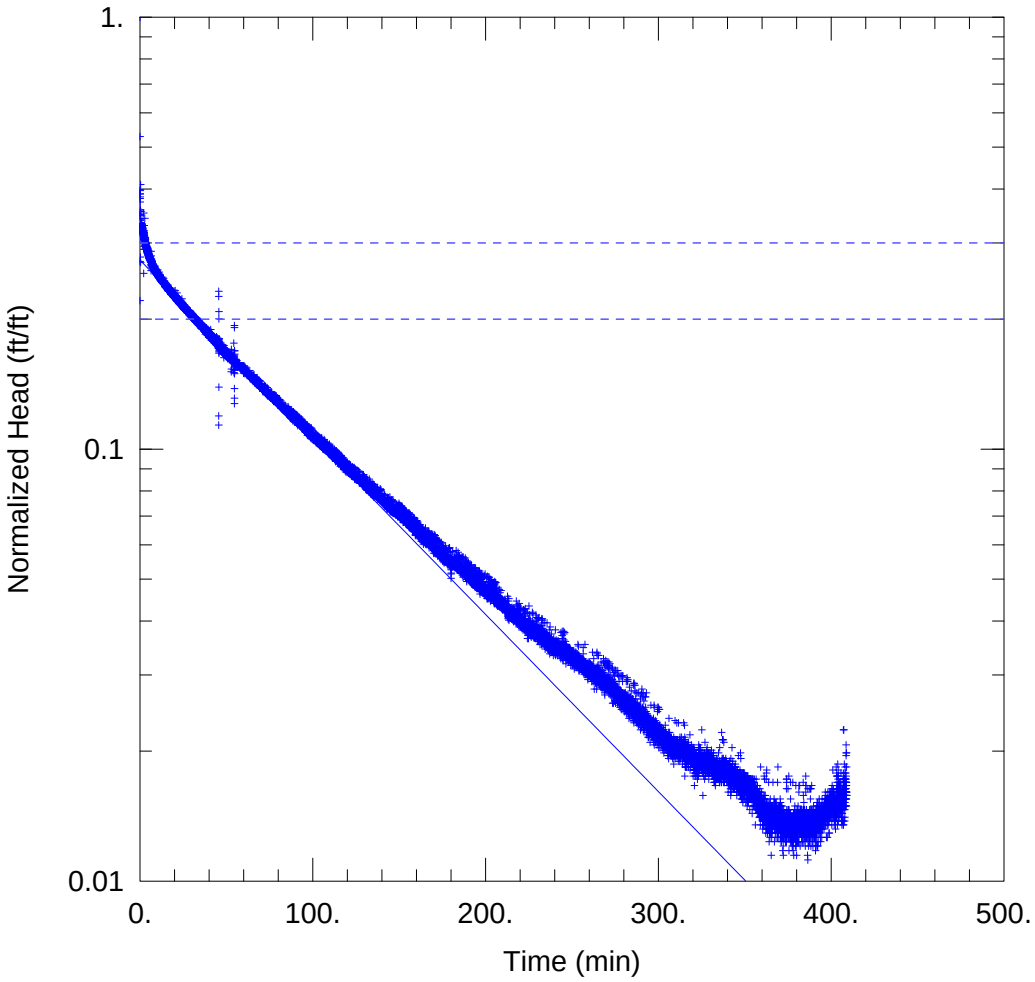
Saturated Thickness: 42.35 ft Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (MW-5 Slug D Rising Head)

Initial Displacement: 0.713 ft Static Water Column Height: 42.35 ft
Total Well Penetration Depth: 42.35 ft Screen Length: 30. ft
Casing Radius: 0.167 ft Well Radius: 0.328 ft

SOLUTION

Aquifer Model: Unconfined Solution Method: Bouwer-Rice
K = 0.02234 ft/day y0 = 0.4928 ft



WELL TEST ANALYSIS

Data Set: S:\...\MW-5_SlugEFallingHead.aqt
Date: 02/19/13 Time: 13:06:29

PROJECT INFORMATION

Company: Rio Algom
Project: 1350.14
Location: Lisbon
Test Well: MW-5
Test Date: 27 Aug 2012

AQUIFER DATA

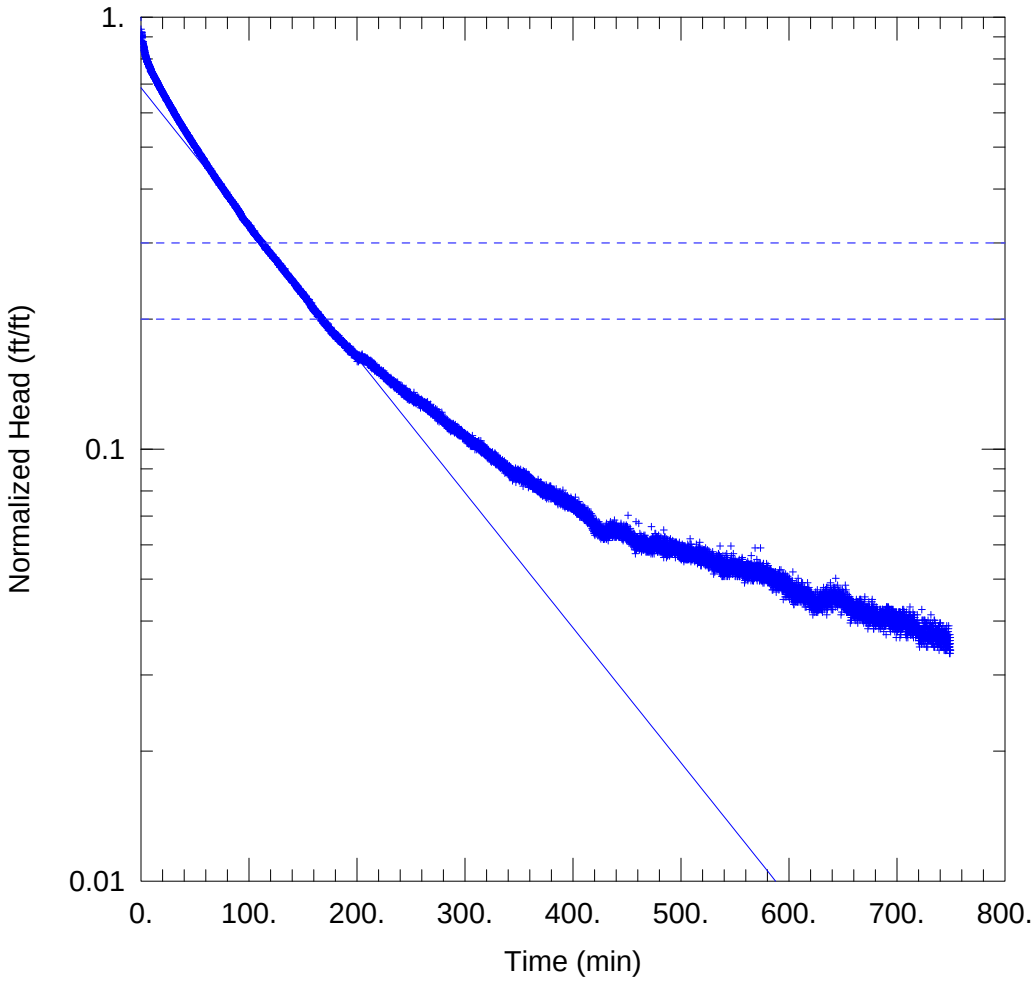
Saturated Thickness: 42.35 ft Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (MW-5 Slug E Falling Head)

Initial Displacement: 3.484 ft
Total Well Penetration Depth: 42.35 ft
Casing Radius: 0.167 ft
Static Water Column Height: 42.35 ft
Screen Length: 30. ft
Well Radius: 0.328 ft

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice
K = 0.02335 ft/day
y0 = 0.9541 ft



WELL TEST ANALYSIS

Data Set: S:\...\MW-5_SlugERisingHead.aqt
Date: 02/19/13 Time: 13:06:19

PROJECT INFORMATION

Company: Rio Algom
Project: 1350.14
Location: Lisbon
Test Well: MW-5
Test Date: 27 Aug 2012

AQUIFER DATA

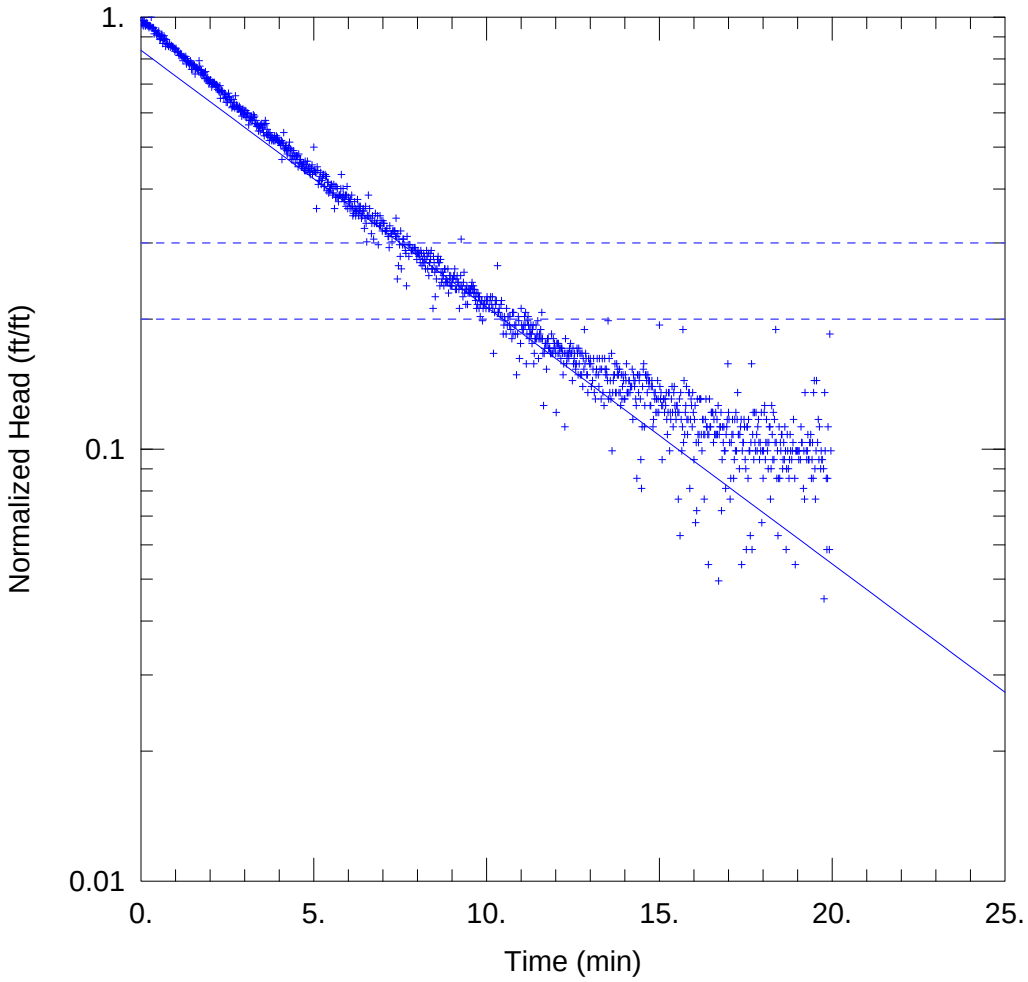
Saturated Thickness: 42.35 ft Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (MW-5 Slug E Rising Head)

Initial Displacement: 1.693 ft
Total Well Penetration Depth: 42.35 ft
Casing Radius: 0.167 ft
Static Water Column Height: 42.35 ft
Screen Length: 30. ft
Well Radius: 0.328 ft

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice
K = 0.0178 ft/day
y0 = 1.162 ft



WELL TEST ANALYSIS

Data Set: S:\...\OW-UT9_SlugBFallingHead.aqt
Date: 02/19/13 Time: 13:10:39

PROJECT INFORMATION

Company: Rio Algom
Project: 1350.14
Location: Lisbon
Test Well: OW-UT9
Test Date: 29 Aug 2012

AQUIFER DATA

Saturated Thickness: 16.54 ft Anisotropy Ratio (Kz/Kr): 1.

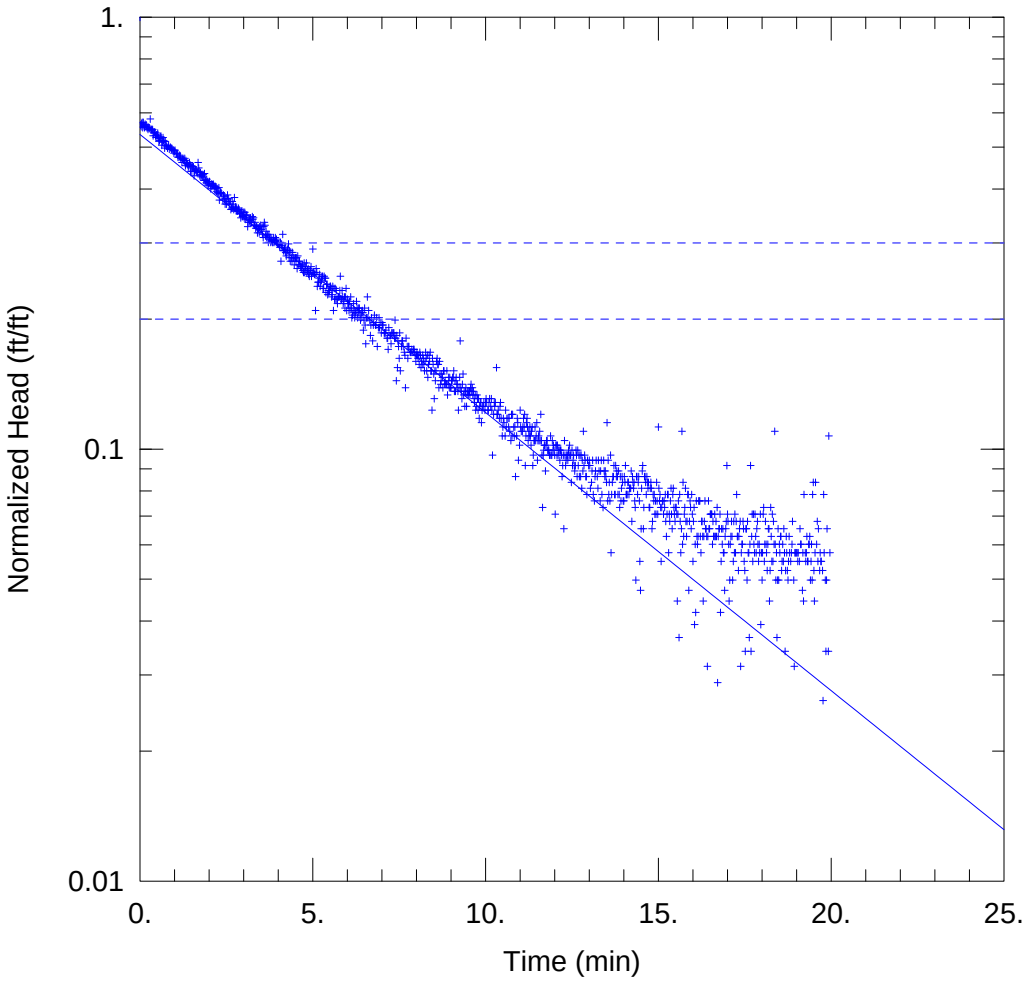
WELL DATA (OW-UT9 Slug B Falling Head)

Initial Displacement: 0.222 ft Static Water Column Height: 16.54 ft
Total Well Penetration Depth: 16.54 ft Screen Length: 16.54 ft
Casing Radius: 0.25 ft Well Radius: 0.4115 ft

SOLUTION

Aquifer Model: Unconfined Solution Method: Bouwer-Rice

K = 1.049 ft/day y0 = 0.186 ft



WELL TEST ANALYSIS

Data Set: S:\...\OW-UT9_SlugBRisingHead.aqt
Date: 02/19/13 Time: 13:10:35

PROJECT INFORMATION

Company: Rio Algom
Project: 1350.14
Location: Lisbon
Test Well: OW-UT9
Test Date: 29 Aug 2012

AQUIFER DATA

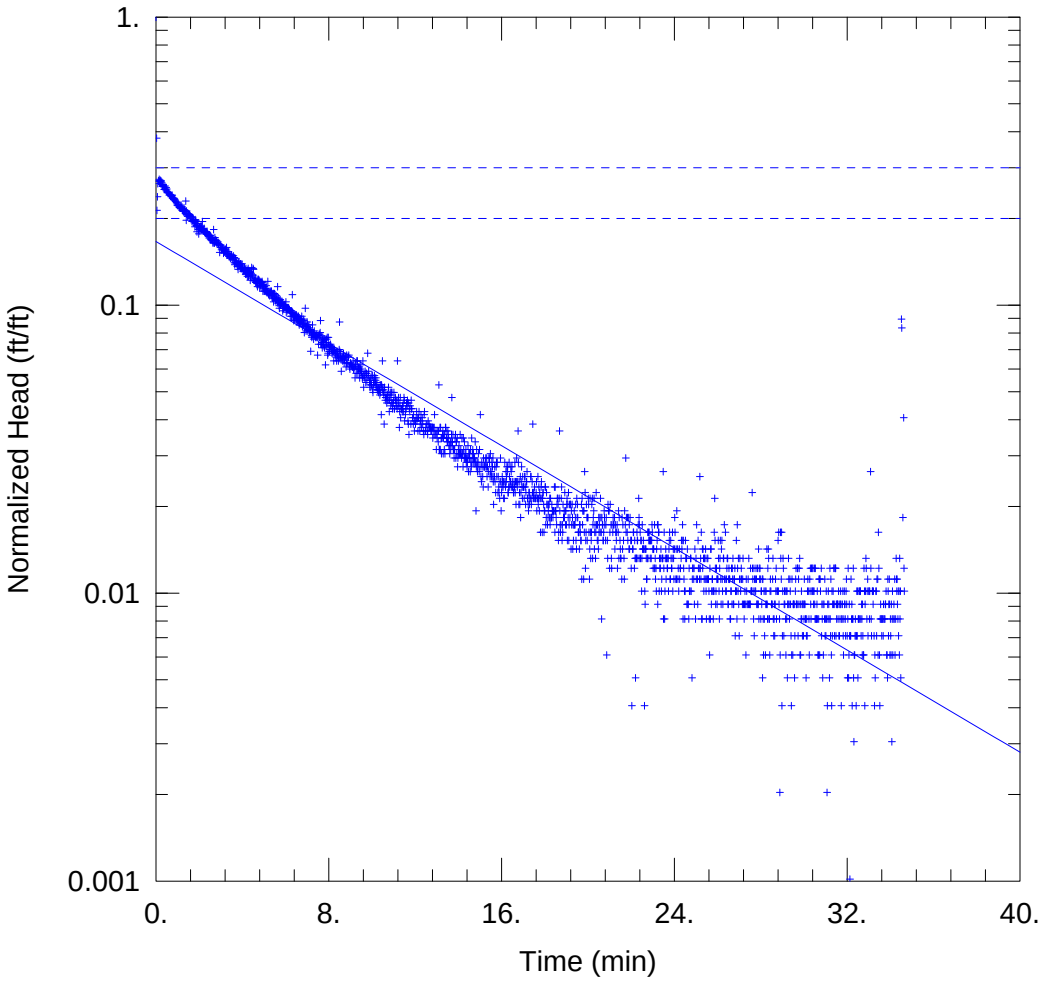
Saturated Thickness: 16.54 ft Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (OW-UT9 Slug B Rising Head)

Initial Displacement: 0.382 ft Static Water Column Height: 16.54 ft
Total Well Penetration Depth: 16.54 ft Screen Length: 16.54 ft
Casing Radius: 0.25 ft Well Radius: 0.4115 ft

SOLUTION

Aquifer Model: Unconfined Solution Method: Bouwer-Rice
K = 1.136 ft/day y0 = 0.2044 ft



WELL TEST ANALYSIS

Data Set: S:\...\OW-UT9_SlugCFallingHead.aqt
Date: 02/19/13 Time: 13:10:32

PROJECT INFORMATION

Company: Rio Algom
Project: 1350.14
Location: Lisbon
Test Well: OW-UT9
Test Date: 29 Aug 2012

AQUIFER DATA

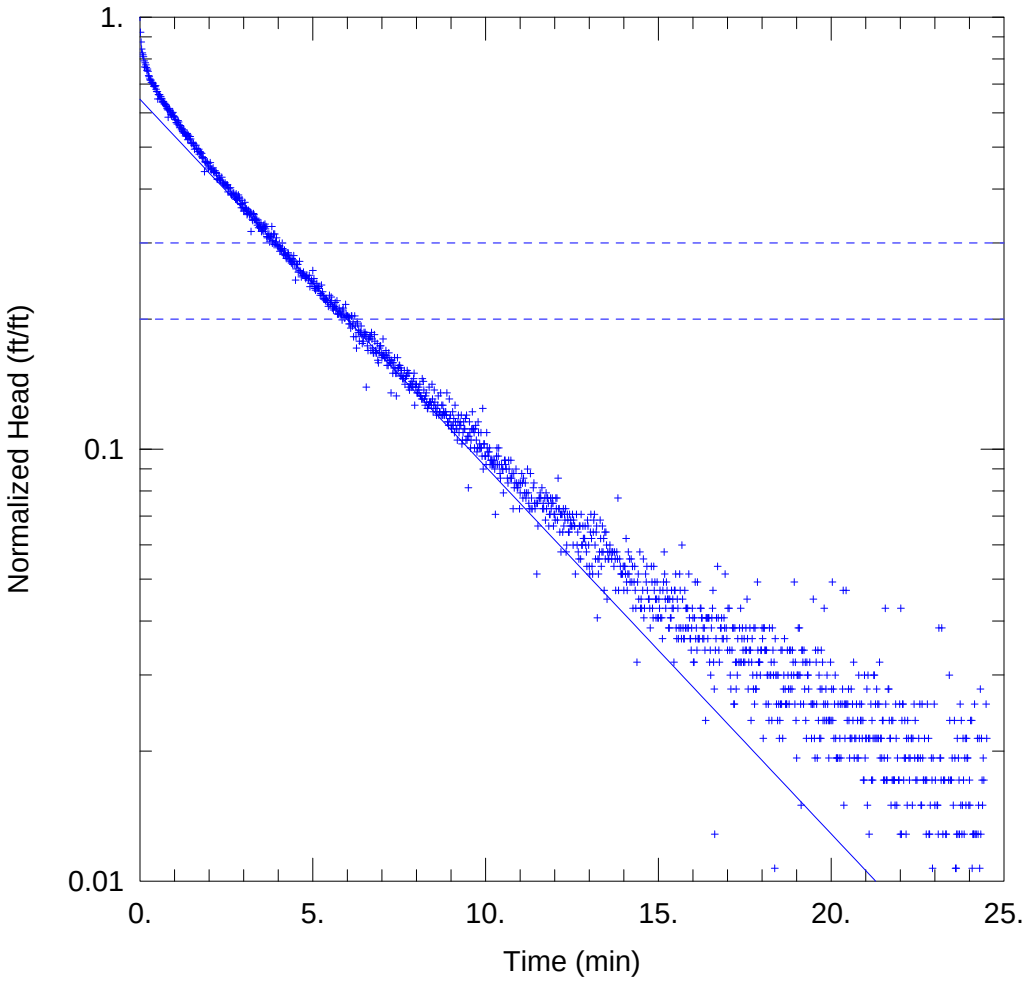
Saturated Thickness: 16.54 ft Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (OW-UT9 Slug C Falling Head)

Initial Displacement: 0.984 ft
Total Well Penetration Depth: 16.54 ft
Casing Radius: 0.25 ft
Static Water Column Height: 16.54 ft
Screen Length: 16.54 ft
Well Radius: 0.4115 ft

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice
K = 0.782 ft/day
y0 = 0.1637 ft



WELL TEST ANALYSIS

Data Set: S:\...\OW-UT9_SlugCRisingHead.aqt
Date: 02/19/13 Time: 13:10:29

PROJECT INFORMATION

Company: Rio Algom
Project: 1350.14
Location: Lisbon
Test Well: OW-UT9
Test Date: 29 Aug 2012

AQUIFER DATA

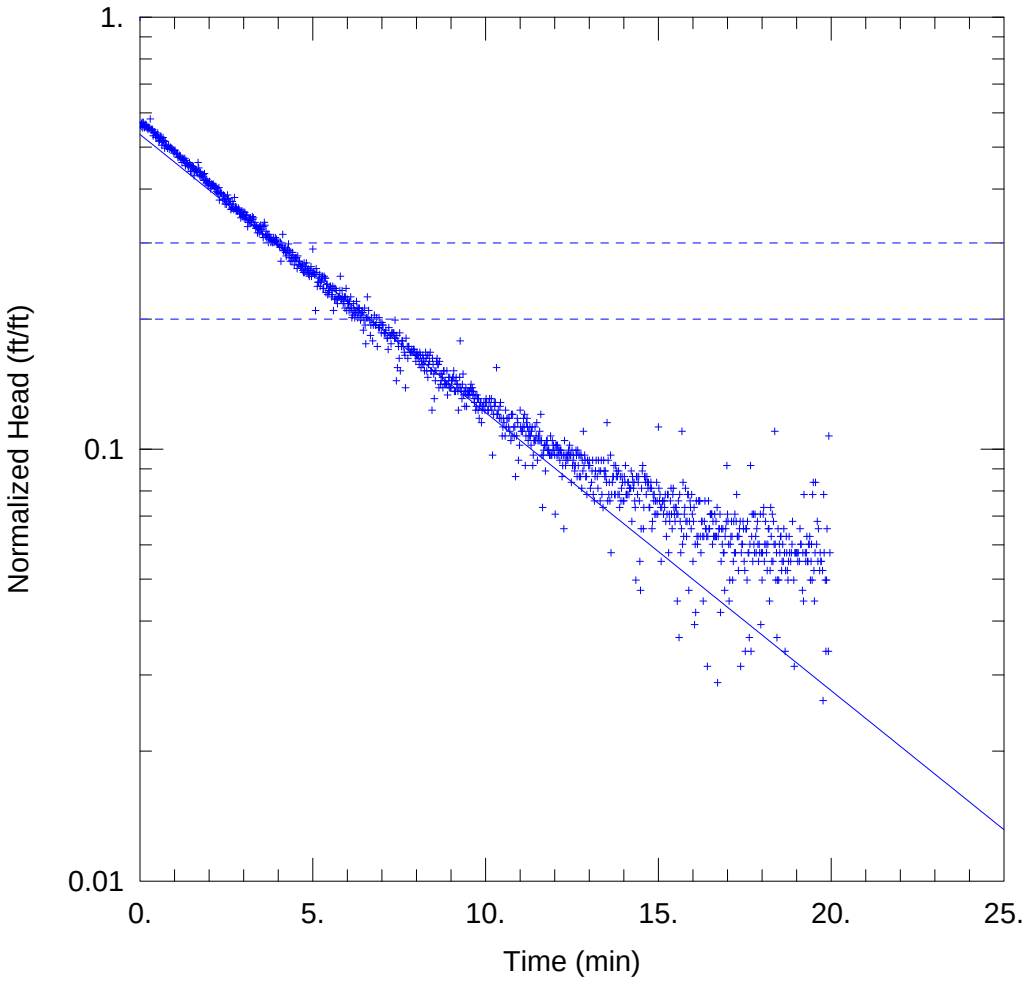
Saturated Thickness: 16.54 ft Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (OW-UT9 Slug C Rising Head)

Initial Displacement: 0.467 ft Static Water Column Height: 16.54 ft
Total Well Penetration Depth: 16.54 ft Screen Length: 16.54 ft
Casing Radius: 0.25 ft Well Radius: 0.4115 ft

SOLUTION

Aquifer Model: Unconfined Solution Method: Bouwer-Rice
K = 1.5 ft/day y0 = 0.3013 ft



WELL TEST ANALYSIS

Data Set: S:\...\OW-UT9_SlugDFallingHead.aqt
Date: 02/19/13 Time: 13:10:26

PROJECT INFORMATION

Company: Rio Algom
Project: 1350.14
Location: Lisbon
Test Well: OW-UT9
Test Date: 29 Aug 2012

AQUIFER DATA

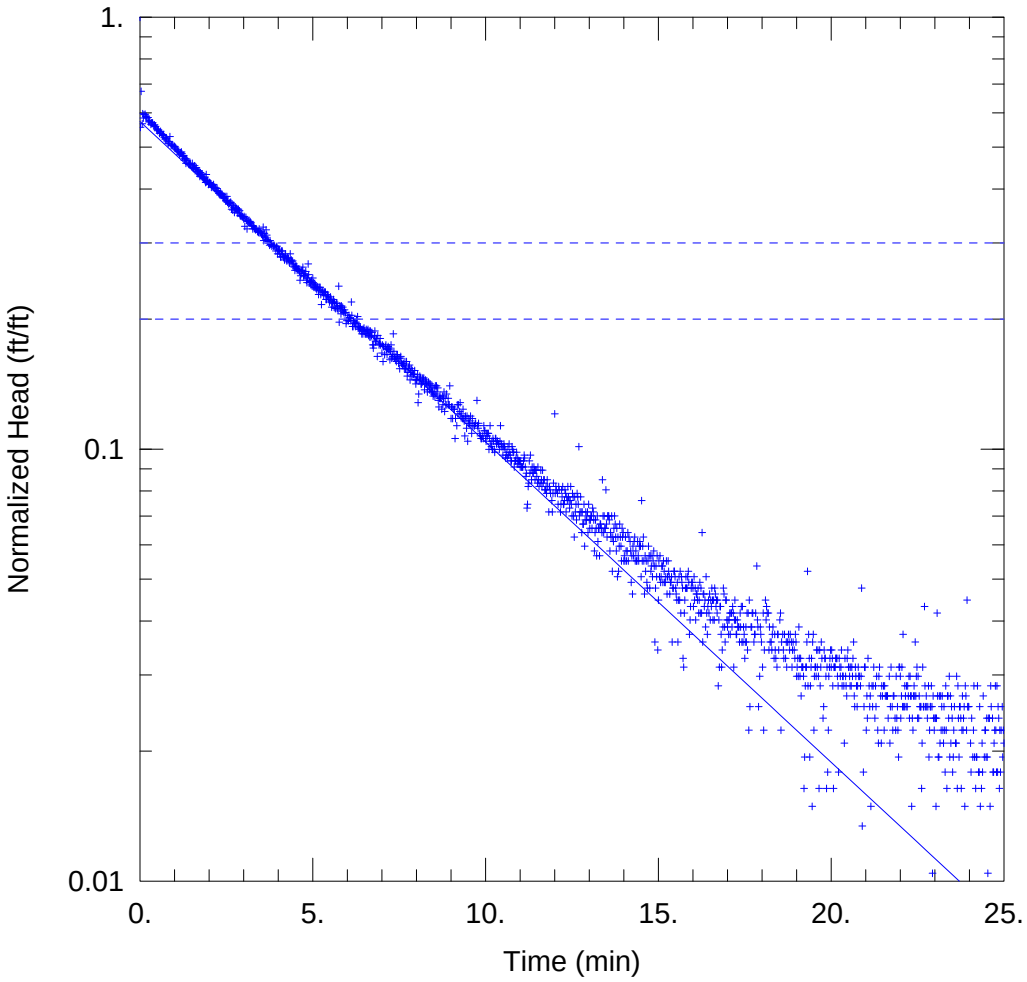
Saturated Thickness: 16.54 ft Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (OW-UT9 Slug B Rising Head)

Initial Displacement: 0.382 ft
Total Well Penetration Depth: 16.54 ft
Casing Radius: 0.25 ft
Static Water Column Height: 16.54 ft
Screen Length: 16.54 ft
Well Radius: 0.4115 ft

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice
K = 1.136 ft/day
y0 = 0.2044 ft



WELL TEST ANALYSIS

Data Set: S:\...\OW-UT9_SlugDRisingHead.aqt
Date: 02/19/13 Time: 13:10:22

PROJECT INFORMATION

Company: Rio Algom
Project: 1350.14
Location: Lisbon
Test Well: OW-UT9
Test Date: 29 Aug 2012

AQUIFER DATA

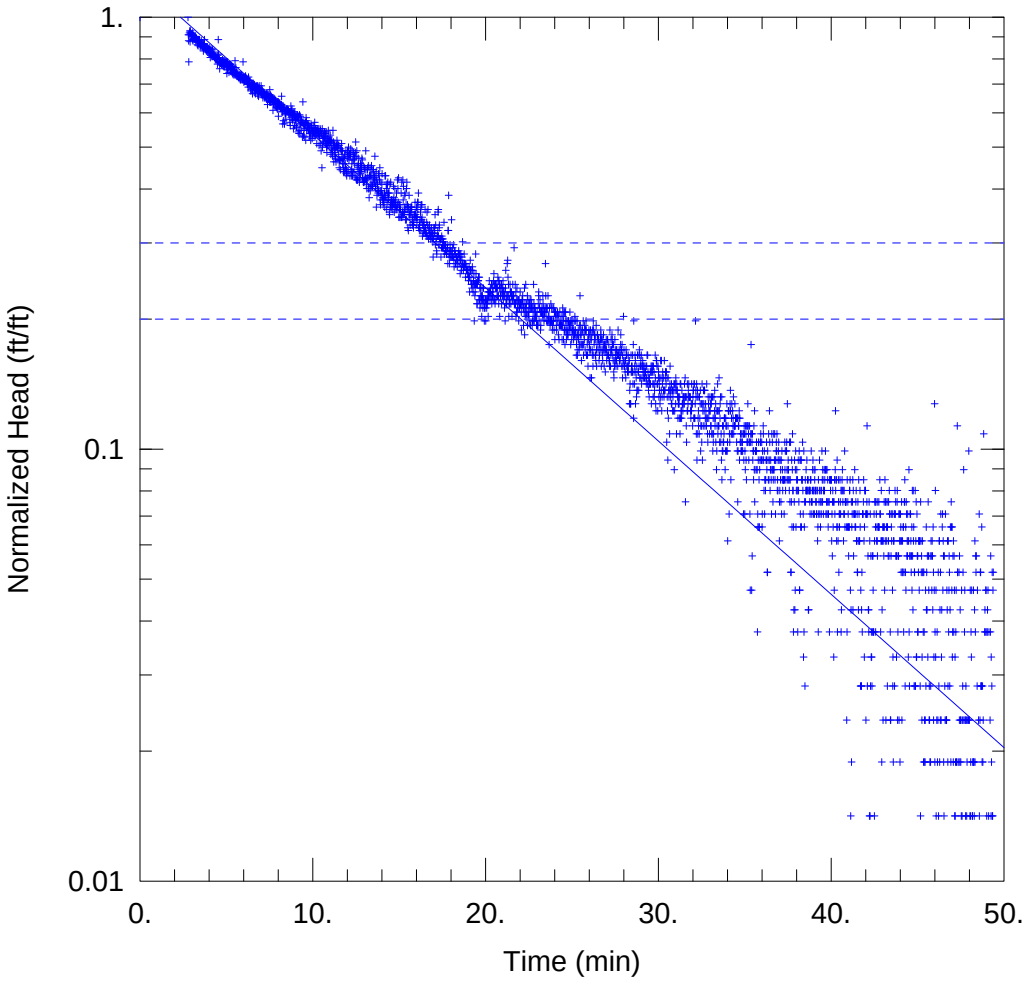
Saturated Thickness: 16.54 ft Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (OW-UT9 Slug D Rising Head)

Initial Displacement: 0.671 ft Static Water Column Height: 16.54 ft
Total Well Penetration Depth: 16.54 ft Screen Length: 16.54 ft
Casing Radius: 0.25 ft Well Radius: 0.4115 ft

SOLUTION

Aquifer Model: Unconfined Solution Method: Bouwer-Rice
K = 1.308 ft/day y0 = 0.3846 ft



RL-1 SLUG A

Data Set: S:\...\RL-1_SlugAFallingHead.aqt
Date: 02/19/13 Time: 13:11:12

PROJECT INFORMATION

Company: Rio Algom
Project: 1350.14
Location: Lisbon
Test Well: RL-1
Test Date: 28 Aug 2012

AQUIFER DATA

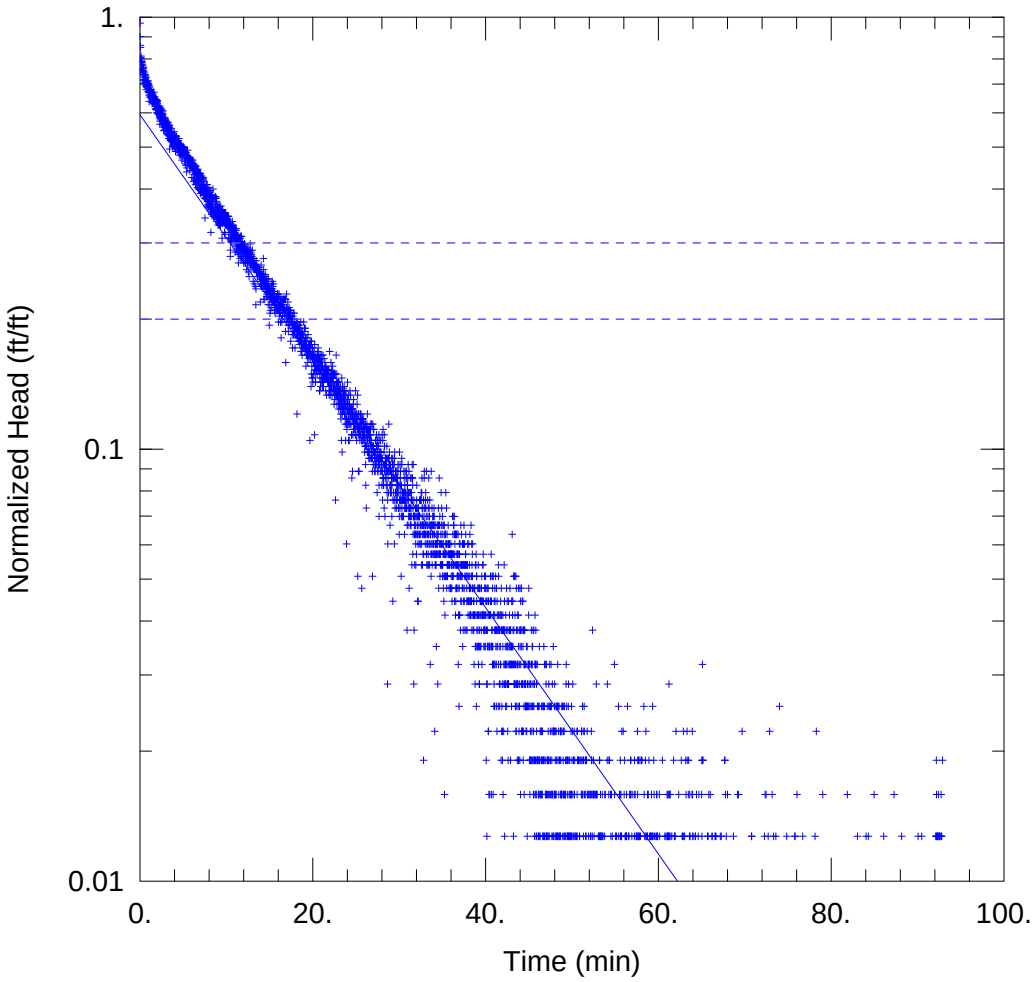
Saturated Thickness: 8.8 ft Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (RL-1 Slug A)

Initial Displacement: 0.212 ft
Total Well Penetration Depth: 8.8 ft
Casing Radius: 0.208 ft
Static Water Column Height: 8.8 ft
Screen Length: 8.8 ft
Well Radius: 0.365 ft

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice
K = 0.6889 ft/day
y0 = 0.2565 ft



RL-1 SLUG A

Data Set: S:\...\RL-1_SlugARisingHead.aqt
Date: 02/19/13 Time: 13:11:09

PROJECT INFORMATION

Company: Rio Algom
Project: 1350.14
Location: Lisbon
Test Well: RL-1
Test Date: 28 Aug 2012

AQUIFER DATA

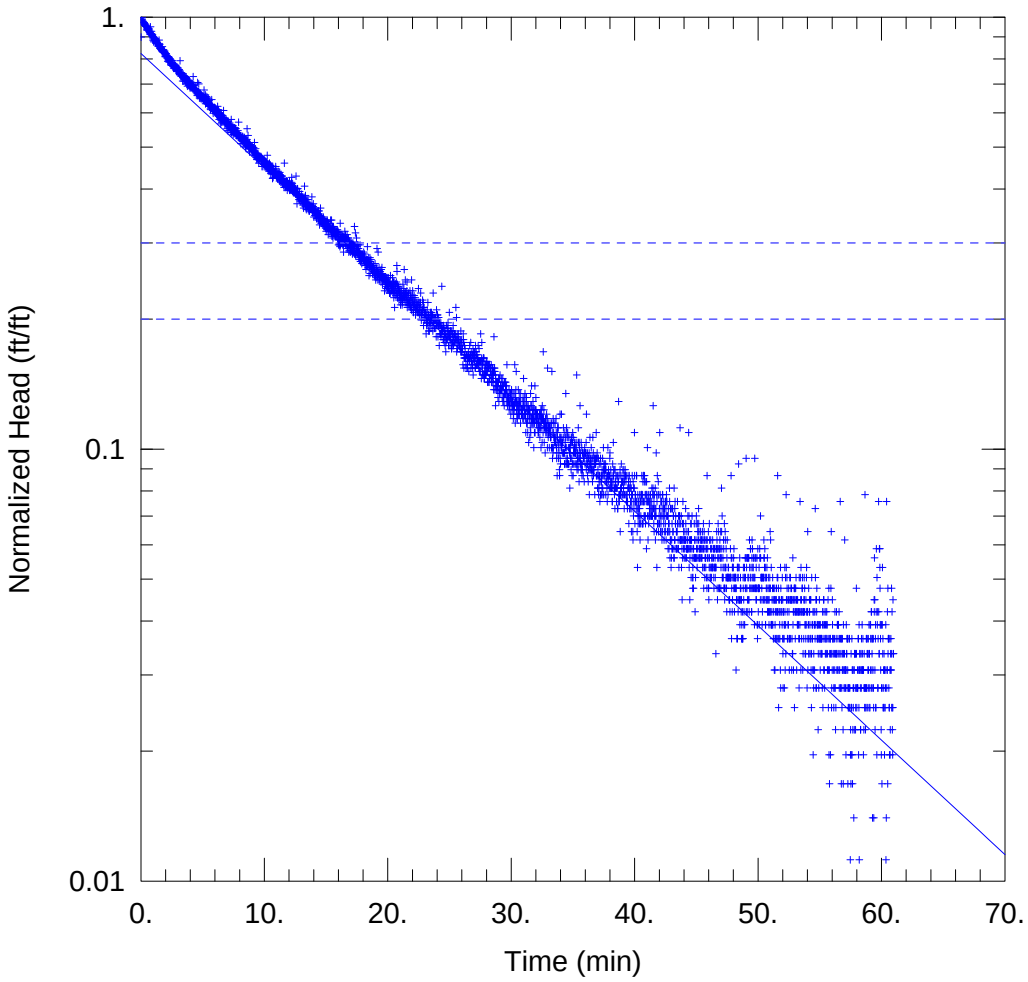
Saturated Thickness: 8.8 ft Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (RL-1 Slug A)

Initial Displacement: 0.315 ft
Total Well Penetration Depth: 8.8 ft
Casing Radius: 0.208 ft
Static Water Column Height: 8.8 ft
Screen Length: 8.8 ft
Well Radius: 0.365 ft

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice
K = 0.5538 ft/day
y0 = 0.1871 ft



RL-1 SLUG B

Data Set: S:\...\RL-1_SlugBFallingHead.aqt
Date: 02/19/13 Time: 13:11:06

PROJECT INFORMATION

Company: Rio Algom
Project: 1350.14
Location: Lisbon
Test Well: RL-1
Test Date: 28 Aug 2012

AQUIFER DATA

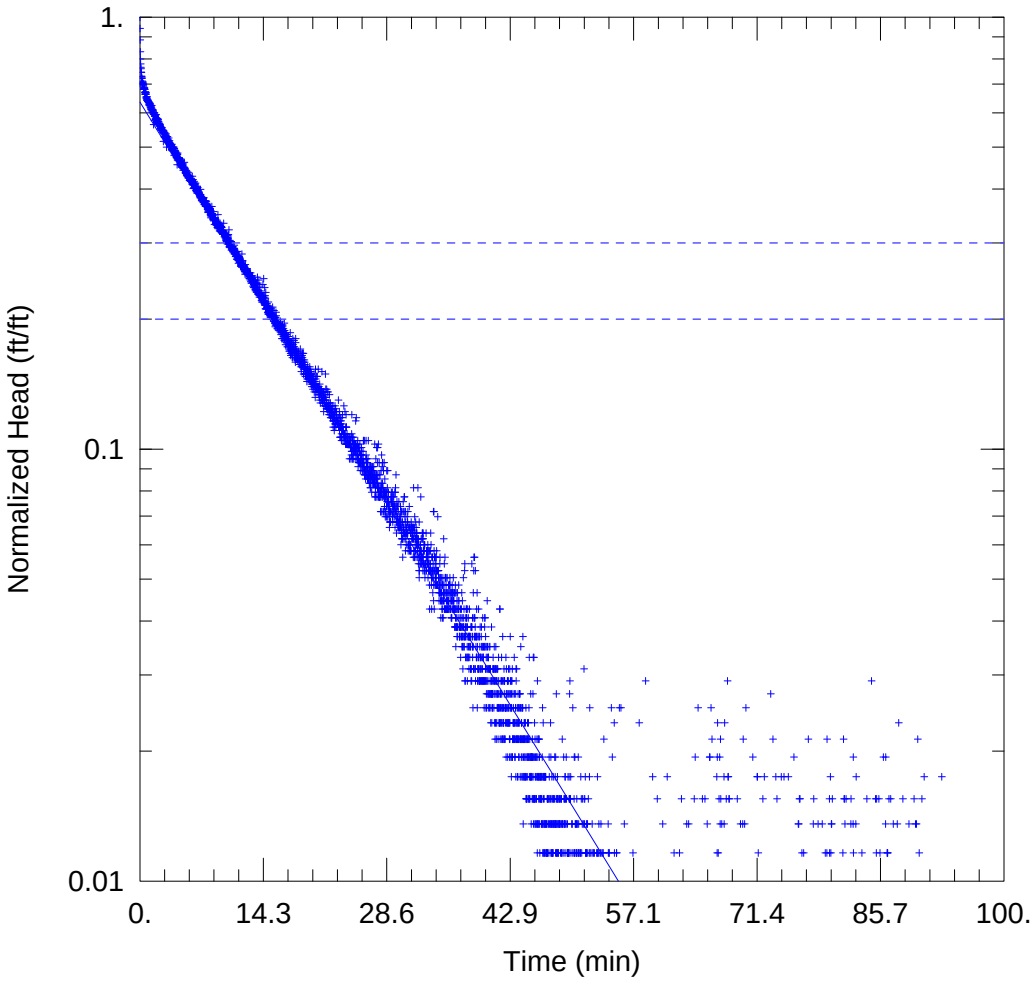
Saturated Thickness: 8.8 ft
Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (RL-1 Slug B)

Initial Displacement: 0.357 ft
Total Well Penetration Depth: 8.8 ft
Casing Radius: 0.208 ft
Static Water Column Height: 8.8 ft
Screen Length: 8.8 ft
Well Radius: 0.365 ft

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice
K = 0.5145 ft/day
y0 = 0.2941 ft



RL-1 SLUG B

Data Set: S:\...\RL-1_SlugBRisingHead.aqt
Date: 02/19/13 Time: 13:11:03

PROJECT INFORMATION

Company: Rio Algom
Project: 1350.14
Location: Lisbon
Test Well: RL-1
Test Date: 28 Aug 2012

AQUIFER DATA

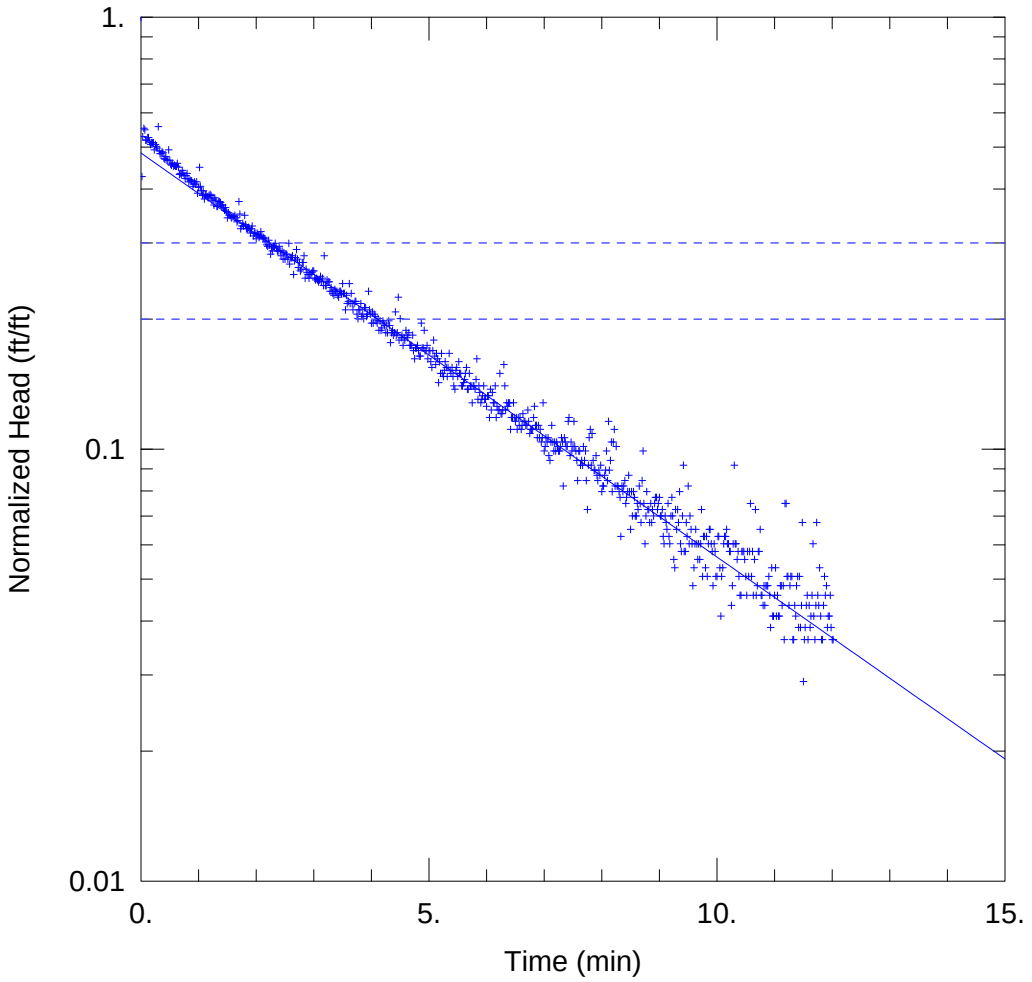
Saturated Thickness: 8.8 ft Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (RL-1 Slug B)

Initial Displacement: 0.516 ft
Total Well Penetration Depth: 8.8 ft
Casing Radius: 0.208 ft
Static Water Column Height: 8.8 ft
Screen Length: 8.8 ft
Well Radius: 0.365 ft

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice
K = 0.6324 ft/day
y0 = 0.3279 ft



RL-3 SLUG A FALLING HEAD

Data Set: S:\...\RL-3_SlugAFallingHead.aqt
Date: 02/19/13 Time: 13:11:46

PROJECT INFORMATION

Company: Rio Algom
Project: 1350.14
Location: Lisbon
Test Well: RL-3
Test Date: 2 Nov 2012

AQUIFER DATA

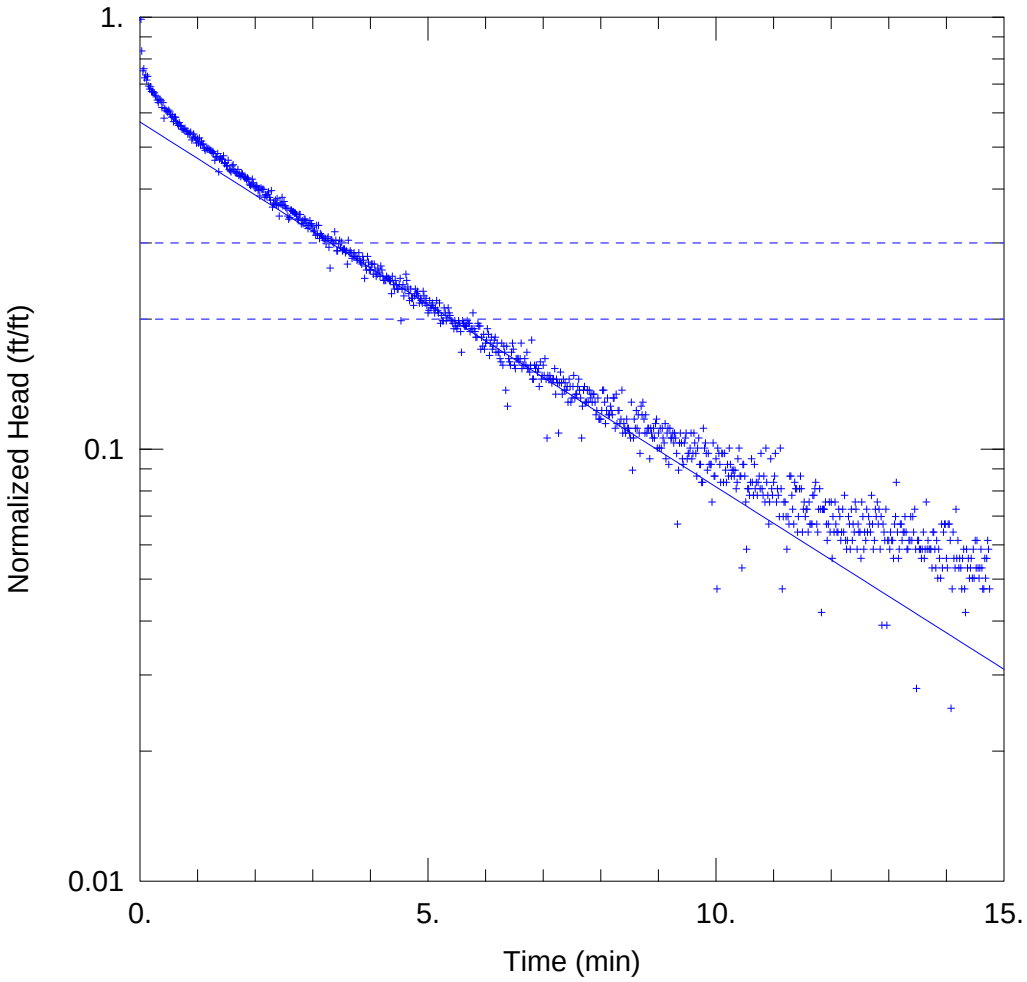
Saturated Thickness: 15. ft
Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (RL-3)

Initial Displacement: 0.414 ft
Total Well Penetration Depth: 15. ft
Casing Radius: 0.208 ft
Static Water Column Height: 15. ft
Screen Length: 15. ft
Well Radius: 0.365 ft

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice
K = 1.267 ft/day
y0 = 0.2006 ft



RL-3 SLUG A RISING HEAD

Data Set: S:\...\RL-3_SlugARisingHead.aqt
Date: 02/19/13 Time: 13:11:43

PROJECT INFORMATION

Company: Rio Algom
Project: 1350.14
Location: Lisbon
Test Well: RL-3
Test Date: 2 Nov 2012

AQUIFER DATA

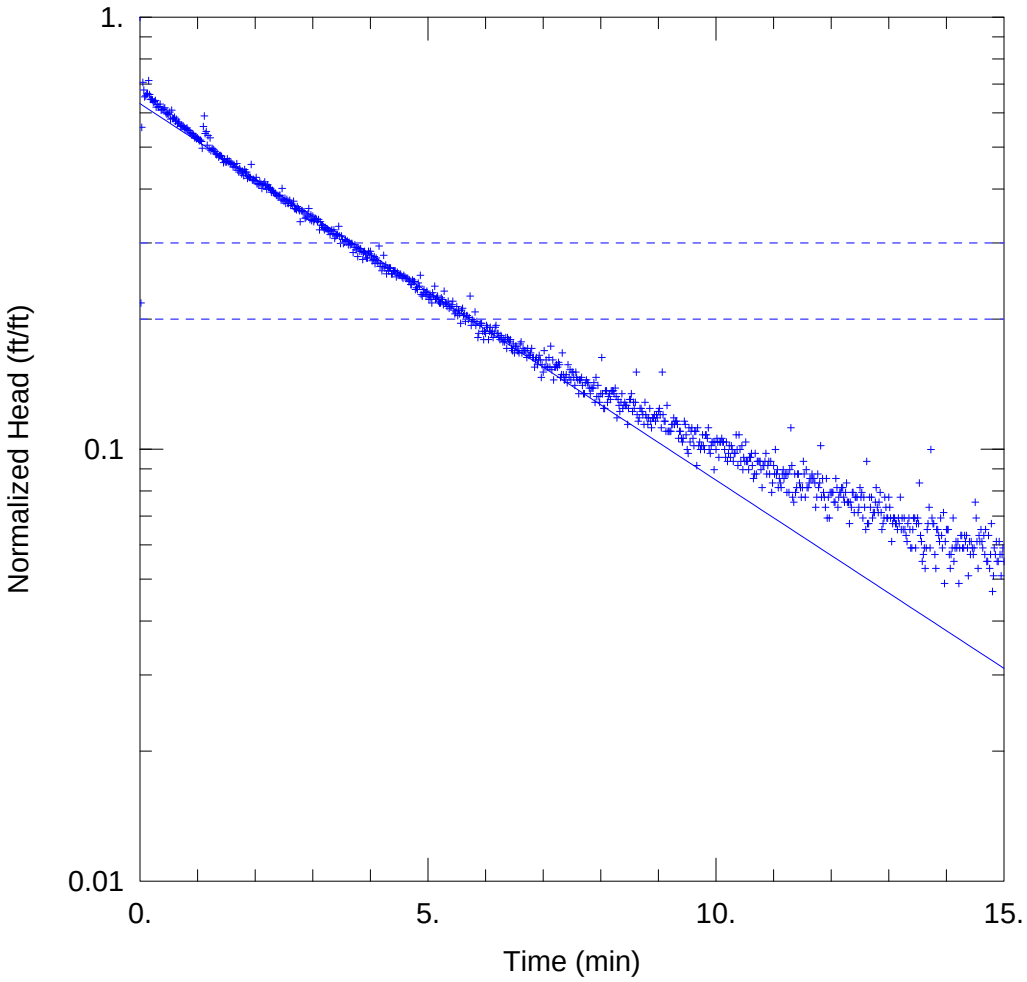
Saturated Thickness: 15. ft
Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (RL-3)

Initial Displacement: 0.358 ft
Total Well Penetration Depth: 15. ft
Casing Radius: 0.208 ft
Static Water Column Height: 15. ft
Screen Length: 15. ft
Well Radius: 0.365 ft

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice
K = 1.145 ft/day
y0 = 0.2047 ft



RL-3 SLUG B FALLING HEAD

Data Set: S:\...\RL-3_SlugBFallingHead.aqt
Date: 02/19/13 Time: 13:11:40

PROJECT INFORMATION

Company: Rio Algom
Project: 1350.14
Location: Lisbon
Test Well: RL-3
Test Date: 2 Nov 2012

AQUIFER DATA

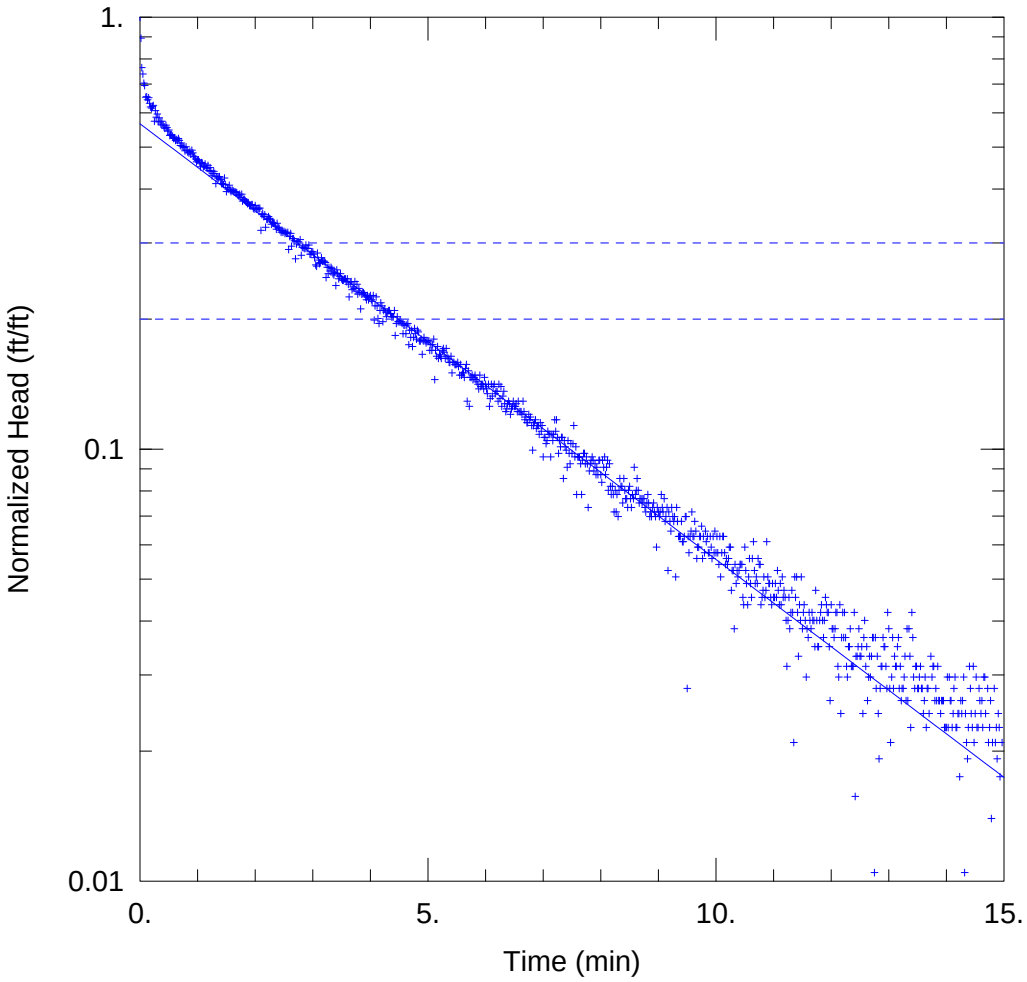
Saturated Thickness: 15. ft
Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (RL-3)

Initial Displacement: 0.491 ft
Total Well Penetration Depth: 15. ft
Casing Radius: 0.208 ft
Static Water Column Height: 15. ft
Screen Length: 15. ft
Well Radius: 0.365 ft

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice
K = 1.181 ft/day
y0 = 0.3096 ft



RL-3 SLUG B RISING HEAD

Data Set: S:\...\RL-3_SlugBRisingHead.aqt
Date: 02/19/13 Time: 13:11:37

PROJECT INFORMATION

Company: Rio Algom
Project: 1350.14
Location: Lisbon
Test Well: RL-3
Test Date: 2 Nov 2012

AQUIFER DATA

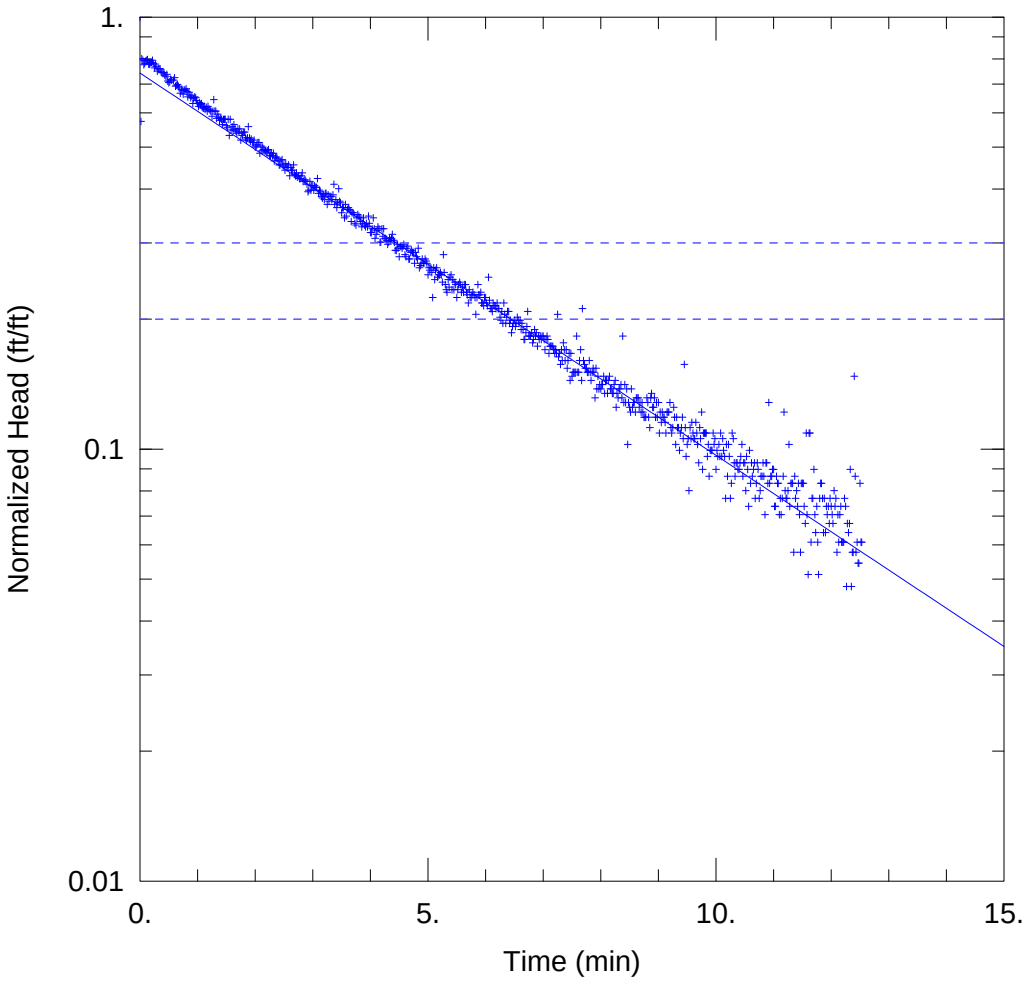
Saturated Thickness: 15. ft
Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (RL-3)

Initial Displacement: 0.573 ft
Total Well Penetration Depth: 15. ft
Casing Radius: 0.208 ft
Static Water Column Height: 15. ft
Screen Length: 15. ft
Well Radius: 0.365 ft

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice
K = 1.367 ft/day
y0 = 0.3246 ft



RL-3 SLUG G FALLING HEAD

Data Set: S:\...\RL-3_SlugGFallingHead.aqt
Date: 02/19/13 Time: 13:11:34

PROJECT INFORMATION

Company: Rio Algom
Project: 1350.14
Location: Lisbon
Test Well: RL-3
Test Date: 2 Nov 2012

AQUIFER DATA

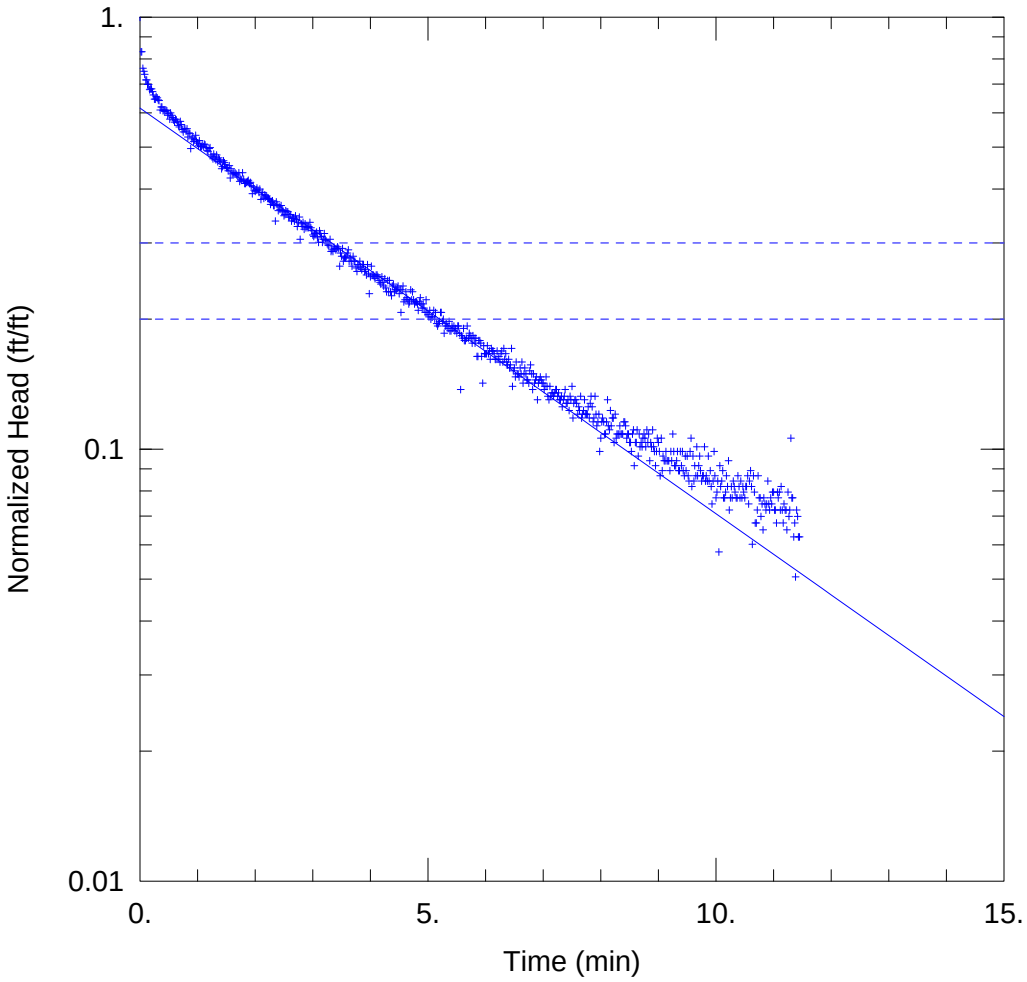
Saturated Thickness: 15. ft
Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (RL-3)

Initial Displacement: 0.312 ft
Total Well Penetration Depth: 15. ft
Casing Radius: 0.208 ft
Static Water Column Height: 15. ft
Screen Length: 15. ft
Well Radius: 0.365 ft

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice
K = 1.199 ft/day
y0 = 0.2316 ft



RL-3 SLUG G RISING HEAD

Data Set: S:\...\RL-3_SlugGRisingHead.aqt
Date: 02/19/13 Time: 13:11:30

PROJECT INFORMATION

Company: Rio Algom
Project: 1350.14
Location: Lisbon
Test Well: RL-3
Test Date: 2 Nov 2012

AQUIFER DATA

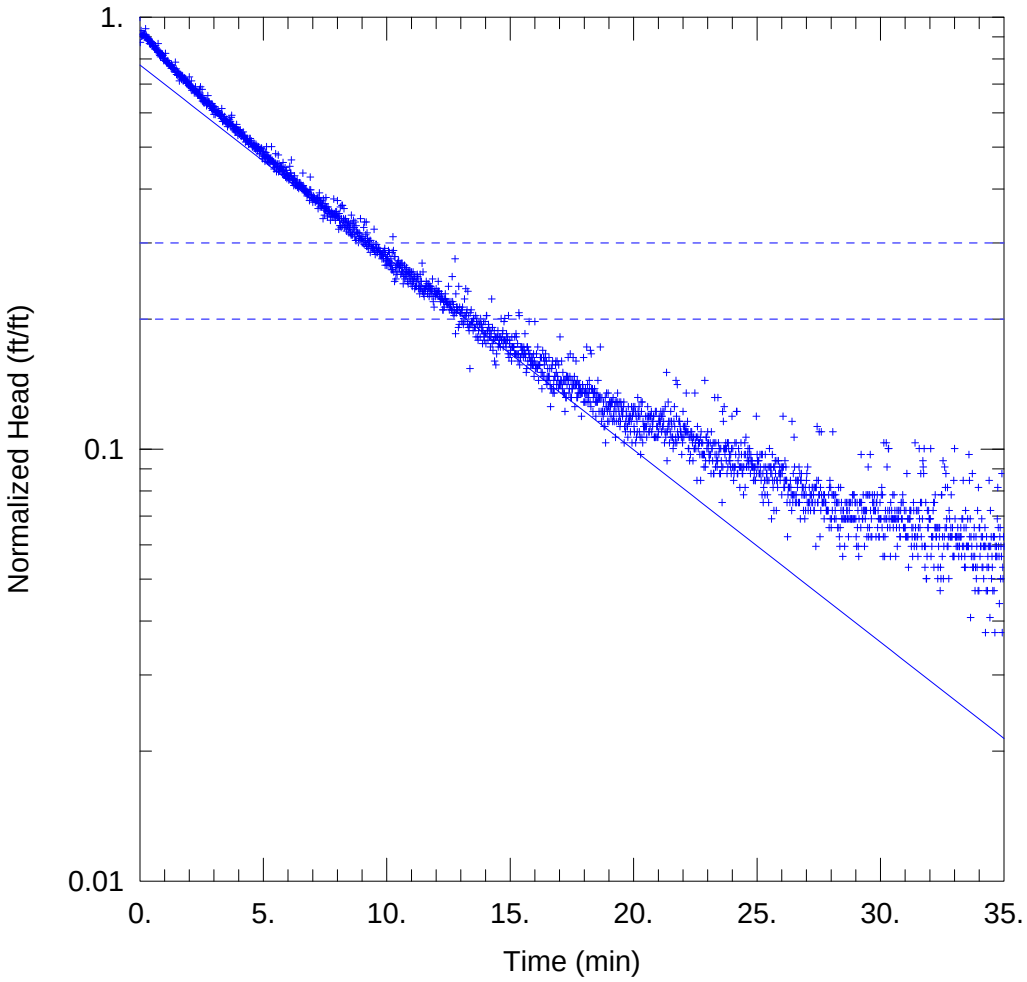
Saturated Thickness: 15. ft
Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (RL-3)

Initial Displacement: 0.415 ft
Total Well Penetration Depth: 15. ft
Casing Radius: 0.208 ft
Static Water Column Height: 15. ft
Screen Length: 15. ft
Well Radius: 0.365 ft

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice
K = 1.273 ft/day
y0 = 0.2556 ft



WELL TEST ANALYSIS

Data Set: S:\...\RL-4_SlugBFallingHead.aqt
Date: 02/19/13 Time: 13:12:18

PROJECT INFORMATION

Company: Rio Algom
Project: 1350.14
Location: Lisbon
Test Well: RL-4
Test Date: 26 Aug 2012

AQUIFER DATA

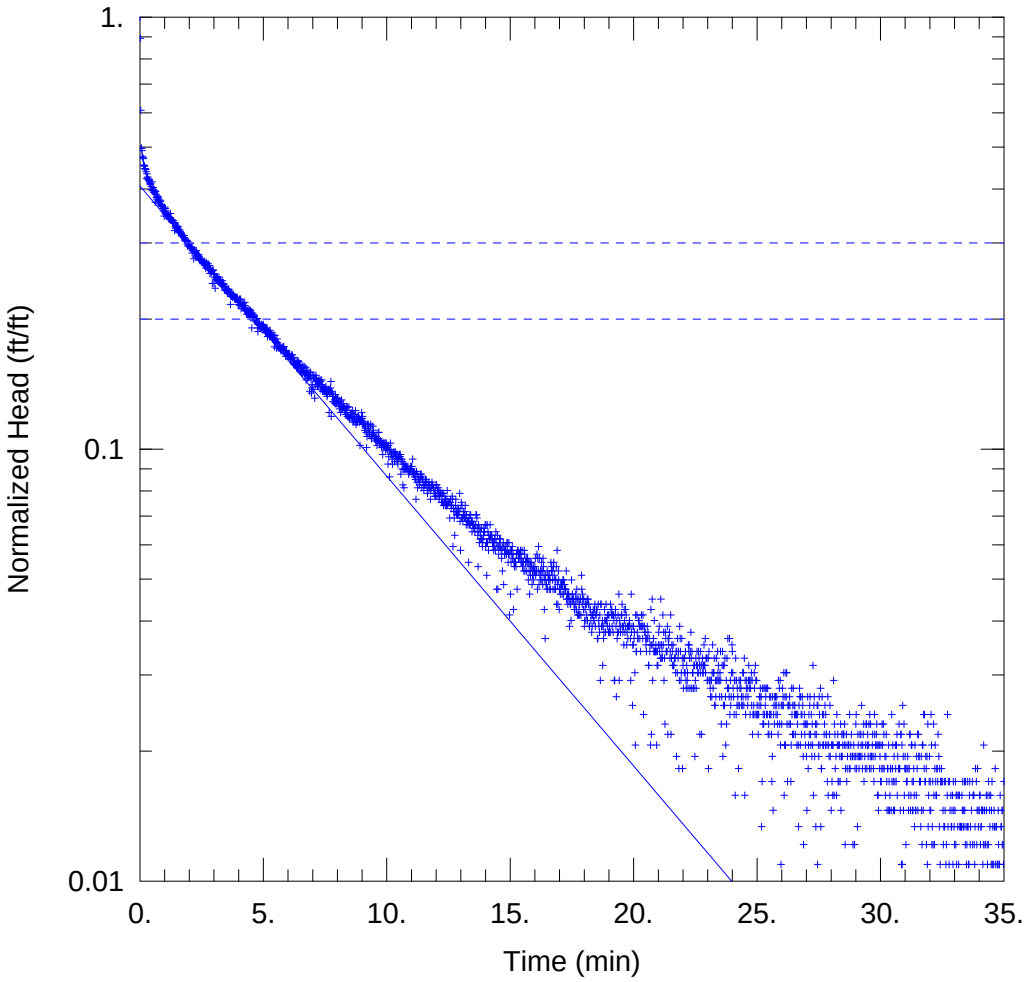
Saturated Thickness: 21.9 ft Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (RL-4 Slug B Falling Head)

Initial Displacement: 0.319 ft Static Water Column Height: 21.9 ft
Total Well Penetration Depth: 21.9 ft Screen Length: 21.9 ft
Casing Radius: 0.2083 ft Well Radius: 0.3646 ft

SOLUTION

Aquifer Model: Unconfined Solution Method: Bouwer-Rice
K = 0.4594 ft/day y0 = 0.2471 ft



WELL TEST ANALYSIS

Data Set: S:\...\RL-4_SlugBRisingHead.aqt
Date: 02/19/13 Time: 13:12:15

PROJECT INFORMATION

Company: Rio Algom
Project: 1350.14
Location: Lisbon
Test Well: RL-4
Test Date: 26 Aug 2012

AQUIFER DATA

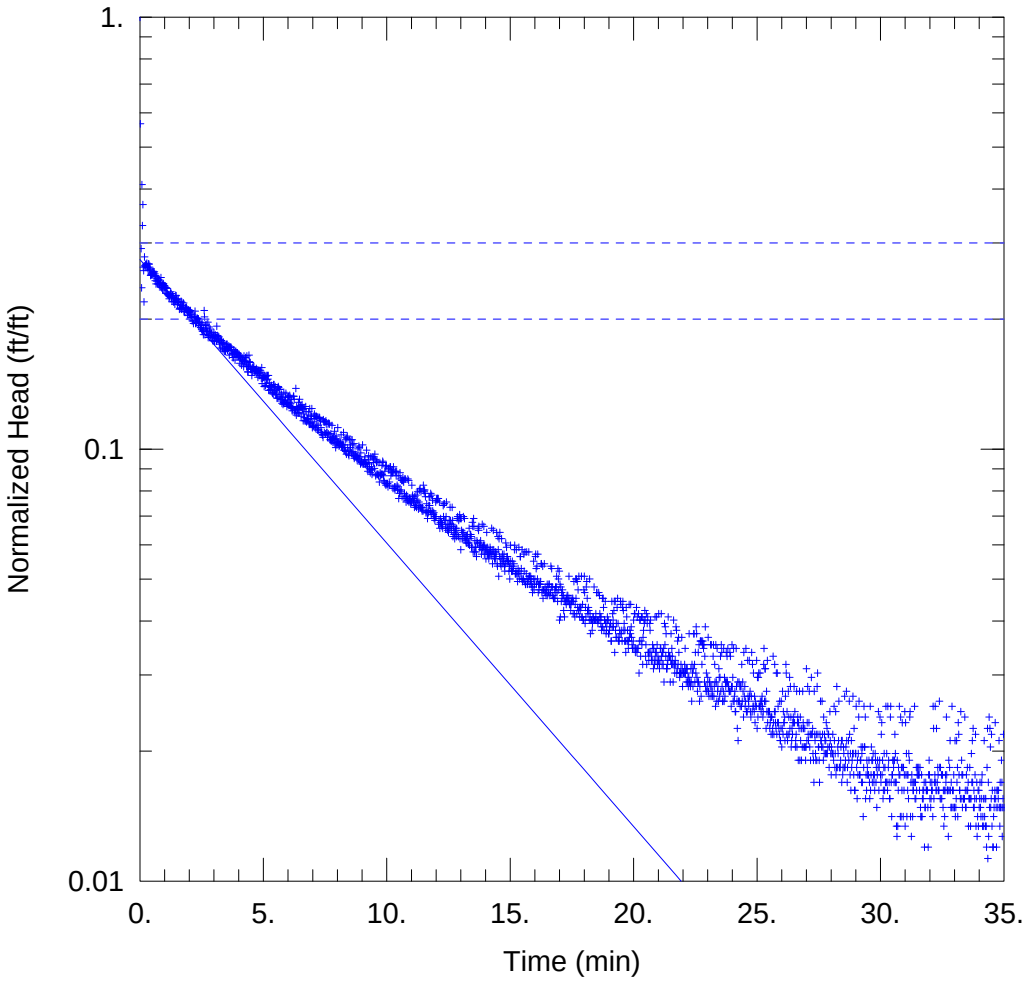
Saturated Thickness: 21.9 ft Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (RL-4 Slug B Rising Head)

Initial Displacement: 0.823 ft Static Water Column Height: 21.9 ft
Total Well Penetration Depth: 21.9 ft Screen Length: 21.9 ft
Casing Radius: 0.2083 ft Well Radius: 0.3646 ft

SOLUTION

Aquifer Model: Unconfined Solution Method: Bouwer-Rice
K = 0.6925 ft/day y0 = 0.3344 ft



WELL TEST ANALYSIS

Data Set: S:\...\RL-4_SlugCFallingHead.aqt
Date: 02/19/13 Time: 13:12:12

PROJECT INFORMATION

Company: Rio Algom
Project: 1350.14
Location: Lisbon
Test Well: RL-4
Test Date: 26 Aug 2012

AQUIFER DATA

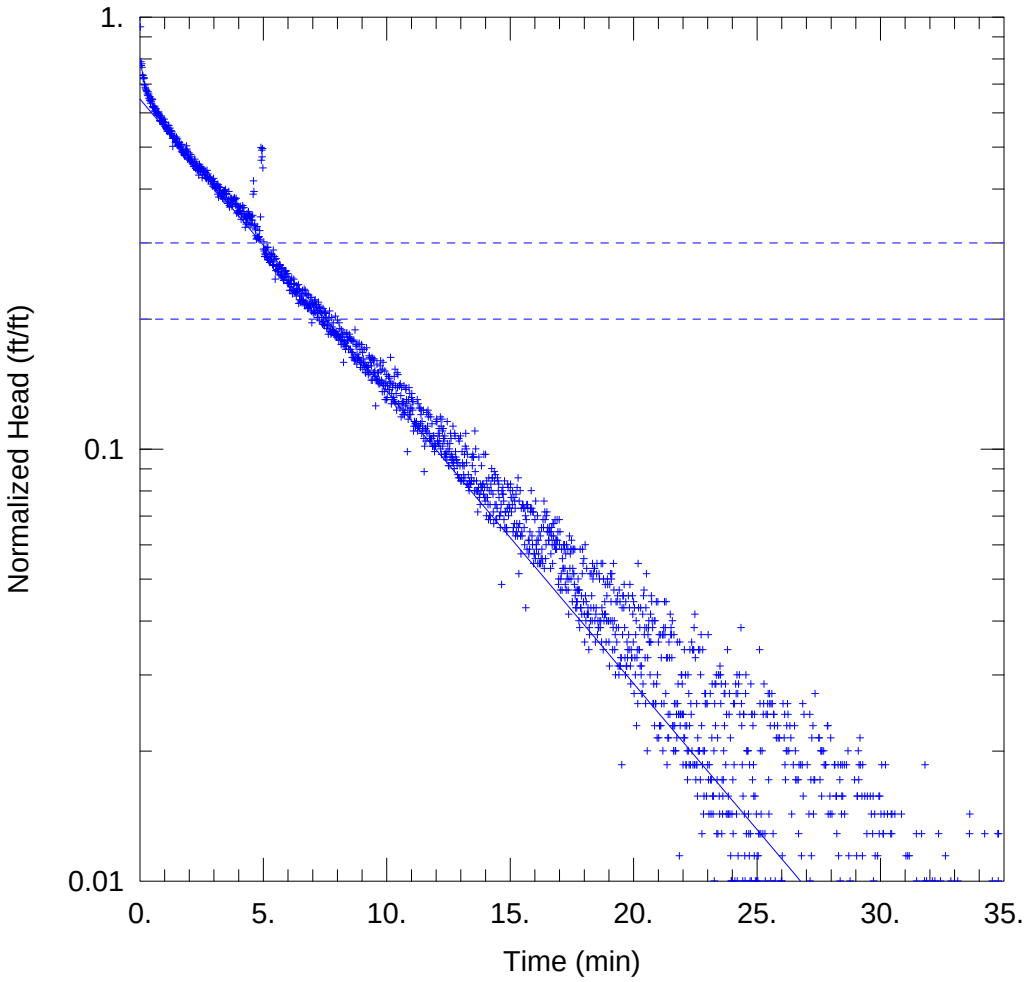
Saturated Thickness: 21.9 ft Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (RL-4 Slug C Falling Head)

Initial Displacement: 1.418 ft
Total Well Penetration Depth: 21.9 ft
Casing Radius: 0.2083 ft
Static Water Column Height: 21.9 ft
Screen Length: 21.9 ft
Well Radius: 0.3646 ft

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice
K = 0.6769 ft/day
y0 = 0.3894 ft



WELL TEST ANALYSIS

Data Set: S:\...\RL-4_SlugCRisingHead.aqt
Date: 02/19/13 Time: 13:12:09

PROJECT INFORMATION

Company: Rio Algom
Project: 1350.14
Location: Lisbon
Test Well: RL-4
Test Date: 26 Aug 2012

AQUIFER DATA

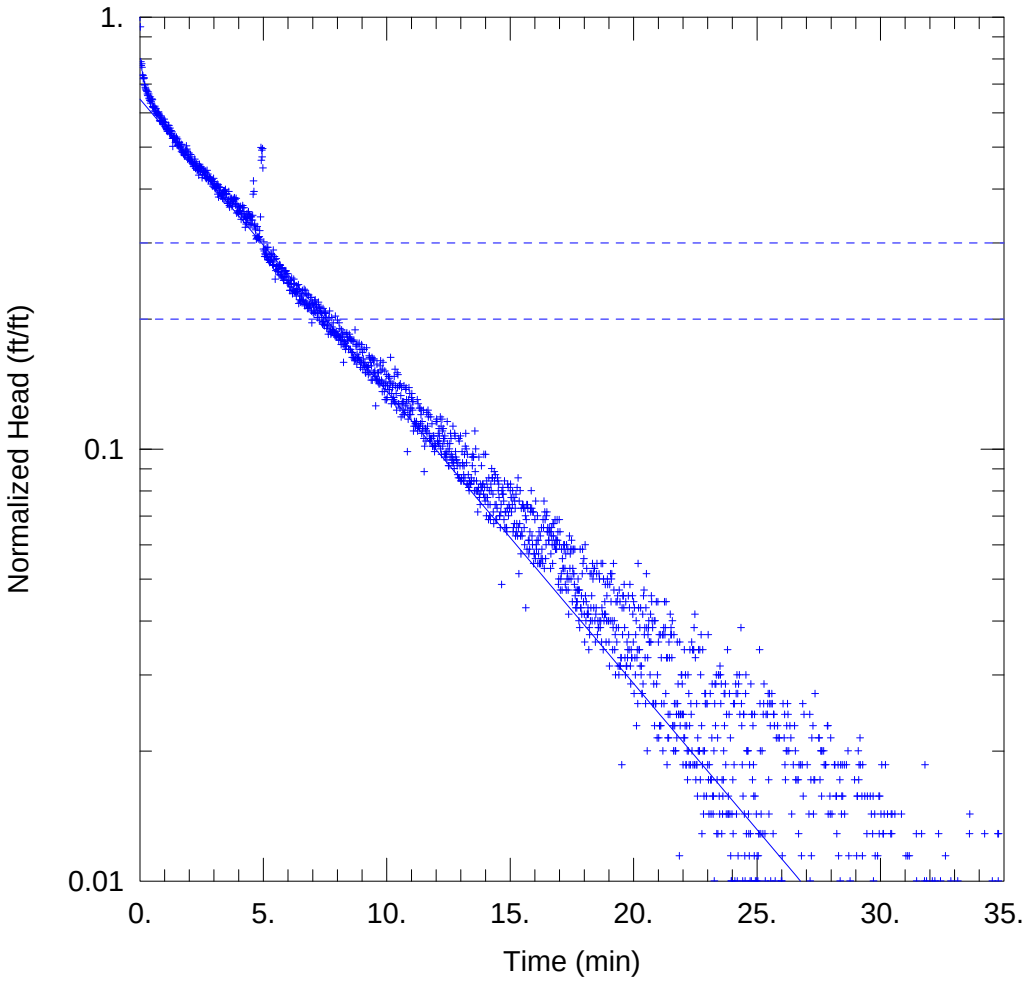
Saturated Thickness: 21.9 ft Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (RL-4 Slug C Rising Head)

Initial Displacement: 0.699 ft Static Water Column Height: 21.9 ft
Total Well Penetration Depth: 21.9 ft Screen Length: 21.9 ft
Casing Radius: 0.2083 ft Well Radius: 0.3646 ft

SOLUTION

Aquifer Model: Unconfined Solution Method: Bouwer-Rice
K = 0.6979 ft/day y0 = 0.4516 ft



WELL TEST ANALYSIS

Data Set: S:\...\RL-4_SlugDFallingHead.aqt
Date: 02/19/13 Time: 13:12:06

PROJECT INFORMATION

Company: Rio Algom
Project: 1350.14
Location: Lisbon
Test Well: RL-4
Test Date: 26 Aug 2012

AQUIFER DATA

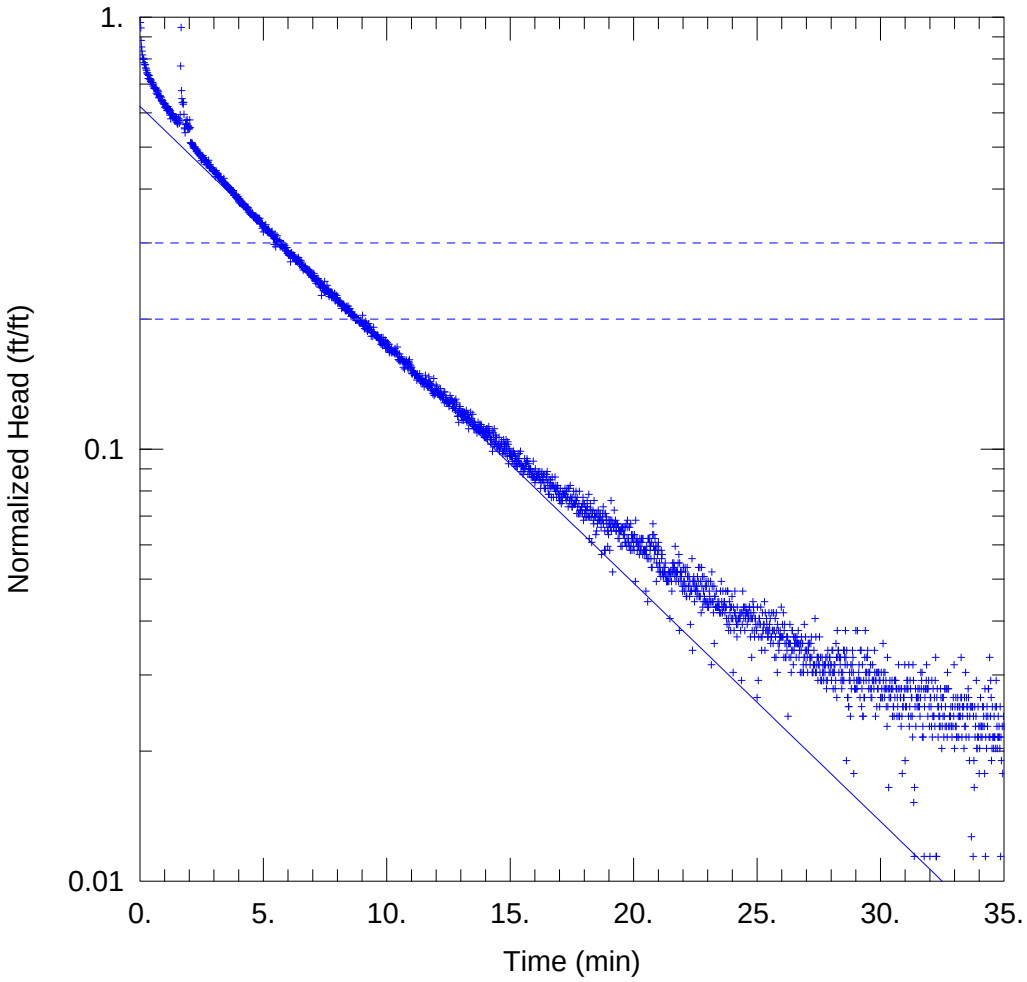
Saturated Thickness: 21.9 ft Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (RL-4 Slug C Rising Head)

Initial Displacement: 0.699 ft Static Water Column Height: 21.9 ft
Total Well Penetration Depth: 21.9 ft Screen Length: 21.9 ft
Casing Radius: 0.2083 ft Well Radius: 0.3646 ft

SOLUTION

Aquifer Model: Unconfined Solution Method: Bouwer-Rice
K = 0.6979 ft/day y0 = 0.4516 ft



WELL TEST ANALYSIS

Data Set: S:\...\RL-4_SlugDRisingHead.aqt
Date: 02/19/13 Time: 13:12:03

PROJECT INFORMATION

Company: Rio Algom
Project: 1350.14
Location: Lisbon
Test Well: RL-4
Test Date: 26 Aug 2012

AQUIFER DATA

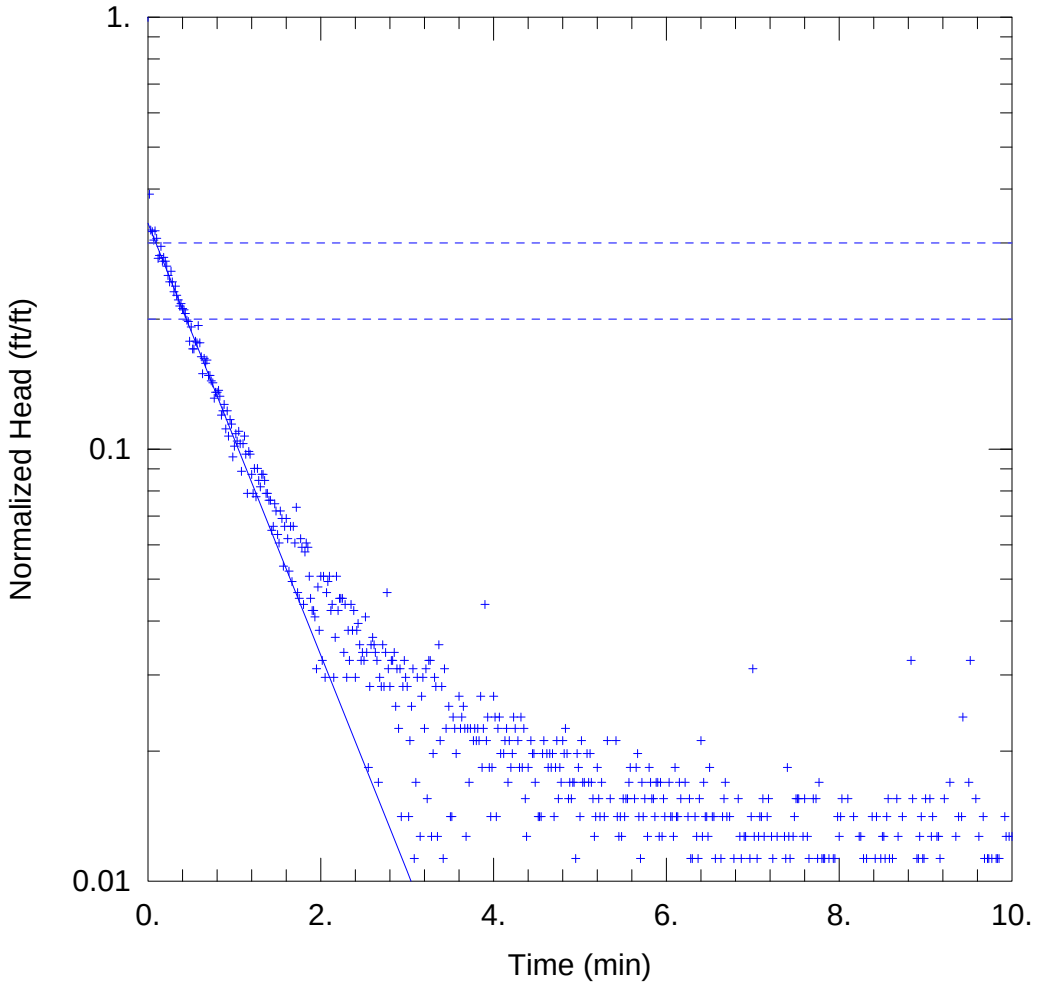
Saturated Thickness: 21.9 ft Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (RL-4 Slug D Rising Head)

Initial Displacement: 0.789 ft Static Water Column Height: 21.9 ft
Total Well Penetration Depth: 21.9 ft Screen Length: 21.9 ft
Casing Radius: 0.2083 ft Well Radius: 0.3646 ft

SOLUTION

Aquifer Model: Unconfined Solution Method: Bouwer-Rice
K = 0.5693 ft/day y0 = 0.4902 ft



WELL TEST ANALYSIS

Data Set: S:\...\RL-5_SlugBFallingHeadGraph.aqt
Date: 07/09/14 Time: 10:52:18

PROJECT INFORMATION

Company: Rio Algom
Project: 1350.14
Location: Lisbon
Test Well: RL-5
Test Date: 25 Aug 2012

AQUIFER DATA

Saturated Thickness: 36.4 ft Anisotropy Ratio (Kz/Kr): 1.

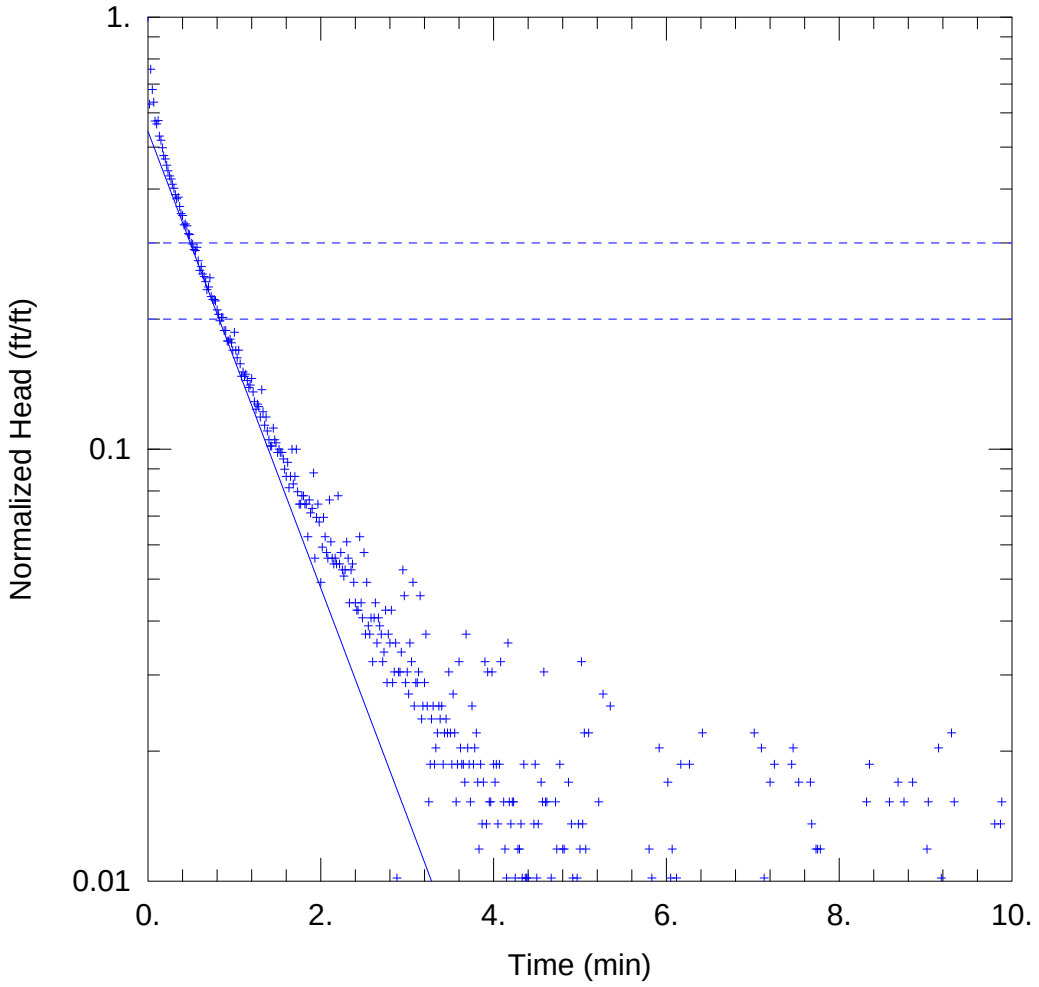
WELL DATA (RL-5 Slug B Falling Head)

Initial Displacement: 0.709 ft
Total Well Penetration Depth: 36.4 ft
Casing Radius: 0.2083 ft
Static Water Column Height: 36.4 ft
Screen Length: 36.4 ft
Well Radius: 0.3646 ft

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice

K = 3.501 ft/day
y0 = 0.2364 ft



WELL TEST ANALYSIS

Data Set: S:\...\RL-5_SlugBRisingHeadGraph.aqt
Date: 07/09/14 Time: 10:52:31

PROJECT INFORMATION

Company: Rio Algom
Project: 1350.14
Location: Lisbon
Test Well: RL-5
Test Date: 25 Aug 2012

AQUIFER DATA

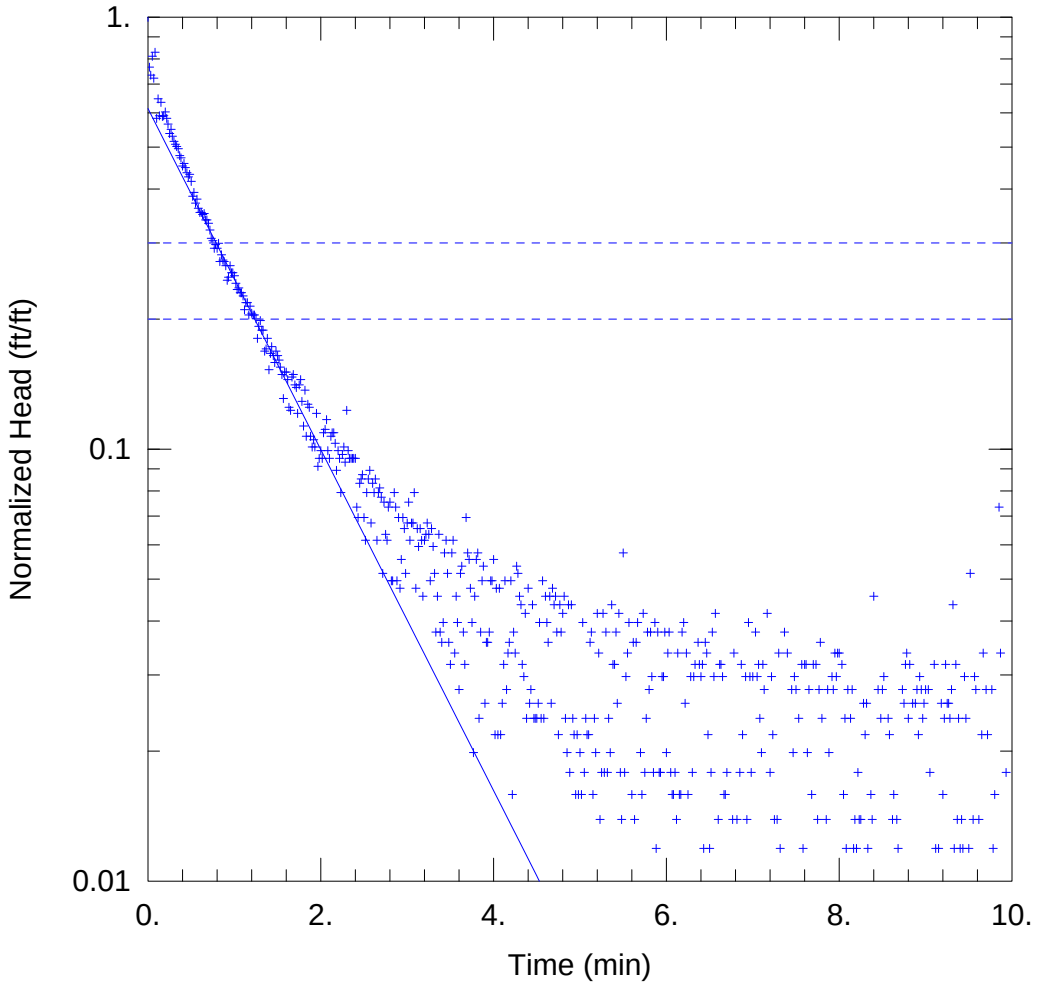
Saturated Thickness: 36.4 ft Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (RL-5 Slug B Rising Head)

Initial Displacement: 0.59 ft
Total Well Penetration Depth: 36.4 ft
Casing Radius: 0.2083 ft
Static Water Column Height: 36.4 ft
Screen Length: 36.4 ft
Well Radius: 0.3646 ft

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice
K = 3.701 ft/day
y0 = 0.321 ft



WELL TEST ANALYSIS

Data Set: S:\...\RL-5_SlugCFallingHeadGraph.aqt
Date: 07/09/14 Time: 10:52:58

PROJECT INFORMATION

Company: Rio Algom
Project: 1350.14
Location: Lisbon
Test Well: RL-5
Test Date: 25 Aug 2012

AQUIFER DATA

Saturated Thickness: 36.4 ft Anisotropy Ratio (Kz/Kr): 1.

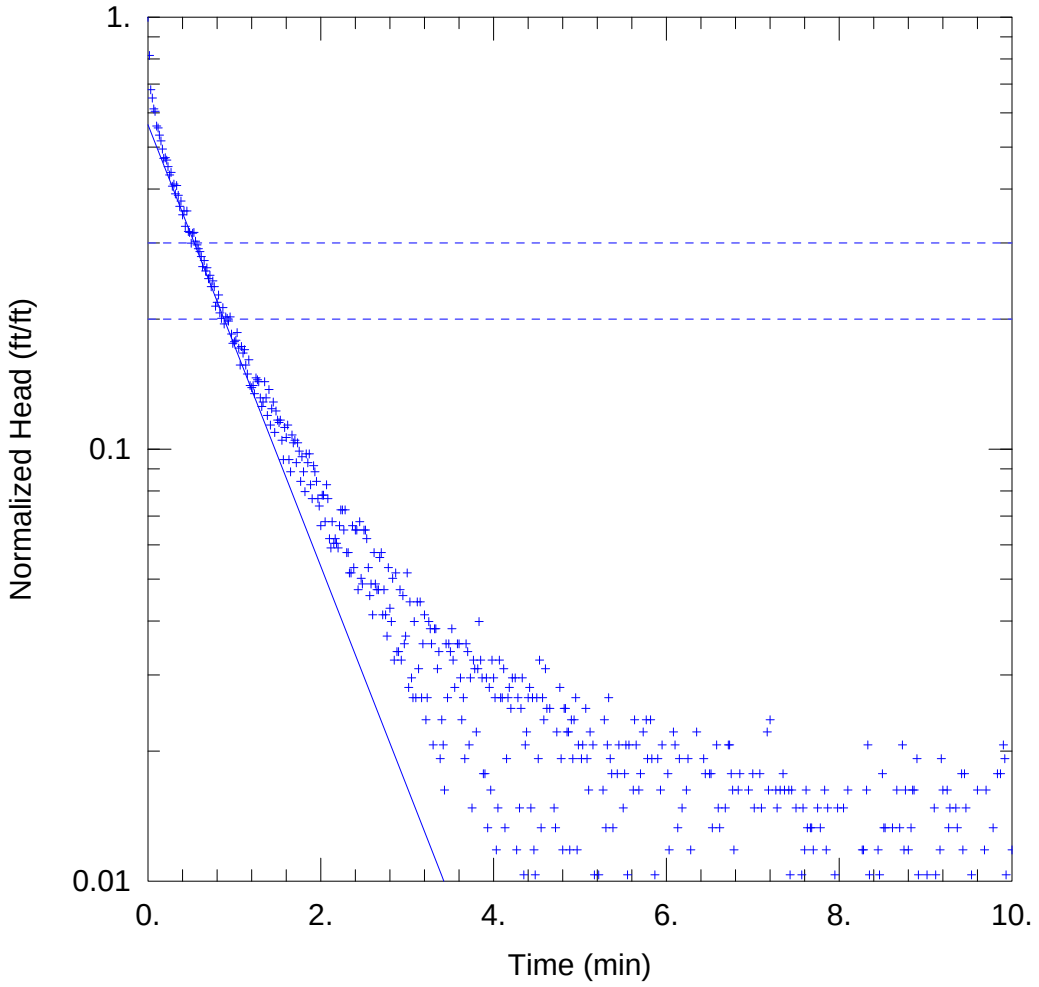
WELL DATA (RL-5 Slug C Falling Head)

Initial Displacement: 0.504 ft
Total Well Penetration Depth: 36.4 ft
Casing Radius: 0.2083 ft
Static Water Column Height: 36.4 ft
Screen Length: 36.4 ft
Well Radius: 0.3646 ft

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice

K = 2.763 ft/day
y0 = 0.3095 ft



WELL TEST ANALYSIS

Data Set: S:\...\RL-5_SlugCRisingHeadGraph.aqt
Date: 07/09/14 Time: 10:53:10

PROJECT INFORMATION

Company: Rio Algom
Project: 1350.14
Location: Lisbon
Test Well: RL-5
Test Date: 25 Aug 2012

AQUIFER DATA

Saturated Thickness: 36.4 ft Anisotropy Ratio (Kz/Kr): 1.

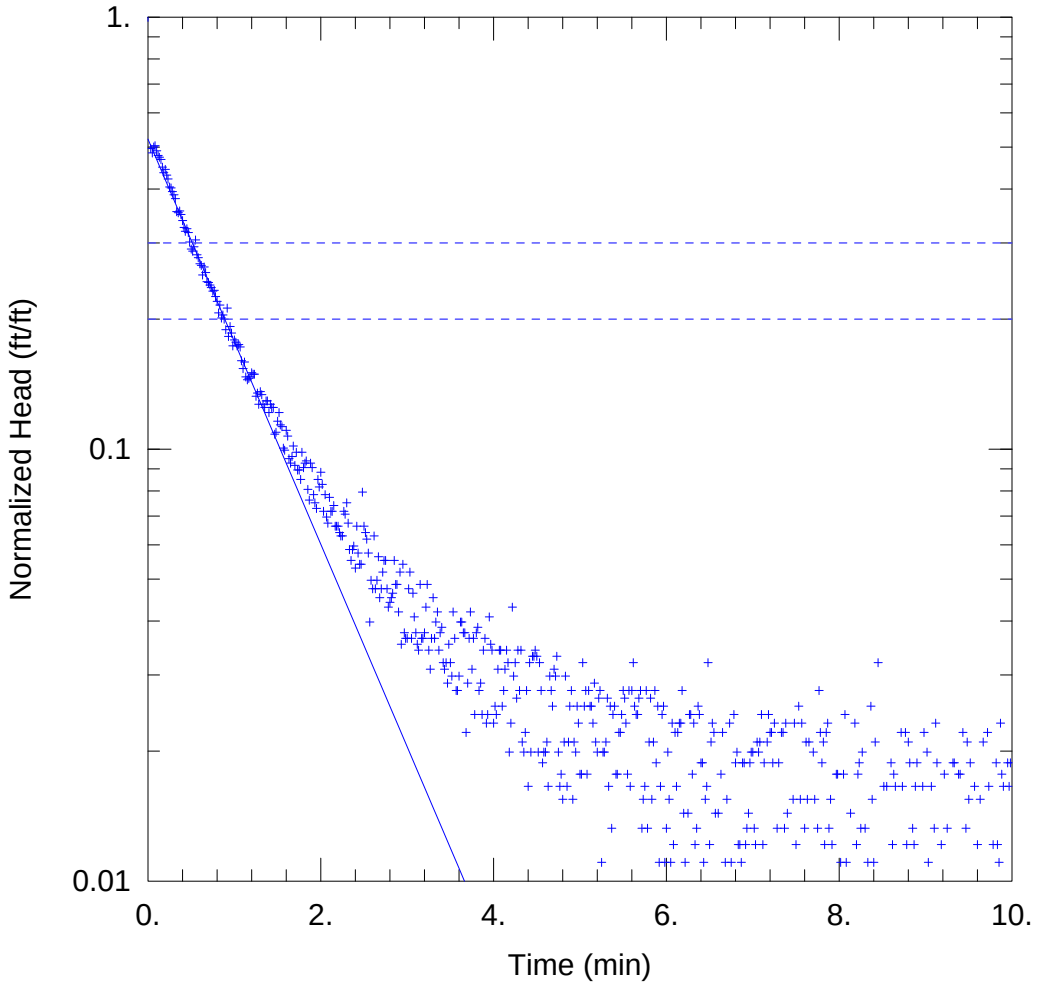
WELL DATA (RL-5 Slug C Rising Head)

Initial Displacement: 0.677 ft
Total Well Penetration Depth: 36.4 ft
Casing Radius: 0.2083 ft
Static Water Column Height: 36.4 ft
Screen Length: 36.4 ft
Well Radius: 0.3646 ft

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice

K = 3.579 ft/day
y0 = 0.3815 ft



WELL TEST ANALYSIS

Data Set: S:\...\RL-5_SlugDFallingHeadGraph.aqt
Date: 07/09/14 Time: 10:53:26

PROJECT INFORMATION

Company: Rio Algom
Project: 1350.14
Location: Lisbon
Test Well: RL-5
Test Date: 25 Aug 2012

AQUIFER DATA

Saturated Thickness: 36.4 ft Anisotropy Ratio (Kz/Kr): 1.

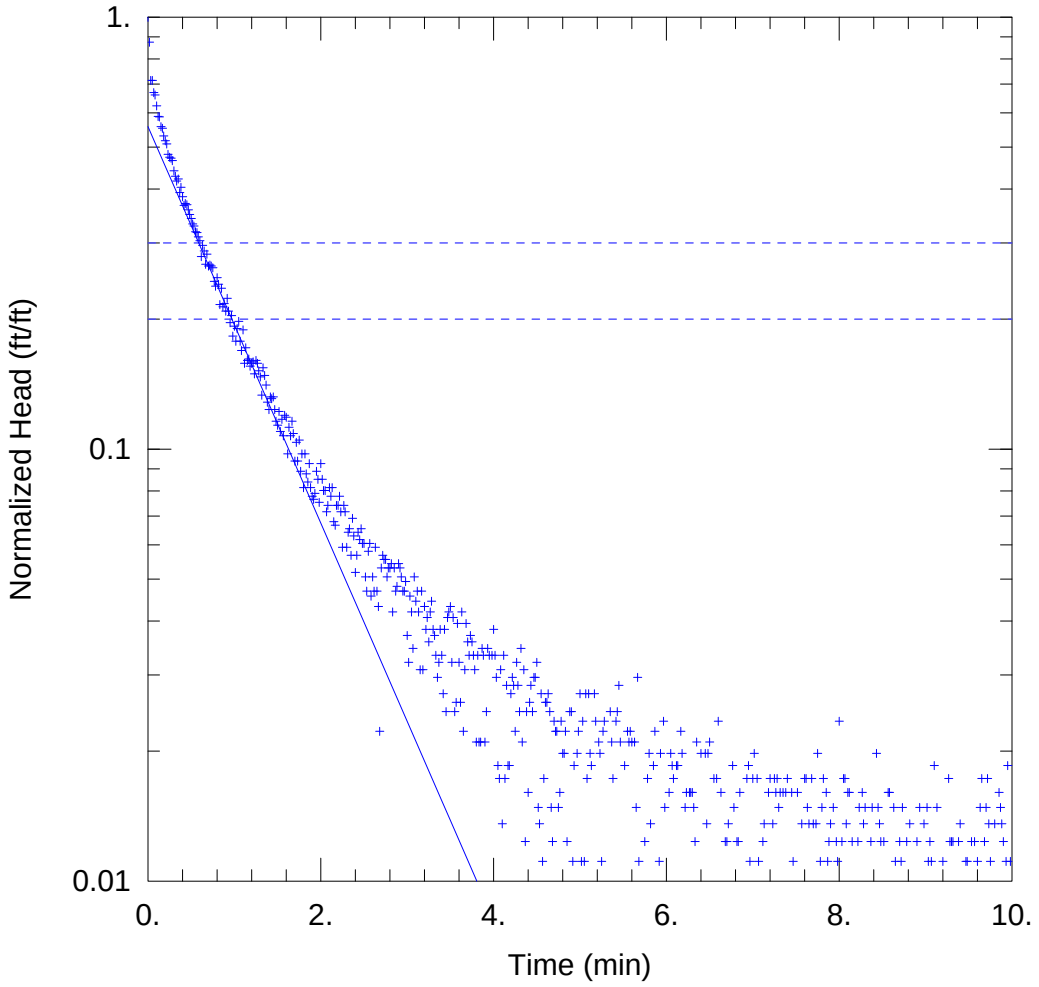
WELL DATA (RL-5 Slug D Falling Head)

Initial Displacement: 0.905 ft
Total Well Penetration Depth: 36.4 ft
Casing Radius: 0.2083 ft
Static Water Column Height: 36.4 ft
Screen Length: 36.4 ft
Well Radius: 0.3646 ft

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice

K = 3.282 ft/day
y0 = 0.4722 ft



WELL TEST ANALYSIS

Data Set: S:\...\RL-5_SlugDRisingHeadGraph.aqt
Date: 07/09/14 Time: 10:53:36

PROJECT INFORMATION

Company: Rio Algom
Project: 1350.14
Location: Lisbon
Test Well: RL-5
Test Date: 25 Aug 2012

AQUIFER DATA

Saturated Thickness: 36.4 ft Anisotropy Ratio (Kz/Kr): 1.

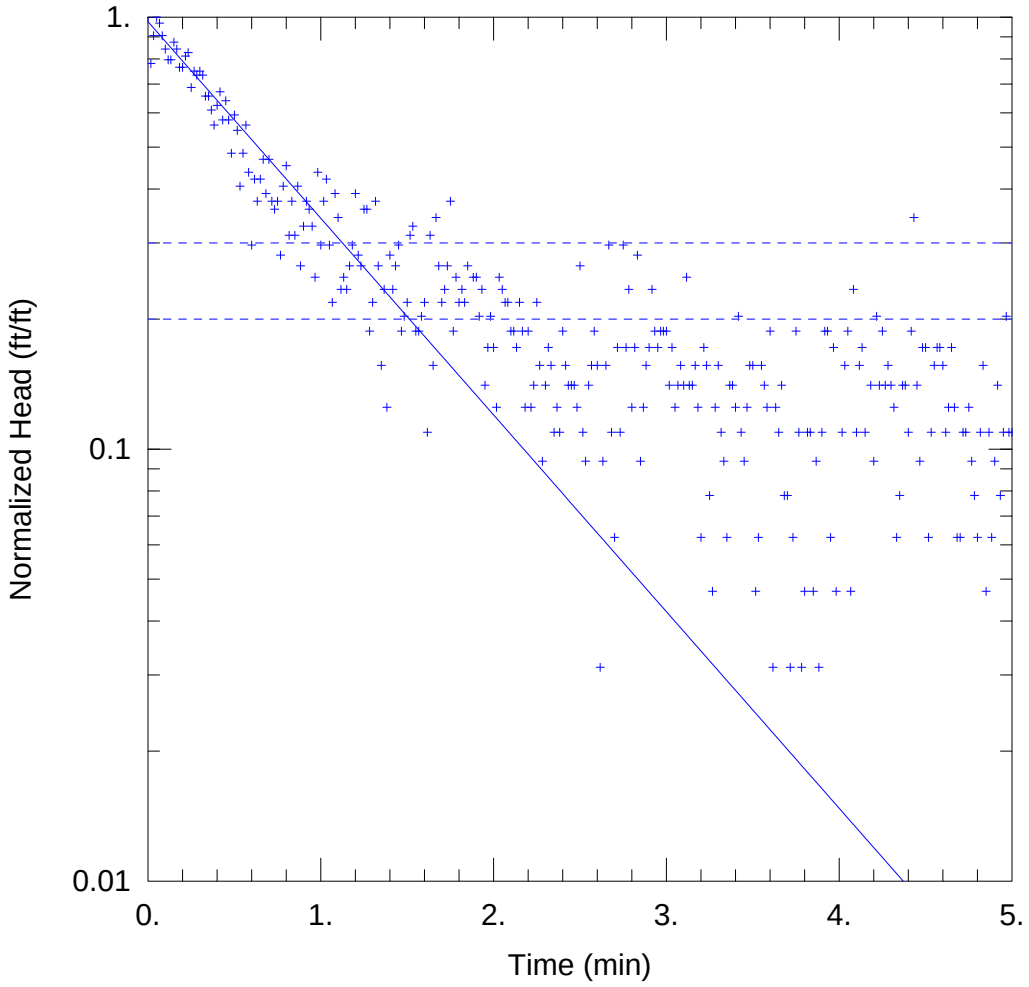
WELL DATA (RL-5 Slug D Rising Head)

Initial Displacement: 0.81 ft
Total Well Penetration Depth: 36.4 ft
Casing Radius: 0.2083 ft
Static Water Column Height: 36.4 ft
Screen Length: 36.4 ft
Well Radius: 0.3646 ft

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice

K = 3.213 ft/day
y0 = 0.4519 ft



WELL TEST ANALYSIS

Data Set: S:\...\RL-6_SlugAFallingHeadSmallHo.aqt
Date: 07/09/14 Time: 10:55:27

PROJECT INFORMATION

Company: Rio Algom
Project: 1350.14
Location: Lisbon
Test Well: RL-6
Test Date: 25 Aug 2012

AQUIFER DATA

Saturated Thickness: 6.03 ft Anisotropy Ratio (Kz/Kr): 1.

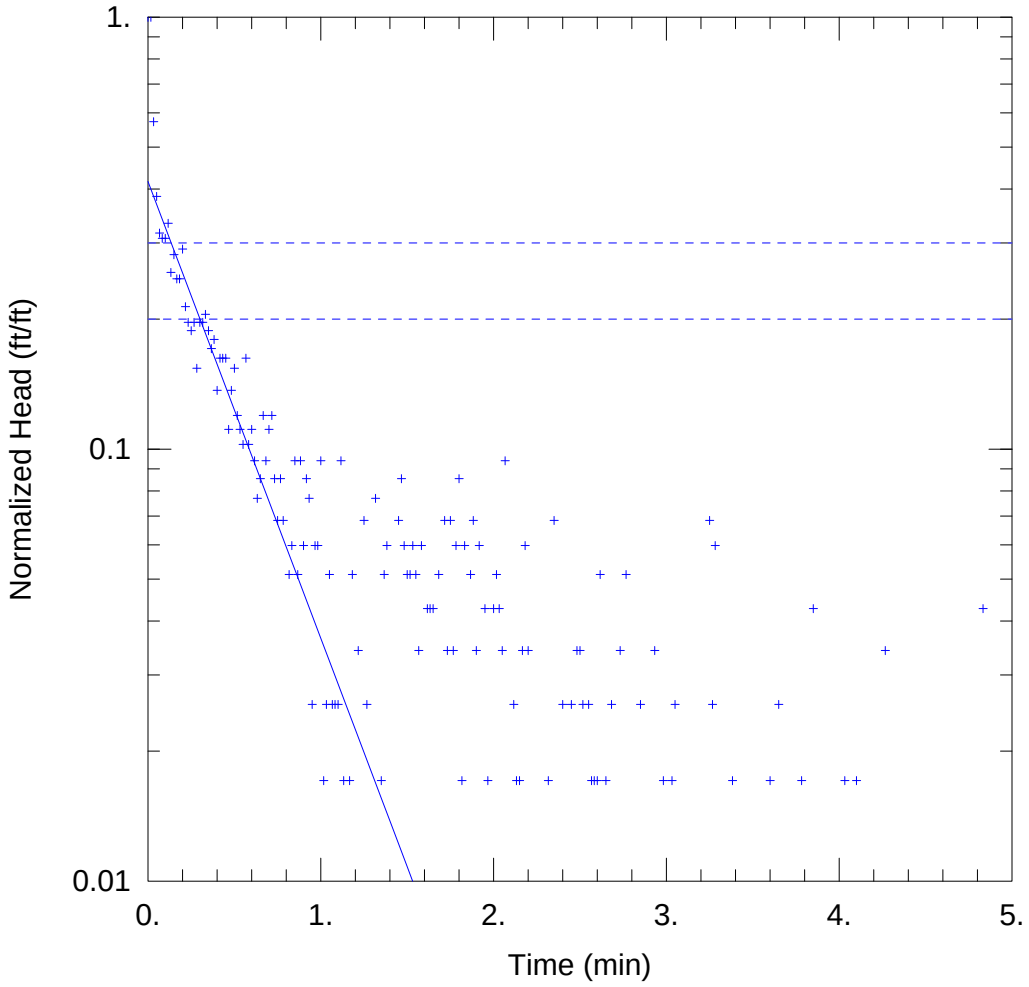
WELL DATA (RL-6 Slug A Falling Head)

Initial Displacement: 0.064 ft
Total Well Penetration Depth: 6.03 ft
Casing Radius: 0.2083 ft
Static Water Column Height: 6.03 ft
Screen Length: 6.03 ft
Well Radius: 0.3646 ft

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice

K = 11.17 ft/day
y0 = 0.06246 ft



WELL TEST ANALYSIS

Data Set: S:\...\RL-6_SlugARisingHeadSmallHo.aqt
Date: 07/09/14 Time: 10:58:19

PROJECT INFORMATION

Company: Rio Algom
Project: 1350.14
Location: Lisbon
Test Well: RL-6
Test Date: 25 Aug 2012

AQUIFER DATA

Saturated Thickness: 6.03 ft Anisotropy Ratio (Kz/Kr): 1.

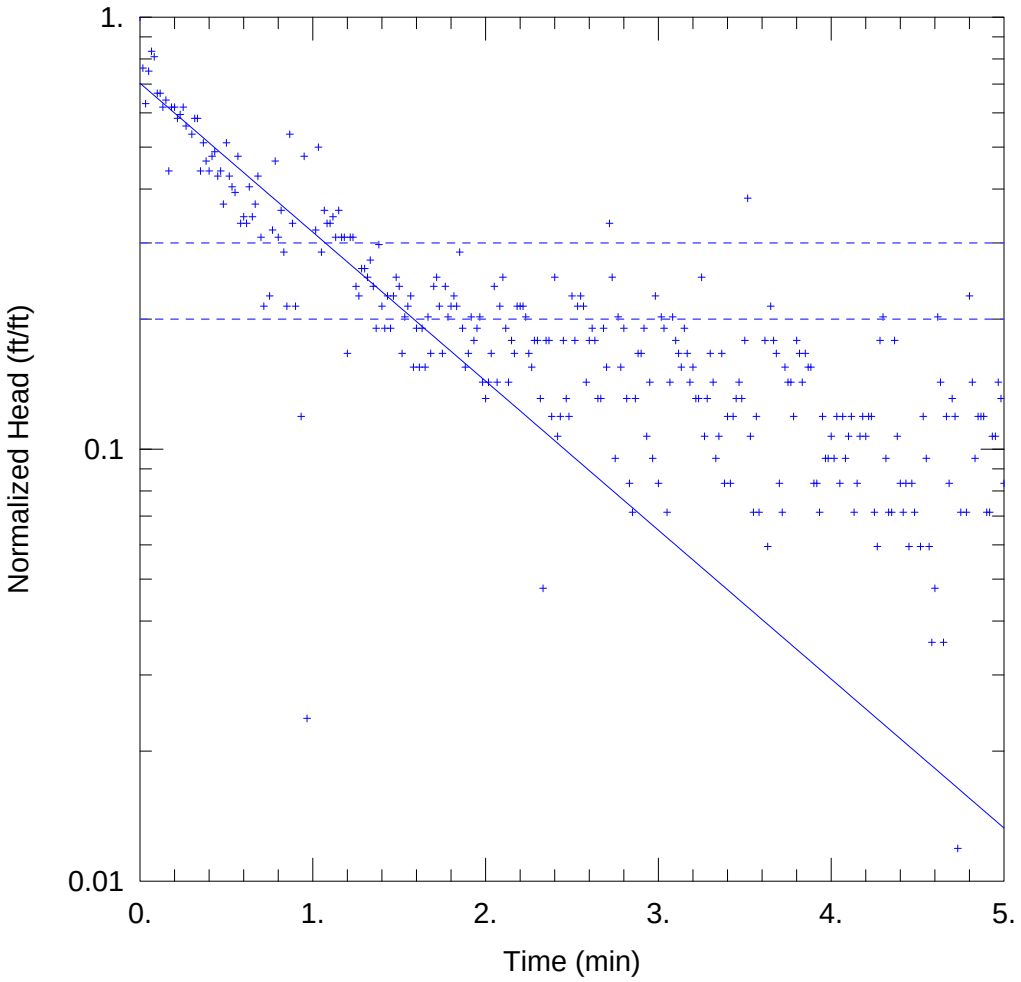
WELL DATA (RL-6 Slug A Rising Head)

Initial Displacement: 0.117 ft
Total Well Penetration Depth: 6.03 ft
Casing Radius: 0.2083 ft
Static Water Column Height: 6.03 ft
Screen Length: 6.03 ft
Well Radius: 0.3646 ft

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice

K = 25.96 ft/day
y0 = 0.04869 ft



WELL TEST ANALYSIS

Data Set: S:\...\RL-6_SlugBFallingHead.aqt
Date: 02/19/13 Time: 13:13:38

PROJECT INFORMATION

Company: Rio Algom
Project: 1350.14
Location: Lisbon
Test Well: RL-6
Test Date: 25 Aug 2012

AQUIFER DATA

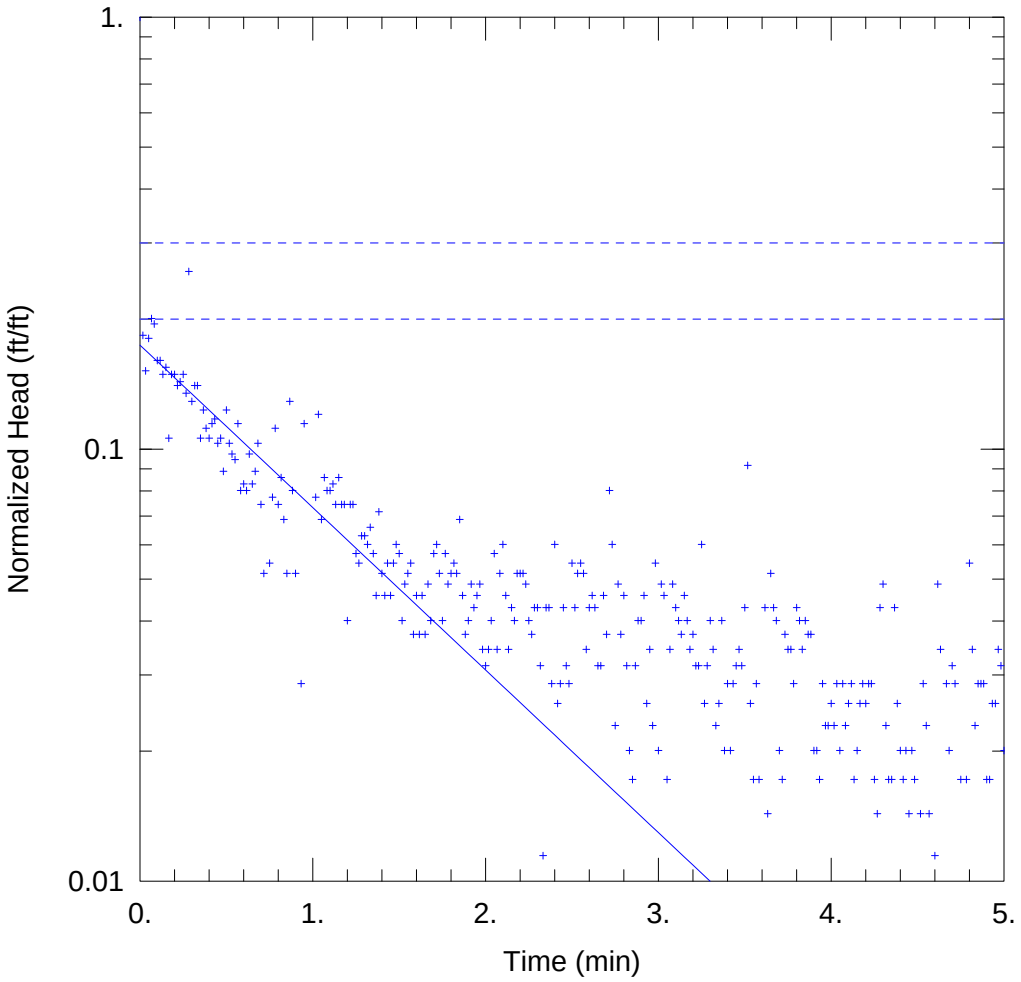
Saturated Thickness: 6.03 ft Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (RL-6 Slug B Falling Head)

Initial Displacement: 0.084 ft Static Water Column Height: 6.03 ft
Total Well Penetration Depth: 6.03 ft Screen Length: 6.03 ft
Casing Radius: 0.2083 ft Well Radius: 0.3646 ft

SOLUTION

Aquifer Model: Unconfined Solution Method: Bouwer-Rice
K = 8.465 ft/day y0 = 0.05905 ft



WELL TEST ANALYSIS

Data Set: S:\...\RL-6_SlugBRisingHead.aqt
Date: 02/19/13 Time: 13:13:35

PROJECT INFORMATION

Company: Rio Algom
Project: 1350.14
Location: Lisbon
Test Well: RL-6
Test Date: 25 Aug 2012

AQUIFER DATA

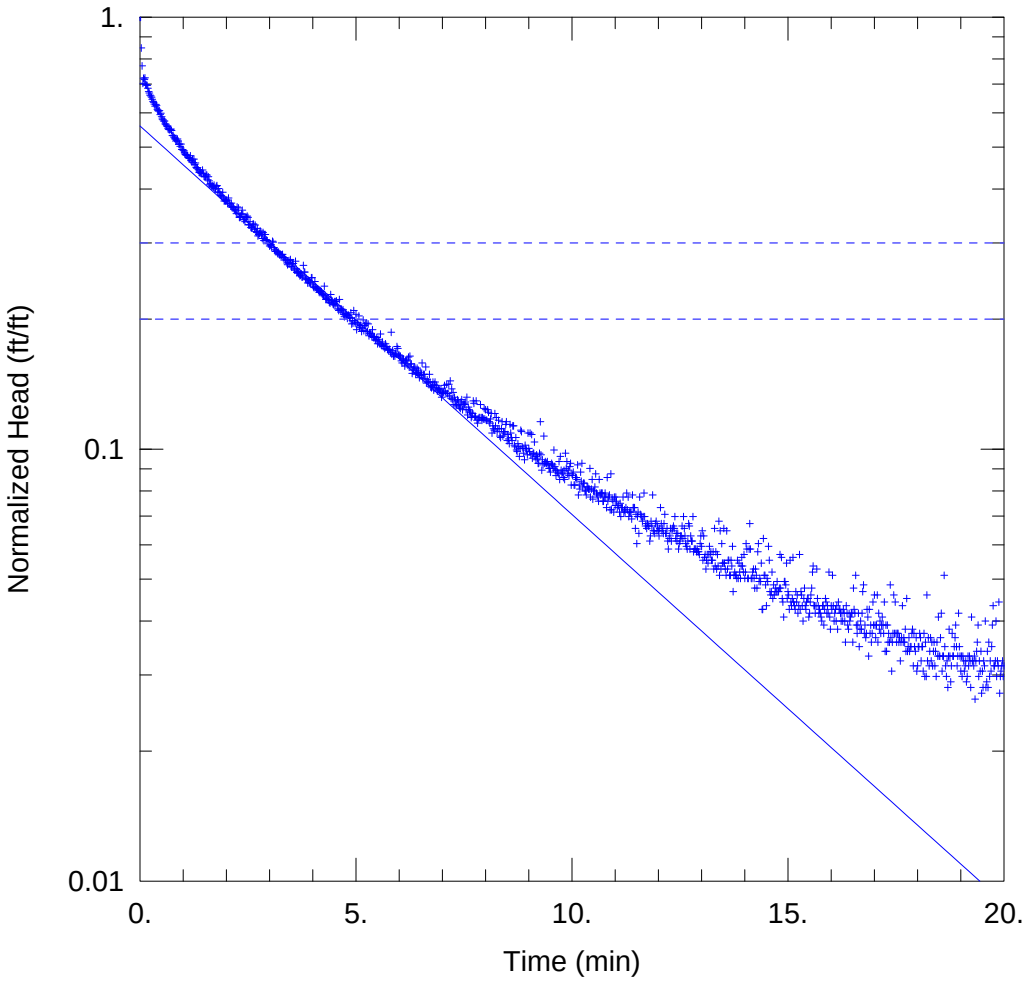
Saturated Thickness: 6.03 ft Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (RL-6 Slug B Rising Head)

Initial Displacement: 0.349 ft Static Water Column Height: 6.03 ft
Total Well Penetration Depth: 6.03 ft Screen Length: 6.03 ft
Casing Radius: 0.2083 ft Well Radius: 0.3646 ft

SOLUTION

Aquifer Model: Unconfined Solution Method: Bouwer-Rice
K = 9.233 ft/day y0 = 0.06074 ft



UW-1 SLUG C&G FALLING HEAD

Data Set: S:\...\UW-1_SlugC&GFallingHead.aqt
Date: 02/19/13 Time: 13:15:25

PROJECT INFORMATION

Company: Rio Algom
Project: 1350.14
Location: Lisbon
Test Well: UW-1
Test Date: 4 Nov 2012

AQUIFER DATA

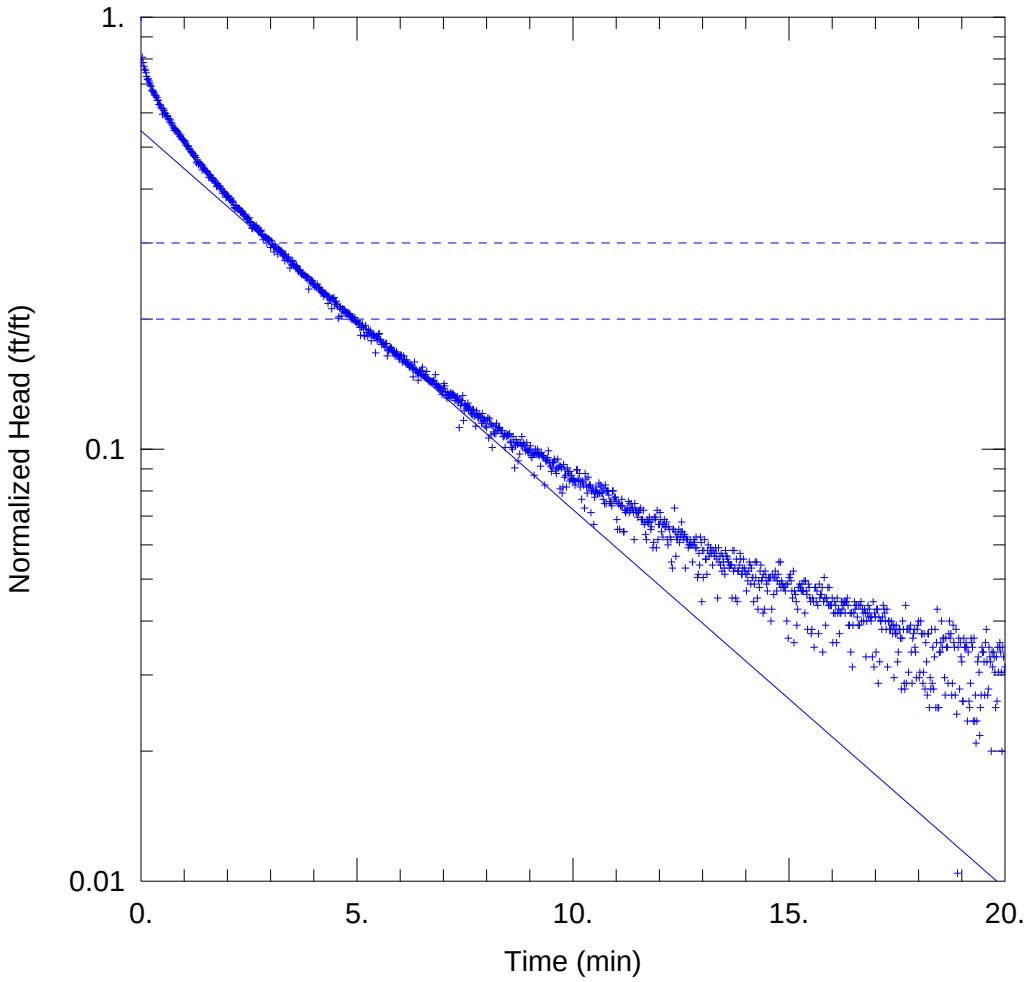
Saturated Thickness: 34.64 ft Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (UW-1)

Initial Displacement: 1.175 ft
Total Well Penetration Depth: 34.64 ft
Casing Radius: 0.167 ft
Static Water Column Height: 34.64 ft
Screen Length: 34.64 ft
Well Radius: 0.333 ft

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice
K = 0.4291 ft/day
y0 = 0.6578 ft



UW-1 SLUG C&G RISING HEAD

Data Set: S:\...\UW-1_SlugC&GRisingHead.aqt
Date: 02/19/13 Time: 13:15:15

PROJECT INFORMATION

Company: Rio Algom
Project: 1350.14
Location: Lisbon
Test Well: UW-1
Test Date: 4 Nov 2012

AQUIFER DATA

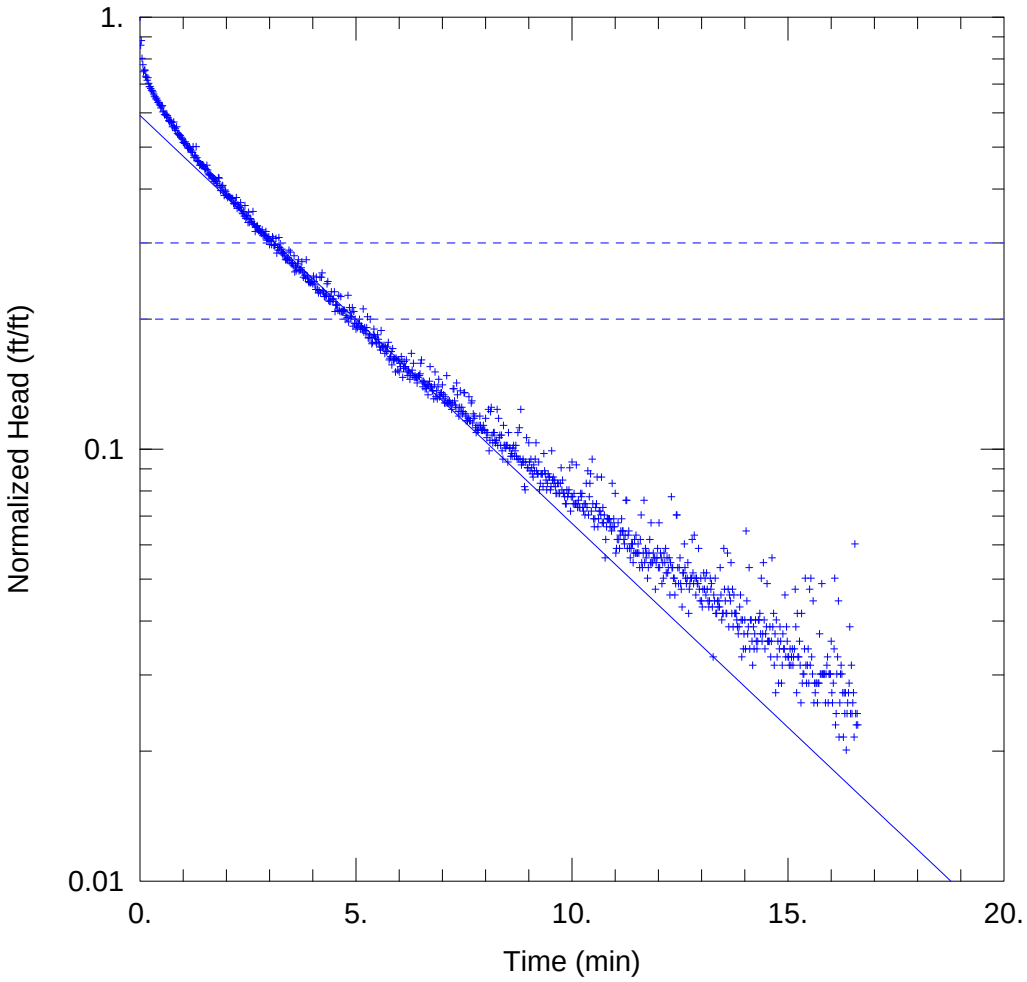
Saturated Thickness: 34.64 ft
Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (UW-1)

Initial Displacement: 1.15 ft
Total Well Penetration Depth: 34.64 ft
Casing Radius: 0.167 ft
Static Water Column Height: 34.64 ft
Screen Length: 34.64 ft
Well Radius: 0.333 ft

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice
K = 0.4184 ft/day
y0 = 0.6273 ft



UW-1 SLUG C FALLING HEAD

Data Set: S:\...\UW-1_SlugCFallingHead.aqt
Date: 02/19/13 Time: 13:15:05

PROJECT INFORMATION

Company: Rio Algom
Project: 1350.14
Location: Lisbon
Test Well: UW-1
Test Date: 4 Nov 2012

AQUIFER DATA

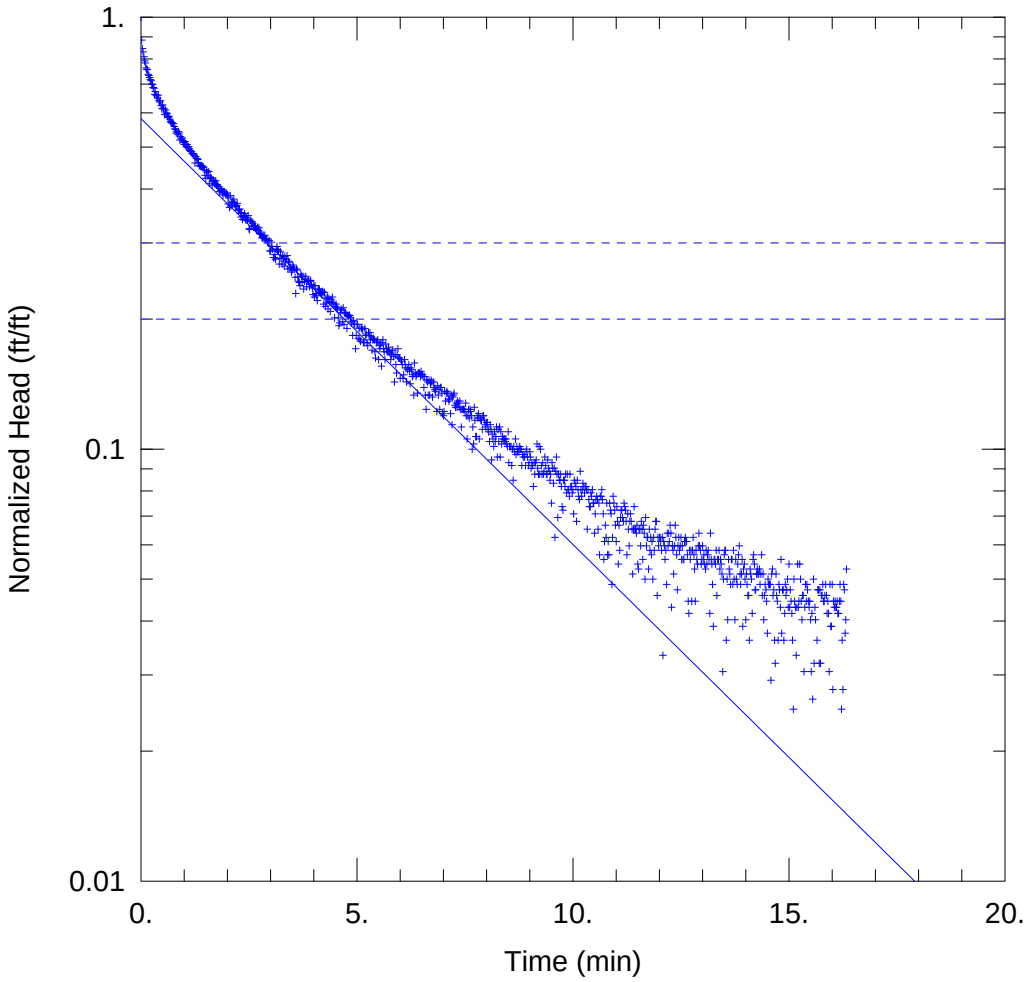
Saturated Thickness: 34.64 ft
Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (UW-1)

Initial Displacement: 0.696 ft
Total Well Penetration Depth: 34.64 ft
Casing Radius: 0.167 ft
Static Water Column Height: 34.64 ft
Screen Length: 34.64 ft
Well Radius: 0.333 ft

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice
K = 0.4506 ft/day
y0 = 0.4121 ft



UW-1 SLUG C RISING HEAD

Data Set: S:\...\UW-1_SlugCRisingHead.aqt
Date: 02/19/13 Time: 13:14:44

PROJECT INFORMATION

Company: Rio Algom
Project: 1350.14
Location: Lisbon
Test Well: UW-1
Test Date: 4 Nov 2012

AQUIFER DATA

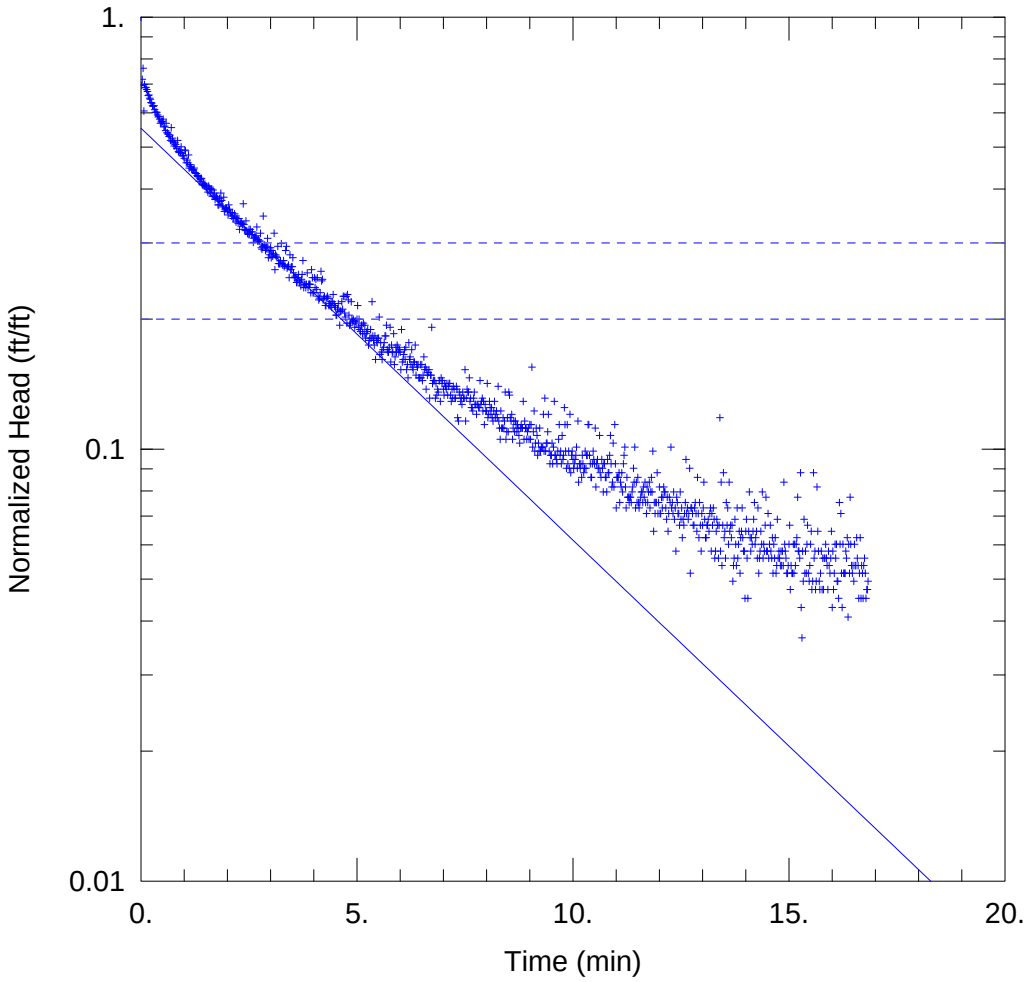
Saturated Thickness: 34.64 ft Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (UW-1)

Initial Displacement: 0.72 ft
Total Well Penetration Depth: 34.64 ft
Casing Radius: 0.167 ft
Static Water Column Height: 34.64 ft
Screen Length: 34.64 ft
Well Radius: 0.333 ft

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice
K = 0.4704 ft/day
y0 = 0.4191 ft



UW-1 SLUG G FALLING HEAD

Data Set: S:\...\UW-1_SlugGFallingHead.aqt
Date: 02/19/13 Time: 13:14:41

PROJECT INFORMATION

Company: Rio Algom
Project: 1350.14
Location: Lisbon
Test Well: UW-1
Test Date: 4 Nov 2012

AQUIFER DATA

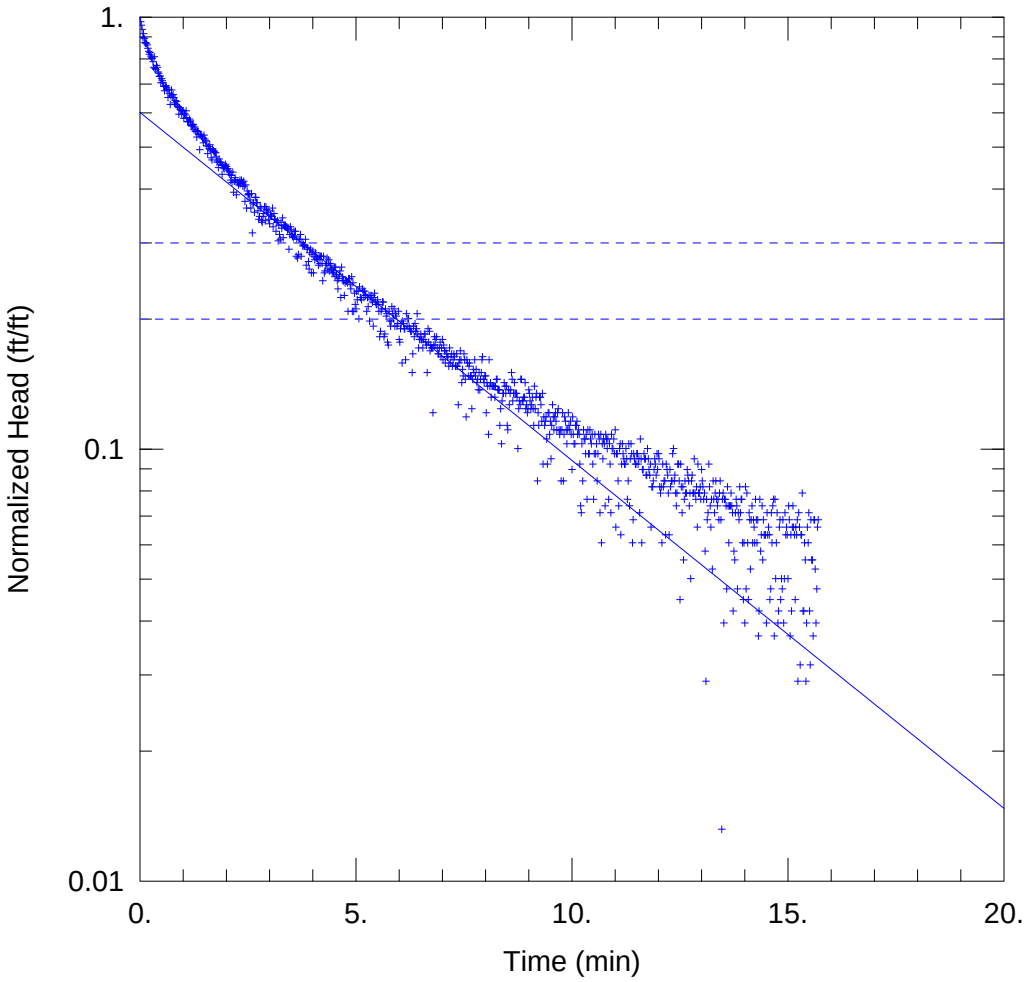
Saturated Thickness: 34.64 ft Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (UW-1)

Initial Displacement: 0.465 ft
Total Well Penetration Depth: 34.64 ft
Casing Radius: 0.167 ft
Static Water Column Height: 34.64 ft
Screen Length: 34.64 ft
Well Radius: 0.333 ft

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice
K = 0.455 ft/day
y0 = 0.2572 ft



UW-1 SLUG G RISING HEAD

Data Set: S:\...\UW-1_SlugGRisingHead.aqt
Date: 02/19/13 Time: 13:14:36

PROJECT INFORMATION

Company: Rio Algom
Project: 1350.14
Location: Lisbon
Test Well: UW-1
Test Date: 4 Nov 2012

AQUIFER DATA

Saturated Thickness: 34.64 ft Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (UW-1)

Initial Displacement: 0.379 ft
Total Well Penetration Depth: 34.64 ft
Casing Radius: 0.167 ft
Static Water Column Height: 34.64 ft
Screen Length: 34.64 ft
Well Radius: 0.333 ft

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice
K = 0.3844 ft/day
y0 = 0.228 ft

MONTGOMERY & ASSOCIATES
Water Resource Consultants

1550 East Prince Road
Tucson, Arizona 85719
Phone: (520) 881-4912 Fax: (520) 881-1609
Email: info@elmontgomery.com

Page 1 of
Date 8/19/2013
Project No. 1350
Observers JSL/MS

SLUG FIELD DATA SHEET

WELL ID MW-104

Test Description SLUG TEST

Measuring Point PVC Casing 1.7' above pad

AMBIENT WATER LEVEL/DATE/TIME 8/19 1145 94.21' bmp

Method of Water Level Measurement: Sounder/Xducer

Total Well Depth 110' bmp

Well Diameter 4"

Perforated Interval 70-100' bmp

Depth to Bottom of Slug

Depth to Top of Transducer ~~108~~ ~~109~~ 109' bmp
(14.79 below H_2O

Date/Time	t (min)	Depth to Water (ft bmp)	Slug ID	Falling or Rising?	Remarks (pH, Temp, EC)
8/19		~~94.21~~			
1145		94.21			
1155					Install Level Troll 300 S/N 320084
1200					Set up pre test log
1230					Start log @ 30 min intervals
8/27					
9:10		94.17 (S)			
9:20			B	Falling	Start log: MW-104_B_Fall
9:42	0	93.71 (T)			Drop SLUG B
10:00		94.03 (T)			Download data
8/29					
1030		94.14 (T)			
1032			B	RISING	PULLED SLUG B
1040		94.58 (T)			
9/11					
1400		94.300 (T)		RISING	END LOG SLUG B
1410					STOP LOG
1411		94.22 (S)			
			A	Falling	Start new log MW-104_SLUG A
1420					DROP SLUG A
1421		93.911 (T)			
9/14		94.19 (S)			
1456		94.28 (T)			
1500		~~[illegible]~~	A	Rising	Pull SLUG A
~~1500~~					

(*) (S) Sounder
(T) Transducer

MW-104

Date/Time	t (min)	Depth to Water ( )	Slug ID	Falling or Rising?	Remarks (pH, Temp, EC)
9/22/13					
10:33		94.428 (T)	A	Rising	
10:34					Download data / Stop log

MONTGOMERY & ASSOCIATES
Water Resource Consultants

1550 East Prince Road
Tucson, Arizona 85719
Phone: (520) 881-4912 Fax: (520) 881-1609
Email: info@elmontgomery.com

SLUG FIELD DATA SHEET

WELL ID MW-106

Test Description SLUG TEST

Measuring Point PVC casing 1.8' above pad

AMBIENT WATER LEVEL/DATE/TIME 8/19 10:55 229.08

Method of Water Level Measurement: Sounder/Xducer

Total Well Depth 267' bmp
Well Diameter 4"
Perforated Interval 237-267
Depth to Bottom of Slug
Depth to Top of Transducer 248' bmp

18.92 below water

Date/Time	t (min)	Depth to Water (ft bmp)	Slug ID	Falling or Rising?	Remarks (pH, Temp, EC)
8/19					
10:55		229.08			
1105					Install Level Troll 300 S/N 320612
1130					Set up pretest log
1200					Start log @ 30 min intervals
8/27					
7:55		228.59 (S)			
8:10			F	Falling	Start log MW-106_F_Fall
8:40					Place SLUG F above water
8:52		227.59 (T)			DROP SLUG F
16:00		227.95 (T)			
8/29					
1016		227.96 (T)			
			F	Rising	MS/JB pulled SLUG F on 9/1
9/11					
13:15		228.000 (T)	F	Rising	
					End log SLUG F
13:35		227.97 (S)			
1344			H	Falling	Start new log MW-106_SLUG H
13:50					DROP SLUG H
1351		227.609 (T)			
9/14					
1430		227.60 (S)			
		227.74 (T)			
1440				RISING	PULL SLUG H

* T: transducer
* S: sounder

~~9/21/2013~~ MW-106

Date/Time	t (min)	Depth to Water (ft bmp)	Slug ID	Falling or Rising?	Remarks (pH, Temp, EC)
9/22/2013					
1001			H	Rising	
1006		227.720 (T)			Download data / stop log

MONTGOMERY & ASSOCIATES
Water Resource Consultants

1550 East Prince Road
Tucson, Arizona 85719
Phone: (520) 881-4912 Fax: (520) 881-1609
Email: info@elmontgomery.com

Date 01 Oct 2013
Project No. 1350.21
Observers MMZ, TWB

SLUG FIELD DATA SHEET

WELL ID MW-107S

Test Description Slug Test

Measuring Point Top of PVC = 1.8 ft, bgls
Bottom of casing 61.8 ft, bmp

AMBIENT WATER LEVEL/DATE/TIME 50.98 ft, bmp at 11:22

Method of Water Level Measurement: ~~Tape~~ Solinst

Total Well Depth 61 ft, bls ~~bmp~~
Well Diameter 4-in
Perforated Interval 30-60 ft, bls
Depth to Bottom of Slug 57 ft, bmp
Depth to Top of Transducer 59 ft, bmp

S=Sounder T=transducer from table in Winsitu.

Date/Time	t (min)	Depth to Water (ft bmp)	Slug ID	Falling or Rising?	Remarks (pH, Temp, EC)
10:48		51.00 (S)			
11:13		~~50.95~~ (S)			Installed LT300 (not s/N 320612); Cable set
					Slugged w/ 30 PSI - S/N: 320084
11:16		50.98 (S)			
11:22		50.98 (S)			
11:25			F	Falling	Start ~~Test~~ Transducer, 1 sec readings
11:37			~~S~~ F	"	Slug F - Dropped, drop took ~5 sec
12:05:16		50.964 (T)		"	
12:09:03			F	Rising	Pull Slug F
		Max 52.054 (T) - max displacement			
~~Cap~~ 9			B	Falling	Drop Slug B
14:04:03		Max 50.624 (T) - displacement		"	
1:31:00		50.95		"	
1:32:00		~~51.04~~		Rising	Pull Slug B
		51.898 - Max displacement		"	
13:36:07		50.970 (T)		"	
14:02:02			A	Falling	Drop Slug A
		50.713 (T) - Max displacement			
15:00:03				Rising	Pull Slug A
		51.375 Max displacement			
15:07:02		50.948 (T)			
15:12:33		50.945 (T)			

MONTGOMERY & ASSOCIATES
Water Resource Consultants

1550 East Prince Road
Tucson, Arizona 85719
Phone: (520) 881-4912 Fax: (520) 881-1609
Email: info@elmontgomery.com

SLUG FIELD DATA SHEET

WELL ID MW-107D

Test Description

Measuring Point Top of PVC, 1.7' above ground surface

AMBIENT WATER LEVEL/DATE/TIME 51.11 / 5mp

Method of Water Level Measurement: Sounder/Xducer

Total Well Depth 82
Well Diameter 4"
Perforated Interval 62-82
Depth to Bottom of Slug
Depth to Top of Transducer

Date/Time	t (min)	Depth to Water (ft bmp)	Slug ID	Falling or Rising?	Remarks (pH, Temp, EC)
10:53		51.11			
1435 1140		51.08			Set LT700-30 psia SN 169717
1150	Transducer slipped-	Reset			to 1 sec recordings
1155		51.06			Reset LT700 to 1sec readings
1200			B	Falling	Dropped Slug
1201		50.81	B	Falling	
1225 (about 50sec)	*NOTE		B	Rising	Pulled Slug
1228		51.18	B	Rising	
	*NOTE: Slug tangled with transducer cable when pulling at 1225				
1248		51.06			Ready to drop Slug F
1252 (@ 35sec)		51.05	F	Falling	Dropped Slug
1252:43		49.95 →	Max	Displacement	(1.1 ft)
1313		51.04	F	Falling	
1328		51.04	F	Falling	
1331		—	F	Rising	Pull Slug
1331	→	51.78 →	Max	Displacement	(0.78 ft)
1340		51.09	F	Rising	
1352		51.06	F	Rising	
1411		51.04	F	Rising	
1416 (+45sec)			C	Falling	Drop Slug
1416	→	50.328 →	Max	Displacement	(0.712)
1447		51.04	C	Falling	
1451		51.05	C	Falling	
1454		52.25	C	Rising	Pull Slug / Max Displacement
1506		51.08	C	Rising	

Note: all values are from real-time pulling

MONTGOMERY & ASSOCIATES
Water Resource Consultants

1550 East Prince Road
Tucson, Arizona 85719
Phone: (520) 881-4912 Fax: (520) 881-1609
Email: info@elmontgomery.com

SLUG FIELD DATA SHEET

WELL ID MW-109

Test Description Slug Test

Measuring Point Top of PVC which is 1.7 ft, ags (concrete pad)

AMBIENT WATER LEVEL/DATE/TIME 136.15 ft, bmp = 134.45 ft, ags at 09:12 01 Oct

Marker tape at top of steel casing.

Method of Water Level Measurement: Waterline 500

Total Well Depth 155 ft, bls
Well Diameter 4-inch
Perforated Interval 30-124 ft, bls
Depth to Bottom of Slug 141 ft, bmp
Depth to Top of Transducer 130 ft (150 ft cable)

Slug A: length 17.5

Date/Time	t (min)	Depth to Water (ft, bmp)	Slug ID	Falling or Rising?	Remarks (pH, Temp, EC)
01 Oct 09:12		136.15 (S)	A		
09:28		136.15 (S)			LT700 set for 1 sec readings
					30 psi S/N 171459, cable set
					Using slug A
09:56:00			A	FALLING	DROP SLUG A
10:01:31		135.909 (T)			
12:22					
12:32:02				Rising	Raise SLUG A
12:32:13		Max D 136.567 (T)		~~Falling~~ Rising	
15:35					Reached reasonable recovery.
15:38:59			G	Falling	Drop Slug G
15:39:09		135.856 (T) Max displacement			
18:34					Ready to pull.
18:36:00			G	Rising	Pull slug G
18:36:08		136.745 - Max displacement			- when closing lid - we moved transducer in morning - moved transducer back.
02 Oct 08:20:30		—	H	Falling	Drop slug H — NOT A (SSL)
	↳ Mega watch, need to check data for start.				
		135.653 - Max displacement			
1638		136.11			~~Recovered~~ Waterline Sounder DRG / JSL
~17.48					Move transducer to PVC - 0.49 ft from top of steel
	pull	transducer	morning	03 Oct 2013	

T = transducer, S = Sounder (from Wissota Table)

MONTGOMERY & ASSOCIATES
Water Resource Consultants
1550 East Prince Road
Tucson, Arizona 85719
Phone: (520) 881-4912 Fax: (520) 881-1609
Email: info@elmontgomery.com

Date 1 Oct 2013
Project No. 1350.21
Observers MMZ, JB

SLUG FIELD DATA SHEET

WELL ID MW-110

Test Description Slug Test

Measuring Point Top of PVC, which is 2.0 ft, a.l.s.

AMBIENT WATER LEVEL/DATE/TIME 01 Oct at 08:27; 141.07 ft, bmp

Tag bottom of casing 142.1 ft, bmp, using sounder w/ weight

Method of Water Level Measurement: Water line 500

Total Well Depth 141 ft, bls

Well Diameter 4 inches

Perforated Interval 160-140 ft, bls

Depth to Bottom of Slug

Depth to Top of Transducer

~~~149.6~~ bottom of casing measured with sounder

Date/Time	t (min)	Depth to Water ( )	Slug ID	Falling or Rising?	Remarks (pH, Temp, EC)
01 October 08:27		141.07			
~~~

MONTGOMERY & ASSOCIATES
Water Resource Consultants

1550 East Prince Road
Tucson, Arizona 85719
Phone: (520) 881-4912 Fax: (520) 881-1609
Email: info@elmontgomery.com

Date 10/2/2013
Project No. 1350.21
Observers DC/JSL

SLUG FIELD DATA SHEET

WELL ID MW-11Z

Test Description Slug Test

Measuring Point PVC casing; 1.8' above cement pad

AMBIENT WATER LEVEL/DATE/TIME 45.51

Method of Water Level Measurement: Sounder / Xducer

Total Well Depth _____
Well Diameter 4"
Perforated Interval _____
Depth to Bottom of Slug _____
Depth to Top of Transducer _____

75 - 1.8 = 73.2 - 43.83 = 29.37

10/2/2013

Date/Time	t (min)	Depth to Water (ft,bmp)	Slug ID	Falling or Rising?	Remarks (pH, Temp, EC)
1014		45.51			LT700 30psia already set in well @ 75'
1022		45.52			set transducer to sec (SN 169717)
1034 (+478sec)		43.426	K	Falling	Drop Slug K / Max Displacement
1107		45.49	K	Falling	Est 98.4% recovery
1108 (+40sec)		46.67	K	Rising	Pull Slug K / Max Displacement
1113		45.59	K	Rising	(Slug C set above water ready for drop)
1213		45.49	K	Rising	Done w/ load
1216 (+12?)		44.868	C	Falling	Drop Slug C / Max Displacement
1327		45.486	C	Falling	
1327 (+36sec)		46.541	C	Rising	Pull Slug C / Max Displacement
1401		45.49	C	Rising	(Slug F set above water ready for drop)
1407 (+12)		45.06	F	Falling	Drop Slug F / Max Displacement
1710					Stop Test / Demob

MONTGOMERY & ASSOCIATES
Water Resource Consultants

1550 East Prince Road
Tucson, Arizona 85719
Phone: (520) 881-4912 Fax: (520) 881-1609
Email: info@elmontgomery.com

Date 10/2/2013
Project No. 1350.21
Observers JSL/DC

SLUG FIELD DATA SHEET

WELL ID MW-113

Test Description Slug Test

Measuring Point PVC top of casing; 1.45' above cement pad

AMBIENT WATER LEVEL/DATE/TIME 68.47' bmp

68.49 - 1.45 = 67.04'

Method of Water Level Measurement: Sounder / Xducer

Total Well Depth _____
Well Diameter 4"
Perforated Interval _____
Depth to Bottom of Slug _____
Depth to Top of Transducer _____

Date/Time	t (min)	Depth to Water (ft bmp)	Slug ID	Falling or Rising?	Remarks (pH, Temp, EC)
10/2/13	0830	–	–	–	Install LT300 - 30 psi; SN 320612 @100' bmp
~~10/~~	0842	68.49	–	–	Set transducer to 1 sec readings (begin 845)
0857	(+10 sec)	68.004	C	Falling	Drop Slug / Max Displacement (0.466 ft)
0930		68.47	C	Falling	(Note: Baseline before slug was dropped was 68.47)
0932		69.023	C	Rising	Pull Slug / Max Displacement
1126		68.45	–	–	Download data / setup slug F
1128		68.099	F	Falling	Drop Slug F / Max Displacement
1145		68.45	F	Falling	Ready to pull slug
1155	(+25 sec)	69.009	F	Rising	Pull Slug F / Max Displacement
1201		68.456	F	Rising	(slug I set for drop)
1231		68.447	F	Rising	
1233	(+02 sec)	67.951	I	Falling	Drop Slug I / Max Displacement
1258		68.447	I	Falling	
1301	(+09 sec)	69.145	I	Rising	Pull Slug I / Max Displacement
1309		68.458	I	Rising	
1340		68.455	I	Rising	Stop Test / Download

MONTGOMERY & ASSOCIATES
Water Resource Consultants

1550 East Prince Road
Tucson, Arizona 85719
Phone: (520) 881-4912 Fax: (520) 881-1609
Email: info@elmontgomery.com

Date 02Oct2013

Project No. 1350.21

Observers

SLUG FIELD DATA SHEET

WELL ID MW-114

Test Description Slug Test

Measuring Point Top of PVC (Stickup 1.0)

AMBIENT WATER LEVEL/DATE/TIME 57.95 ft,bmp at 11:26 02Oct

T= transducer (in monitoring table)
S= Sounder

Method of Water Level Measurement: Water Line 500

Total Well Depth 204 ft,bls

Well Diameter 4-in

Perforated Interval 48-198 ft,bls

Depth to Bottom of Slug 55-65 ft,bmp

Depth to Top of Transducer 72 ft,bmp
71 bls

Date/Time	t (min)	Depth to Water (ft,bmp)	Slug ID	Falling or Rising?	Remarks (pH, Temp, EC)
11:00		57.95 (S)			
11:18		57.95 (S)			
11:22		—			Install LT 300 S/N 320084
11:26		57.95 (S) = zero for DD			
11:28		—			Start LT; 1 sec readings, set to DD.
11:40:03		—	J	Falling	Drop slug J
11:40:07		-0.248 - max displacement			
11:55		57.94		Rising	Pull slug
		~~57.94~~			
1225			L	Falling	Drop Slug L
			"	"	
13:15:25		—	L	Rising	Pull Slug L
		—	"	"	Transducer caught while pulling set back to original placement
13:15:27		0.371 - max d	"	"	
13:22		—	"	"	Recovered
13:26			D	~~Falling~~	Drop slug D - accidentally partially slugged
		—		U	Waiting for it to recover
13:44:30			D	Falling	Drop Slug D
13:44:34		-0.348 - Max displacement			
14:13:51		—	D	Rising	Pull Slug D

MONTGOMERY & ASSOCIATES
Water Resource Consultants

1550 East Prince Road
Tucson, Arizona 85719
Phone: (520) 881-4912 Fax: (520) 881-1609
Email: info@elmontgomery.com

Date 10/11/2013
Project No. 13.50.21
Observers DSC

SLUG FIELD DATA SHEET

WELL ID MW-11SM

Test Description SLUG TEST

Measuring Point PVC top of casing 2.0' above cement pad

AMBIENT WATER LEVEL/DATE/TIME

Method of Water Level Measurement:

Total Well Depth
Well Diameter
Perforated Interval
Depth to Bottom of Slug
Depth to Top of Transducer
24.26' stbw water

Date/Time	t (min)	Depth to Water (ft bmp)	Slug ID	Falling or Rising?	Remarks (pH, Temp, EC)
10/11		75.70			
10/11 1100					Begin development
10/11 12:00		76.40			End development
10/11 16:00		75.79			
10/12 0740		75.74			
0745					Set LT 500 30psi @ 100' bmp S/N 318927
0750					Start log @ 1 sec interval
1250		75.70			Set up to run slug test
1312			L	Falling ~~Rising~~	DROP SLUG L
1334		75.70	L	Rising	PULL SLUG L
1350		75.70	C	Falling	DROP SLUG C
1406		75.70	C	Rising	PULL SLUG C
1422			F	Falling	DROP SLUG F
1440		75.69	F	Rising	PULL SLUG F
1458		75.69			END TEST Stop test

MONTGOMERY & ASSOCIATES
Water Resource Consultants

1550 East Prince Road
Tucson, Arizona 85719
Phone: (520) 881-4912 Fax: (520) 881-1609
Email: info@elmontgomery.com

Date 02 Oct 2013

Project No. 1350.21

Observers MRM, TJS

SLUG FIELD DATA SHEET

WELL ID MW-115S

Test Description Slug Test

Measuring Point Top of PVC. stickup = 1.9

AMBIENT WATER LEVEL/DATE/TIME 75.61 ft,bmp at 15.51
= 73.71 bls

Method of Water Level Measurement: Waterline 500

Total Well Depth 218 ft,bls

Well Diameter

Perforated Interval 60-125 ft,bls

Depth to Bottom of Slug 74-84 ft,bmp

Depth to Top of Transducer 85 ft,bmp
9.39 below water

Date/Time	t (min)	Depth to Water (ft,bmp)	Slug ID	Falling or Rising?	Remarks (pH, Temp, EC)
15:26		75.61 (S)			
15:46		—			Install LT-300 LT S/N = 320084; [redacted]
15:51		75.61 – zero			
15:54					Start LT; 1sec readings; [redacted] DD
16:04:51			J	Falling	Drop slug J
		-0.161 – max displacement			
16:12:32			J	Rising	Pull slug J; 4/16 12:30 DD = 0.001
		0.160 – max displacement			
16:21:52			L	Falling	Drop slug L
		-0.222 – max displacement			
16:15:20			L	Rising	Pull slug L
		0.242 – max displacement			
~~16:50:31~~			~~K~~		Transducer moved while pulling slug
16:56:31			K	Falling	Drop slug K
		-0.184 – max displacement			
17:08:27		0.220	K	Rising	Pull slug L
17:10:18					Transducer caught air again! Reset by this time

MONTGOMERY & ASSOCIATES
Water Resource Consultants

1550 East Prince Road
Tucson, Arizona 85719
Phone: (520) 881-4912 Fax: (520) 881-1609
Email: info@elmontgomery.com

Page 1 of
Date 10/2/2013 - 10/3
Project No. 1358.21
Observers DR / SSL

SLUG FIELD DATA SHEET

WELL ID MW-116

Test Description Slug Test

Measuring Point Top of PVC; 2.0' above cement pad

AMBIENT WATER LEVEL/DATE/TIME 85.25 - bmp

Method of Water Level Measurement: Sounder / Xducer

Total Well Depth
Well Diameter 4"
Perforated Interval
Depth to Bottom of Slug
Depth to Top of Transducer 110'
- 24.75 below water

10/2/2013

Date/Time	t (min)	Depth to Water ( )	Slug ID	Falling or Rising?	Remarks (pH, Temp, EC)
1430		~	~	~	Install LT300 - 30psia SN 320612 @ 110'
1443		85.25	—	—	Start readings @ 1-sec
1449		84.909	I	Falling	Drop Slug I / Max Displacement
1507		85.193	I	Falling	
1512		85.217	I	Falling	
1549 (+1.16 sec)		86.004	I	Rising	Pull Slug I / Max Displacement
1724		85.25	I	Rising	Download / Stop Test / off-site
10/3/2013		NOTE: Log stopped from yesterday. New test with new baseline of 85.20'			
0819		85.20	—	—	Same equipment as 10/2
0828		85.20	~	~	Start 1-sec logging
0933 (+3.31 sec)		84.722	A	Falling	Drop Slug A / Max Displacement
0910		85.19	A	Falling	
0920		85.197	A	Falling	
954 (+5.76 sec)		85.664	A	Rising	Pull Slug A / Max Displacement
1000					Set slug G above water for next drop
1338		—	G	Falling	Drop Slug G in water
1435		85.20	G	Falling	Ready to Pull Slug
1436		85.901	G	Rising	Pull Slug G / Max Displ.
1530					Stop Test / Download

MONTGOMERY & ASSOCIATES
Water Resource Consultants

1550 East Prince Road
Tucson, Arizona 85719
Phone: (520) 881-4912 Fax: (520) 881-1609
Email: info@elmontgomery.com

Date 10/12/2013
Project No. 1350.21
Observers JSC

SLUG FIELD DATA SHEET

WELL ID MW-116

Test Description PURGE/WL MONITORING

Measuring Point TOP OF PVC 2.0' above pad

AMBIENT WATER LEVEL/DATE/TIME _____

Method of Water Level Measurement: _____

Total Well Depth _____
Well Diameter _____
Perforated Interval _____
Depth to Bottom of Slug _____
Depth to Top of Transducer _____

Date/Time	t (min)	Depth to Water ( )	Slug ID	Falling or Rising?	Remarks (pH, Temp, EC)
10/12					
1515		85.69 (S)			Install LT 500, 100PSI @ 125'bmp S/N 348914
1524		85.69 (T)			Start log at 10 sec intervals
1534					Lowered pump, set @ 116' bmp
1536		86.23 (T)			Q = 400 mL/min
1545		86.22 (T)			Q = 400 mL/min
1546					Q = drifting up, adjusted 400 mL/min
1548					~~Collected LF sample~~
1556		86.31 (T)			Collected LF sample
1602					Start purge Q = 2 gpm
1616					↑ Q slightly Q = 2 gpm
1620		97.40 (T)			Q = 2 gpm
1623					↑ Q slightly Q = 2 gpm
1639		102.35 (T)			Q = 2 gpm
1645					~~↑ Q~~ prepare to sample; pump off
↓					Recover to 80% before sampling
1659		93.40 (T)			80% recovery; collected sample
					Pump on to sample
1700					Stop log

MONTGOMERY & ASSOCIATES
Water Resource Consultants

1550 East Prince Road
Tucson, Arizona 85719
Phone: (520) 881-4912 Fax: (520) 881-1609
Email: info@elmontgomery.com

Date 03 Oct 2013

Project No. 1350.21

Observers MW2-TWB

SLUG FIELD DATA SHEET

WELL ID MW-117 M

Test Description Slug Test

Measuring Point Top of PVC = 1.4 ft, ags

AMBIENT WATER LEVEL/DATE/TIME _____

S = Sounder
T = transducer

Method of Water Level Measurement: Waterline 500

Total Well Depth 210 ft, bls

Well Diameter 4-in

Perforated Interval 125-150 ft, bls

Depth to Bottom of Slug 81-91 ft, bmp

Depth to Top of Transducer 98 ft, bmp
= 14.7 below water

Date/Time	t (min)	Depth to Water ( )	Slug ID	Falling or Rising?	Remarks (pH, Temp, EC)
11:30		82.81 (S)			Clouds rolling in.
11:45		—	—	—	Install LT 300 S/N 320084, 30psi
11:50		82.91 (S) - zero			
11:51					Start LT test; 1 sec readings; DD
11:52		82.98 (S)			
11:56:21		0.001 before drop	K	Falling	Drop Slug K
1		-1.077 - Max	D "	"	
~12:11:22		—	K	Rising	Pull slug K
		~0.007 - 0.012 before pull		"	
12:11:28		1.415 - max	D "	"	
12:14		—			Transducer / Sounder caught on slug
—		—			Test is garbage - took some time to free transducer.
—		—			
~12:26:00		-0.001 - 0.006 before drop	D	Falling	Drop slug D
12:26:03		-2.575 (LT) - Max	D "	"	
12:35:31			D	Rising	Pull Slug D
		(~ -0.006 - reading before drop)			
12:35:34		1.519 - Max D			
12:44:46			J	Falling	Drop Slug J
		(0.000 before drop)			
12:44:50		-0.912 - Max	D		
			J	Rising	Pull Slug J
13:16	—	—	—	—	Stop LT; end test
					Silt on LT (+cable?)

MONTGOMERY & ASSOCIATES
Water Resource Consultants

1550 East Prince Road
Tucson, Arizona 85719
Phone: (520) 881-4912 Fax: (520) 881-1609
Email: info@elmontgomery.com

Date 03012013
Project No. 1350.21
Observers MM2; TW3

SLUG FIELD DATA SHEET

WELL ID MW-117S

Test Description Slug Test

Measuring Point Top of PVC = 1.7 ft, ags

AMBIENT WATER LEVEL/DATE/TIME 82.66 ft, bmp at 10:32

S = Sounder
T = transducer from table

Method of Water Level Measurement: Water line

Total Well Depth 128 ft, bls
Well Diameter 4-in
Perforated Interval 70 - 125 ft, bls
Depth to Bottom of Slug 81-91 ft, bmp
Depth to Top of Transducer 98 ft, bmp
↑ 15.34' Below Water

Date/Time	t (min)	Depth to Water (ft, bmp)	Slug ID	Falling or Rising?	Remarks (pH, Temp, EC)
10:14		82.66 (S)			
10:22		—			Install LT300, S/N 320084; 30psi
10:32		82.66 (S) - zero			
10:35		—			Start LT test; 1sec readings; DD
~10:44:18		—	K	Falling	drop slug K
10:44:25		-0.222 (T) - Max displacement			
10:50:47		-0.011		Rising	Pull slug K
		0.903 Max D			
11:01:01		-0.025	L	Falling	Slug L Dropped
11:01:06		0.901 Max D			
~11:12:27		-0.022	L	Rising	Pull Slug L
11:12:32		0.574 - Max D			
		—	—	—	Transducer pulled slightly - ignore other max
~11:19:40		—	D	Falling	Drop slug D, 0.034 before drop
11:19:43		-0.335 - Max displacement			
11:25:57		-0.029 - before pull	D	Rising	Pull Slug D
11:25:58		-0.880 - Max D			
~11:38:20		—	—	—	Stop log - end test

MONTGOMERY & ASSOCIATES
Water Resource Consultants

1550 East Prince Road
Tucson, Arizona 85719
Phone: (520) 881-4912 Fax: (520) 881-1609
Email: info@elmontgomery.com

Date 10/12/2013
Project No. 1350.21
Observers JSL

SLUG FIELD DATA SHEET

WELL ID MW-117S

Test Description Purge / WL Mon

Measuring Point Top of PVC 1.7' above pad

AMBIENT WATER LEVEL/DATE/TIME

Method of Water Level Measurement:

Total Well Depth
Well Diameter
Perforated Interval
Depth to Bottom of Slug
Depth to Top of Transducer

Date/Time	t (min)	Depth to Water (ft bmp)	Slug ID	Falling or Rising?	Remarks (pH, Temp, EC)
10/12 1105		82.84 (S)			
1108					Install LT 500 100PSI @ 120' bmp S/N 348914
11:12		82.84 (T)			Start log @ 10 sec intervals
1114					Lowered pump; set at 107' bmp
1118					Start Low-flow Q= dialing in
1120					Q=600mL/min
1122					Q=500 mL/min
1134					Q=500 mL/min trouble w/ Q; sand in impeller
1145					Collected LF sample
1150					Start purge Q=3 gpm
1221					Reduce Q to sample
1226					Pump off
1228					Pull pump

MONTGOMERY & ASSOCIATES
Water Resource Consultants

1550 East Prince Road
Tucson, Arizona 85719
Phone: (520) 881-4912 Fax: (520) 881-1609
Email: info@elmontgomery.com

Date 10/1/2013
Project No. 1350.21
Observers JSL/DG

SLUG FIELD DATA SHEET

WELL ID MW-118

Test Description SLUG TEST

Measuring Point Top of PVC, 1.4' above cement pad

AMBIENT WATER LEVEL/DATE/TIME 15.74' 5mp

Method of Water Level Measurement: SOUNDER / xducer

Total Well Depth

Well Diameter

Perforated Interval

Depth to Bottom of Slug

Depth to Top of Transducer 24.27 below water

Date/Time	t (min)	Depth to Water (ft bmp)	Slug ID	Falling or Rising?	Remarks (pH, Temp, EC)
10/1/13					
15:50		15.74'			Level Troll 700; 30psi
15:52		=			Installed xducer 40' 5mp S/N 1560034
1600		15.76			Set transducer to 1-sec readings
1616		15.125	F	Falling	Drop Slug
		to Max Displacement			
1633 (+30sec)		16.30	F	Rising	Pull Slug / Max Displacement
1643		15.746	F	Rising	
1649		15.026	C	Falling	Drop Slug C / Max Displacement
1659		15.735	C	Falling	
1704		15.74	C	Falling	
1704 (+27sec)		16.293	C	Rising	Pull Slug C / Max Displacement
1710		15.744	C	Rising	
1719		15.750	C	Rising	
1720	(+23 sec)	15.479	I	Falling	Drop Slug I / Max Displacement
1731		15.741	I	Falling	
1735		15.743	I	Falling	
1735	(+39sec)	16.131	I	Rising	Pull Slug I / Max Displacement
1741		15.75	I	Rising	
1750		15.748	I	Rising	Stop Test

MONTGOMERY & ASSOCIATES
Water Resource Consultants

1550 East Prince Road
Tucson, Arizona 85719
Phone: (520) 881-4912 Fax: (520) 881-1609
Email: info@elmontgomery.com

Date 02 Oct 2013
Project No. 1350.21
Observers MM2, TWB

SLUG FIELD DATA SHEET

WELL ID MW-119

Test Description Slug Test

Measuring Point Top of PVC = 1.5 ft, als

AMBIENT WATER LEVEL/DATE/TIME

Method of Water Level Measurement: Waterline 500

Total Well Depth 104 ft, bls
Well Diameter 4-in
Perforated Interval 53-73 ft, bls
Depth to Bottom of Slug 68-78 ft, bmp
Depth to Top of Transducer 85 ft, bmp

S: sounder
T: transducer

Date/Time	t (min)	Depth to Water (ft, bmp)	Slug ID	Falling or Rising?	Remarks (pH, Temp, EC)
02 Oct 08:46		70.31 (S)			= 68.81 BLS
08:55		70.31 (S) = Zero G?			
~~09:00~~					Install LT 700 series; S/N =
09:27					Start Transducer, 1 sec readings, measuring DTW
09:40:04		—	G?	Falling	Drop Slug
09:40:23		-0.564 (T) = Max displacement?			
?			G	Rising	Dant John pulled slug - rising test
03 Oct 09:00		70.24 (S)			
~~09:34~~ 09:09		—	H	Falling	Drop slug H (N0.009 - 0.028 before drop)
09:03:45		-0.349 (T) max displacement			
~13:56		~-0.076 — Recovered past initial.			
~14:08:04			H	Rising	- Pull Slug H
~~14:08:00~~		(0.081 - before drop)	"	"	
14:08:06		0.584 - max D	"	"	
16:23		—			End LT test; end test

MONTGOMERY & ASSOCIATES
Water Resource Consultants

1550 East Prince Road
Tucson, Arizona 85719
Phone: (520) 881-4912 Fax: (520) 881-1609
Email: info@elmontgomery.com

Date 10/3/2012
Project No. 1350.02
Observers DRB / JSL

SLUG FIELD DATA SHEET

WELL ID MW-120

Test Description Slug Test

Measuring Point Top of PVC casing 19 AGLS

AMBIENT WATER LEVEL/DATE/TIME 126.19 ft, bmp 10/3/2012 124.29

Method of Water Level Measurement: Sounder / Xducer

Total Well Depth

Well Diameter 4"

Perforated Interval

Depth to Bottom of Slug

Depth to Top of Transducer L 23.81 BELOW WATER

Date/Time	t (min)	Depth to Water (ft, bmp)	Slug ID	Falling or Rising?	Remarks (pH, Temp, EC)
1045		126.19	-	-	LT300-30psia SN169717 installed & set
1058		125.905	C	Falling	Drop Slug C to log 1-sec @ 150-ft bmp
					Slug C @ 1058 → Max Displacement
1102		126.18	C	Falling	
1124		126.475	C	Rising	Pull slug C
1133		126.184	C	Rising	NOTE: approx 1100 weather is changing. Clouds coming in & winds picking up, becoming gusty at times
1138		126.185			
1144		126.062 (real-time 5-sec data)	F	Falling	Drop Slug F → Need to look at 1-sec data to get accurate Max Displacement
		125.461 → 1-sec data			
1149		126.181	F	Falling	
1152		126.163 → 1-sec data			→ 90% recovery in 1-sec data
1153		126.186 → 5-sec data			(F/Falling)
1156	(49sec)	126.515	F	Rising	Pull slug
1226		126.182	F	Rising	Ready for Slug L
1231		126.005	L	Falling	Drop Slug L
1251	(25sec)	127.137 (5-sec)	L	Rising	Pull Slug L out of water
1256 → Began Pulling Slug up out of well and pulled the transducer cable slightly. May have "small blip" in data.					
1310		126.193	L	Rising	Download / Stop Test / Pull Slug. rest of way

MONTGOMERY & ASSOCIATES
Water Resource Consultants

1550 East Prince Road
Tucson, Arizona 85719
Phone: (520) 881-4912 Fax: (520) 881-1609
Email: info@elmontgomery.com

Page 1 of ____
Date 10/1/2013
Project No. 1350.21
Observers JSL / DG

SLUG FIELD DATA SHEET

WELL ID MW-122

Test Description No TEST

Measuring Point 1.75' above pad PVC casing

AMBIENT WATER LEVEL/DATE/TIME ____

Method of Water Level Measurement: SOUNDER.

Total Well Depth 197' bmp

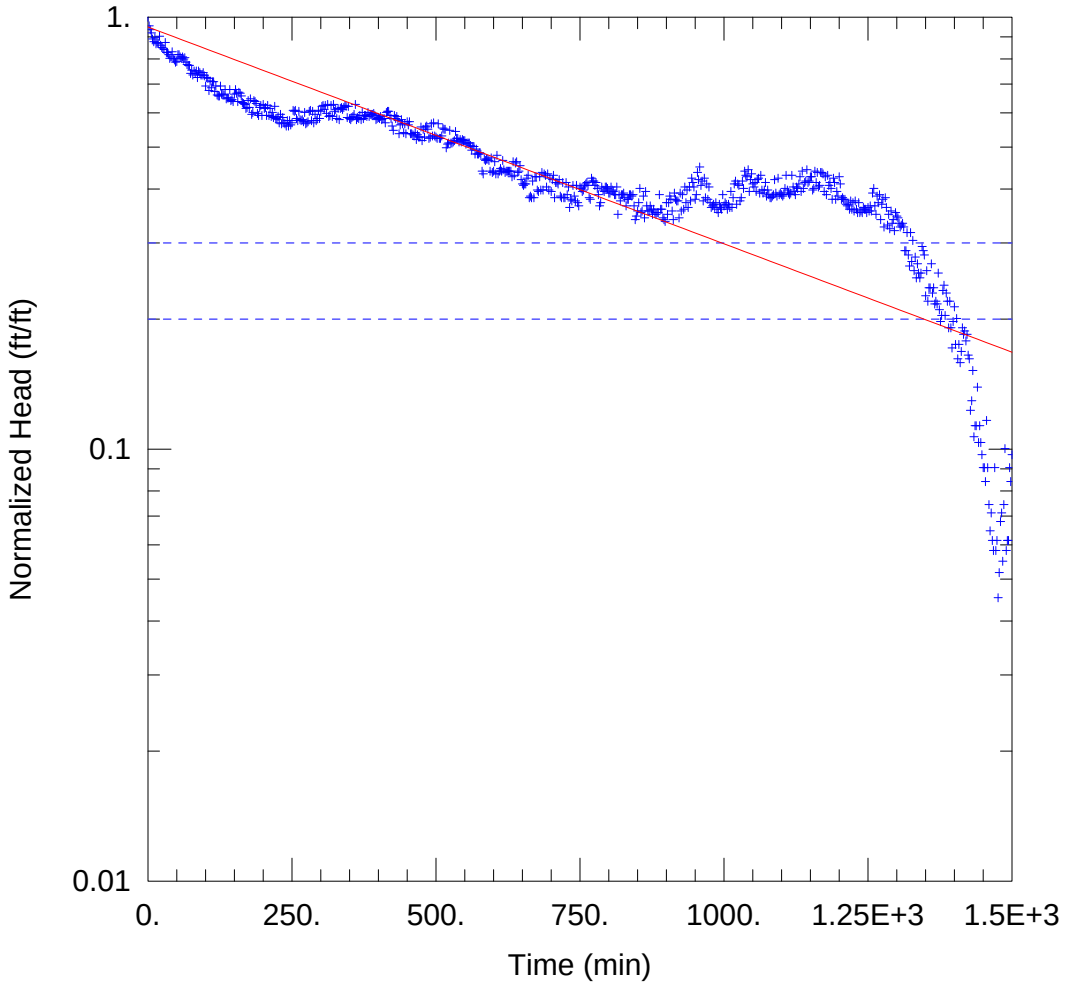
Well Diameter 4"

Perforated Interval 157-197' bmp

Depth to Bottom of Slug ____

Depth to Top of Transducer ____

Date/Time	t (min)	Depth to Water (ft bmp)	Slug ID	Falling or Rising?	Remarks (pH, Temp, EC)
10/1					
10:40		DRY			NO TEST



MW-104 SLUG A FALLING HEAD

Data Set: S:\...\MW-104_SlugAFallingHead.aqt
Date: 07/07/14 Time: 17:03:12

PROJECT INFORMATION

Company: Rio Algom
Project: 1350.21
Location: Lisbon
Test Well: MW-104
Test Date: 11 Sep 2013

AQUIFER DATA

Saturated Thickness: 3.08 ft
Anisotropy Ratio (Kz/Kr): 1.

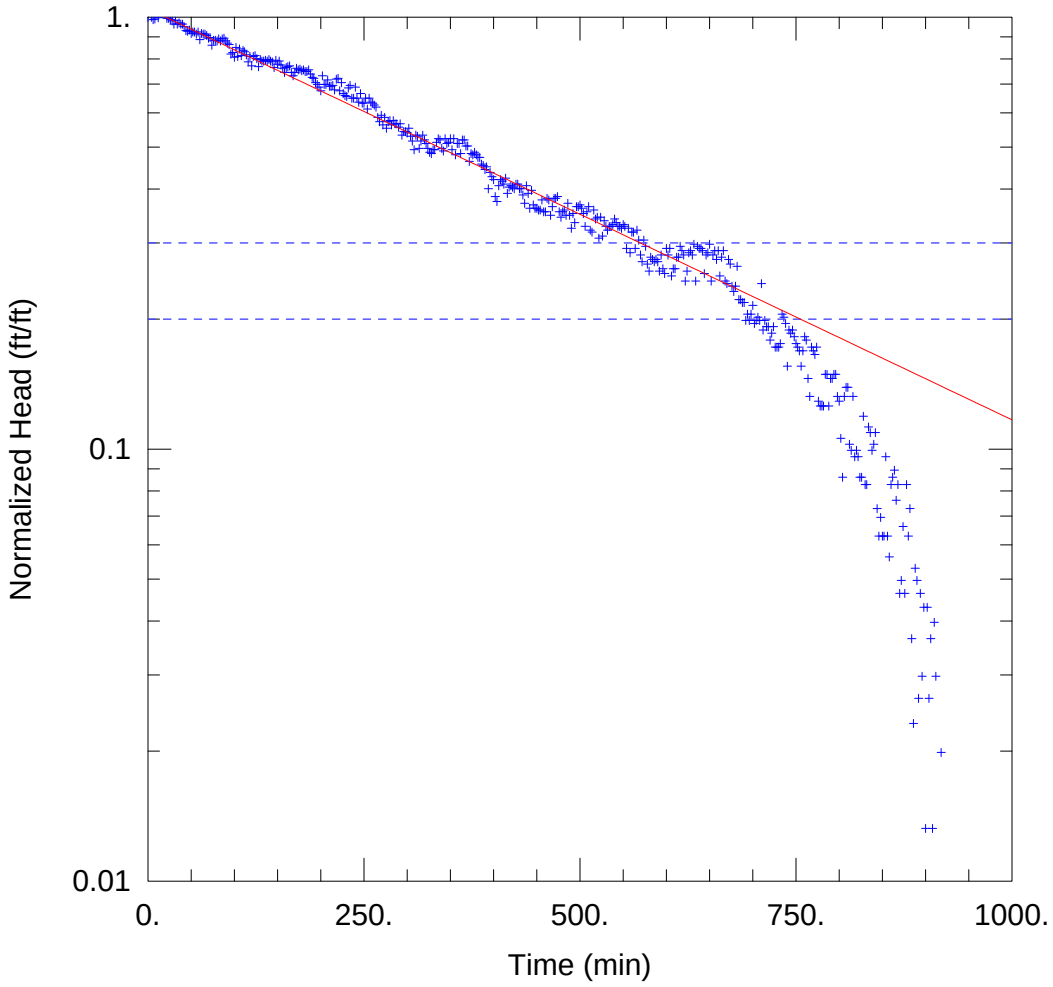
WELL DATA (MW-104)

Initial Displacement: 0.309 ft
Total Well Penetration Depth: 3.08 ft
Casing Radius: 0.167 ft
Static Water Column Height: 3.08 ft
Screen Length: 3.08 ft
Well Radius: 0.333 ft

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice

K = 0.01199 ft/day
y0 = 0.2931 ft



MW-104 SLUG A RISING HEAD

Data Set: S:\...\MW-104_SlugARisingHead.aqt
Date: 07/07/14 Time: 17:04:27

PROJECT INFORMATION

Company: Rio Algom
Project: 1350.21
Location: Lisbon
Test Well: MW-104
Test Date: 14 Sep 2013

AQUIFER DATA

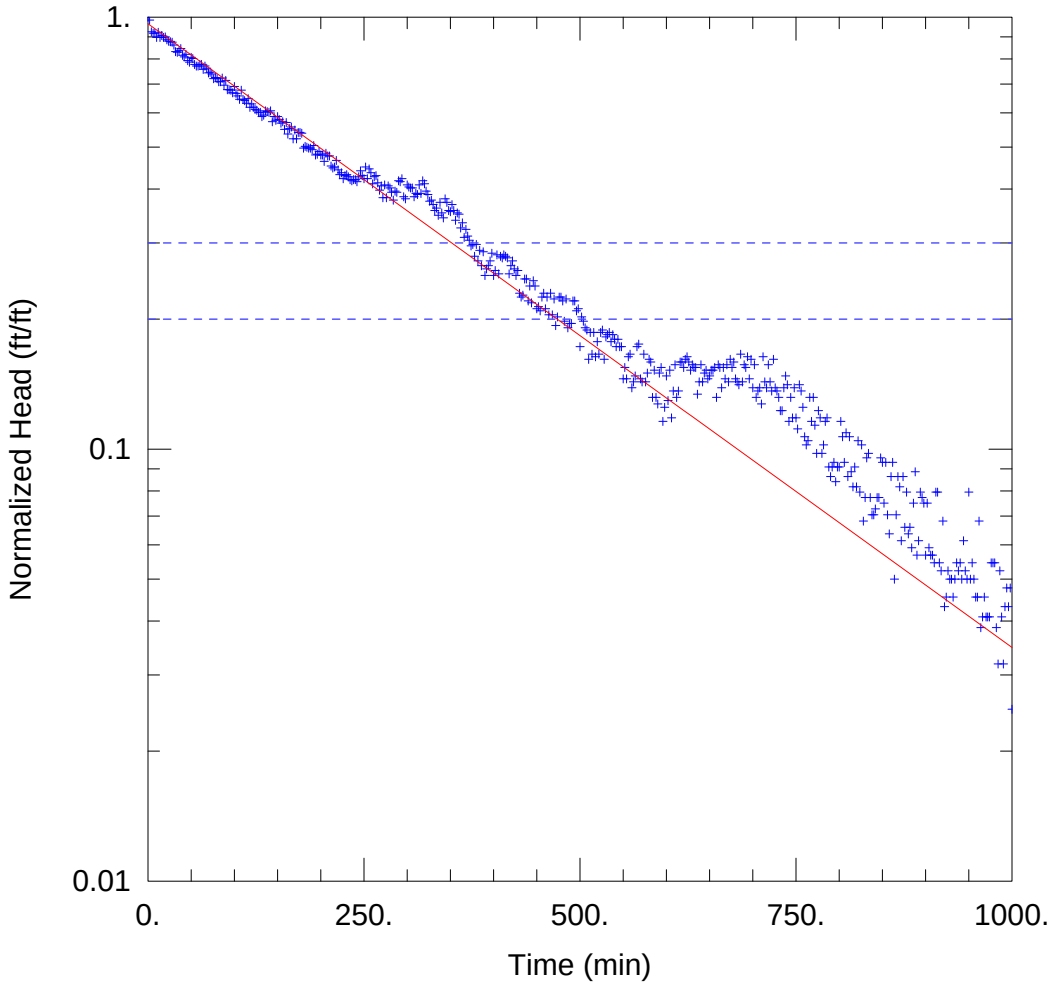
Saturated Thickness: 3.08 ft
Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (MW-104)

Initial Displacement: 0.302 ft
Total Well Penetration Depth: 3.08 ft
Casing Radius: 0.167 ft
Static Water Column Height: 3.08 ft
Screen Length: 3.08 ft
Well Radius: 0.333 ft

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice
K = 0.02273 ft/day
y0 = 0.3158 ft



MW-104 SLUG B FALLING HEAD

Data Set: S:\...\MW-104_SlugBFallingHead.aqt
Date: 07/07/14 Time: 17:04:40

PROJECT INFORMATION

Company: Rio Algom
Project: 1350.21
Location: Lisbon
Test Well: MW-104
Test Date: 27 Aug 2013

AQUIFER DATA

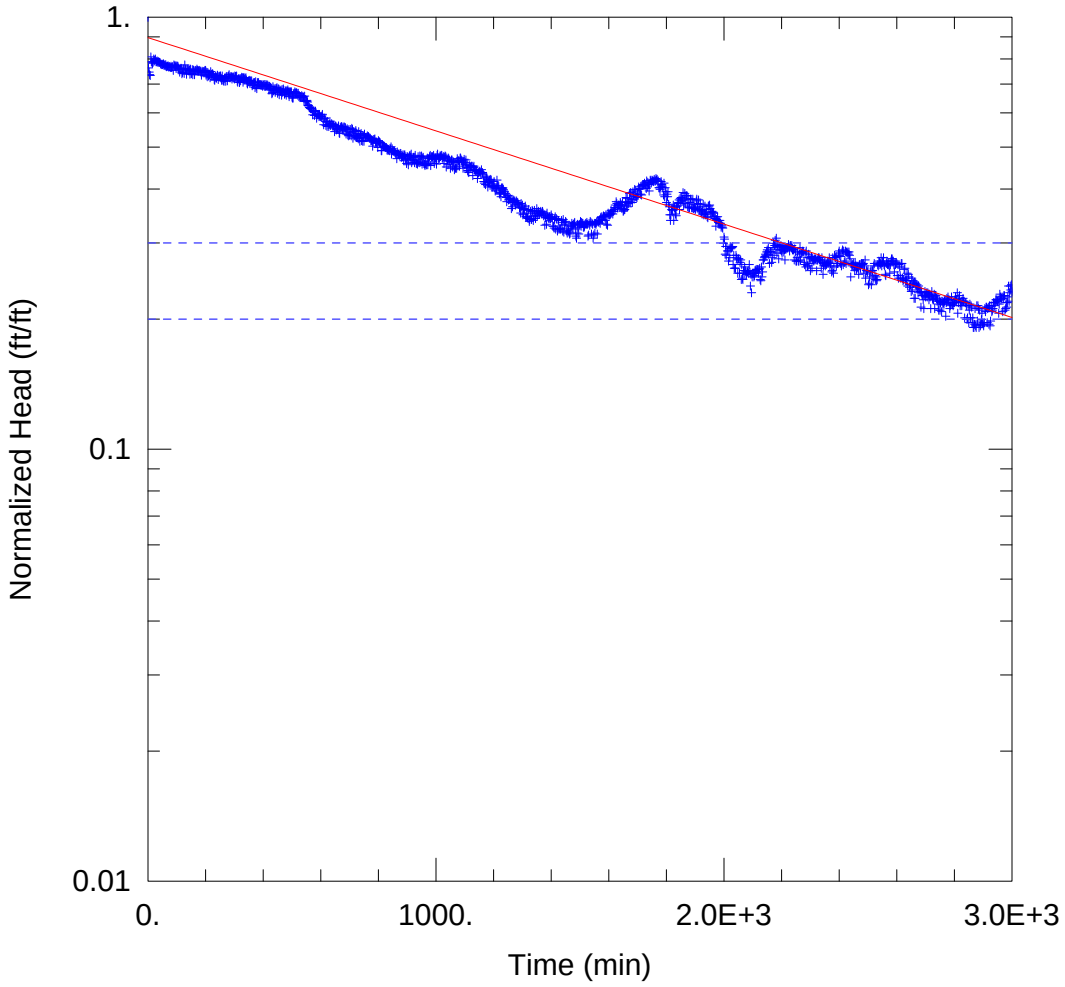
Saturated Thickness: 3.08 ft
Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (MW-104)

Initial Displacement: 0.44 ft
Total Well Penetration Depth: 3.08 ft
Casing Radius: 0.167 ft
Static Water Column Height: 3.08 ft
Screen Length: 3.08 ft
Well Radius: 0.333 ft

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice
K = 0.03449 ft/day
y0 = 0.4248 ft



MW-104 SLUG B RISING HEAD

Data Set: S:\...\MW-104_SlugBRisingHead.aqt
Date: 07/07/14 Time: 17:04:51

PROJECT INFORMATION

Company: Rio Algom
Project: 1350.21
Location: Lisbon
Test Well: MW-104
Test Date: 29 Aug 2013

AQUIFER DATA

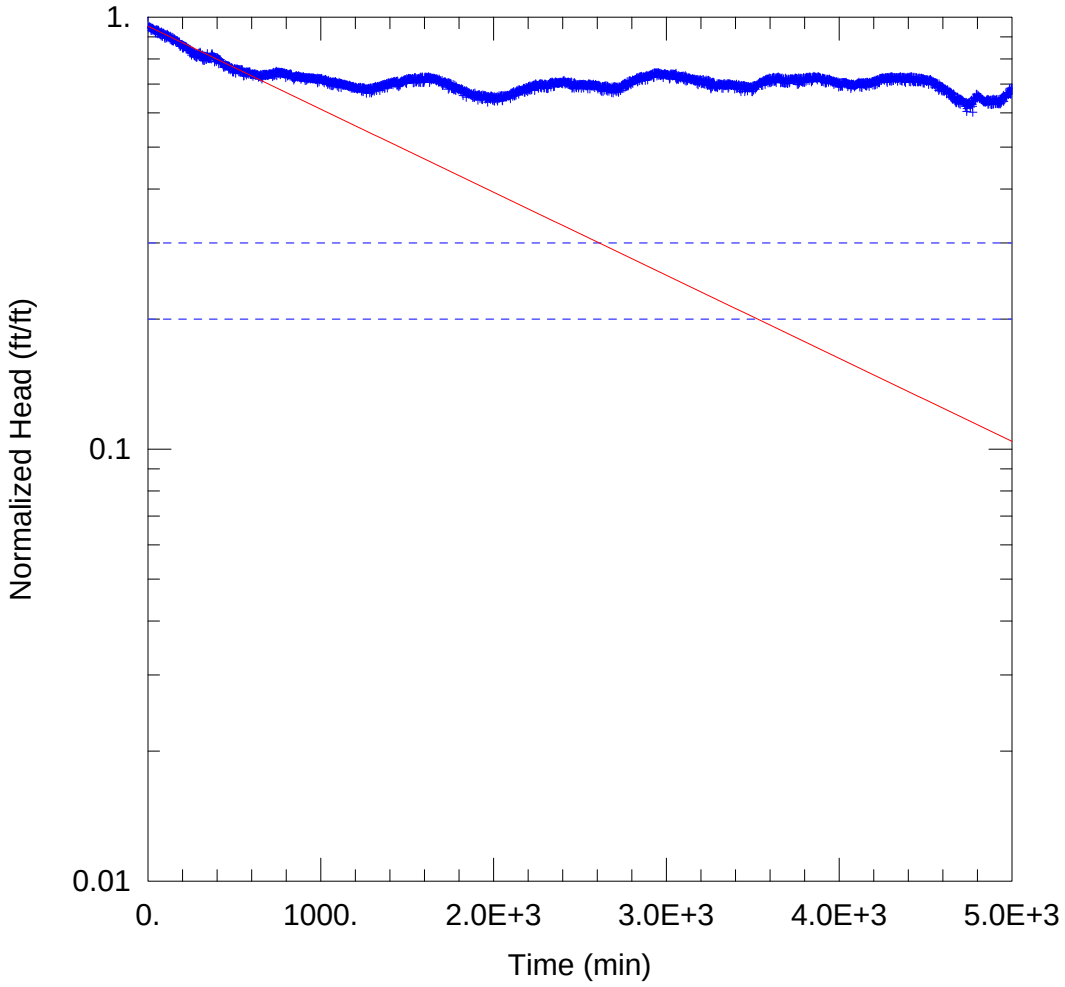
Saturated Thickness: 3.08 ft
Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (MW-104)

Initial Displacement: 0.591 ft
Total Well Penetration Depth: 3.08 ft
Casing Radius: 0.167 ft
Static Water Column Height: 3.08 ft
Screen Length: 3.08 ft
Well Radius: 0.333 ft

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice
K = 0.005158 ft/day
y0 = 0.5299 ft



MW-106 SLUG F FALLING HEAD

Data Set: S:\...\MW-106_SlugFFallingHead.aqt
Date: 07/07/14 Time: 17:05:06

PROJECT INFORMATION

Company: Rio Algom
Project: 1350.21
Location: Lisbon
Test Well: MW-106
Test Date: 19 Aug 2013

AQUIFER DATA

Saturated Thickness: 19.7 ft Anisotropy Ratio (Kz/Kr): 1.

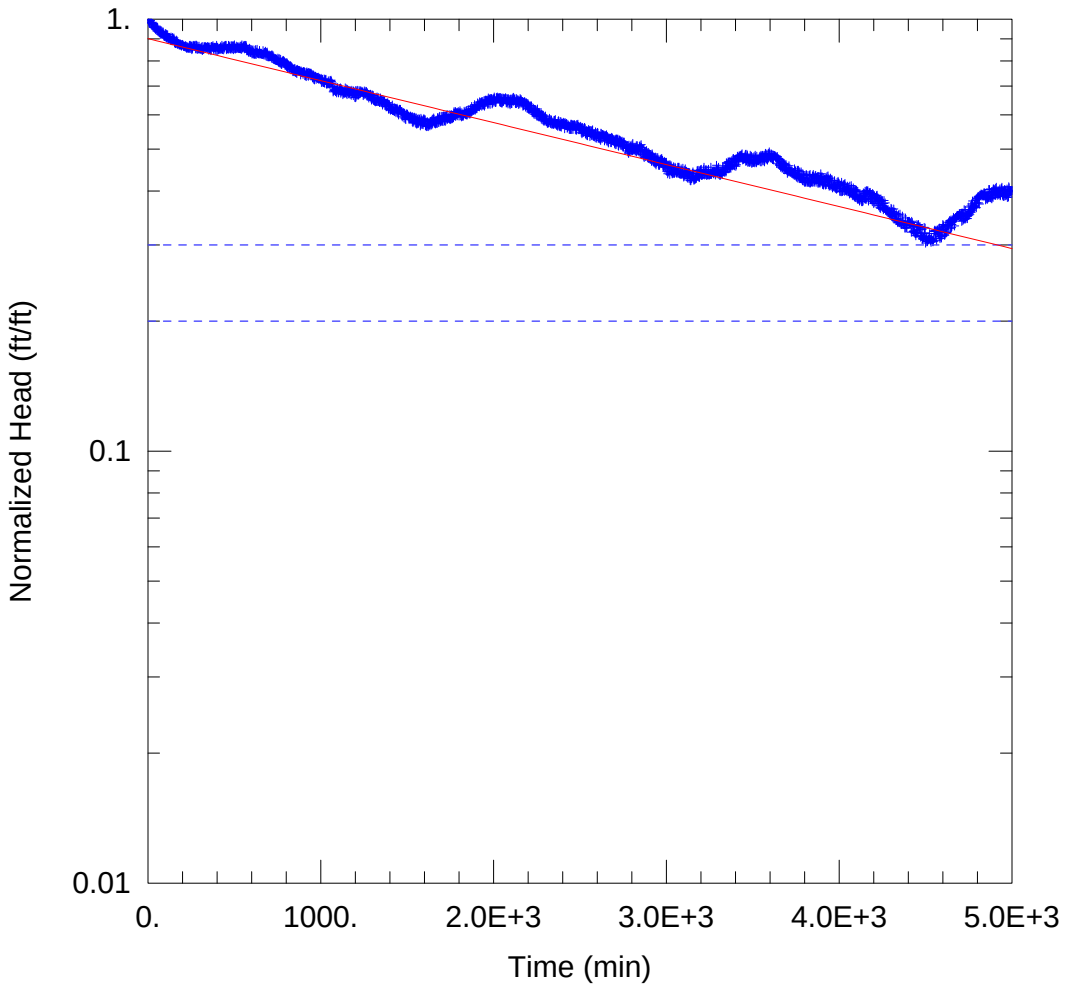
WELL DATA (MW-106)

Initial Displacement: 0.84 ft Static Water Column Height: 30.59 ft
Total Well Penetration Depth: 19.7 ft Screen Length: 19.7 ft
Casing Radius: 0.167 ft Well Radius: 0.333 ft

SOLUTION

Aquifer Model: Unconfined Solution Method: Bouwer-Rice

K = 0.001412 ft/day y0 = 0.8007 ft



MW-106 SLUG F RISING HEAD

Data Set: S:\...\MW-106_SlugFRisingHead.aqt
Date: 07/07/14 Time: 17:05:15

PROJECT INFORMATION

Company: Rio Algom
Project: 1350.21
Location: Lisbon
Test Well: MW-106
Test Date: 1 Sept 2013

AQUIFER DATA

Saturated Thickness: 19.7 ft Anisotropy Ratio (Kz/Kr): 1.

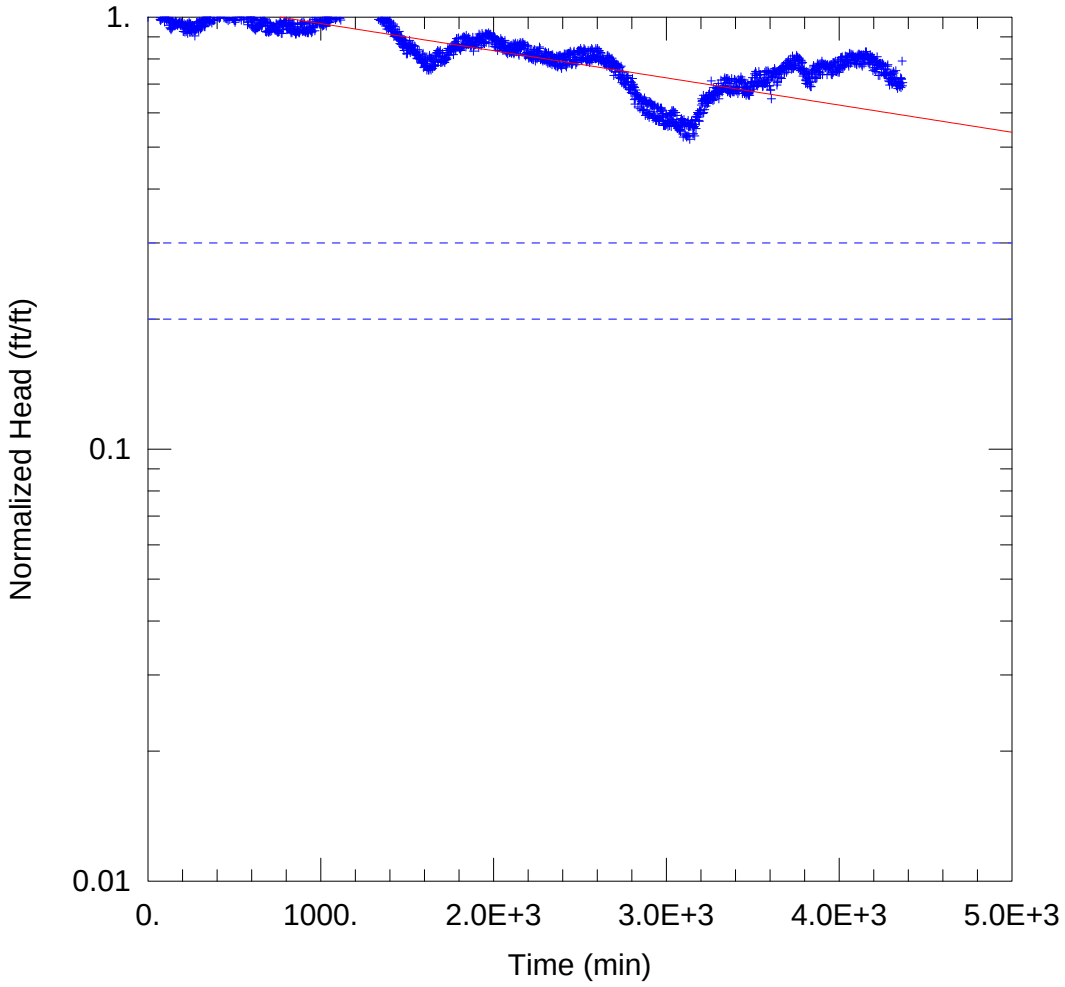
WELL DATA (MW-106)

Initial Displacement: 0.828 ft
Total Well Penetration Depth: 19.7 ft
Casing Radius: 0.167 ft
Static Water Column Height: 30.59 ft
Screen Length: 19.7 ft
Well Radius: 0.333 ft

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice

K = 0.0007136 ft/day
y0 = 0.7462 ft



MW-106 SLUG H FALLING HEAD

Data Set: S:\...\MW-106_SlugHFallingHead.aqt
Date: 07/07/14 Time: 17:05:29

PROJECT INFORMATION

Company: Rio Algom
Project: 1350.21
Location: Lisbon
Test Well: MW-106
Test Date: 11 Sept 2013

AQUIFER DATA

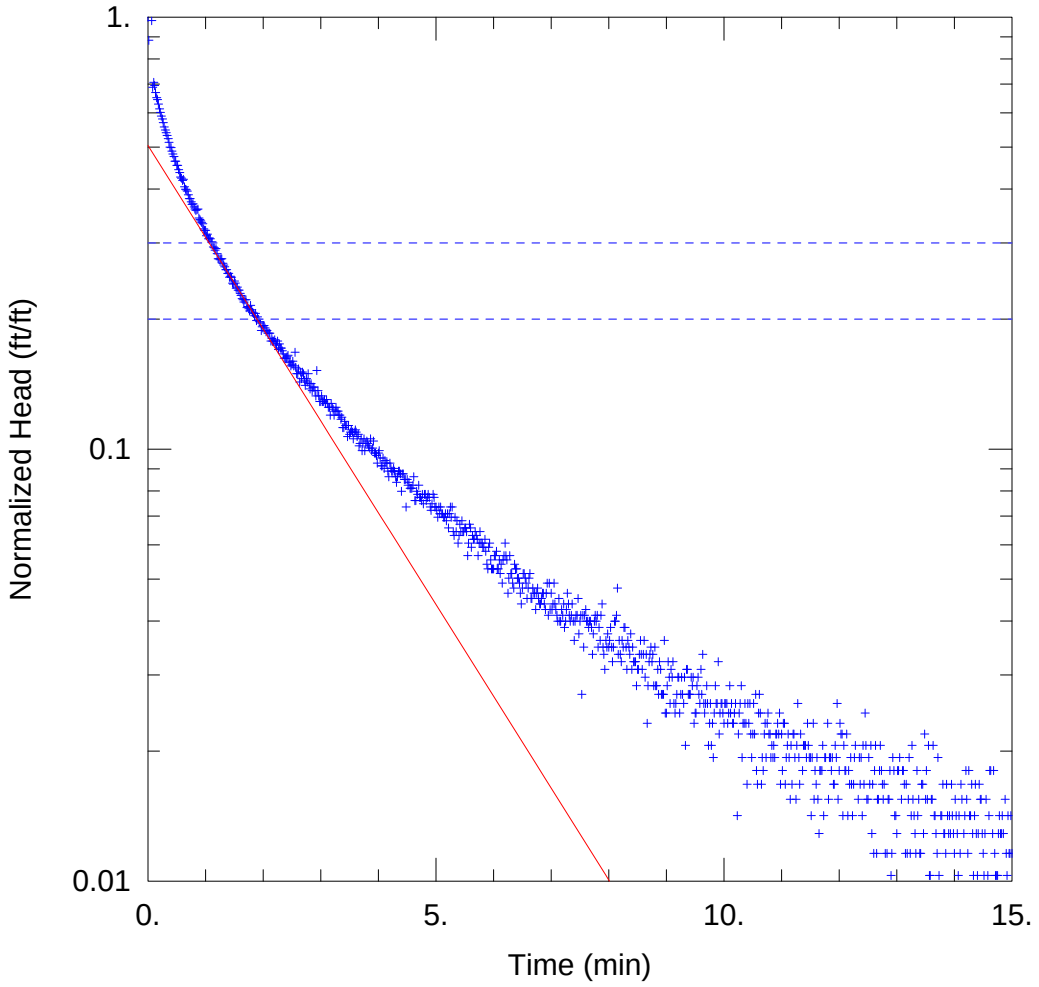
Saturated Thickness: 19.7 ft
Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (MW-106)

Initial Displacement: 0.326 ft
Total Well Penetration Depth: 19.7 ft
Casing Radius: 0.167 ft
Static Water Column Height: 30.59 ft
Screen Length: 19.7 ft
Well Radius: 0.333 ft

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice
K = 0.0004622 ft/day
y0 = 0.3642 ft



MW-107D SLUG B FALLING HEAD

Data Set: S:\...\MW-107D_SlugBFallingHeadSlugHo.aqt
Date: 07/08/14 Time: 09:44:02

PROJECT INFORMATION

Company: Rio Algom
Project: 1350.21
Location: Lisbon
Test Well: MW-107D
Test Date: 1 Oct 2013

AQUIFER DATA

Saturated Thickness: 30.59 ft Anisotropy Ratio (Kz/Kr): 1.

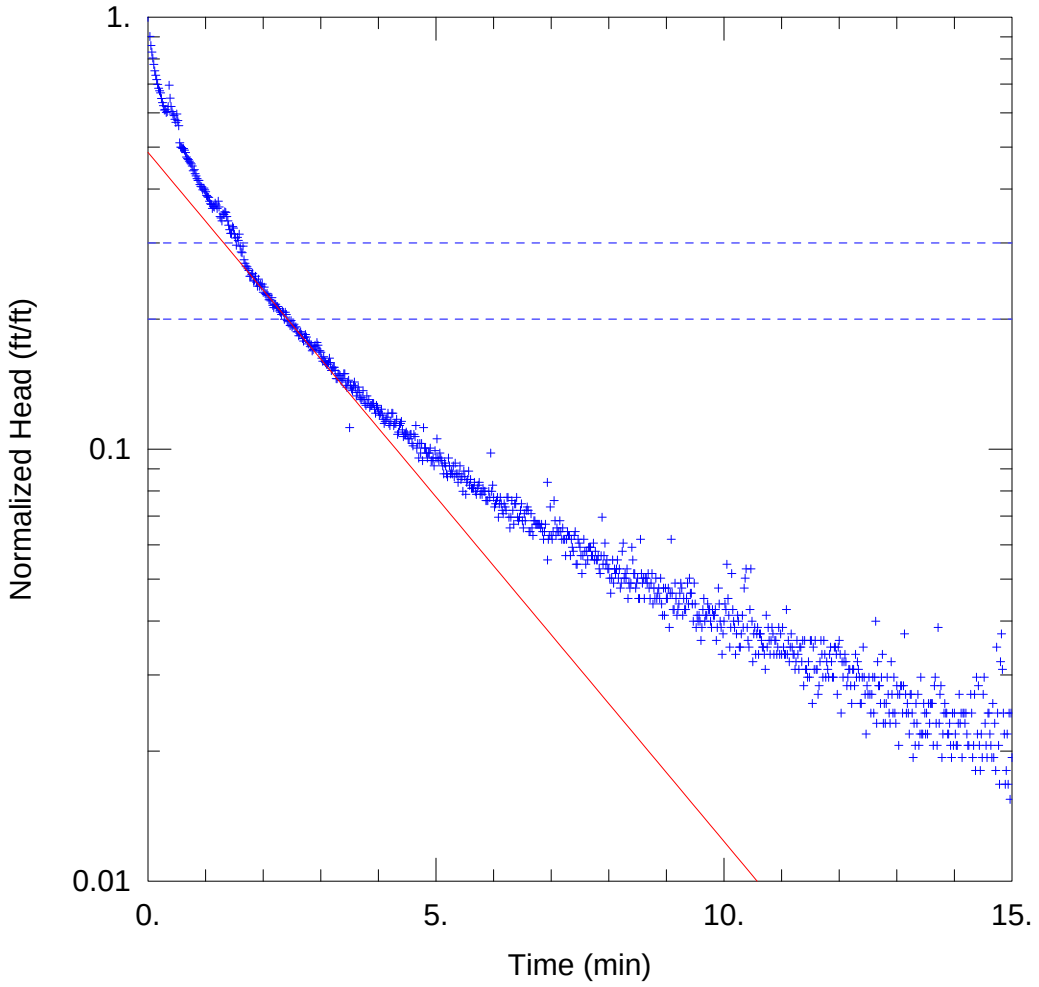
WELL DATA (MW-107D)

Initial Displacement: 0.776 ft
Total Well Penetration Depth: 30.59 ft
Casing Radius: 0.167 ft
Static Water Column Height: 30.59 ft
Screen Length: 20. ft
Well Radius: 0.333 ft

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice

K = 1.676 ft/day
y0 = 0.3915 ft



MW-107D SLUG B RISING HEAD

Data Set: S:\...\MW-107D_SlugBRisingHeadSlugHo.aqt
Date: 07/08/14 Time: 09:44:30

PROJECT INFORMATION

Company: Rio Algom
Project: 1350.21
Location: Lisbon
Test Well: MW-107D
Test Date: 1 Oct 2013

AQUIFER DATA

Saturated Thickness: 30.59 ft Anisotropy Ratio (Kz/Kr): 1.

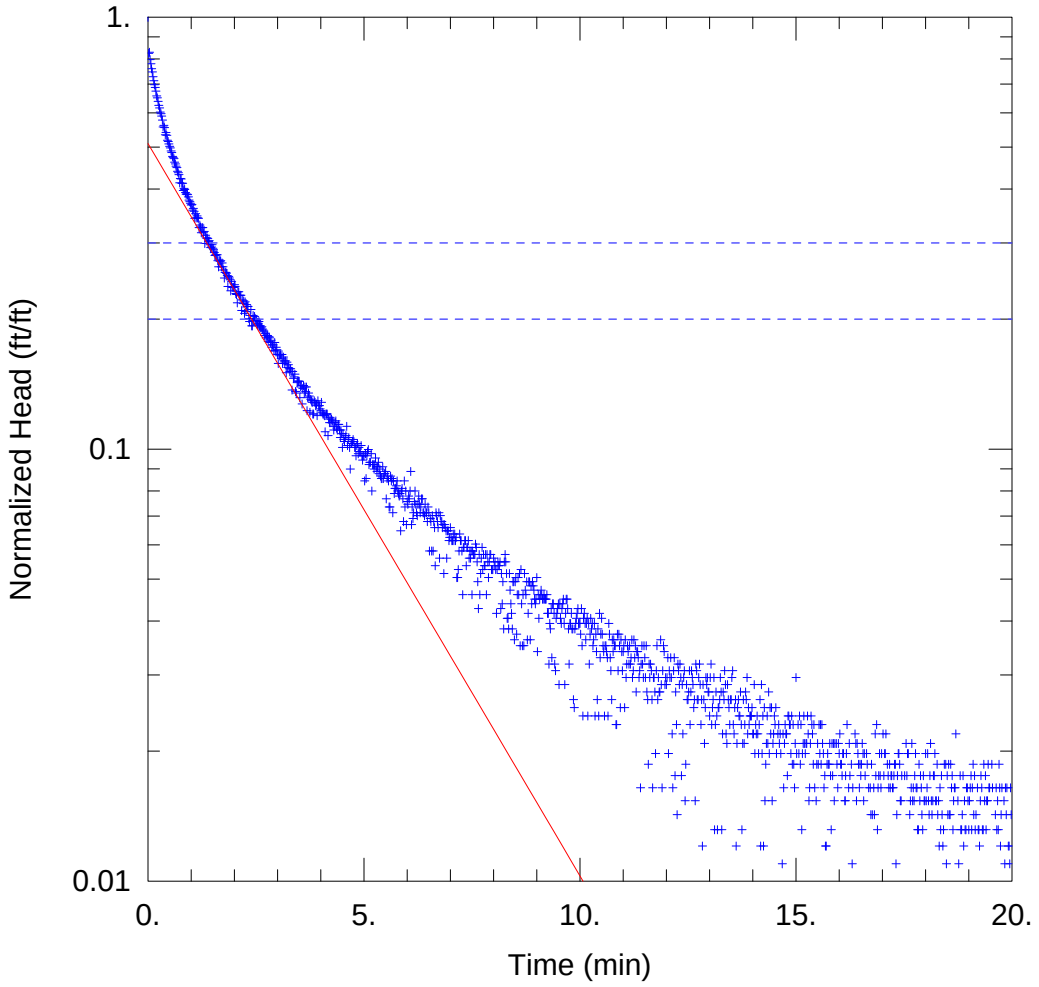
WELL DATA (MW-107D)

Initial Displacement: 0.776 ft
Total Well Penetration Depth: 30.59 ft
Casing Radius: 0.167 ft
Static Water Column Height: 30.59 ft
Screen Length: 20. ft
Well Radius: 0.333 ft

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice

K = 1.258 ft/day
y0 = 0.3774 ft



MW-107D SLUG C FALLING HEAD

Data Set: S:\...\MW-107D_SlugCFallingHeadGraphHo.aqt
Date: 07/08/14 Time: 09:44:55

PROJECT INFORMATION

Company: Rio Algom
Project: 1350.21
Location: Lisbon
Test Well: MW-107D
Test Date: 1 Oct 2013

AQUIFER DATA

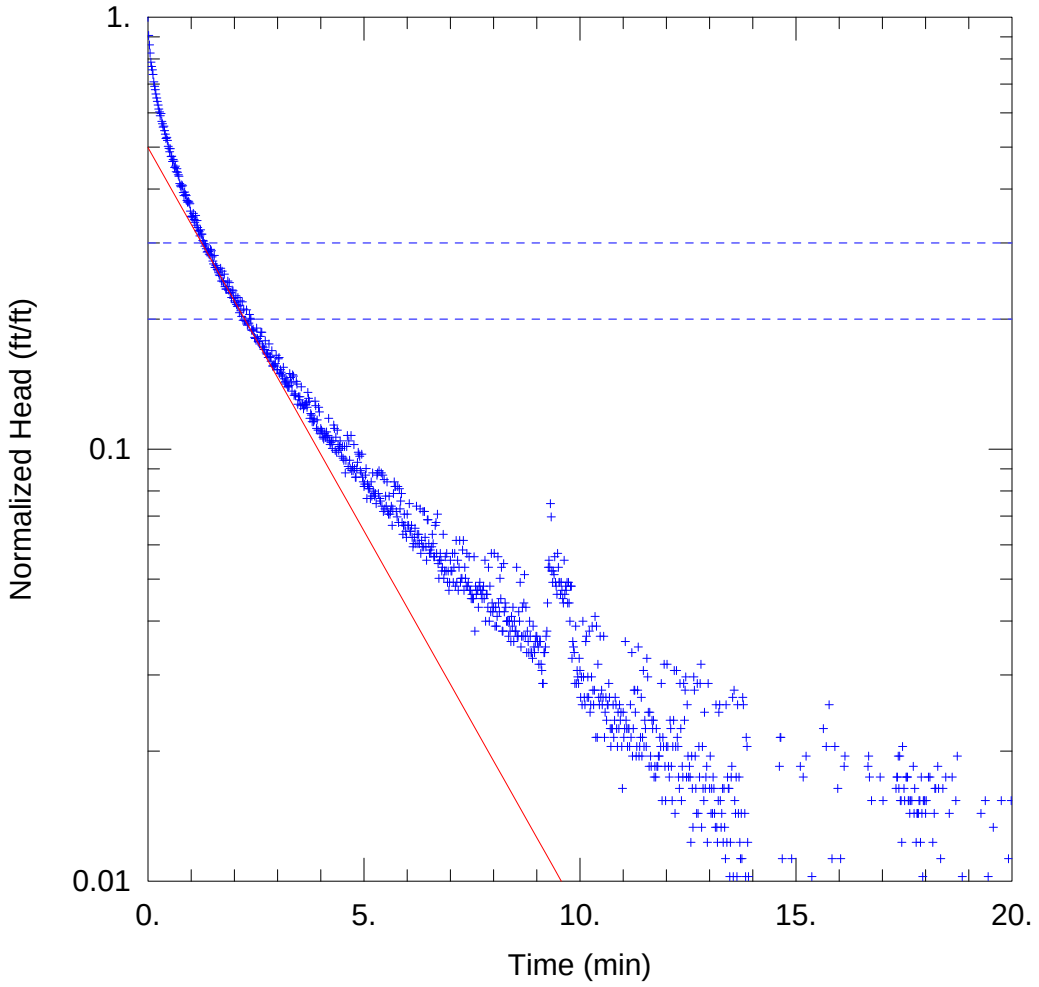
Saturated Thickness: 30.59 ft
Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (MW-107D)

Initial Displacement: 0.912 ft
Total Well Penetration Depth: 30.59 ft
Casing Radius: 0.167 ft
Static Water Column Height: 30.59 ft
Screen Length: 20. ft
Well Radius: 0.333 ft

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice
K = 1.336 ft/day
y0 = 0.4648 ft



MW-107D SLUG C RISING HEAD

Data Set: S:\...\MW-107D_SlugCRisingHeadGraphHo.aqt
Date: 07/08/14 Time: 09:46:17

PROJECT INFORMATION

Company: Rio Algom
Project: 1350.21
Location: Lisbon
Test Well: MW-107D
Test Date: 1 Oct 2013

AQUIFER DATA

Saturated Thickness: 30.59 ft Anisotropy Ratio (Kz/Kr): 1.

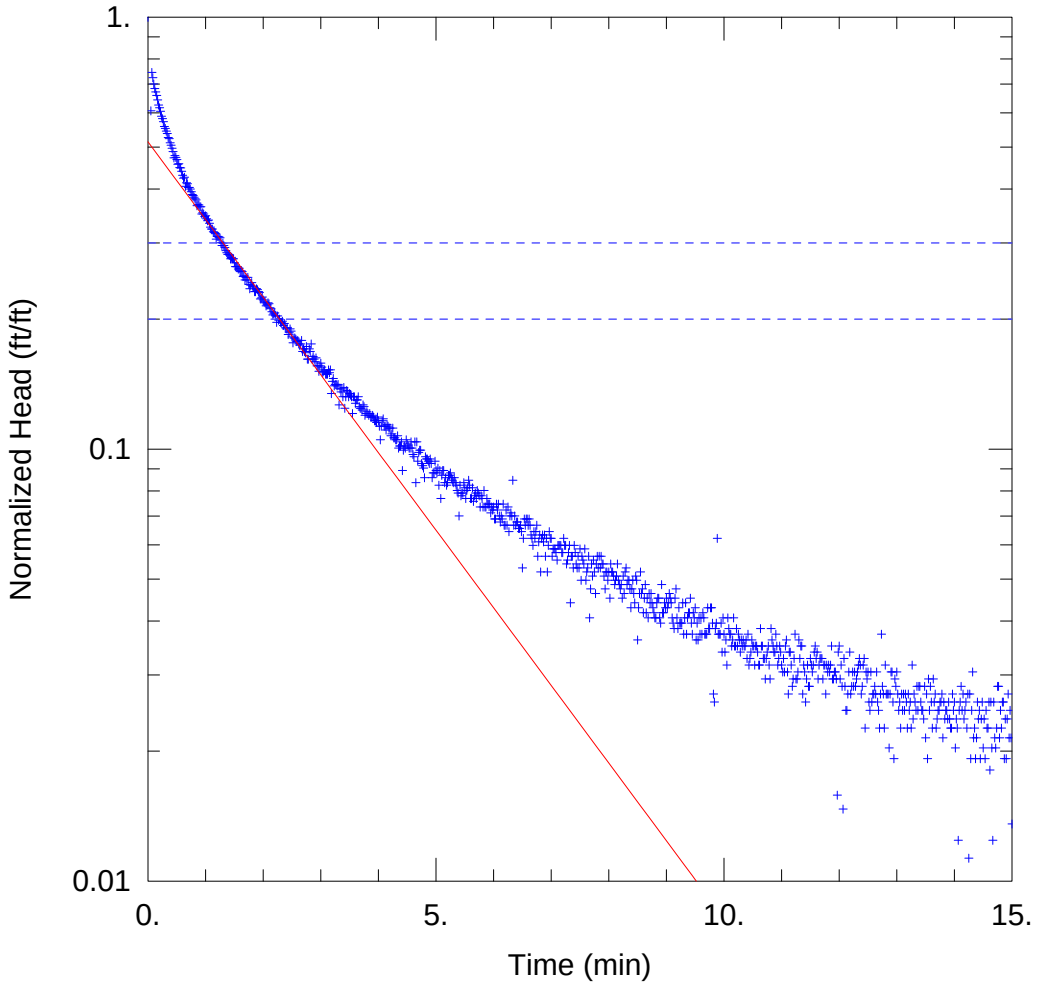
WELL DATA (MW-107D)

Initial Displacement: 0.976 ft
Total Well Penetration Depth: 30.59 ft
Casing Radius: 0.167 ft
Static Water Column Height: 30.59 ft
Screen Length: 20. ft
Well Radius: 0.333 ft

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice

K = 1.399 ft/day
y0 = 0.4867 ft



MW-107D SLUG F FALLING HEAD

Data Set: S:\...\MW-107D_SlugFFallingHeadSlugHo.aqt
Date: 07/08/14 Time: 09:46:38

PROJECT INFORMATION

Company: Rio Algom
Project: 1350.21
Location: Lisbon
Test Well: MW-107D
Test Date: 1 Oct 2013

AQUIFER DATA

Saturated Thickness: 30.59 ft Anisotropy Ratio (Kz/Kr): 1.

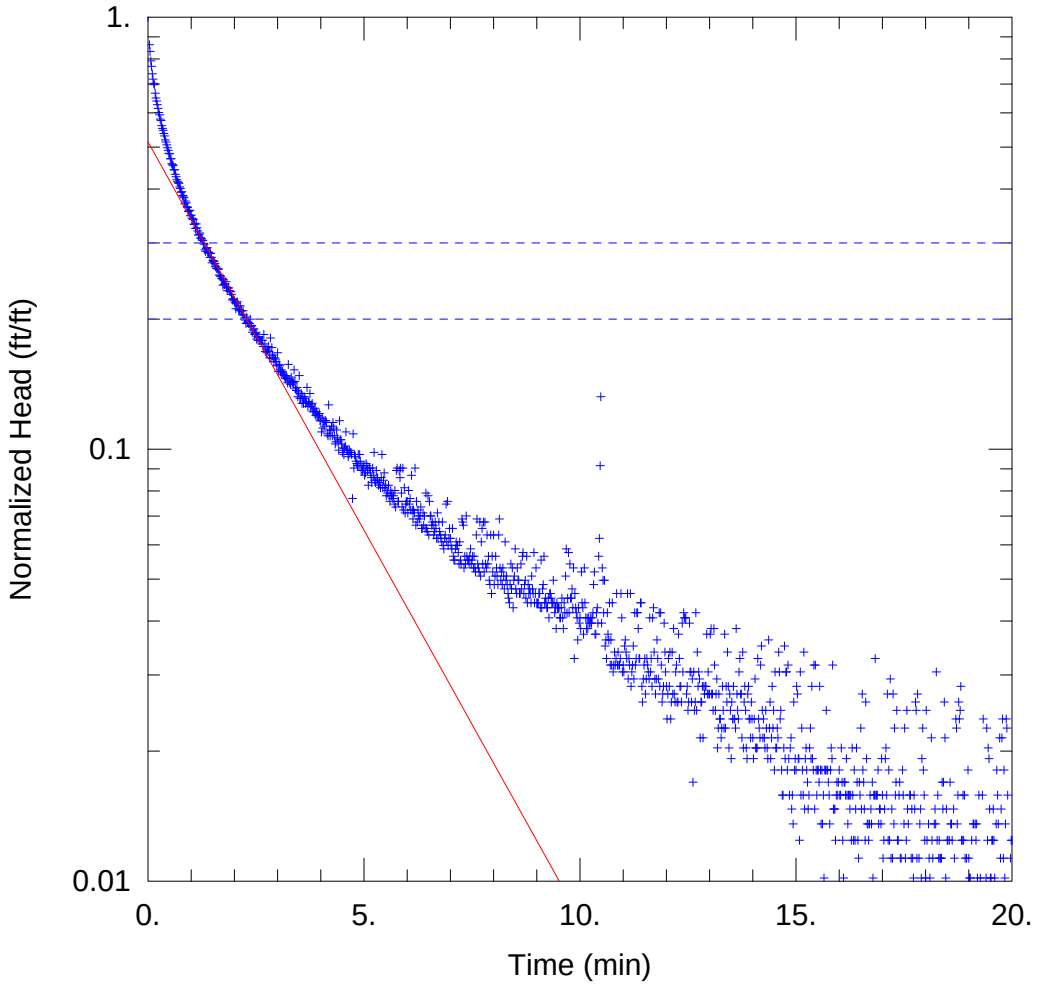
WELL DATA (MW-107D)

Initial Displacement: 0.885 ft
Total Well Penetration Depth: 30.59 ft
Casing Radius: 0.167 ft
Static Water Column Height: 30.59 ft
Screen Length: 20. ft
Well Radius: 0.333 ft

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice

K = 1.417 ft/day
y0 = 0.4551 ft



MW-107D SLUG F RISING HEAD

Data Set: S:\...\MW-107D_SlugFRisingHeadSlugHo.aqt
Date: 07/08/14 Time: 09:47:03

PROJECT INFORMATION

Company: Rio Algom
Project: 1350.21
Location: Lisbon
Test Well: MW-107D
Test Date: 1 Oct 2013

AQUIFER DATA

Saturated Thickness: 30.59 ft Anisotropy Ratio (Kz/Kr): 1.

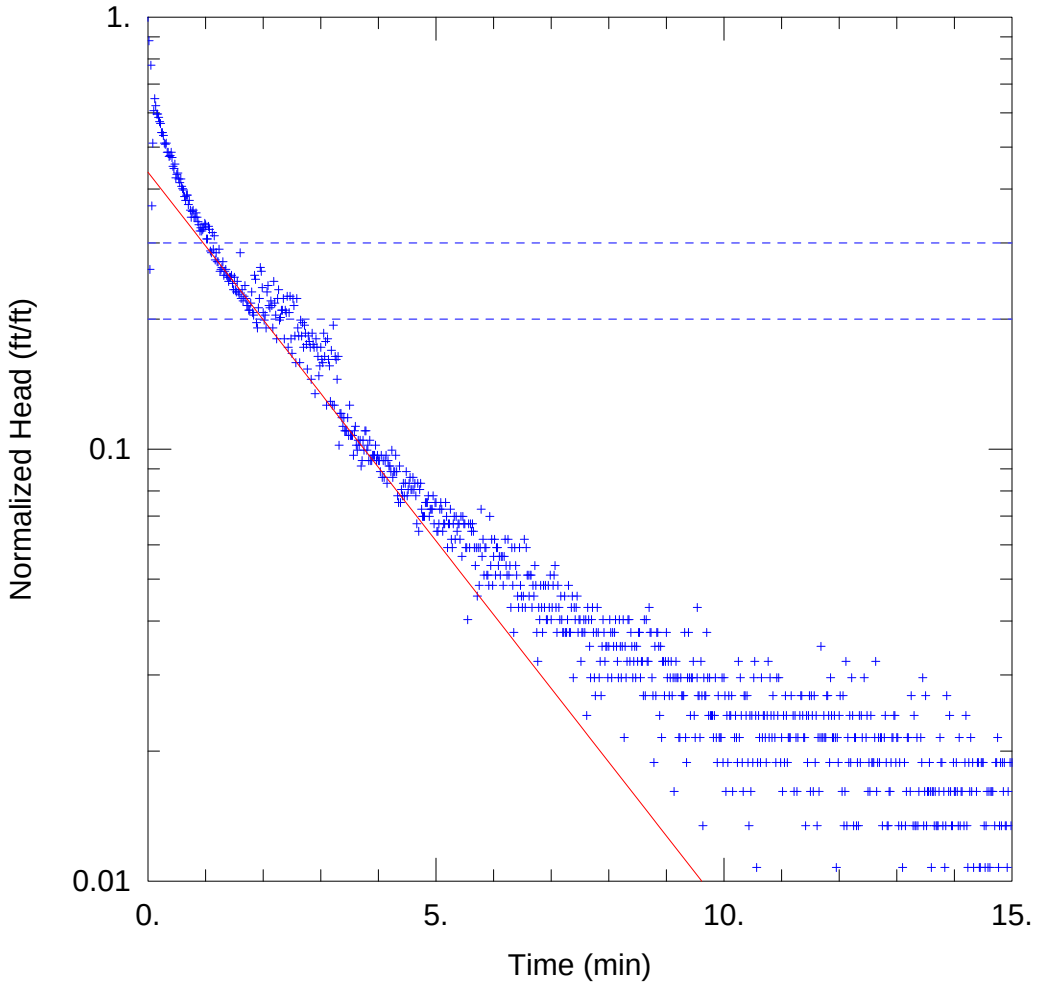
WELL DATA (MW-107D)

Initial Displacement: 0.885 ft
Total Well Penetration Depth: 30.59 ft
Casing Radius: 0.167 ft
Static Water Column Height: 30.59 ft
Screen Length: 20. ft
Well Radius: 0.333 ft

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice

K = 1.417 ft/day
y0 = 0.4551 ft



MW-107S SLUG A FALLING HEAD

Data Set: S:\...\MW-107S_SlugAFallingHeadGraphHo.aqt
Date: 07/08/14 Time: 09:47:32

PROJECT INFORMATION

Company: Rio Algom
Project: 1350.21
Location: Lisbon
Test Well: MW-107S
Test Date: 1 Oct 2013

AQUIFER DATA

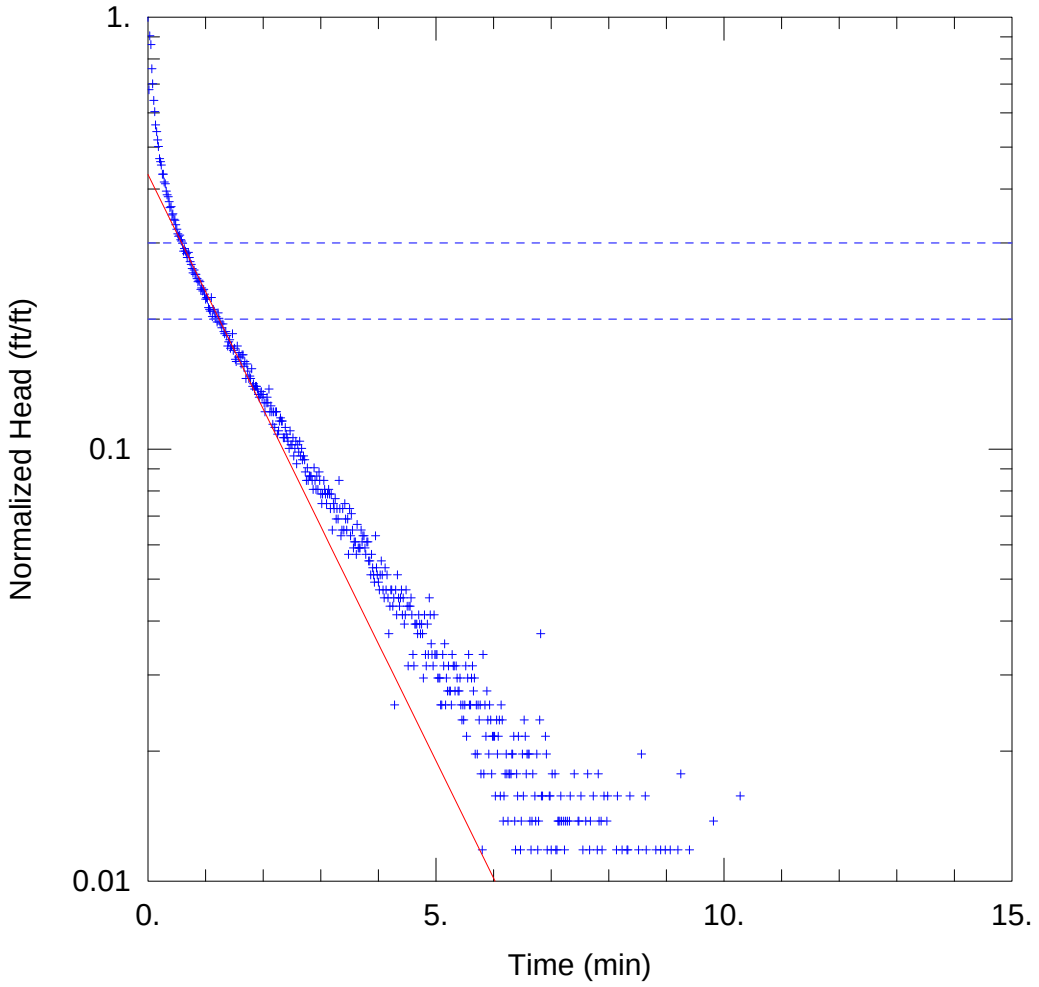
Saturated Thickness: 10.82 ft
Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (MW-107S)

Initial Displacement: 0.372 ft
Total Well Penetration Depth: 10.82 ft
Casing Radius: 0.167 ft
Static Water Column Height: 10.82 ft
Screen Length: 10.82 ft
Well Radius: 0.333 ft

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice
K = 1.924 ft/day
y0 = 0.1628 ft



MW-107S SLUG A RISING HEAD

Data Set: S:\...\MW-107S_SlugARisingHeadSlugHo.aqt
Date: 07/08/14 Time: 09:47:58

PROJECT INFORMATION

Company: Rio Algom
Project: 1350.21
Location: Lisbon
Test Well: MW-107S
Test Date: 1 Oct 2013

AQUIFER DATA

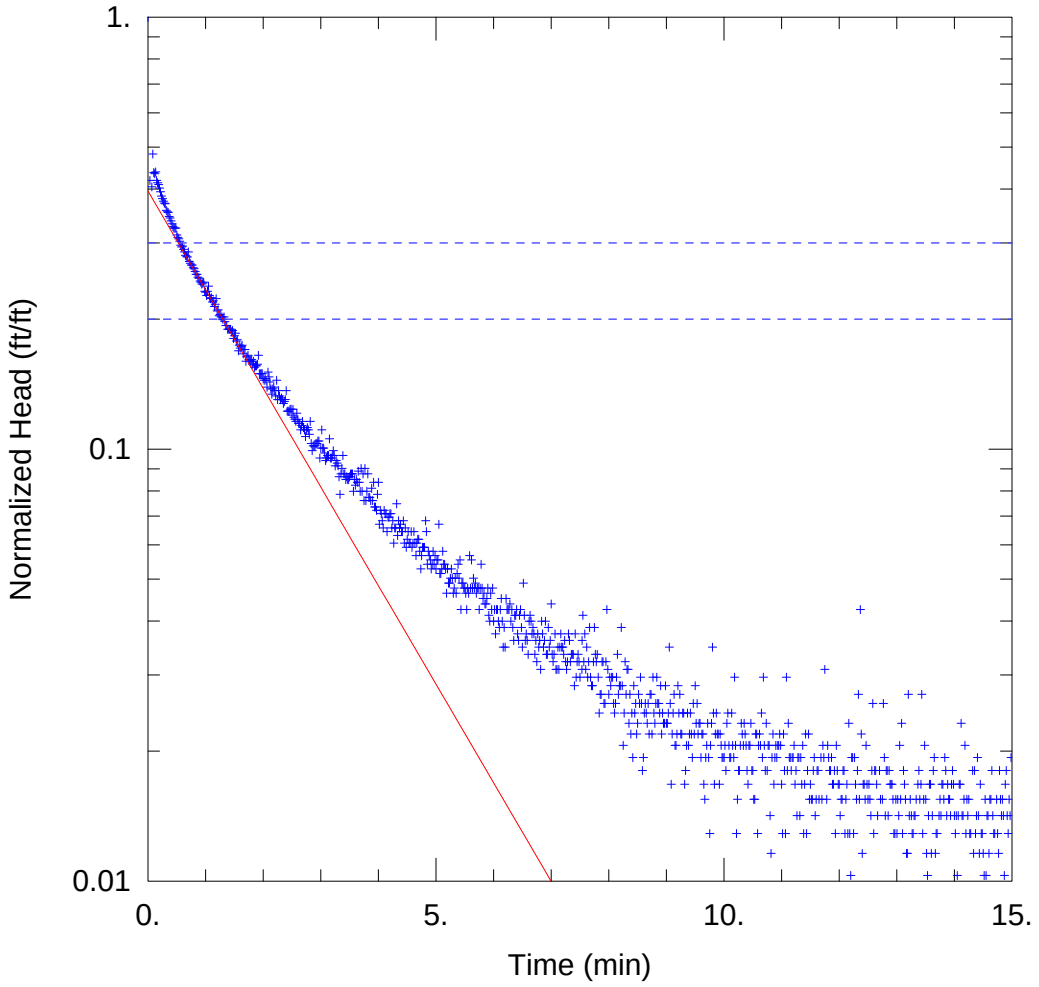
Saturated Thickness: 10.82 ft
Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (MW-107S)

Initial Displacement: 0.508 ft
Total Well Penetration Depth: 10.82 ft
Casing Radius: 0.167 ft
Static Water Column Height: 10.82 ft
Screen Length: 10.82 ft
Well Radius: 0.333 ft

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice
K = 3.061 ft/day
y0 = 0.2196 ft



MW-107S SLUG B FALLING HEAD

Data Set: S:\...\MW-107S_SlugBFallingHeadSlugHo.aqt
Date: 07/08/14 Time: 09:52:00

PROJECT INFORMATION

Company: Rio Algom
Project: 1350.21
Location: Lisbon
Test Well: MW-107S
Test Date: 1 Oct 2013

AQUIFER DATA

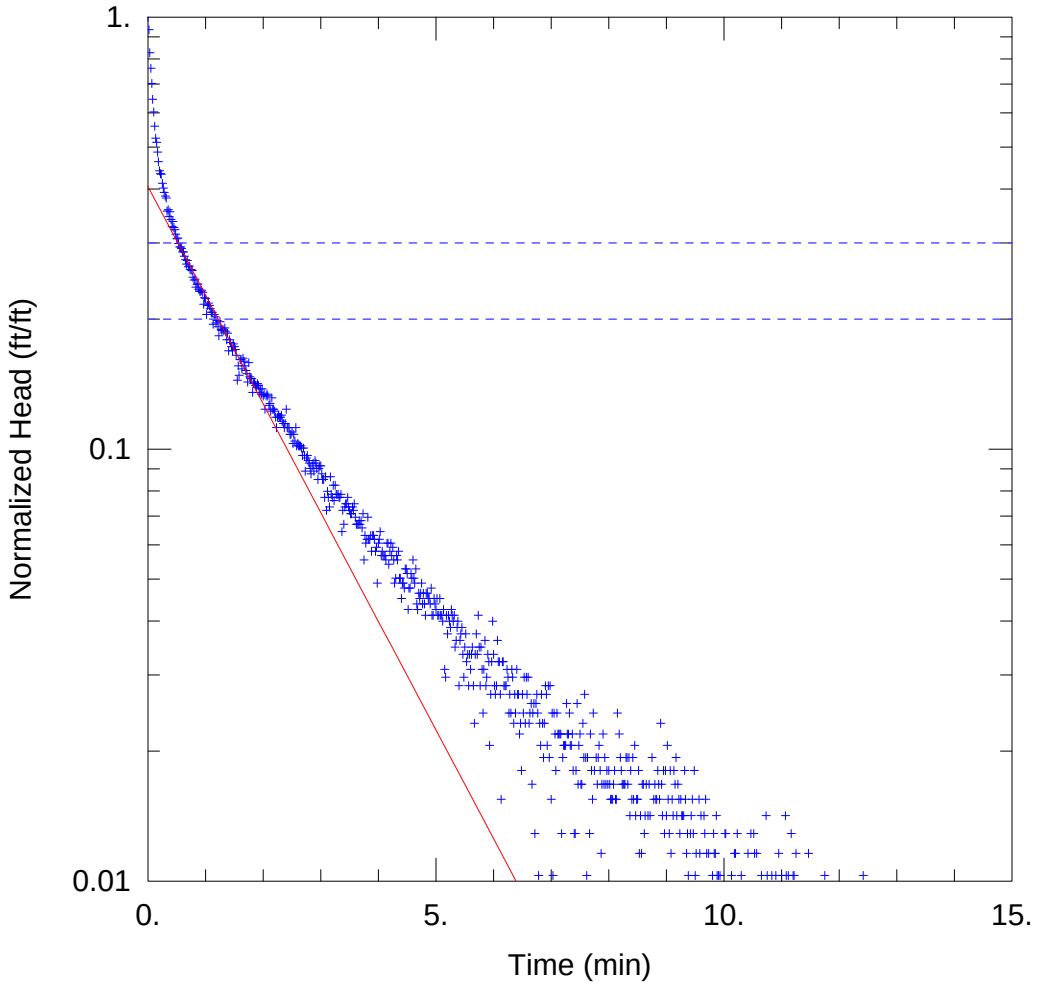
Saturated Thickness: 10.82 ft
Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (MW-107S)

Initial Displacement: 0.776 ft
Total Well Penetration Depth: 10.82 ft
Casing Radius: 0.167 ft
Static Water Column Height: 10.82 ft
Screen Length: 10.82 ft
Well Radius: 0.333 ft

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice
K = 2.573 ft/day
y0 = 0.307 ft



MW-107S SLUG B RISING HEAD

Data Set: S:\...\MW-107S_SlugBRisingHeadSlugHo.aqt
Date: 07/08/14 Time: 09:55:06

PROJECT INFORMATION

Company: Rio Algom
Project: 1350.21
Location: Lisbon
Test Well: MW-107S
Test Date: 1 Oct 2013

AQUIFER DATA

Saturated Thickness: 10.82 ft Anisotropy Ratio (Kz/Kr): 1.

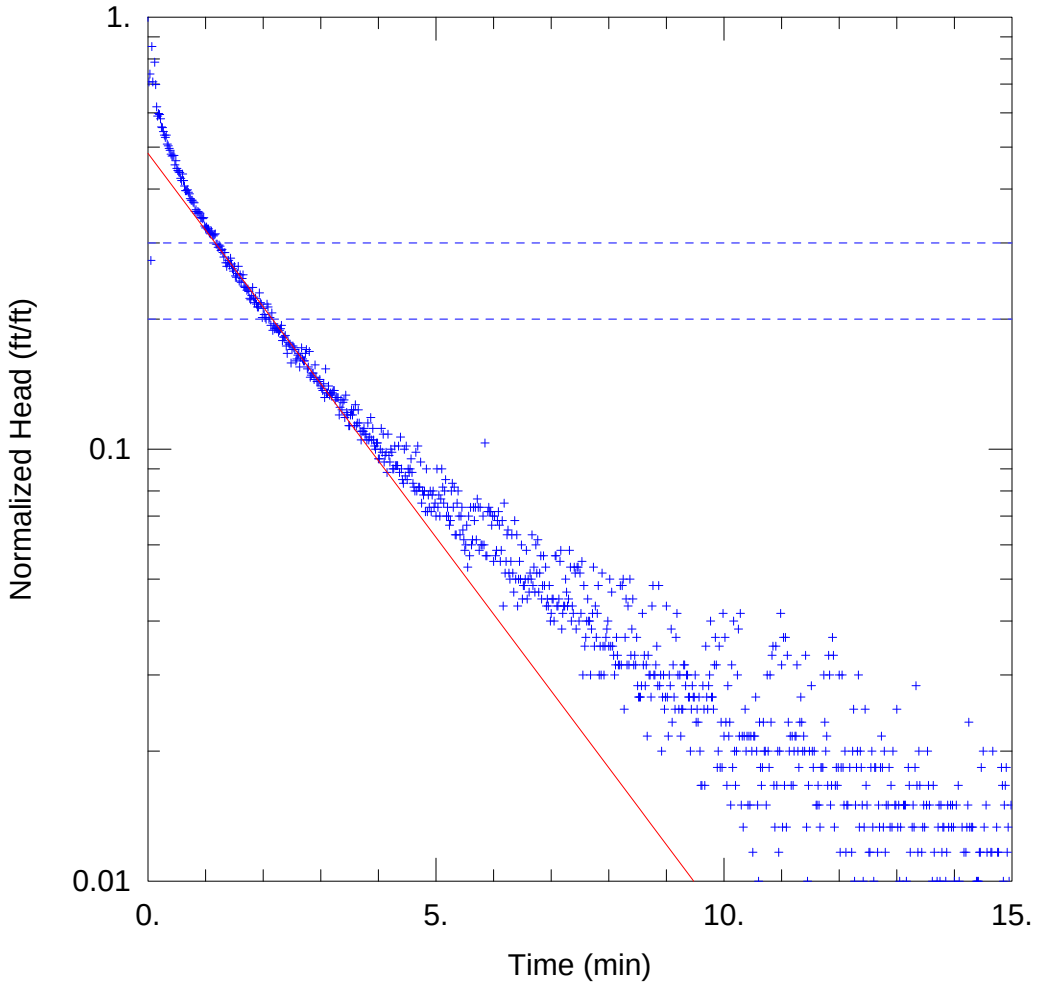
WELL DATA (MW-107S)

Initial Displacement: 0.776 ft
Total Well Penetration Depth: 10.82 ft
Casing Radius: 0.167 ft
Static Water Column Height: 10.82 ft
Screen Length: 10.82 ft
Well Radius: 0.333 ft

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice

K = 2.836 ft/day
y0 = 0.3144 ft



MW-107S SLUG F FALLING HEAD

Data Set: S:\...\MW-107S_SlugFFallingHeadGraphHo.aqt
Date: 07/08/14 Time: 09:55:50

PROJECT INFORMATION

Company: Rio Algom
Project: 1350.21
Location: Lisbon
Test Well: MW-107S
Test Date: 1 Oct 2013

AQUIFER DATA

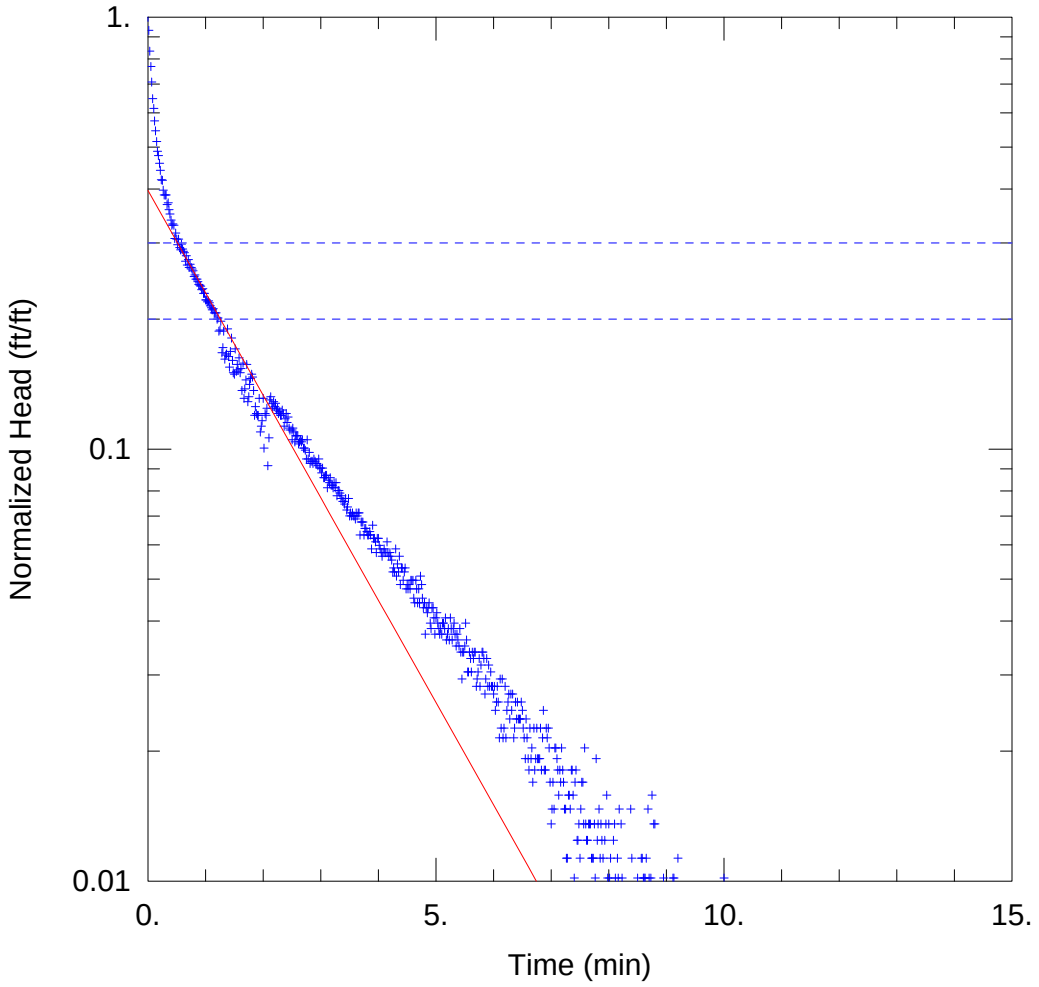
Saturated Thickness: 10.82 ft
Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (MW-107S)

Initial Displacement: 0.6 ft
Total Well Penetration Depth: 10.82 ft
Casing Radius: 0.167 ft
Static Water Column Height: 10.82 ft
Screen Length: 10.82 ft
Well Radius: 0.333 ft

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice
K = 2.005 ft/day
y0 = 0.2903 ft



MW-107S SLUG F RISING HEAD

Data Set: S:\...\MW-107S_SlugFRisingHeadSlugHo.aqt
Date: 07/08/14 Time: 09:56:25

PROJECT INFORMATION

Company: Rio Algom
Project: 1350.21
Location: Lisbon
Test Well: MW-107S
Test Date: 1 Oct 2013

AQUIFER DATA

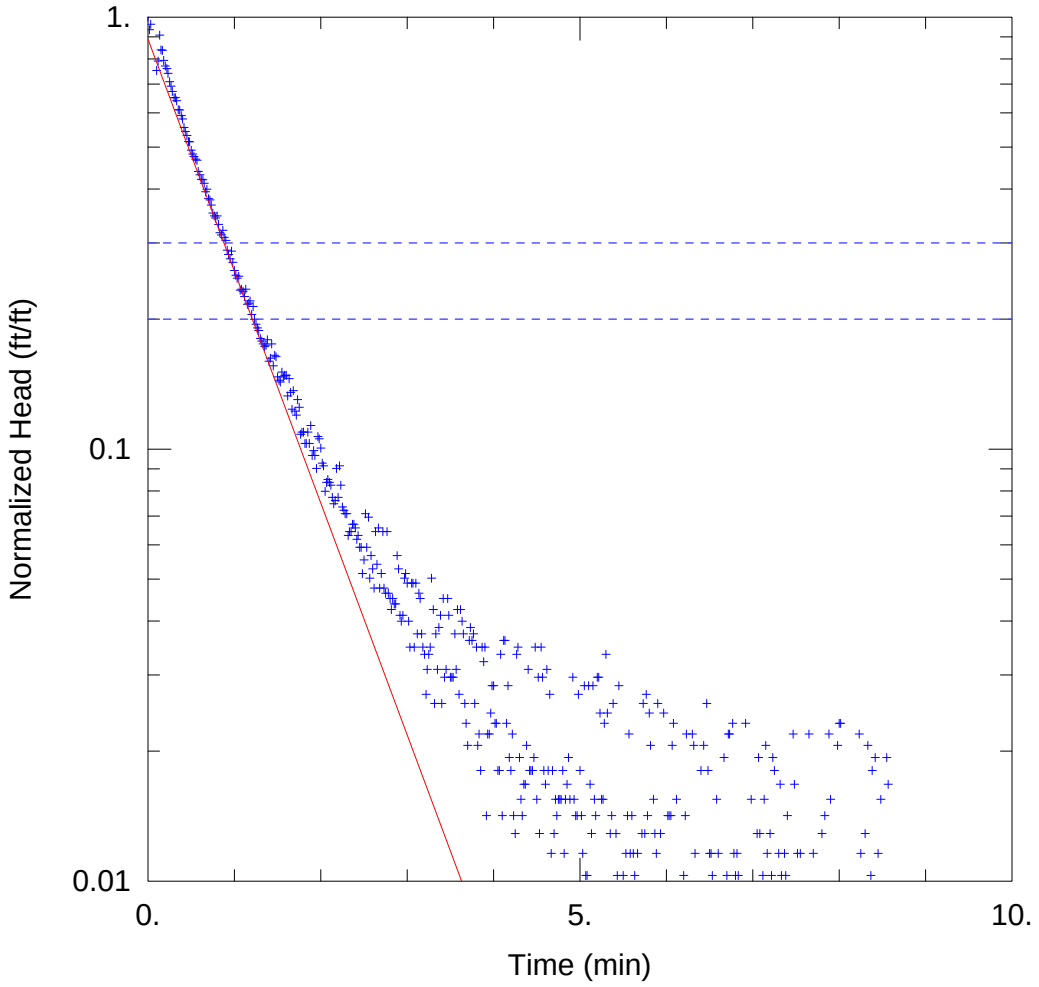
Saturated Thickness: 10.82 ft
Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (MW-107S)

Initial Displacement: 0.885 ft
Total Well Penetration Depth: 10.82 ft
Casing Radius: 0.167 ft
Static Water Column Height: 10.82 ft
Screen Length: 10.82 ft
Well Radius: 0.333 ft

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice
K = 2.673 ft/day
y0 = 0.3514 ft



MW-108 SLUG B FALLING HEAD

Data Set: S:\...\MW-108_SlugBFallingHeadSlugHo.aqt
Date: 07/08/14 Time: 09:57:14

PROJECT INFORMATION

Company: Rio Algom
Project: 1350.21
Location: Lisbon
Test Well: MW-10
Test Date: 1 Oct 2013

AQUIFER DATA

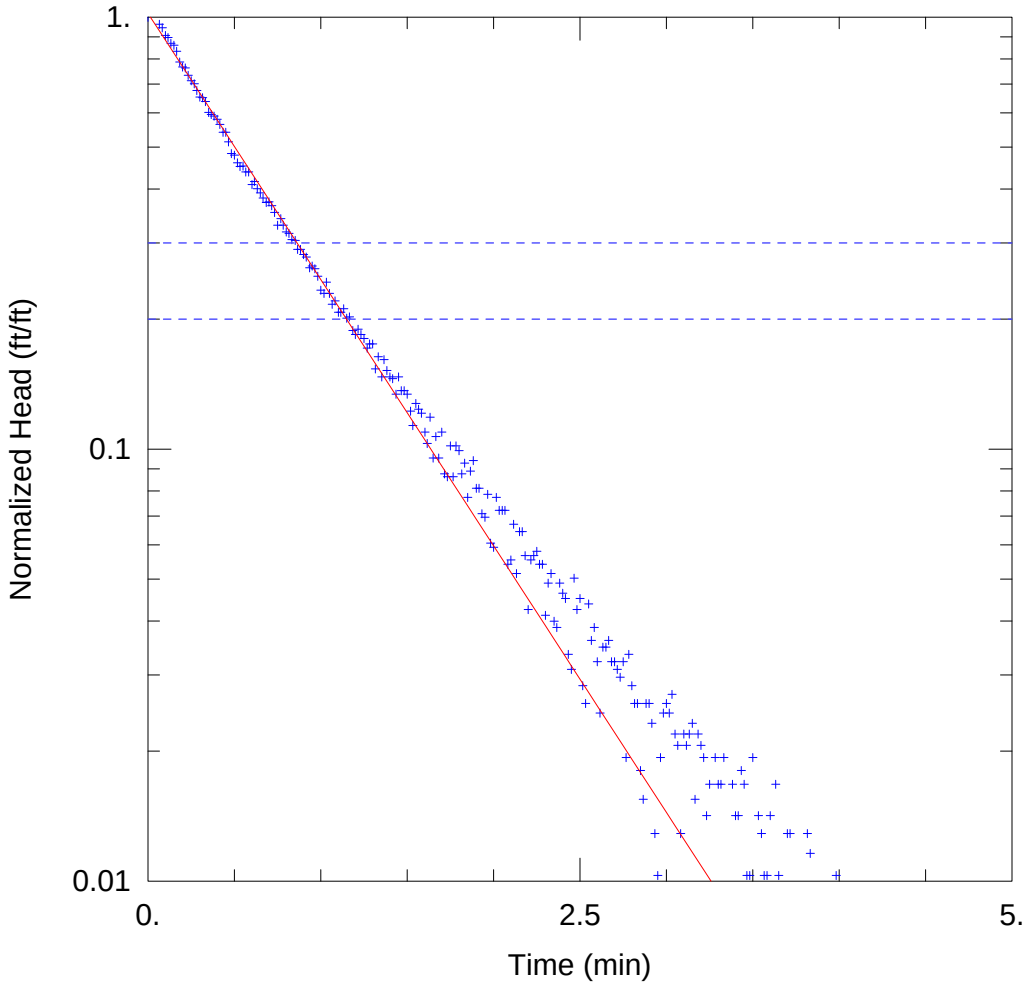
Saturated Thickness: 83. ft
Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (MW-108)

Initial Displacement: 0.776 ft
Total Well Penetration Depth: 83. ft
Casing Radius: 0.167 ft
Static Water Column Height: 142.6 ft
Screen Length: 80. ft
Well Radius: 0.333 ft

SOLUTION

Aquifer Model: Confined
Solution Method: Bouwer-Rice
K = 1.342 ft/day
y0 = 0.6899 ft



MW-108 SLUG B RISING HEAD

Data Set: S:\...\MW-108_SlugBRisingHeadSlugHo.aqt
Date: 07/08/14 Time: 09:58:11

PROJECT INFORMATION

Company: Rio Algom
Project: 1350.21
Location: Lisbon
Test Well: MW-108
Test Date: 1 Oct 2013

AQUIFER DATA

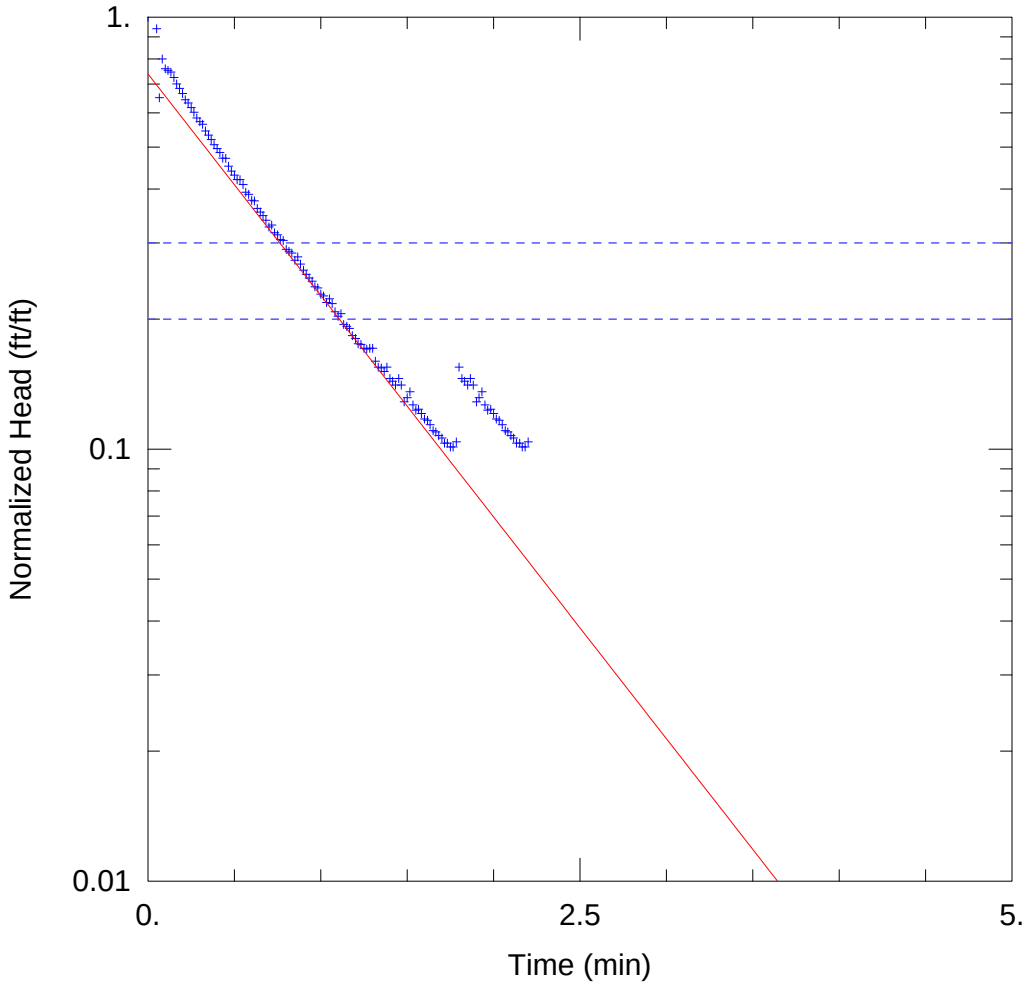
Saturated Thickness: 83. ft
Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (MW-108)

Initial Displacement: 0.776 ft
Total Well Penetration Depth: 83. ft
Casing Radius: 0.167 ft
Static Water Column Height: 142.6 ft
Screen Length: 80. ft
Well Radius: 0.333 ft

SOLUTION

Aquifer Model: Confined
Solution Method: Bouwer-Rice
K = 1.54 ft/day
y0 = 0.7922 ft



MW-108 SLUG D FALLING HEAD

Data Set: S:\...\MW-108_SlugDFallingHeadSlugHo.aqt
Date: 07/08/14 Time: 09:59:13

PROJECT INFORMATION

Company: Rio Algom
Project: 1350.21
Location: Lisbon
Test Well: MW-108
Test Date: 1 Oct 2013

AQUIFER DATA

Saturated Thickness: 83. ft Anisotropy Ratio (Kz/Kr): 1.

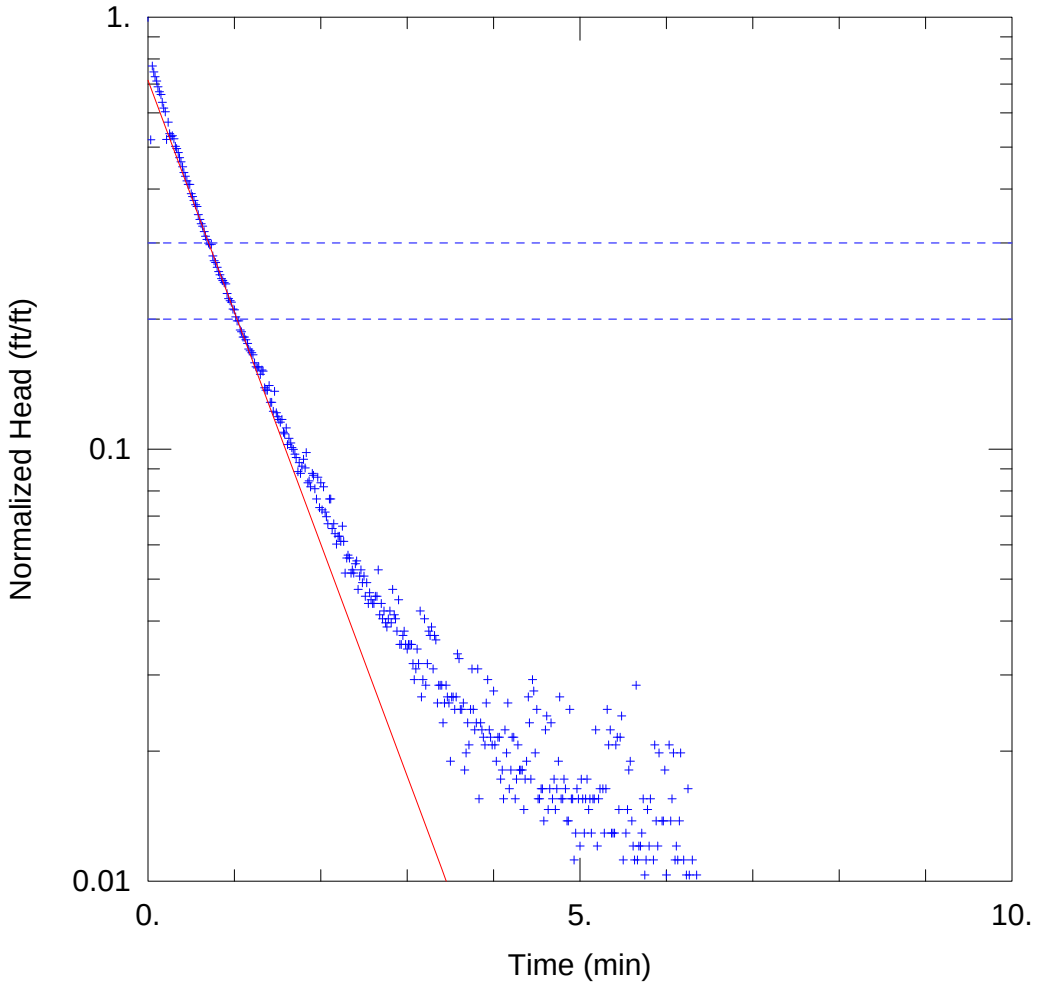
WELL DATA (MW-108)

Initial Displacement: 1.414 ft
Total Well Penetration Depth: 83. ft
Casing Radius: 0.167 ft
Static Water Column Height: 142.6 ft
Screen Length: 80. ft
Well Radius: 0.333 ft

SOLUTION

Aquifer Model: Confined
Solution Method: Bouwer-Rice

K = 1.281 ft/day
y0 = 1.044 ft



MW-108 SLUG J FALLING HEAD

Data Set: S:\...\MW-108_SlugJFallingHeadGraphHo.aqt
Date: 07/08/14 Time: 10:00:42

PROJECT INFORMATION

Company: Rio Algom
Project: 1350.21
Location: Lisbon
Test Well: MW-108
Test Date: 1 Oct 2013

AQUIFER DATA

Saturated Thickness: 83. ft Anisotropy Ratio (Kz/Kr): 1.

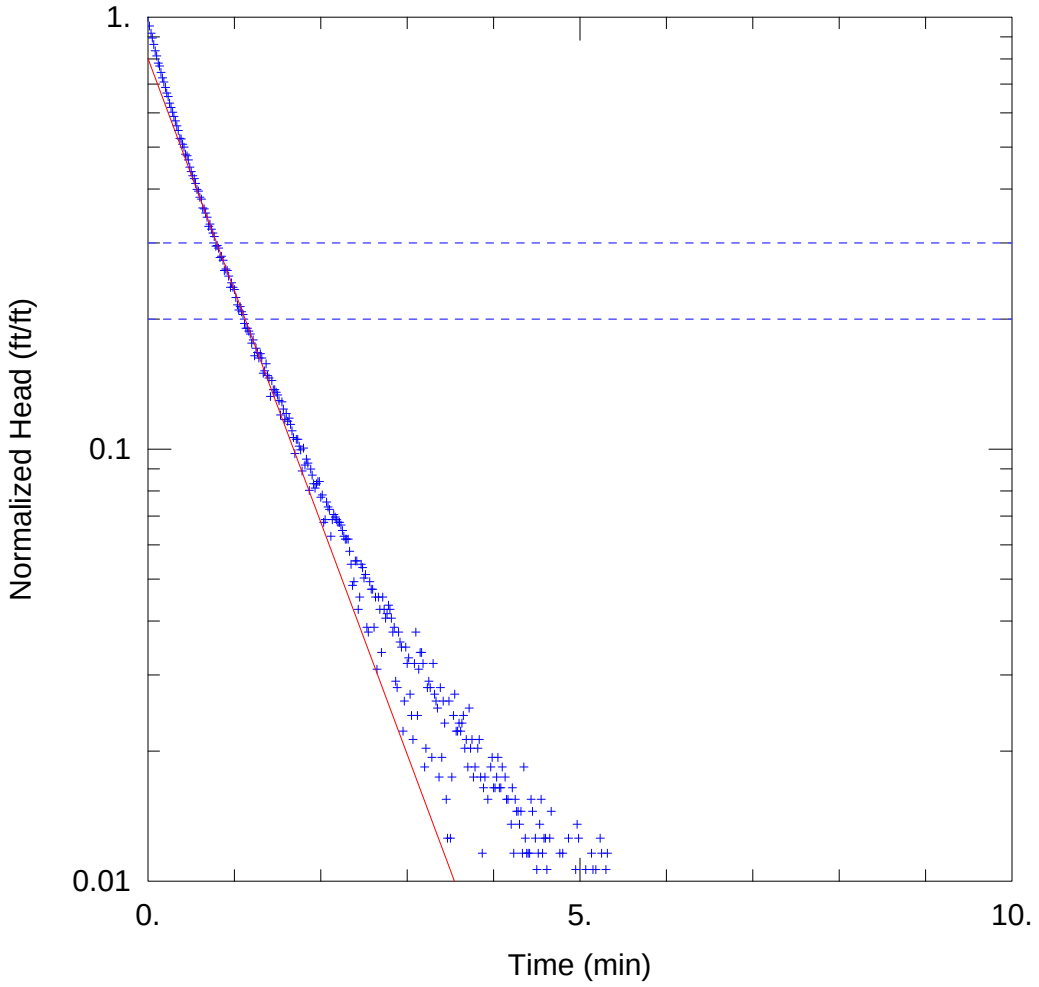
WELL DATA (MW-108)

Initial Displacement: 1.161 ft
Total Well Penetration Depth: 83. ft
Casing Radius: 0.167 ft
Static Water Column Height: 142.6 ft
Screen Length: 80. ft
Well Radius: 0.333 ft

SOLUTION

Aquifer Model: Confined
Solution Method: Bouwer-Rice

K = 1.342 ft/day
y0 = 0.8295 ft



MW-108 SLUG J RISIN HEAD

Data Set: S:\...\MW-108_SlugJRisingHeadGraphHo.aqt
Date: 07/08/14 Time: 10:01:08

PROJECT INFORMATION

Company: Rio Algom
Project: 1350.21
Location: Lisbon
Test Well: MW-108
Test Date: 1 Oct 2013

AQUIFER DATA

Saturated Thickness: 83. ft Anisotropy Ratio (Kz/Kr): 1.

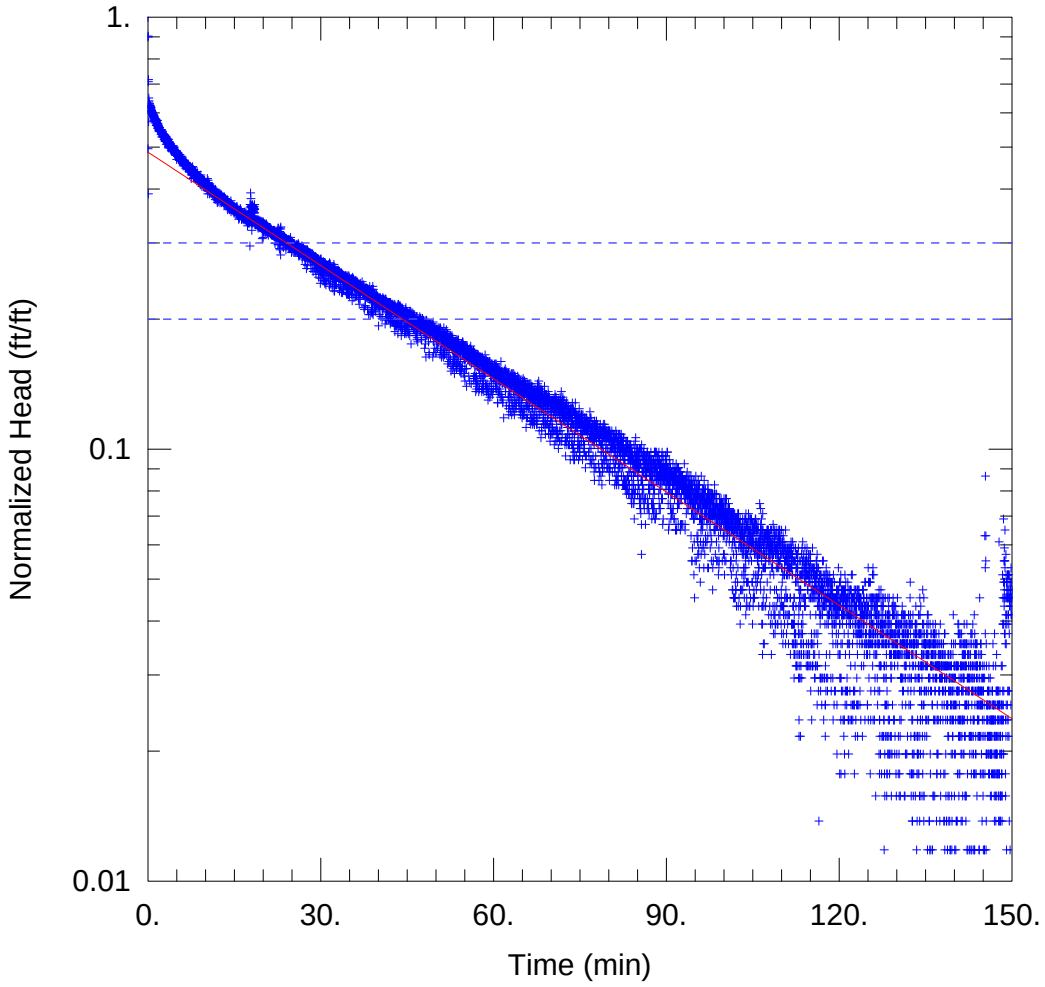
WELL DATA (MW-108)

Initial Displacement: 1.034 ft Static Water Column Height: 142.6 ft
Total Well Penetration Depth: 83. ft Screen Length: 80. ft
Casing Radius: 0.167 ft Well Radius: 0.333 ft

SOLUTION

Aquifer Model: Confined Solution Method: Bouwer-Rice

K = 1.342 ft/day y0 = 0.8295 ft



MW-109 SLUG A FALLING HEAD

Data Set: S:\...\MW-109_SlugAFallingHeadSlugHo.aqt
Date: 07/08/14 Time: 10:02:34

PROJECT INFORMATION

Company: Rio Algom
Project: 1350.22
Location: Lisbon
Test Well: MW-109
Test Date: 1 Oct 2013

AQUIFER DATA

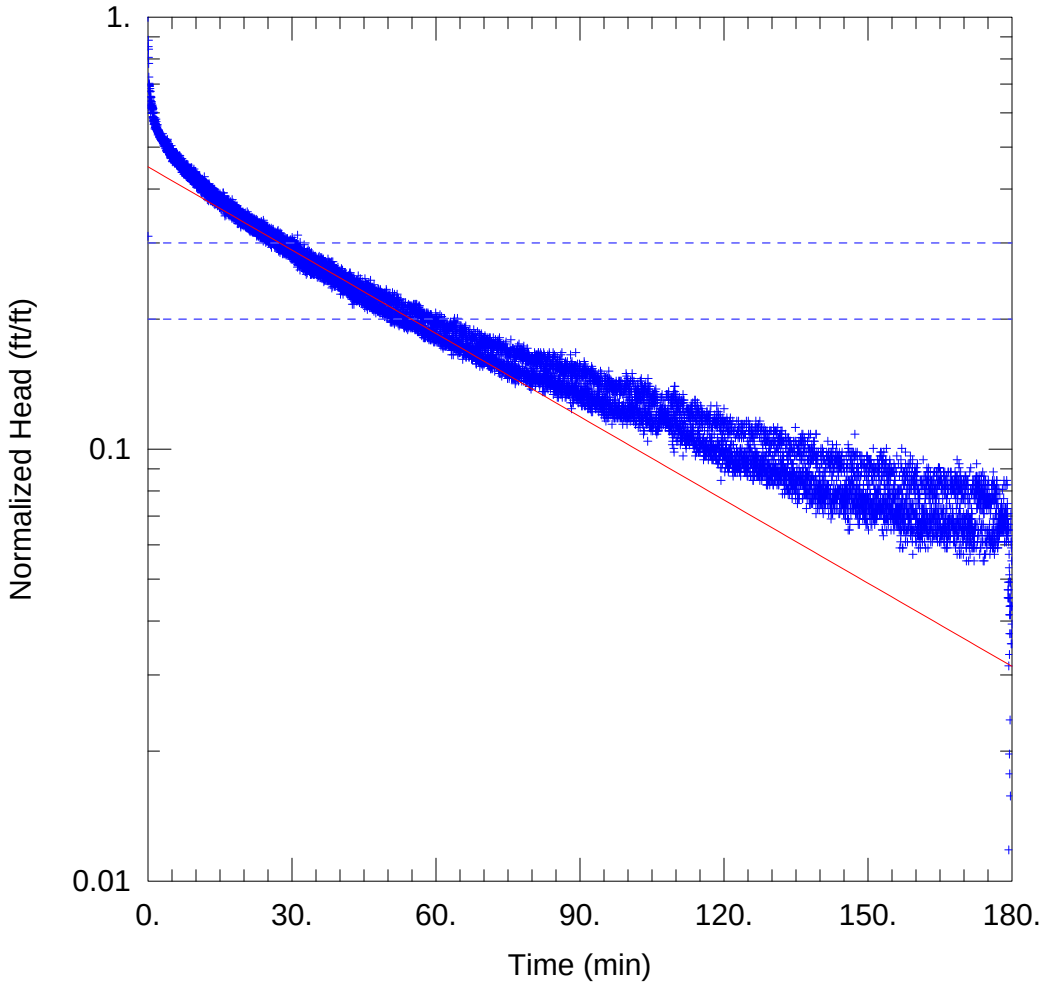
Saturated Thickness: 19.55 ft
Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (MW-109)

Initial Displacement: 0.508 ft
Total Well Penetration Depth: 19.55 ft
Casing Radius: 0.167 ft
Static Water Column Height: 19.55 ft
Screen Length: 19.55 ft
Well Radius: 0.333 ft

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice
K = 0.06456 ft/day
y0 = 0.2473 ft



MW-109 SLUG A RISING HEAD

Data Set: S:\...\MW-109_SlugARisingHeadSlugHo.aqt
Date: 07/08/14 Time: 10:03:03

PROJECT INFORMATION

Company: Rio Algom
Project: 1350.22
Location: Lisbon
Test Well: MW-109
Test Date: 1 Oct 2013

AQUIFER DATA

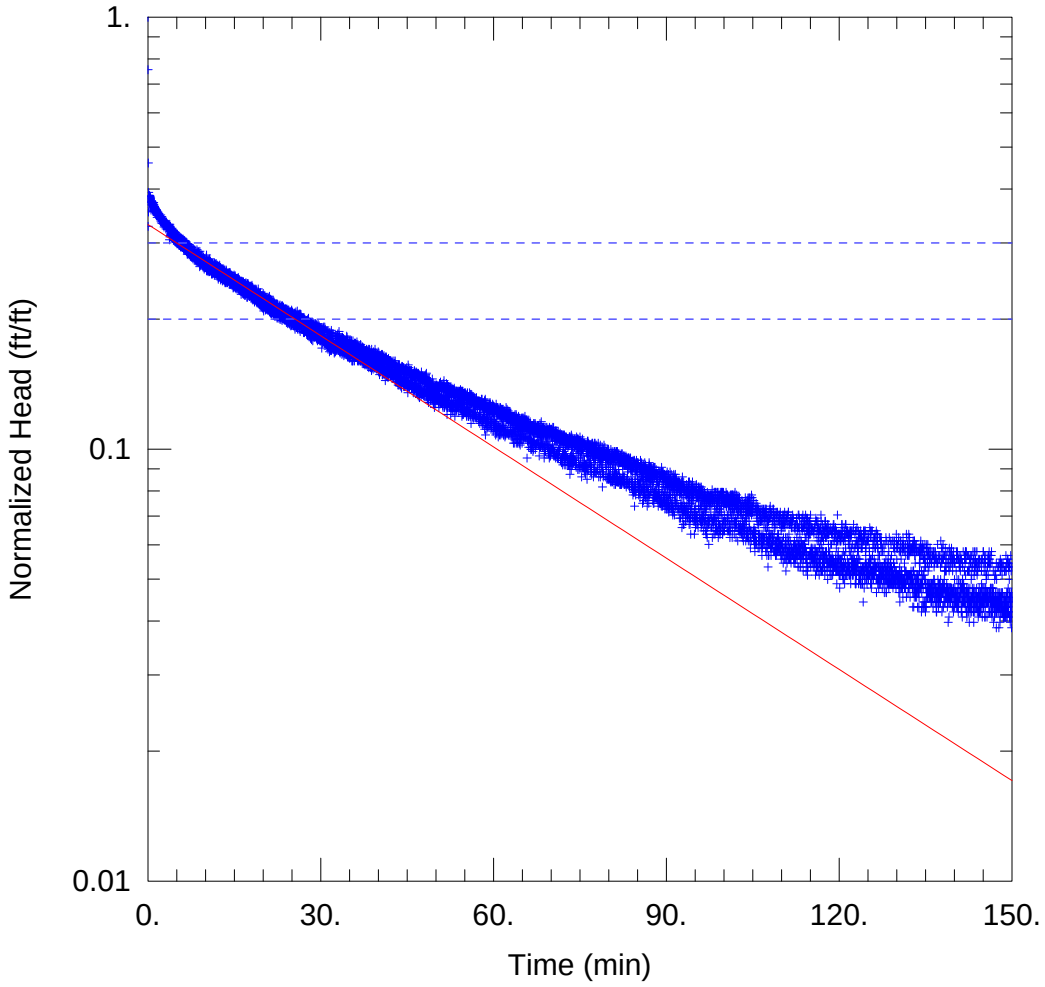
Saturated Thickness: 19.55 ft
Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (MW-109)

Initial Displacement: 0.508 ft
Total Well Penetration Depth: 19.55 ft
Casing Radius: 0.167 ft
Static Water Column Height: 19.55 ft
Screen Length: 19.55 ft
Well Radius: 0.333 ft

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice
K = 0.04744 ft/day
y0 = 0.2287 ft



MW-109 SLUG G FALLING HEAD

Data Set: S:\...\MW-109_SlugGFallingHeadGraphHo.aqt
Date: 07/08/14 Time: 10:23:25

PROJECT INFORMATION

Company: Rio Algom
Project: 1350.22
Location: Lisbon
Test Well: MW-109
Test Date: 1 Oct 2013

AQUIFER DATA

Saturated Thickness: 19.55 ft
Anisotropy Ratio (Kz/Kr): 1.

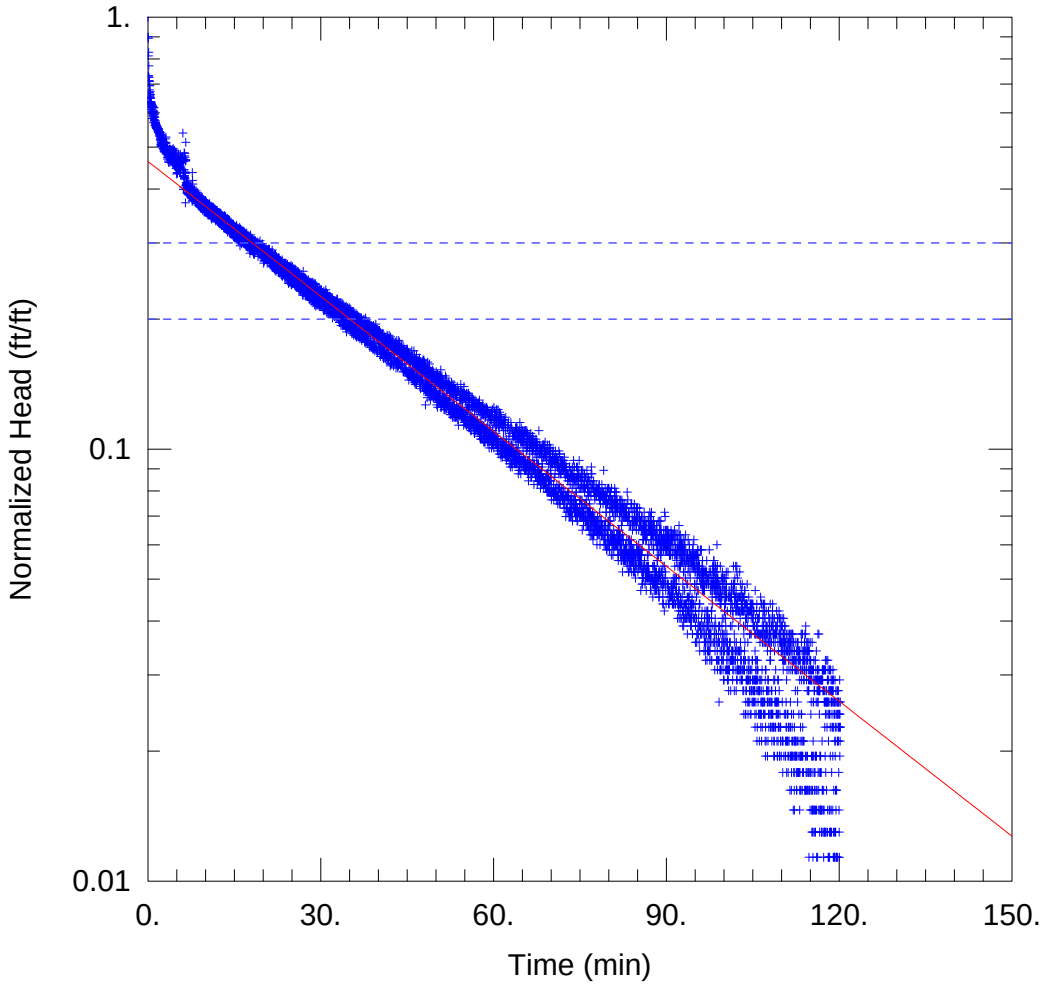
WELL DATA (MW-109)

Initial Displacement: 0.881 ft
Total Well Penetration Depth: 19.55 ft
Casing Radius: 0.167 ft
Static Water Column Height: 19.55 ft
Screen Length: 19.55 ft
Well Radius: 0.333 ft

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice

K = 0.06338 ft/day
y0 = 0.2917 ft



MW-109 SLUG G RISING HEAD

Data Set: S:\...\MW-109_SlugGRisingHeadSlugHo.aqt
Date: 07/08/14 Time: 10:22:54

PROJECT INFORMATION

Company: Rio Algom
Project: 1350.22
Location: Lisbon
Test Well: MW-109
Test Date: 1 Oct 2013

AQUIFER DATA

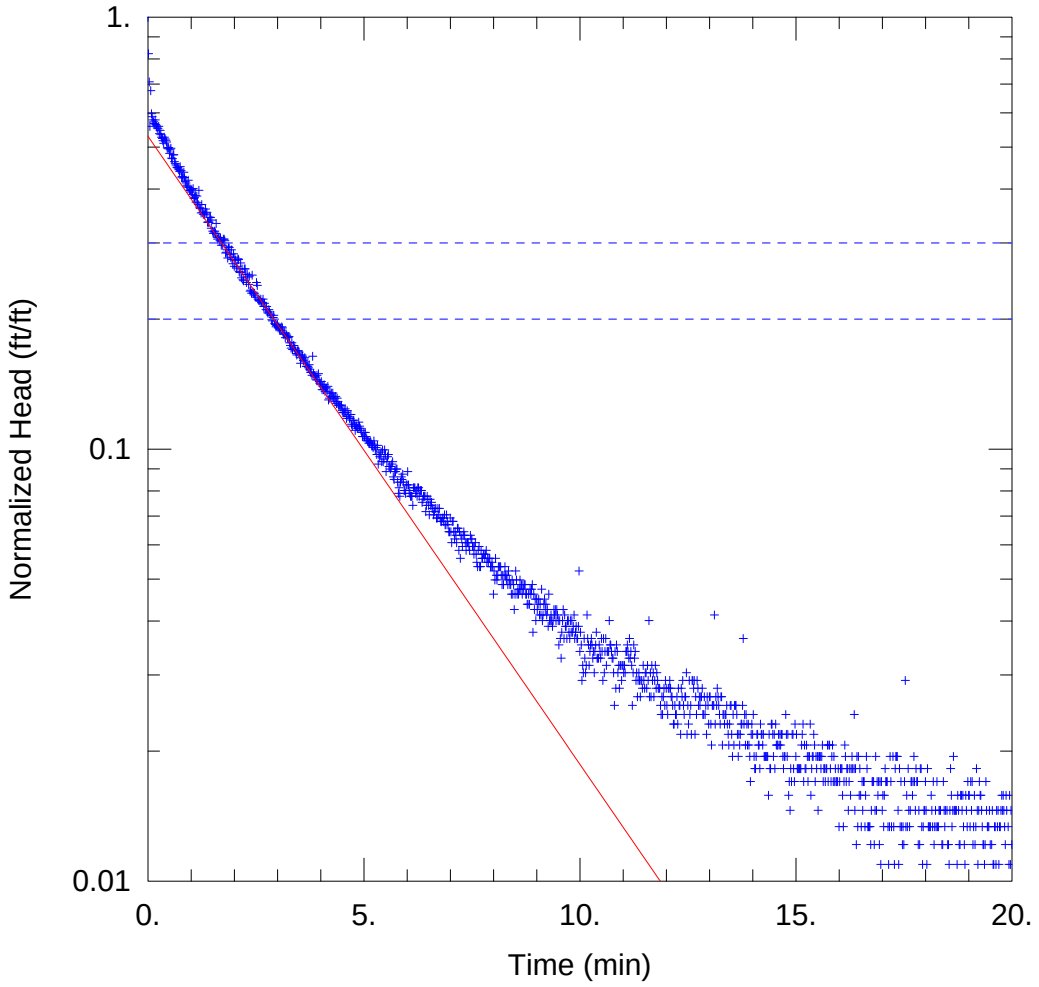
Saturated Thickness: 19.55 ft
Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (MW-109)

Initial Displacement: 0.616 ft
Total Well Penetration Depth: 19.55 ft
Casing Radius: 0.167 ft
Static Water Column Height: 19.55 ft
Screen Length: 19.55 ft
Well Radius: 0.333 ft

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice
K = 0.0769 ft/day
y0 = 0.2854 ft



MW-112 SLUG C FALLING HEAD

Data Set: S:\...\MW-112_SlugCFallingHeadGraphHo.aqt
Date: 07/08/14 Time: 10:42:56

PROJECT INFORMATION

Company: Rio Algom
Project: 1350.21
Location: Lisbon
Test Well: MW-112
Test Date: 2 Oct 2013

AQUIFER DATA

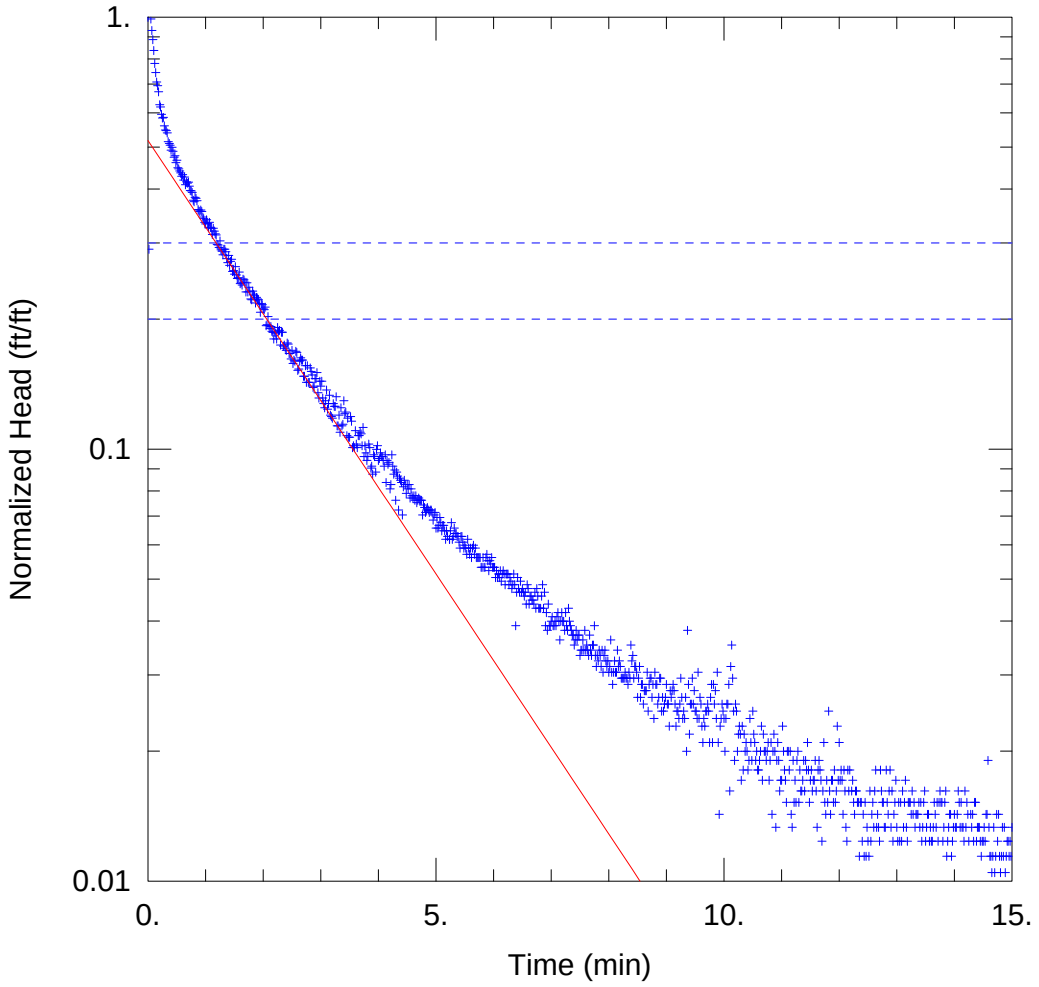
Saturated Thickness: 96.17 ft
Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (MW-112)

Initial Displacement: 0.823 ft
Total Well Penetration Depth: 96.17 ft
Casing Radius: 0.167 ft
Static Water Column Height: 96.17 ft
Screen Length: 96.17 ft
Well Radius: 0.333 ft

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice
K = 0.3128 ft/day
y0 = 0.436 ft



MW-112 SLUG C RISING HEAD

Data Set: S:\...\MW-112_SlugCRisingHeadSlugHo.aqt
Date: 07/08/14 Time: 13:31:56

PROJECT INFORMATION

Company: Rio Algom
Project: 1350.21
Location: Lisbon
Test Well: MW-112
Test Date: 2 Oct 2013

AQUIFER DATA

Saturated Thickness: 96.17 ft
Anisotropy Ratio (Kz/Kr): 1.

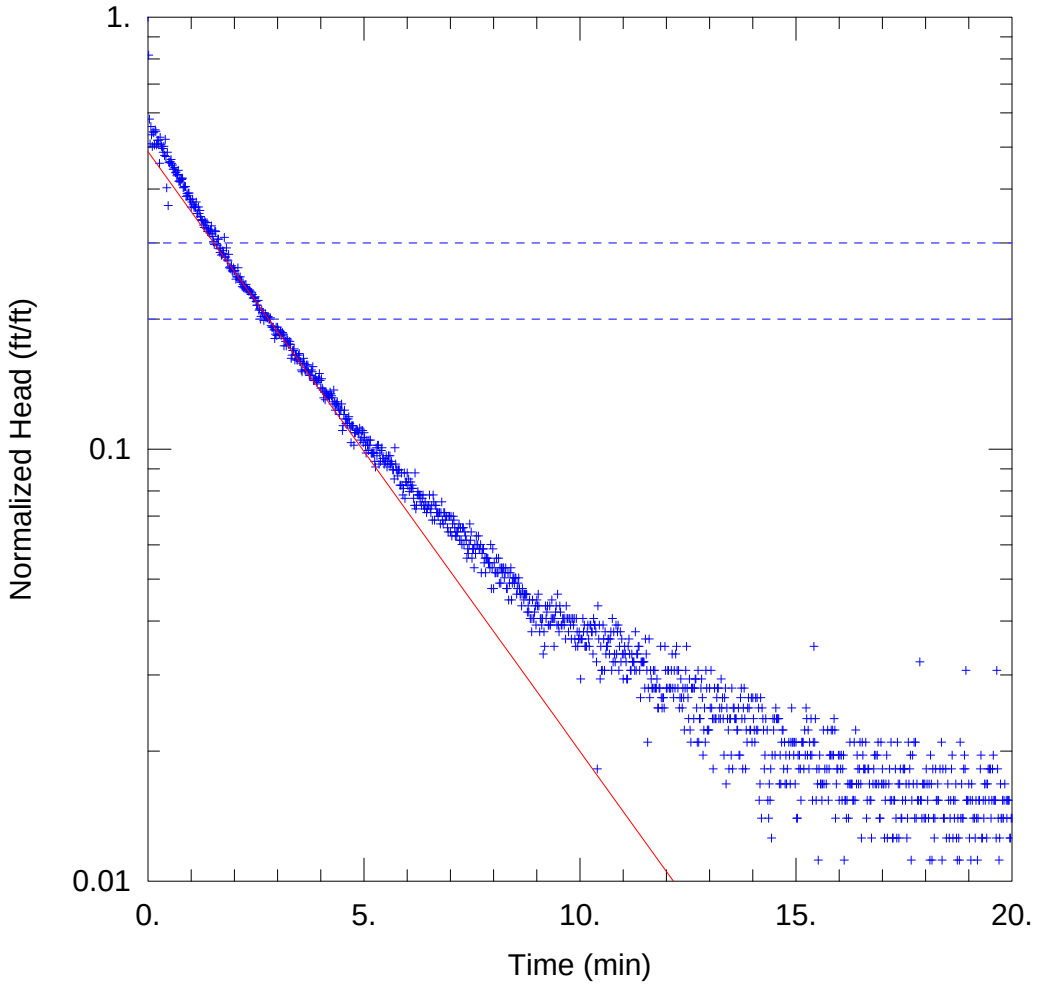
WELL DATA (MW-112)

Initial Displacement: 1.051 ft
Total Well Penetration Depth: 96.17 ft
Casing Radius: 0.167 ft
Static Water Column Height: 96.17 ft
Screen Length: 96.17 ft
Well Radius: 0.333 ft

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice

K = 0.4318 ft/day
y0 = 0.5445 ft



MW-112 SLUG F FALLING HEAD

Data Set: S:\...\MW-112_SlugFFallingHeadGraphHo.aqt
Date: 07/08/14 Time: 13:33:44

PROJECT INFORMATION

Company: Rio Algom
Project: 1350.21
Location: Lisbon
Test Well: MW-112
Test Date: 2 Oct 2013

AQUIFER DATA

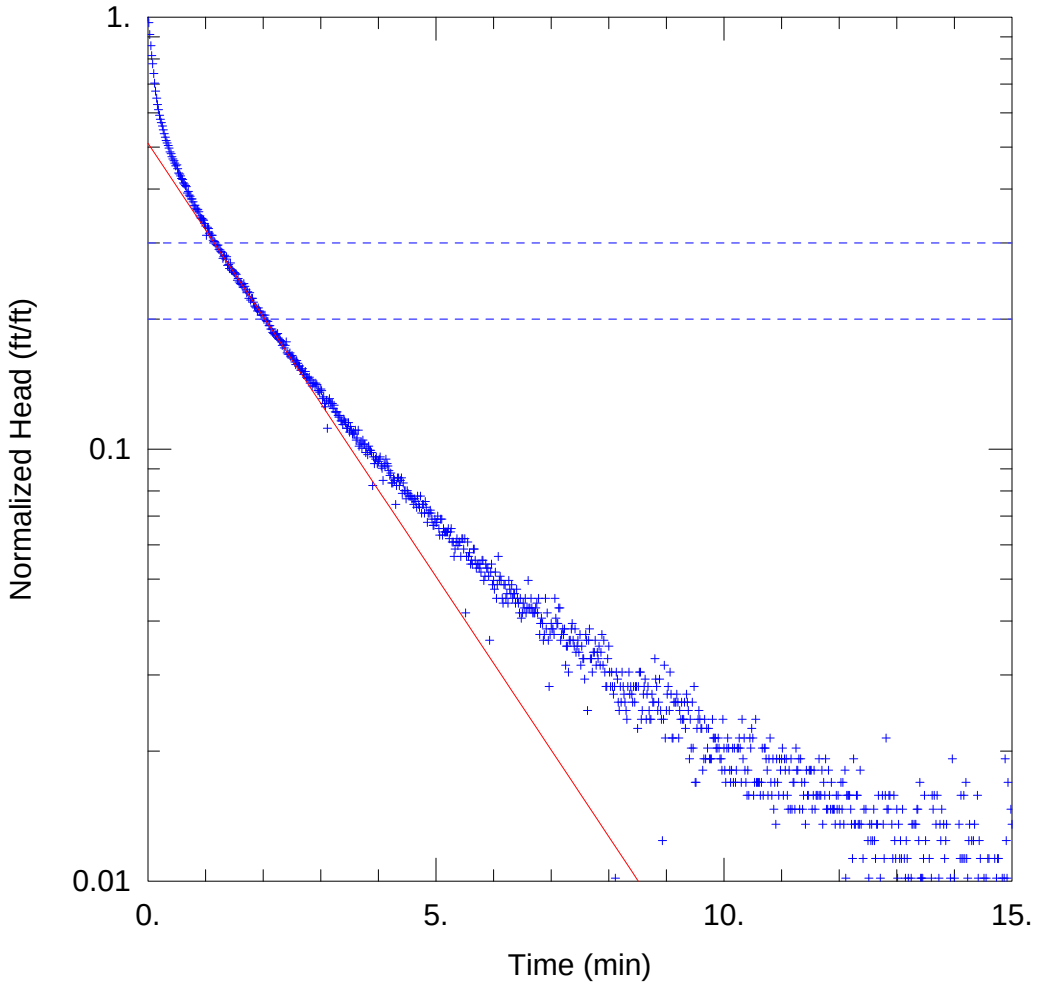
Saturated Thickness: 96.17 ft
Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (MW-112)

Initial Displacement: 0.715 ft
Total Well Penetration Depth: 96.17 ft
Casing Radius: 0.167 ft
Static Water Column Height: 96.17 ft
Screen Length: 96.17 ft
Well Radius: 0.333 ft

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice
K = 0.2987 ft/day
y0 = 0.3491 ft



MW-112 SLUG F RISING HEAD

Data Set: S:\...\MW-112_SlugFRisingHeadGraphHo.aqt
Date: 07/08/14 Time: 13:35:00

PROJECT INFORMATION

Company: Rio Algom
Project: 1350.21
Location: Lisbon
Test Well: MW-112
Test Date: 2 Oct 2013

AQUIFER DATA

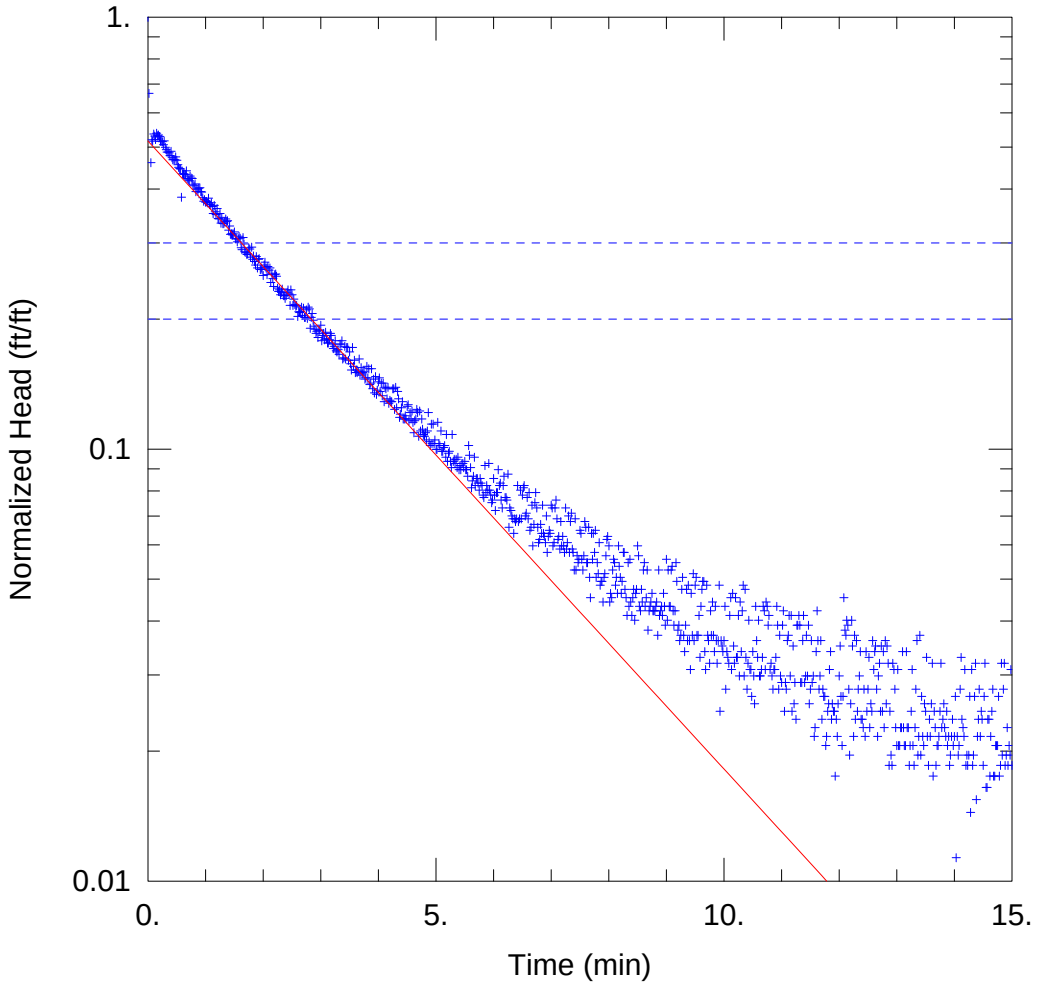
Saturated Thickness: 96.17 ft
Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (MW-112)

Initial Displacement: 0.886 ft
Total Well Penetration Depth: 96.17 ft
Casing Radius: 0.167 ft
Static Water Column Height: 96.17 ft
Screen Length: 96.17 ft
Well Radius: 0.333 ft

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice
K = 0.4318 ft/day
y0 = 0.4524 ft



MW-112 SLUG K FALLING HEAD

Data Set: S:\...\MW-112_SlugKFallingHeadGraphHo.aqt
Date: 07/08/14 Time: 13:36:28

PROJECT INFORMATION

Company: Rio Algom
Project: 1350.21
Location: Lisbon
Test Well: MW-112
Test Date: 2 Oct 2013

AQUIFER DATA

Saturated Thickness: 96.17 ft Anisotropy Ratio (Kz/Kr): 1.

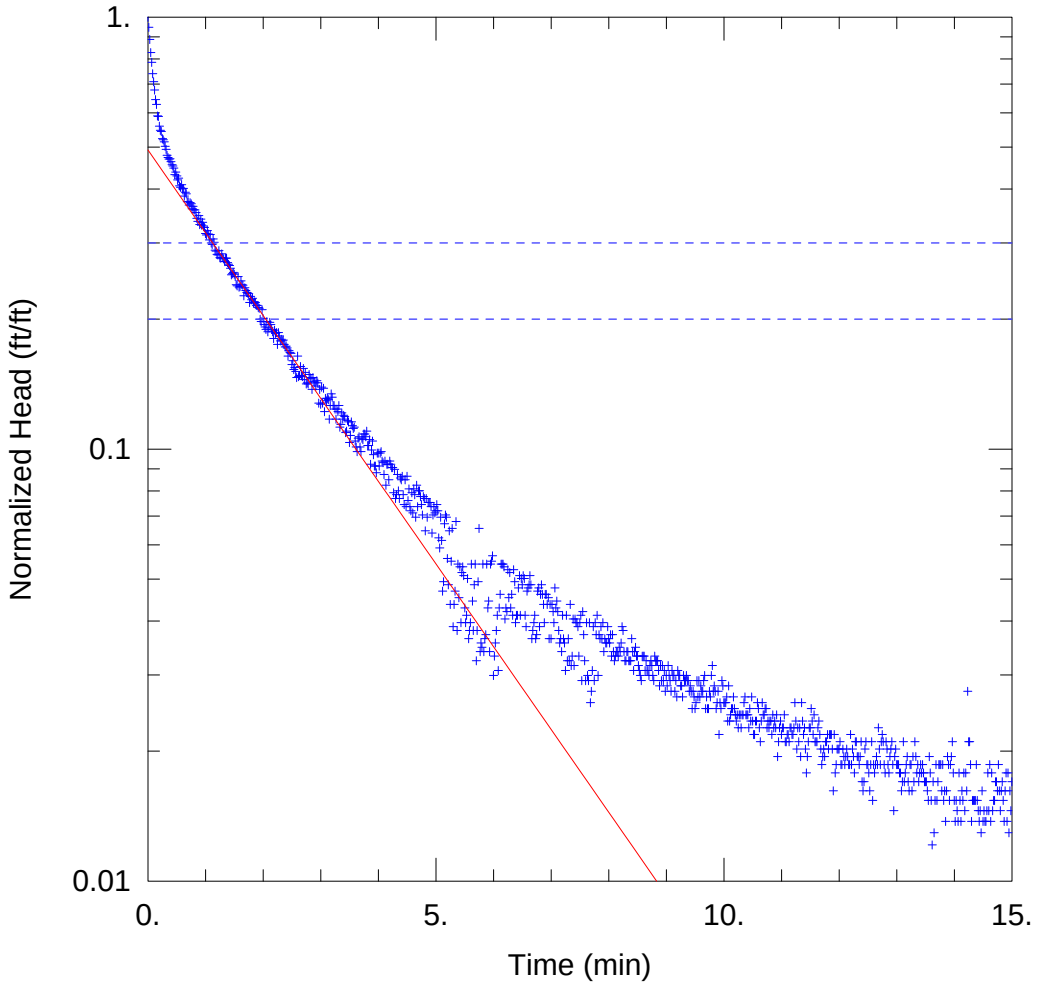
WELL DATA (MW-112)

Initial Displacement: 0.971 ft
Total Well Penetration Depth: 96.17 ft
Casing Radius: 0.167 ft
Static Water Column Height: 96.17 ft
Screen Length: 96.17 ft
Well Radius: 0.333 ft

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice

K = 0.3128 ft/day
y0 = 0.5016 ft



MW-112 SLUG K RISING HEAD

Data Set: S:\...\MW-112_SlugKRisingHeadGraphHo.aqt
Date: 07/08/14 Time: 13:36:59

PROJECT INFORMATION

Company: Rio Algom
Project: 1350.21
Location: Lisbon
Test Well: MW-112
Test Date: 2 Oct 2013

AQUIFER DATA

Saturated Thickness: 96.17 ft Anisotropy Ratio (Kz/Kr): 1.

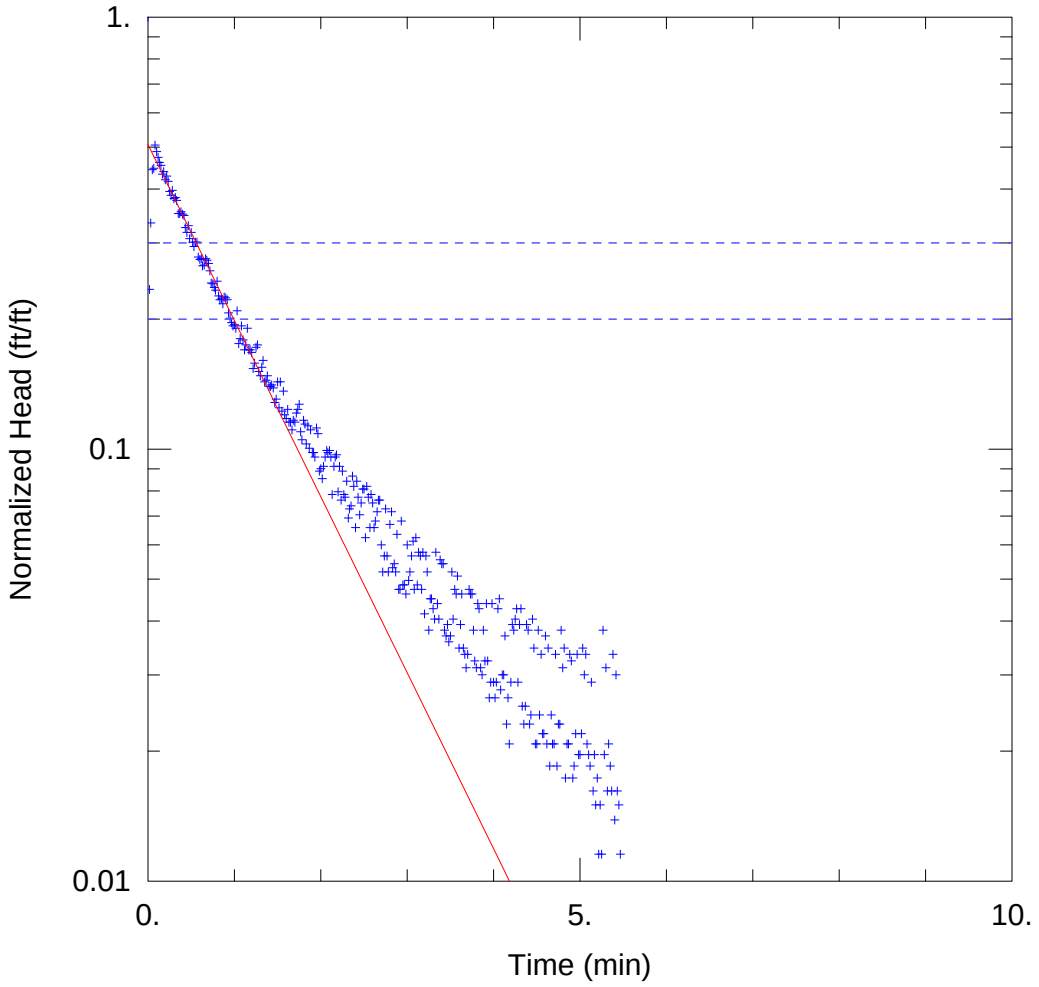
WELL DATA (MW-112)

Initial Displacement: 1.236 ft
Total Well Penetration Depth: 96.17 ft
Casing Radius: 0.167 ft
Static Water Column Height: 96.17 ft
Screen Length: 96.17 ft
Well Radius: 0.333 ft

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice

K = 0.4124 ft/day
y0 = 0.6085 ft



MW-113 SLUG C FALLING HEAD

Data Set: S:\...\MW-113_SlugCFallingHeadGraphHo.aqt
Date: 07/08/14 Time: 13:38:10

PROJECT INFORMATION

Company: Rio Algom
Project: 1350.21
Location: Lisbon
Test Well: MW-113
Test Date: 2 Oct 2013

AQUIFER DATA

Saturated Thickness: 35.96 ft Anisotropy Ratio (Kz/Kr): 1.

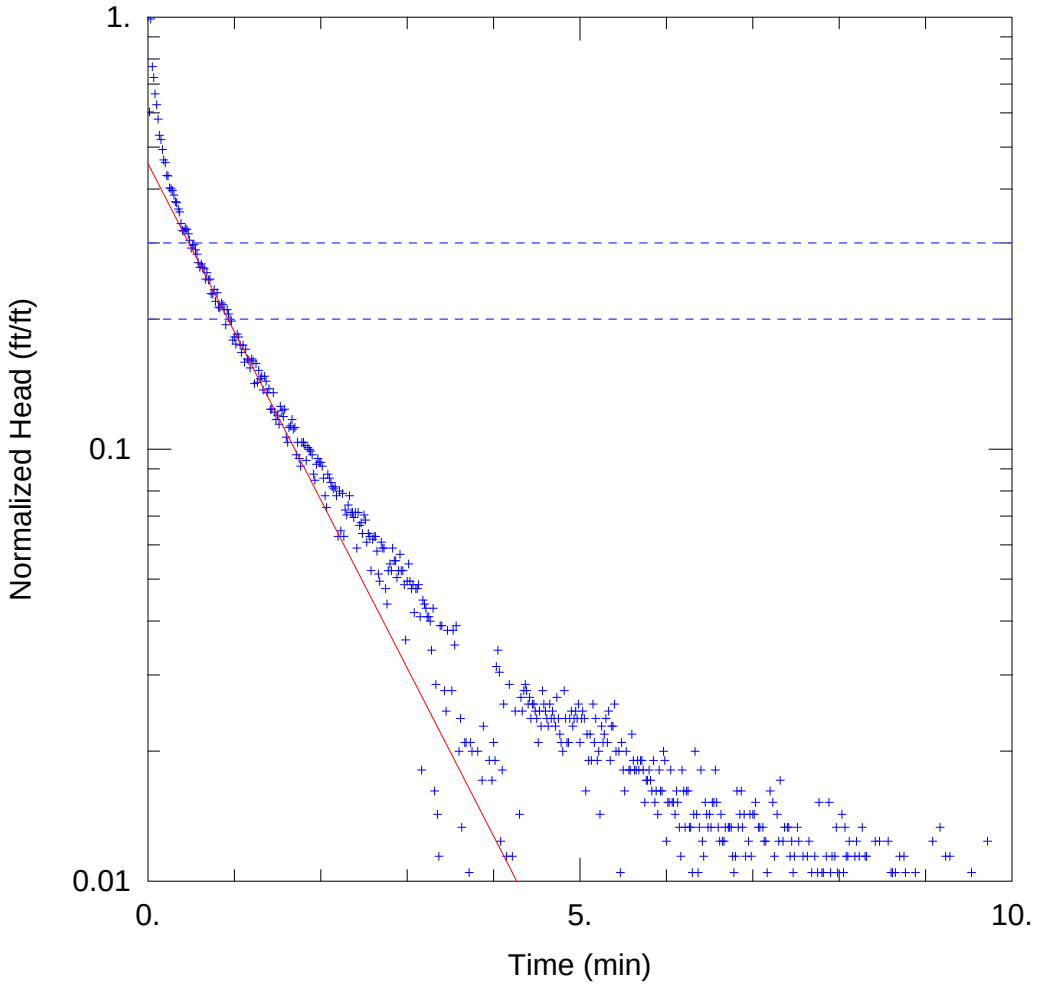
WELL DATA (MW-113)

Initial Displacement: 0.866 ft
Total Well Penetration Depth: 35.96 ft
Casing Radius: 0.167 ft
Static Water Column Height: 35.96 ft
Screen Length: 35.96 ft
Well Radius: 0.333 ft

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice

K = 1.89 ft/day
y0 = 0.4391 ft



MW-113 SLUG C RISING HEAD

Data Set: S:\...\MW-113_SlugCRisingHeadSlugHo.aqt
Date: 07/08/14 Time: 13:38:59

PROJECT INFORMATION

Company: Rio Algom
Project: 1350.21
Location: Lisbon
Test Well: MW-113
Test Date: 2 Oct 2013

AQUIFER DATA

Saturated Thickness: 35.96 ft Anisotropy Ratio (Kz/Kr): 1.

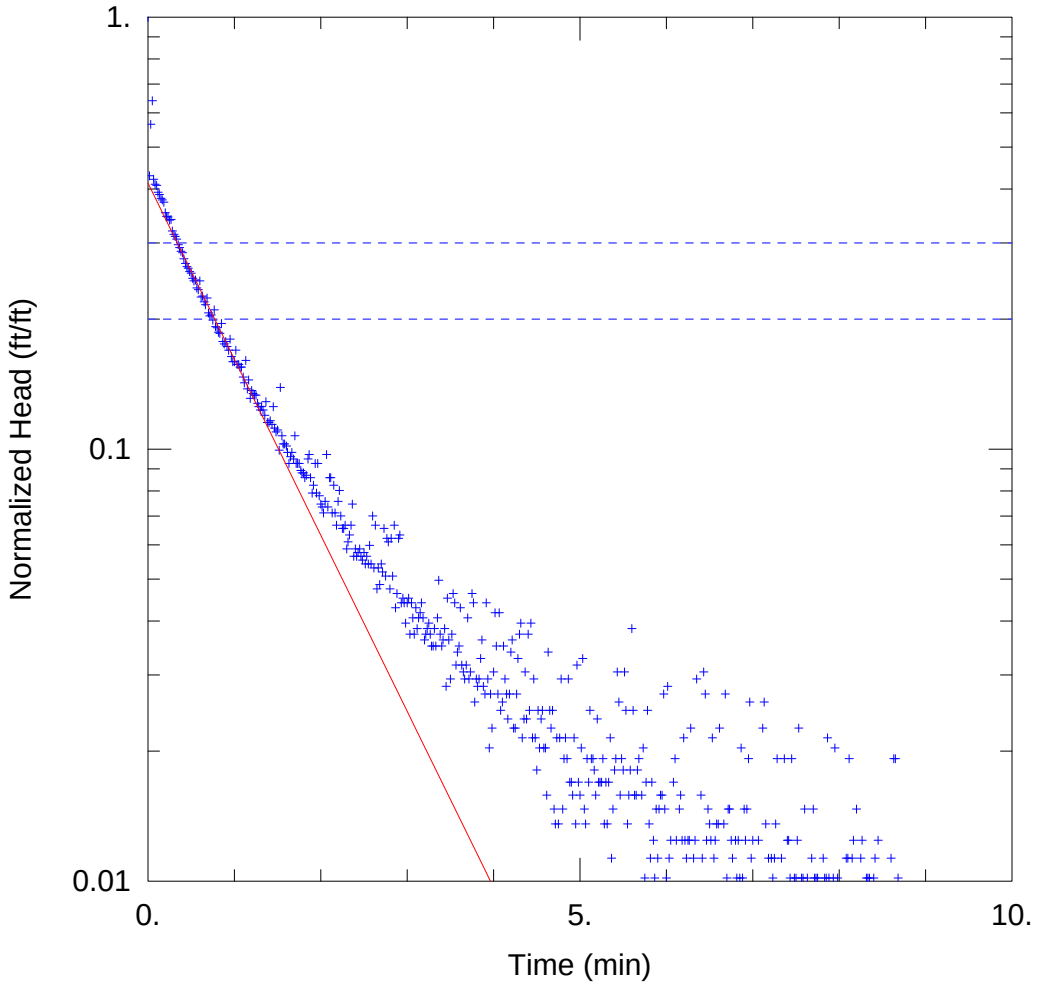
WELL DATA (MW-113)

Initial Displacement: 1.051 ft Static Water Column Height: 35.96 ft
Total Well Penetration Depth: 35.96 ft Screen Length: 35.96 ft
Casing Radius: 0.167 ft Well Radius: 0.333 ft

SOLUTION

Aquifer Model: Unconfined Solution Method: Bouwer-Rice

K = 1.804 ft/day y0 = 0.4814 ft



MW-113 SLUG F FALLING HEAD

Data Set: S:\...\MW-113_SlugFFallingHeadSlugHo.aqt
Date: 07/08/14 Time: 13:39:40

PROJECT INFORMATION

Company: Rio Algom
Project: 1350.21
Location: Lisbon
Test Well: MW-113
Test Date: 2 Oct 2013

AQUIFER DATA

Saturated Thickness: 35.96 ft Anisotropy Ratio (Kz/Kr): 1.

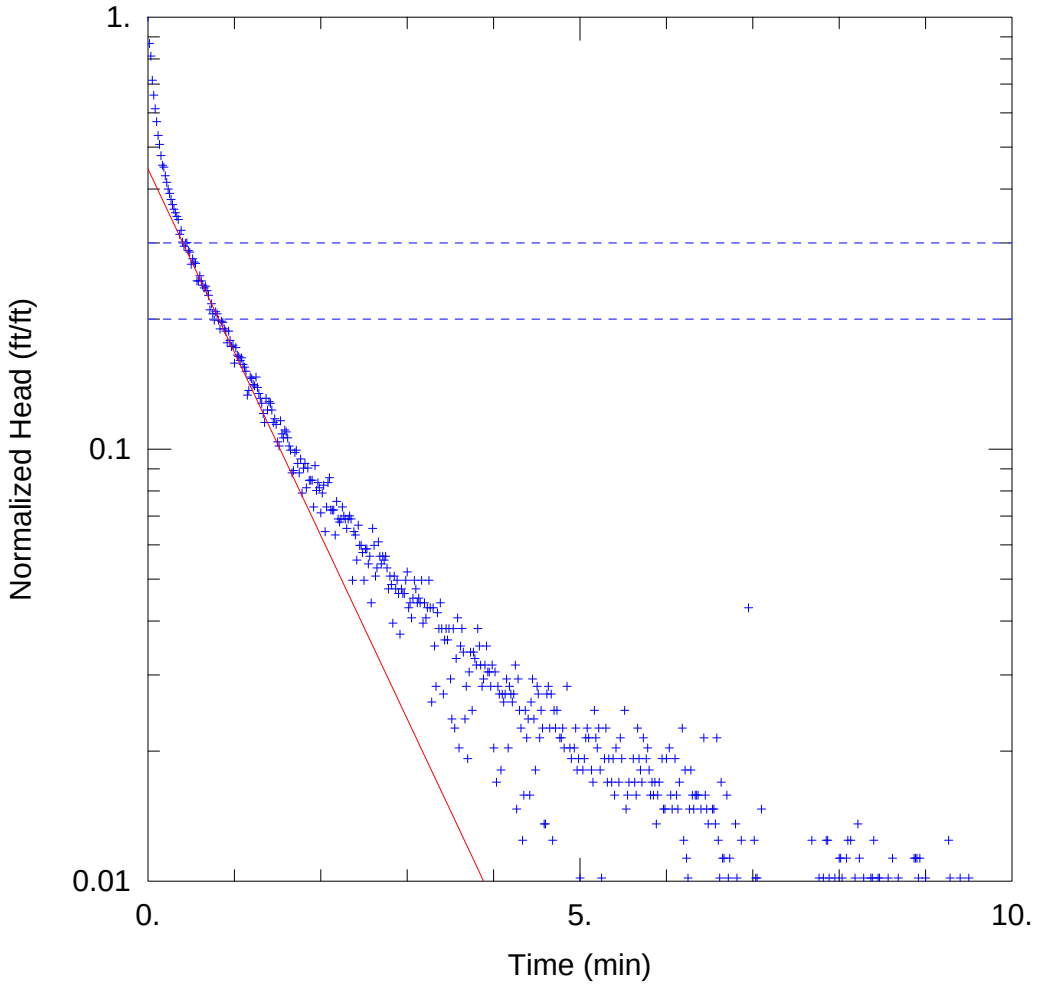
WELL DATA (MW-113)

Initial Displacement: 0.885 ft Static Water Column Height: 35.96 ft
Total Well Penetration Depth: 35.96 ft Screen Length: 35.96 ft
Casing Radius: 0.167 ft Well Radius: 0.333 ft

SOLUTION

Aquifer Model: Unconfined Solution Method: Bouwer-Rice

K = 1.89 ft/day y0 = 0.3652 ft



MW-113 SLUG F RISING HEAD

Data Set: S:\...\MW-113_SlugFRisingHeadSlugHo.aqt
Date: 07/08/14 Time: 13:40:51

PROJECT INFORMATION

Company: Rio Algom
Project: 1350.21
Location: Lisbon
Test Well: MW-113
Test Date: 2 Oct 2013

AQUIFER DATA

Saturated Thickness: 35.96 ft Anisotropy Ratio (Kz/Kr): 1.

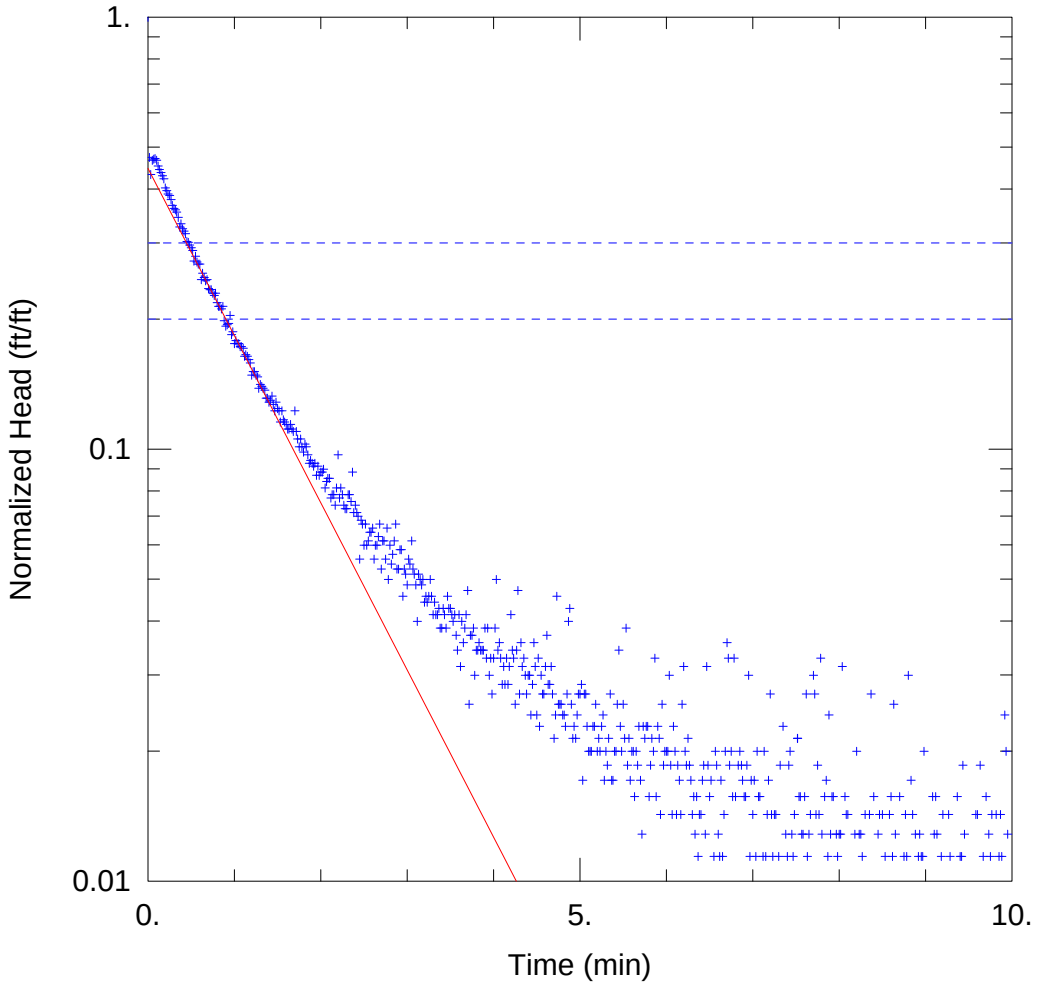
WELL DATA (MW-113)

Initial Displacement: 0.885 ft
Total Well Penetration Depth: 35.96 ft
Casing Radius: 0.167 ft
Static Water Column Height: 35.96 ft
Screen Length: 35.96 ft
Well Radius: 0.333 ft

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice

K = 1.967 ft/day
y0 = 0.3939 ft



MW-113 SLUG I FALLING HEAD

Data Set: S:\...\MW-113_SlugIFallingHeadGraphHo.aqt
Date: 07/08/14 Time: 13:41:28

PROJECT INFORMATION

Company: Rio Algom
Project: 1350.21
Location: Lisbon
Test Well: MW-113
Test Date: 2 Oct 2013

AQUIFER DATA

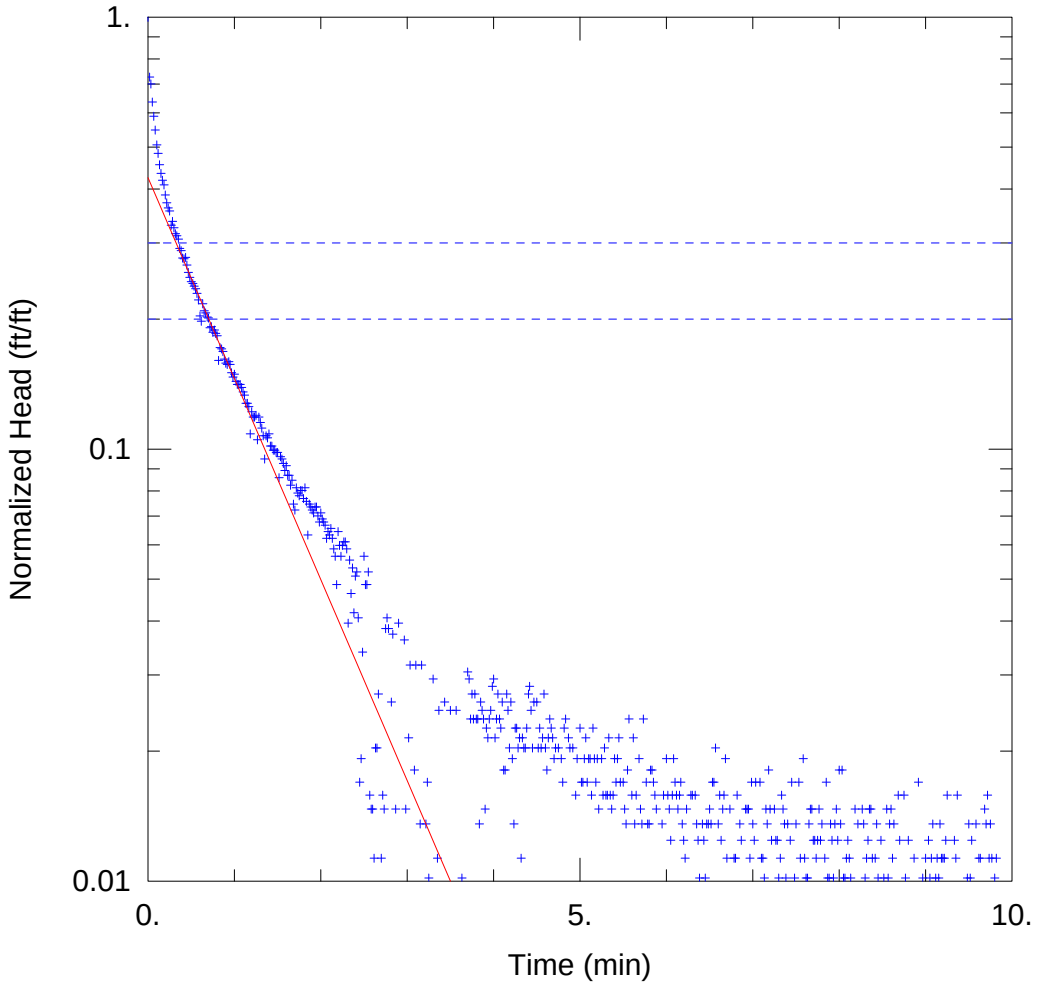
Saturated Thickness: 35.96 ft
Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (MW-113)

Initial Displacement: 0.701 ft
Total Well Penetration Depth: 35.96 ft
Casing Radius: 0.167 ft
Static Water Column Height: 35.96 ft
Screen Length: 35.96 ft
Well Radius: 0.333 ft

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice
K = 1.794 ft/day
y0 = 0.3129 ft



MW-113 SLUG I RISING HEAD

Data Set: S:\...\MW-113_SlugIRisingHeadSlugHo.aqt
Date: 07/08/14 Time: 13:42:18

PROJECT INFORMATION

Company: Rio Algom
Project: 1350.21
Location: Lisbon
Test Well: MW-113
Test Date: 2 Oct 2013

AQUIFER DATA

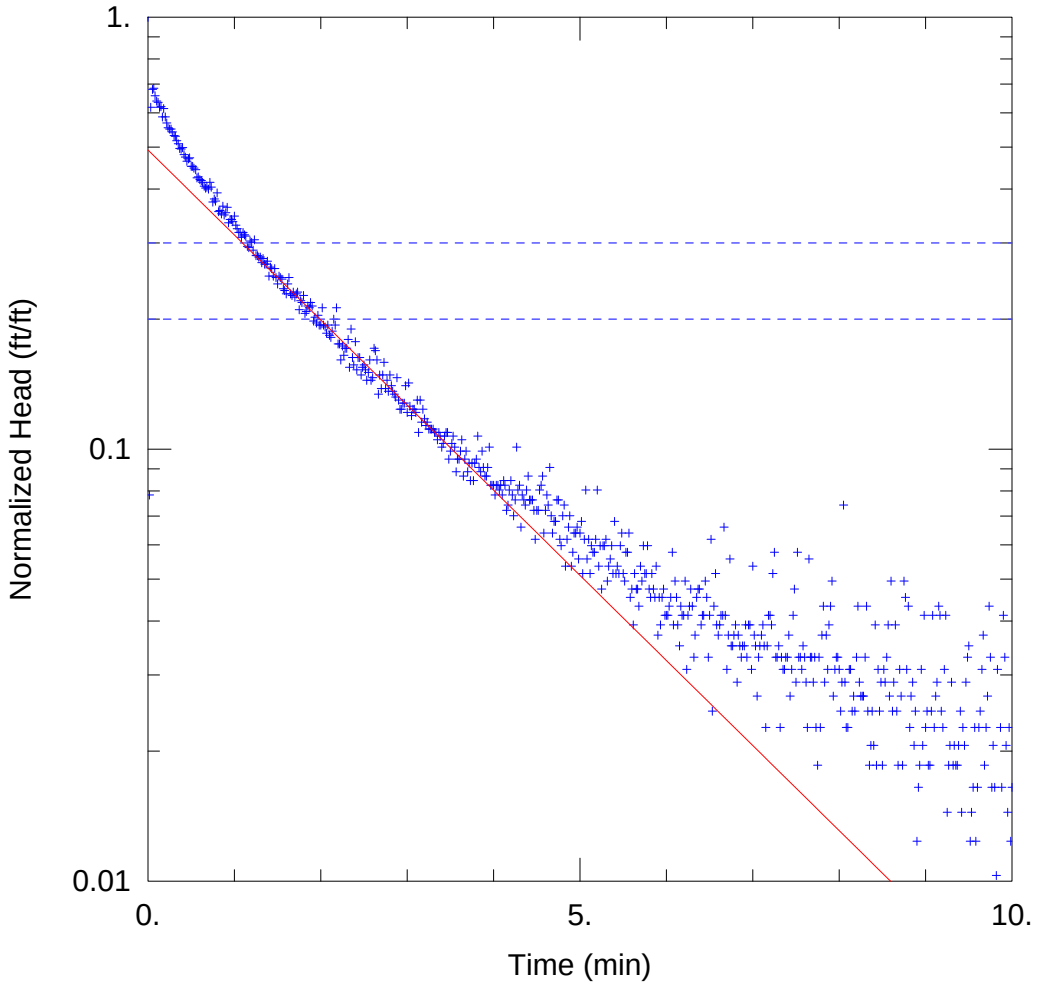
Saturated Thickness: 35.96 ft
Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (MW-113)

Initial Displacement: 0.885 ft
Total Well Penetration Depth: 35.96 ft
Casing Radius: 0.167 ft
Static Water Column Height: 35.96 ft
Screen Length: 35.96 ft
Well Radius: 0.333 ft

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice
K = 2.157 ft/day
y0 = 0.3762 ft



MW-114 SLUG D FALLING HEAD

Data Set: S:\...\MW-114_SlugDFallingHeadGraphHo.aqt
Date: 07/08/14 Time: 13:59:13

PROJECT INFORMATION

Company: Rio Algom
Project: 1350.21
Location: Lisbon
Test Well: MW-114
Test Date: 2 Oct 2013

AQUIFER DATA

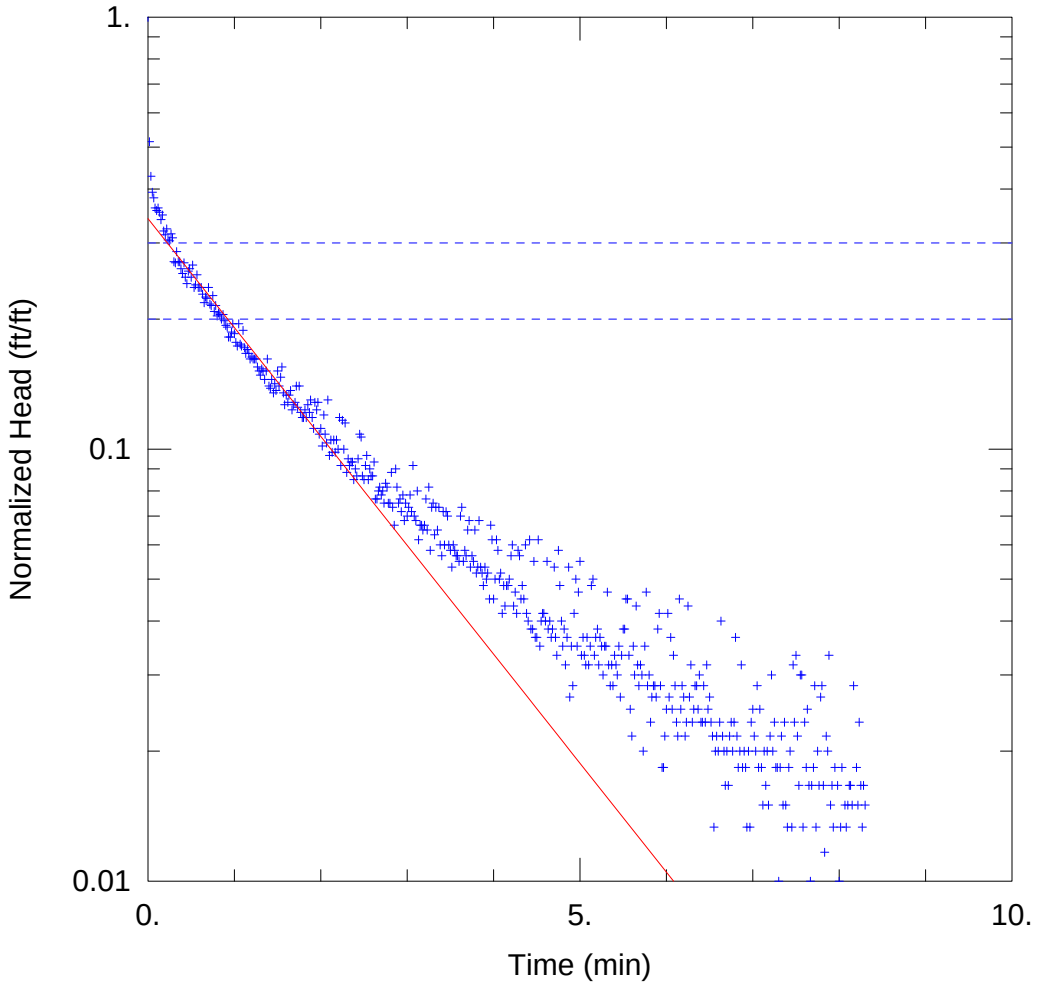
Saturated Thickness: 141.1 ft
Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (MW-114)

Initial Displacement: 0.485 ft
Total Well Penetration Depth: 141.1 ft
Casing Radius: 0.167 ft
Static Water Column Height: 141.1 ft
Screen Length: 141.1 ft
Well Radius: 0.333 ft

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice
K = 0.3142 ft/day
y0 = 0.2389 ft



MW-114 SLUG J FALLING HEAD

Data Set: S:\...\MW-114_SlugJFallingHeadGraphHo.aqt
Date: 07/08/14 Time: 14:02:02

PROJECT INFORMATION

Company: Rio Algom
Project: 1350.21
Location: Lisbon
Test Well: MW-114
Test Date: 2 Oct 2013

AQUIFER DATA

Saturated Thickness: 141.1 ft Anisotropy Ratio (Kz/Kr): 1.

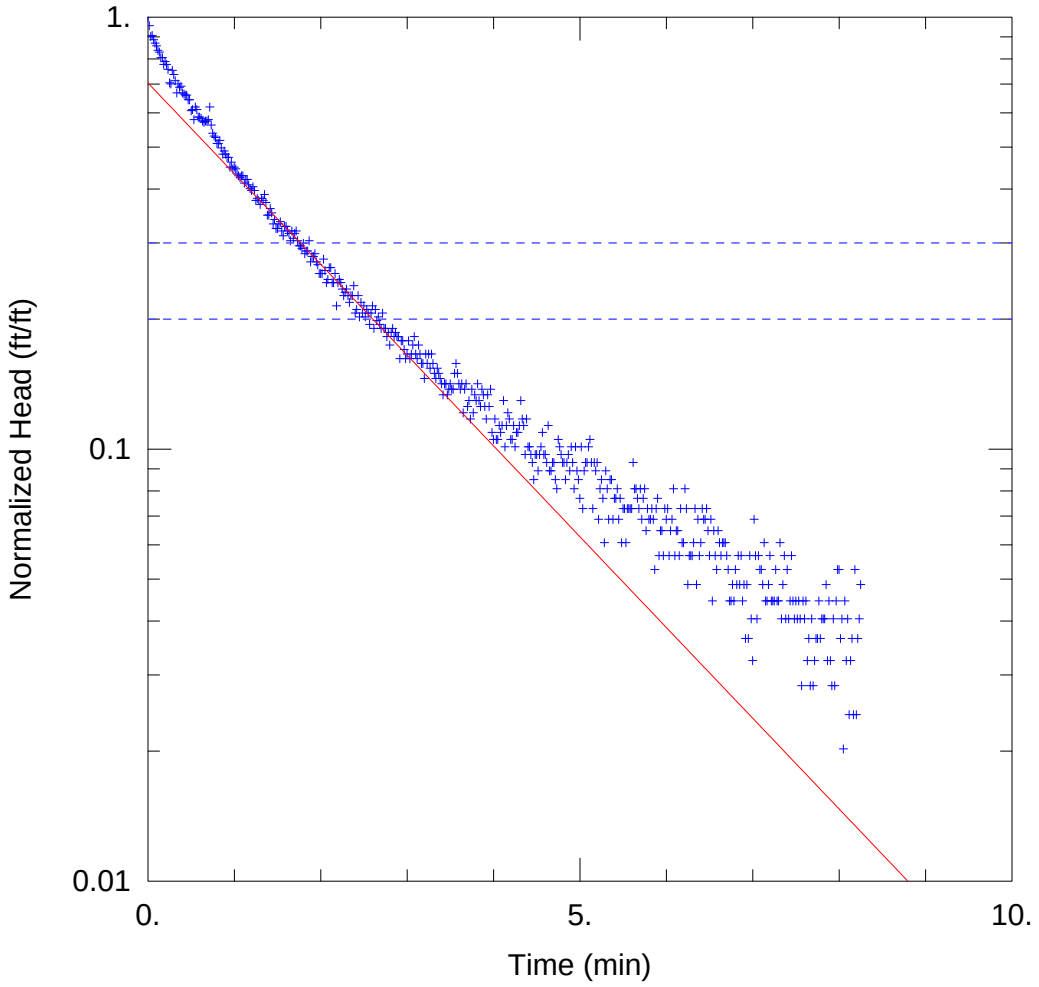
WELL DATA (MW-114)

Initial Displacement: 0.6 ft Static Water Column Height: 141.1 ft
Total Well Penetration Depth: 141.1 ft Screen Length: 141.1 ft
Casing Radius: 0.167 ft Well Radius: 0.333 ft

SOLUTION

Aquifer Model: Unconfined Solution Method: Bouwer-Rice

K = 0.4021 ft/day y0 = 0.2049 ft



MW-114 SLUG J RISING HEAD

Data Set: S:\...\MW-114_SlugJRisingHeadHeadGraphHo.aqt
Date: 07/08/14 Time: 14:02:36

PROJECT INFORMATION

Company: Rio Algom
Project: 1350.21
Location: Lisbon
Test Well: MW-114
Test Date: 2 Oct 2013

AQUIFER DATA

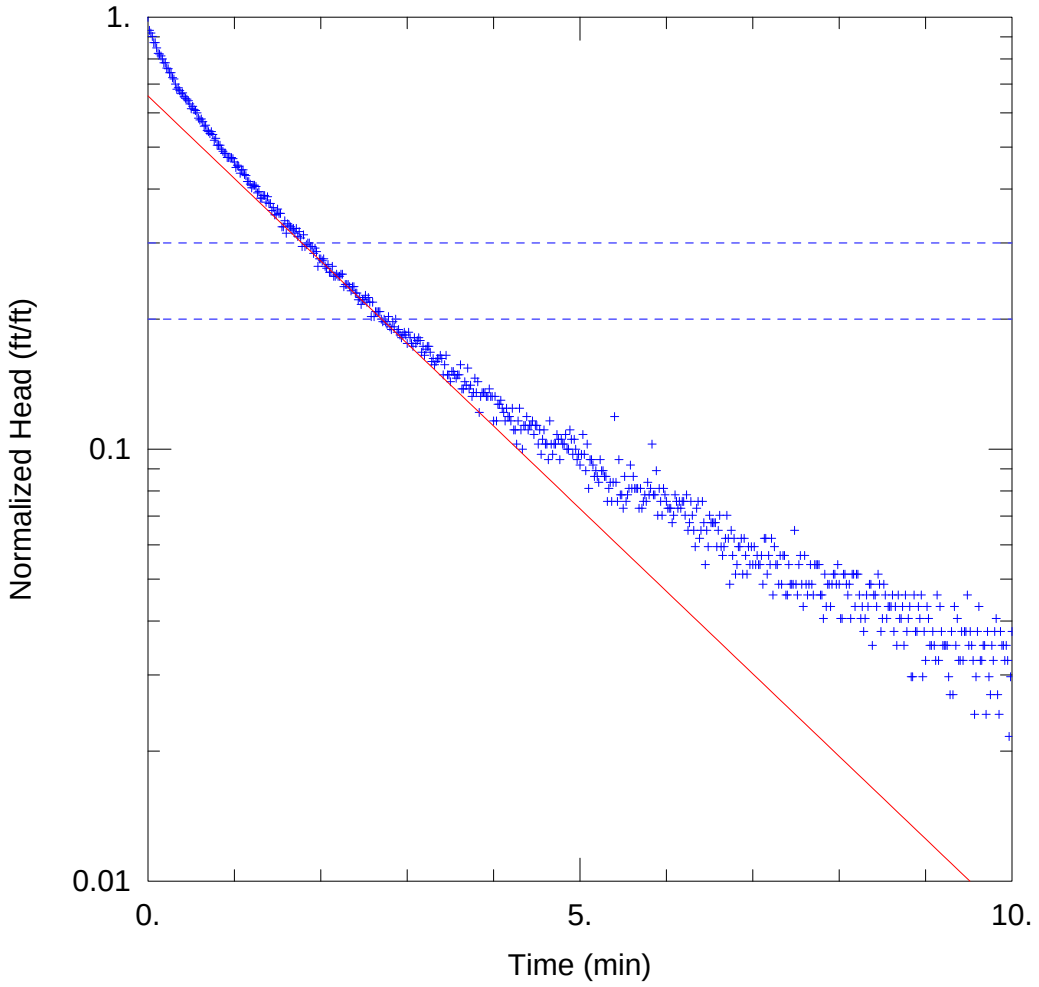
Saturated Thickness: 141.1 ft
Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (MW-114)

Initial Displacement: 0.247 ft
Total Well Penetration Depth: 141.1 ft
Casing Radius: 0.167 ft
Static Water Column Height: 141.1 ft
Screen Length: 141.1 ft
Well Radius: 0.333 ft

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice
K = 0.3351 ft/day
y0 = 0.1739 ft



MW-114 SLUG L FALLING HEAD

Data Set: S:\...\MW-114_SlugLFallingHeadGraphHo.aqt
Date: 07/08/14 Time: 14:03:59

PROJECT INFORMATION

Company: Rio Algom
Project: 1350.21
Location: Lisbon
Test Well: MW-114
Test Date: 2 Oct 2013

AQUIFER DATA

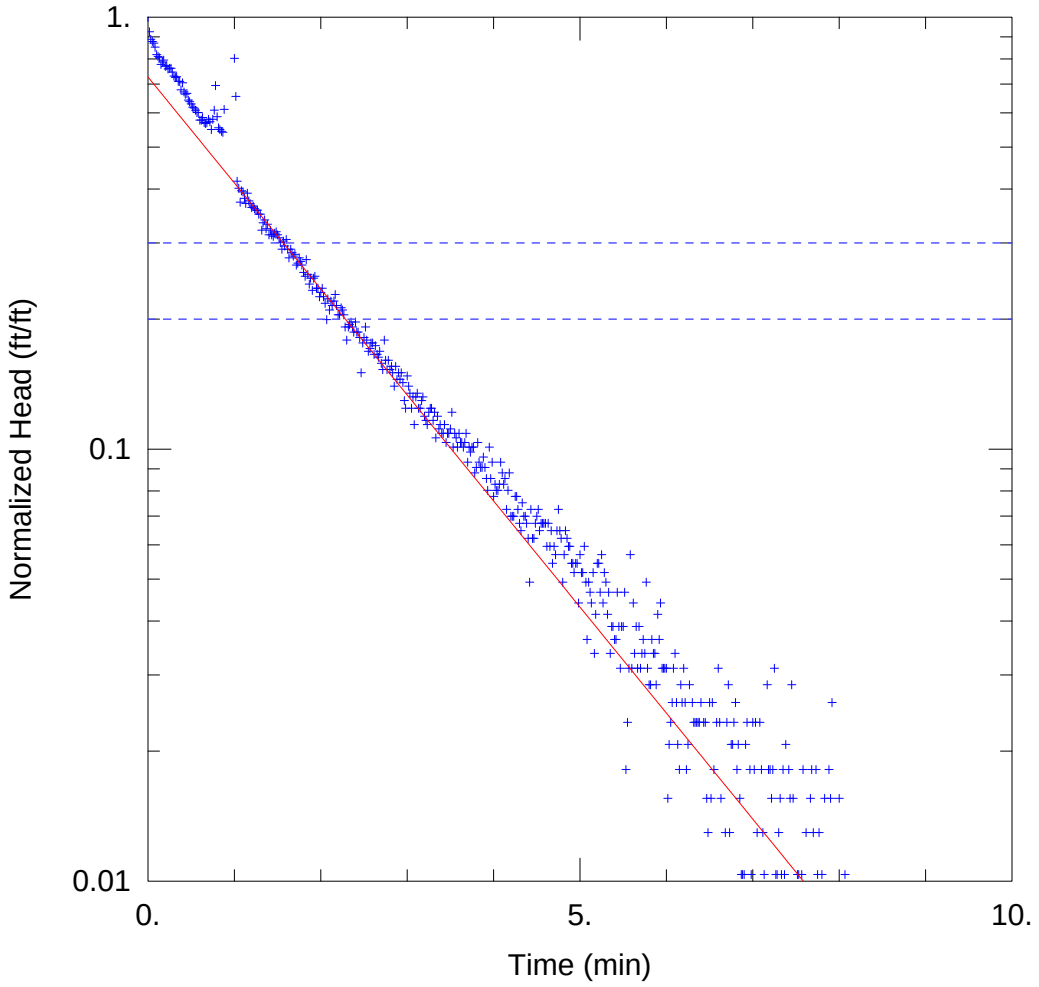
Saturated Thickness: 141.1 ft
Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (MW-114)

Initial Displacement: 0.37 ft
Total Well Penetration Depth: 141.1 ft
Casing Radius: 0.167 ft
Static Water Column Height: 141.1 ft
Screen Length: 141.1 ft
Well Radius: 0.333 ft

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice
K = 0.3048 ft/day
y0 = 0.2431 ft



MW-114 SLUG L RISING HEAD

Data Set: S:\...\MW-114_SlugLRisingHeadHeadGraphHo.aqt
Date: 07/08/14 Time: 14:04:29

PROJECT INFORMATION

Company: Rio Algom
Project: 1350.21
Location: Lisbon
Test Well: MW-114
Test Date: 2 Oct 2013

AQUIFER DATA

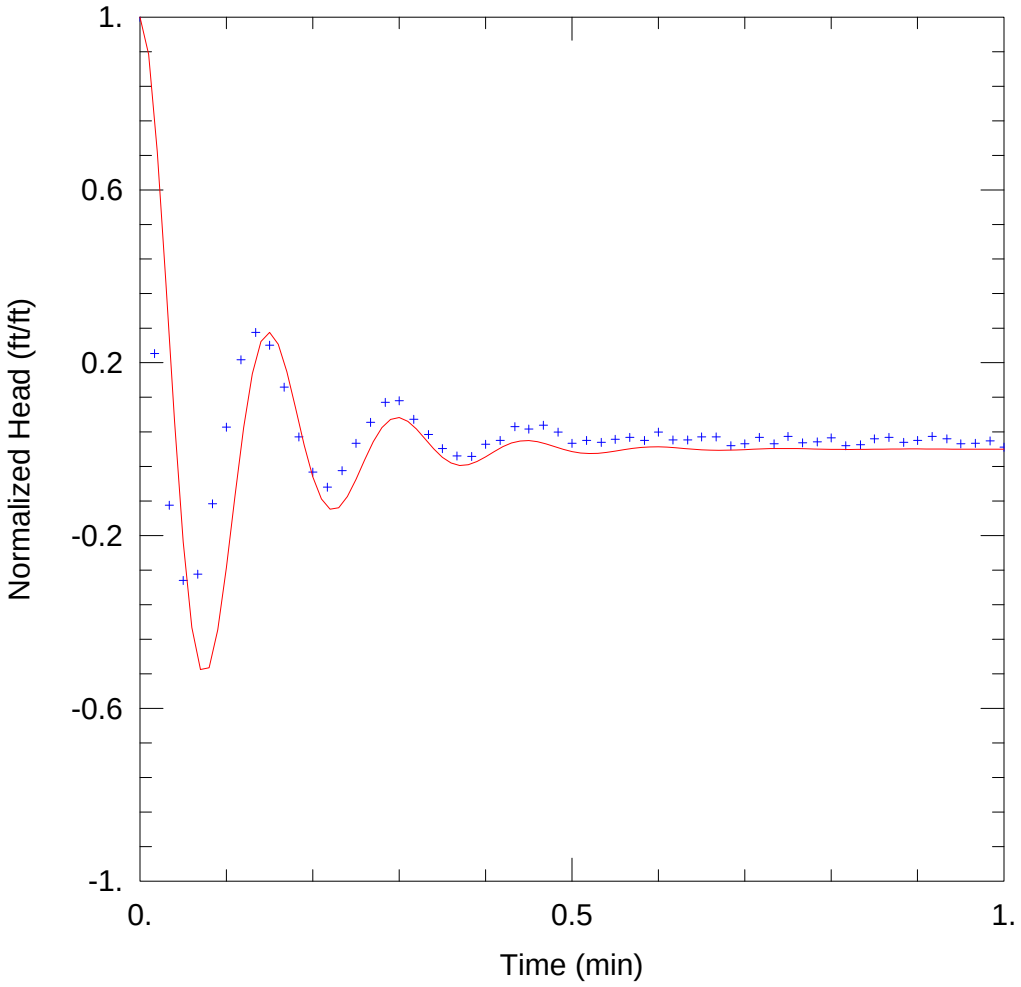
Saturated Thickness: 141.1 ft
Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (MW-114)

Initial Displacement: 0.386 ft
Total Well Penetration Depth: 141.1 ft
Casing Radius: 0.167 ft
Static Water Column Height: 141.1 ft
Screen Length: 141.1 ft
Well Radius: 0.333 ft

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice
K = 0.3914 ft/day
y0 = 0.2805 ft



MW-115M SLUG C FALLING HEAD

Data Set: S:\...\MW-115M_SlugCFallingHeadButler.aqt
Date: 07/08/14 Time: 14:05:37

PROJECT INFORMATION

Company: Rio Algom
Project: 1350.21
Location: Lisbon
Test Well: MW-115M
Test Date: 11 Oct 2013

AQUIFER DATA

Saturated Thickness: 125. ft Anisotropy Ratio (Kz/Kr): 1.

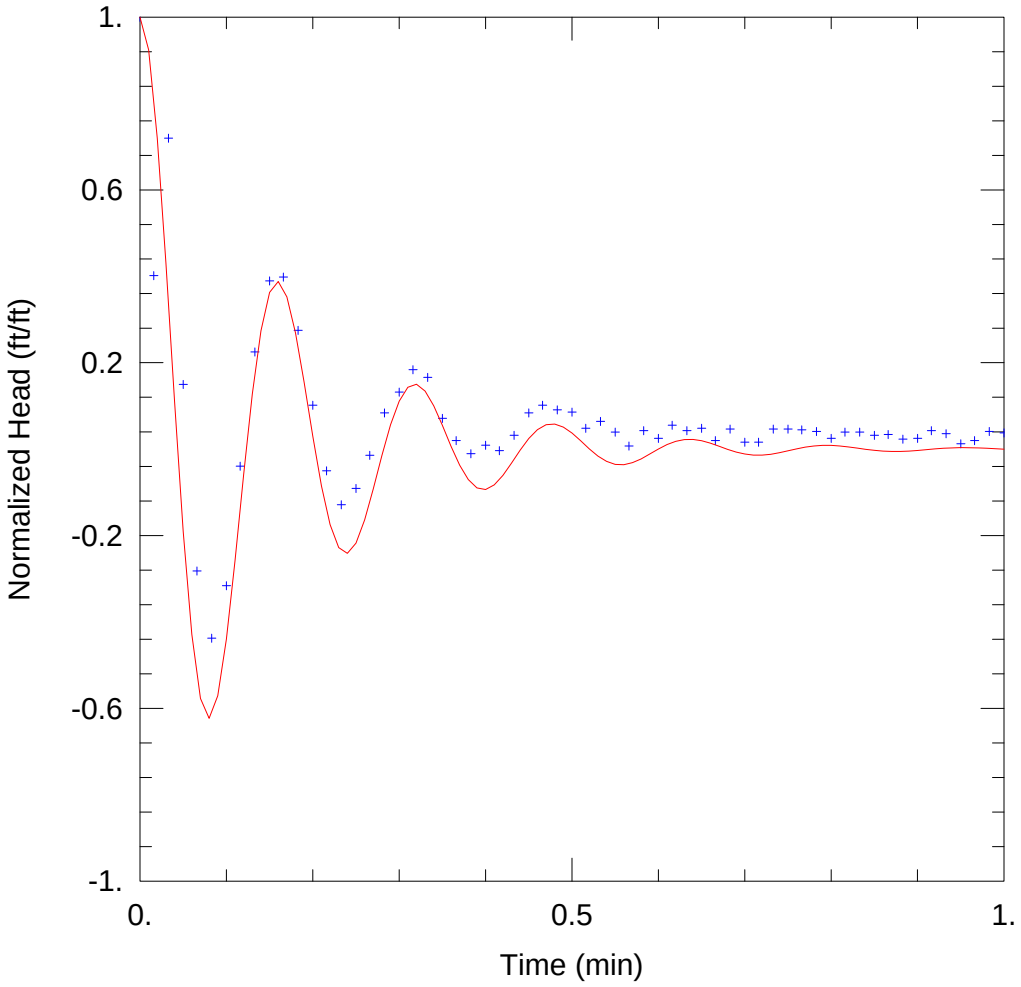
WELL DATA (MW-115M)

Initial Displacement: 0.885 ft Static Water Column Height: 141.3 ft
Total Well Penetration Depth: 125. ft Screen Length: 90. ft
Casing Radius: 0.167 ft Well Radius: 0.4167 ft

SOLUTION

Aquifer Model: Confined Solution Method: Butler

K = 143.1 ft/day Le = 62.47 ft



MW-115M SLUG C RISING HEAD

Data Set: S:\...\MW-115M_SlugCRisingHeadButler.aqt
Date: 07/08/14 Time: 14:05:58

PROJECT INFORMATION

Company: Rio Algom
Project: 1350.21
Location: Lisbon
Test Well: MW-115M
Test Date: 11 Oct 2013

AQUIFER DATA

Saturated Thickness: 125. ft Anisotropy Ratio (Kz/Kr): 1.

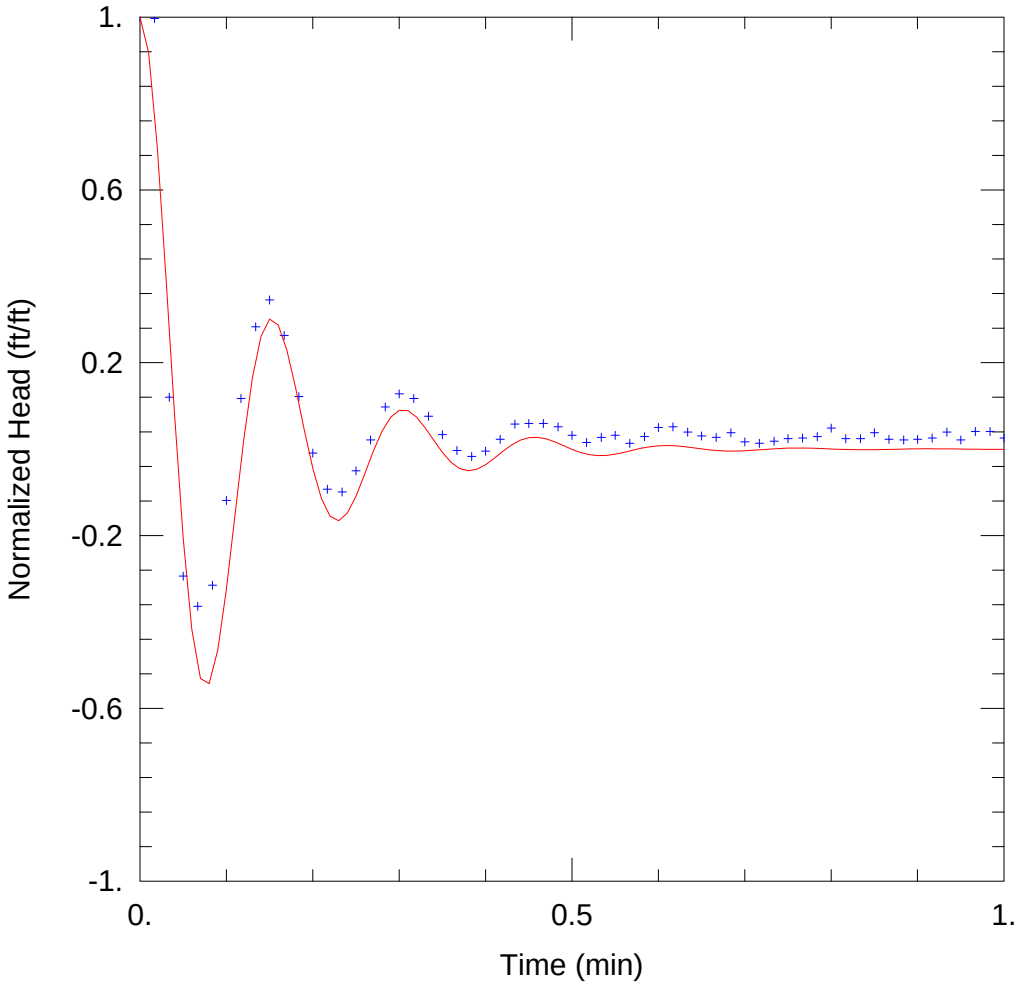
WELL DATA (MW-115M)

Initial Displacement: 0.56 ft
Total Well Penetration Depth: 125. ft
Casing Radius: 0.167 ft
Static Water Column Height: 141.3 ft
Screen Length: 90. ft
Well Radius: 0.4167 ft

SOLUTION

Aquifer Model: Confined
Solution Method: Butler

K = 181.8 ft/day
Le = 72.47 ft



MW-115M SLUG F FALLING HEAD

Data Set: S:\...\MW-115M_SlugFFallingHeadButler.aqt
Date: 07/08/14 Time: 14:06:21

PROJECT INFORMATION

Company: Rio Algom
Project: 1350.21
Location: Lisbon
Test Well: MW-115M
Test Date: 11 Oct 2013

AQUIFER DATA

Saturated Thickness: 125. ft Anisotropy Ratio (Kz/Kr): 1.

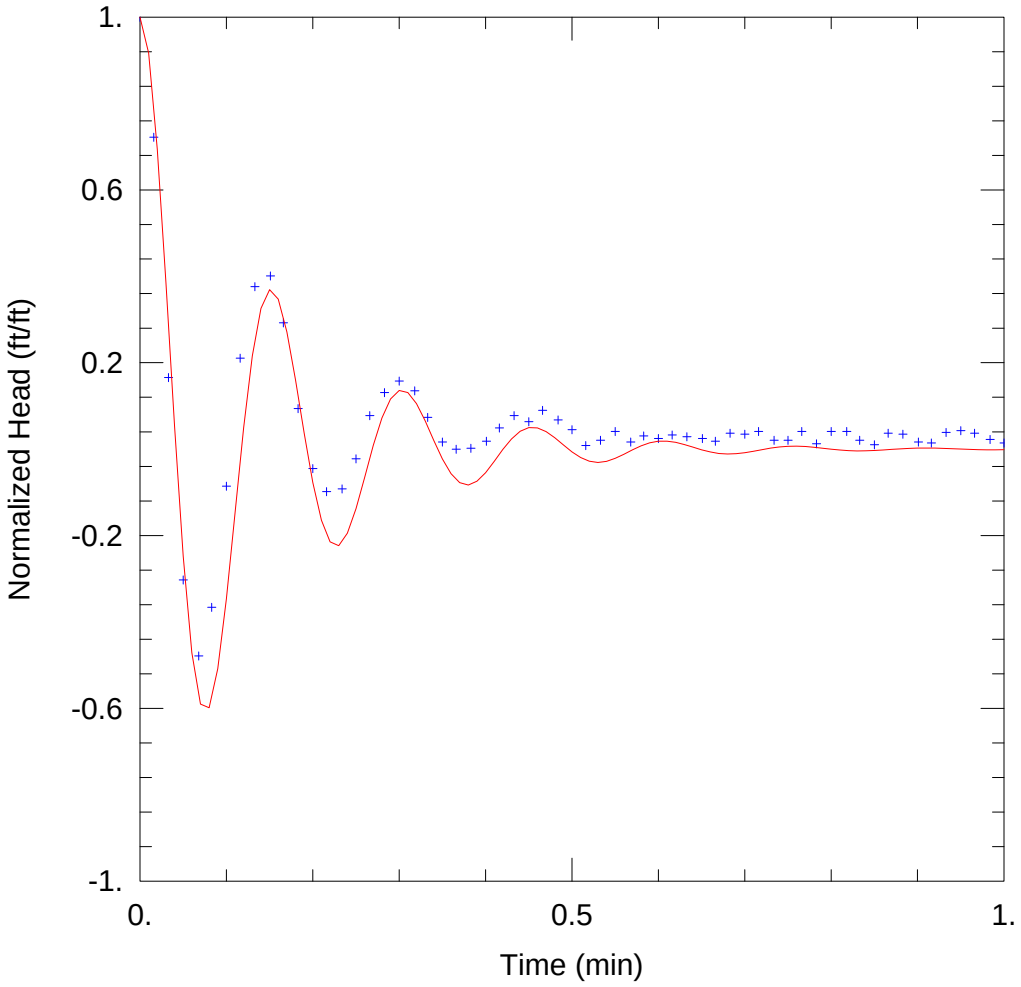
WELL DATA (MW-115M)

Initial Displacement: 0.657 ft
Total Well Penetration Depth: 125. ft
Casing Radius: 0.167 ft
Static Water Column Height: 141.3 ft
Screen Length: 90. ft
Well Radius: 0.4167 ft

SOLUTION

Aquifer Model: Confined
Solution Method: Butler

K = 152. ft/day
Le = 65.64 ft



MW-115M SLUG F RISING HEAD

Data Set: S:\...\MW-115M_SlugFRisingHeadButler.aqt
Date: 07/08/14 Time: 14:07:52

PROJECT INFORMATION

Company: Rio Algom
Project: 1350.21
Location: Lisbon
Test Well: MW-115M
Test Date: 11 Oct 2013

AQUIFER DATA

Saturated Thickness: 125. ft Anisotropy Ratio (Kz/Kr): 1.

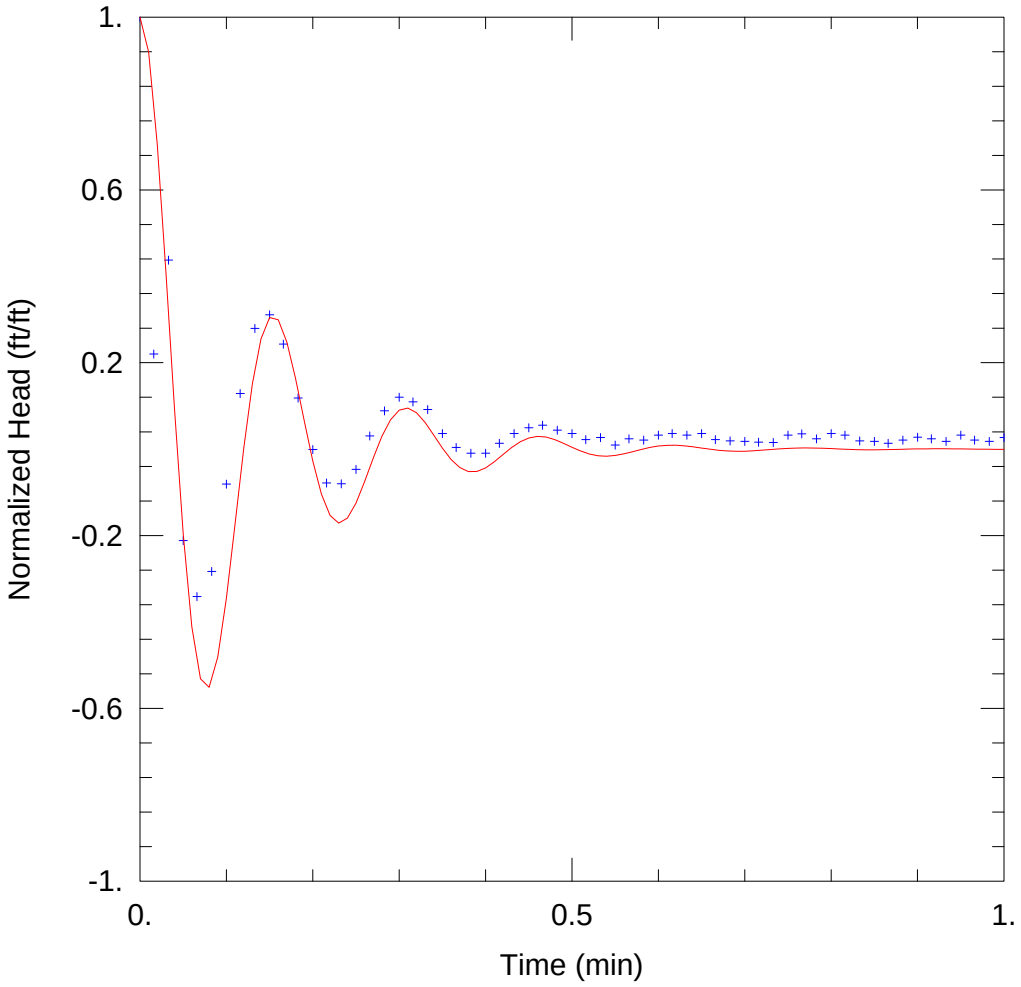
WELL DATA (MW-115M)

Initial Displacement: 0.489 ft
Total Well Penetration Depth: 125. ft
Casing Radius: 0.167 ft
Static Water Column Height: 141.3 ft
Screen Length: 90. ft
Well Radius: 0.4167 ft

SOLUTION

Aquifer Model: Confined
Solution Method: Butler

K = 181.9 ft/day
Le = 65.64 ft



MW-115M SLUG L FALLING HEAD

Data Set: S:\...\MW-115M_SlugLFallingHeadGraphHoButler.aqt
Date: 07/08/14 Time: 14:08:22

PROJECT INFORMATION

Company: Rio Algom
Project: 1350.21
Location: Lisbon
Test Well: MW-115M
Test Date: 11 Oct 2013

AQUIFER DATA

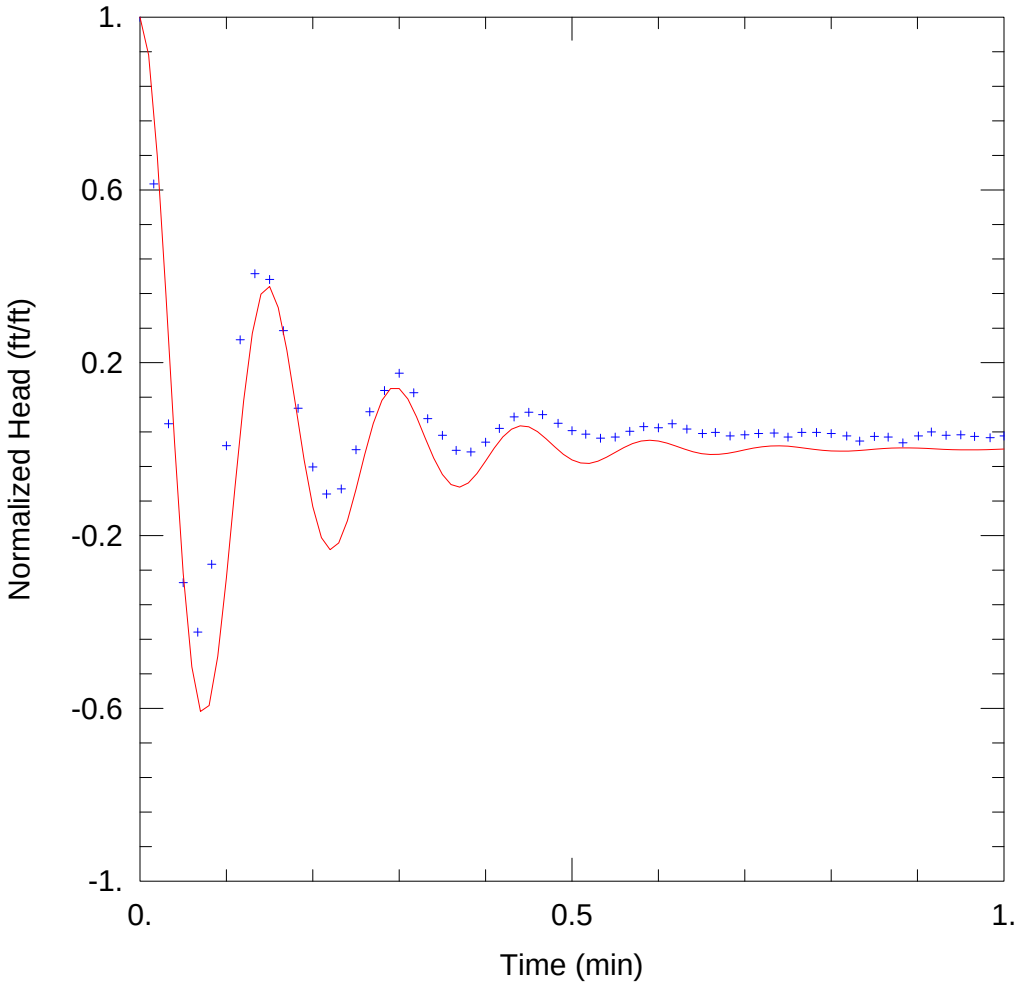
Saturated Thickness: 125. ft
Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (MW-115M)

Initial Displacement: 1.049 ft
Total Well Penetration Depth: 125. ft
Casing Radius: 0.167 ft
Static Water Column Height: 141.3 ft
Screen Length: 90. ft
Well Radius: 0.4167 ft

SOLUTION

Aquifer Model: Confined
Solution Method: Butler
K = 152.9 ft/day
Le = 67.15 ft



MW-115M SLUG L RISING HEAD

Data Set: S:\...\MW-115M_SlugLRisingHeadButler.aqt
Date: 07/08/14 Time: 14:08:40

PROJECT INFORMATION

Company: Rio Algom
Project: 1350.21
Location: Lisbon
Test Well: MW-115M
Test Date: 11 Oct 2013

AQUIFER DATA

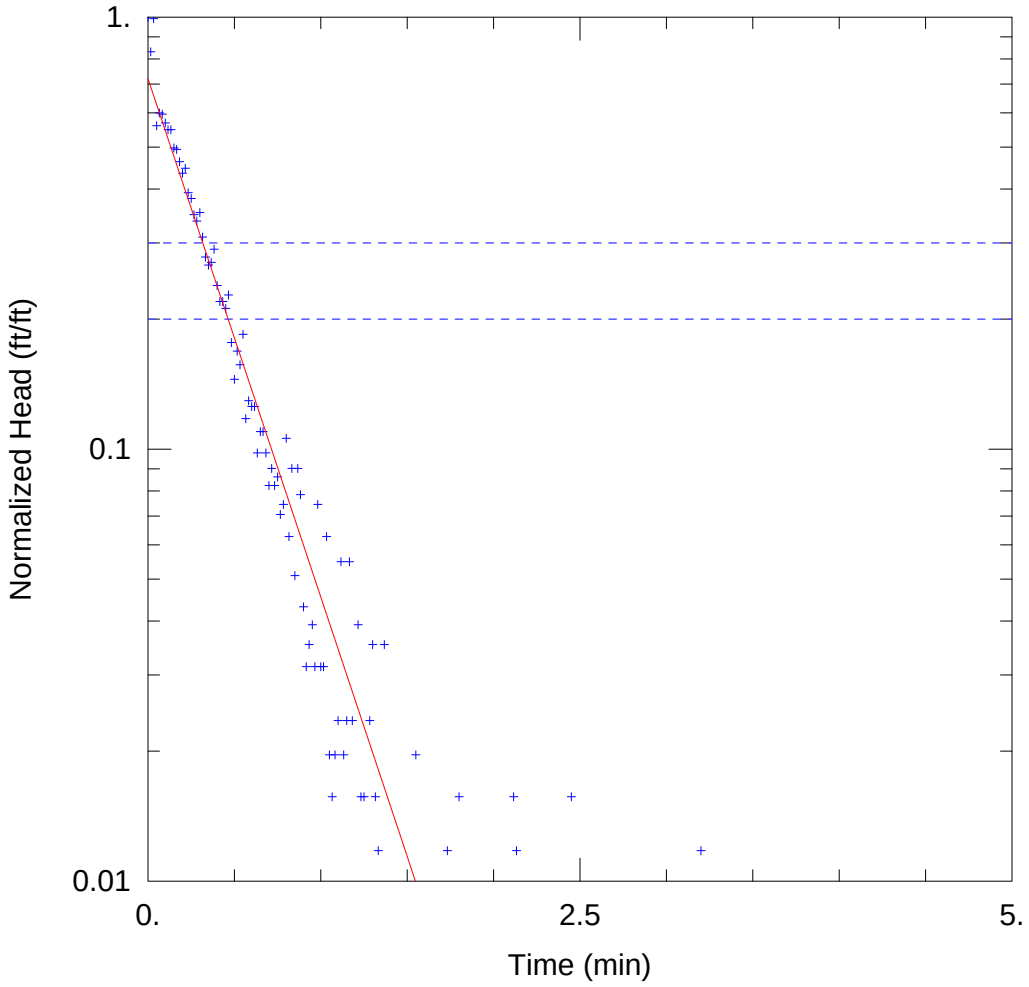
Saturated Thickness: 125. ft
Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (MW-115M)

Initial Displacement: 0.751 ft
Total Well Penetration Depth: 125. ft
Casing Radius: 0.167 ft
Static Water Column Height: 141.3 ft
Screen Length: 90. ft
Well Radius: 0.4167 ft

SOLUTION

Aquifer Model: Confined
Solution Method: Butler
K = 191.1 ft/day
Le = 62.32 ft



MW-115S SLUG J FALLING HEAD

Data Set: S:\...\MW-115S_SlugJFallingHeadGraphHo.aqt
Date: 07/08/14 Time: 14:09:07

PROJECT INFORMATION

Company: Rio Algom
Project: 1350.21
Location: Lisbon
Test Well: MW-115S
Test Date: 2 Oct 2013

AQUIFER DATA

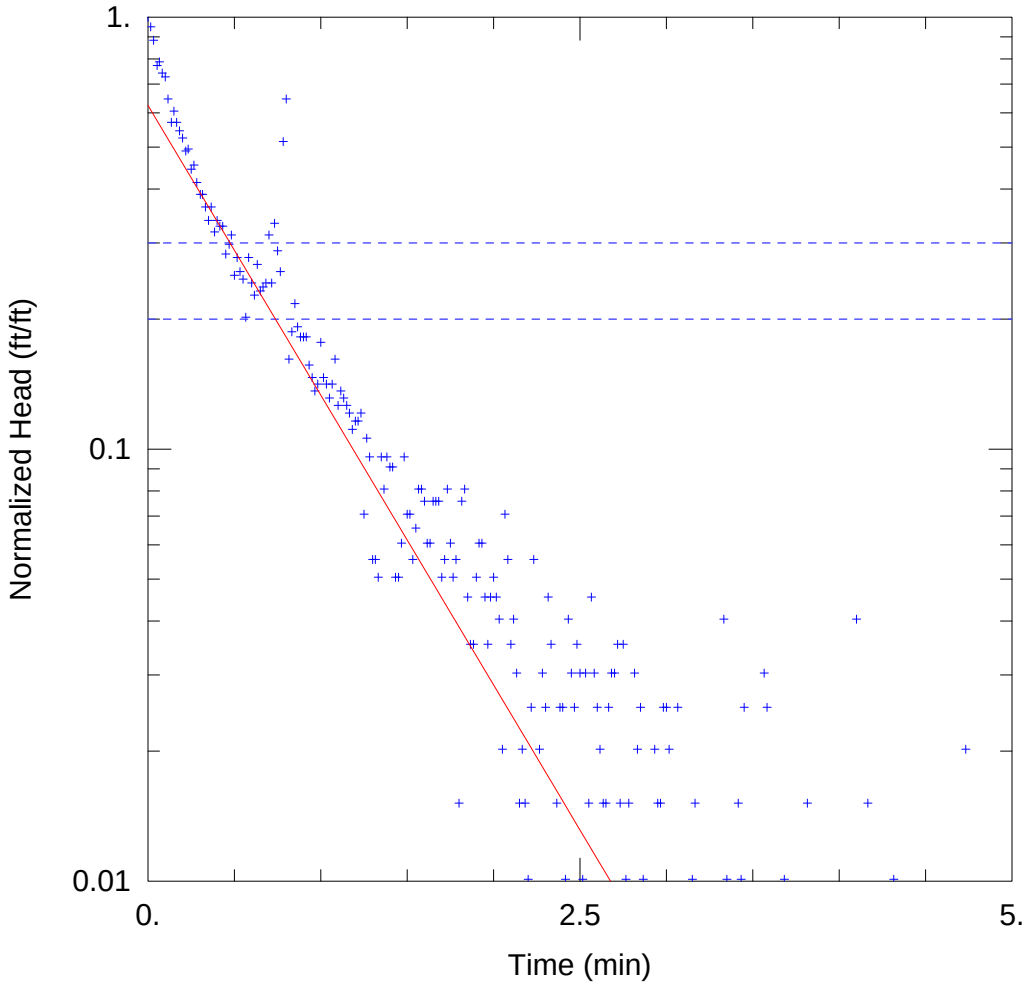
Saturated Thickness: 51.29 ft
Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (MW-115)

Initial Displacement: 0.255 ft
Total Well Penetration Depth: 51.29 ft
Casing Radius: 0.167 ft
Static Water Column Height: 51.29 ft
Screen Length: 51.29 ft
Well Radius: 0.333 ft

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice
K = 4.22 ft/day
y0 = 0.1838 ft



MW-115S SLUG J RISING HEAD

Data Set: S:\...\MW-115S_SlugJRisingHeadGraphHo.aqt
Date: 07/08/14 Time: 14:09:31

PROJECT INFORMATION

Company: Rio Algom
Project: 1350.21
Location: Lisbon
Test Well: MW-115S
Test Date: 2 Oct 2013

AQUIFER DATA

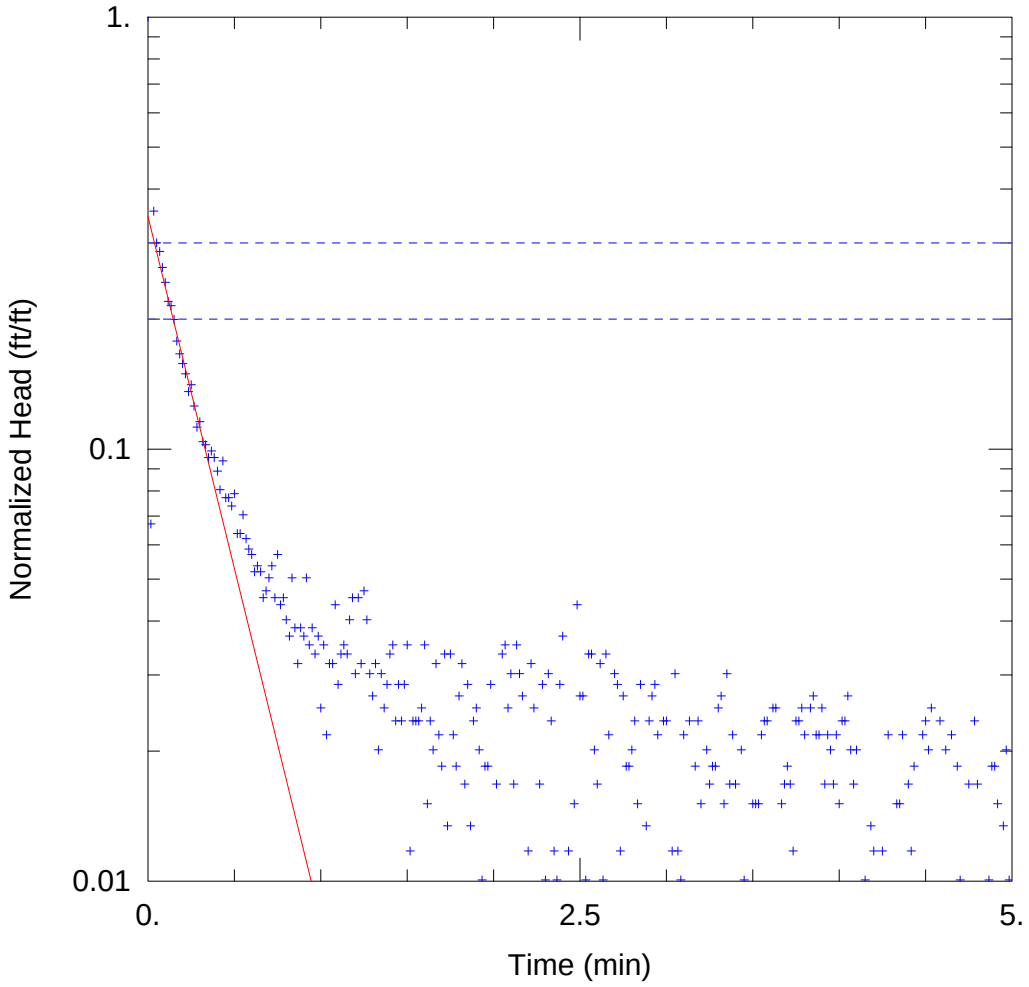
Saturated Thickness: 51.29 ft
Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (MW-115)

Initial Displacement: 0.198 ft
Total Well Penetration Depth: 51.29 ft
Casing Radius: 0.167 ft
Static Water Column Height: 51.29 ft
Screen Length: 51.29 ft
Well Radius: 0.333 ft

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice
K = 2.358 ft/day
y0 = 0.1237 ft



MW-115S SLUG K FALLING HEAD

Data Set: S:\...\MW-115S_SlugKFallingHeadGraphHo.aqt
Date: 07/08/14 Time: 14:09:50

PROJECT INFORMATION

Company: Rio Algom
Project: 1350.21
Location: Lisbon
Test Well: MW-115S
Test Date: 2 Oct 2013

AQUIFER DATA

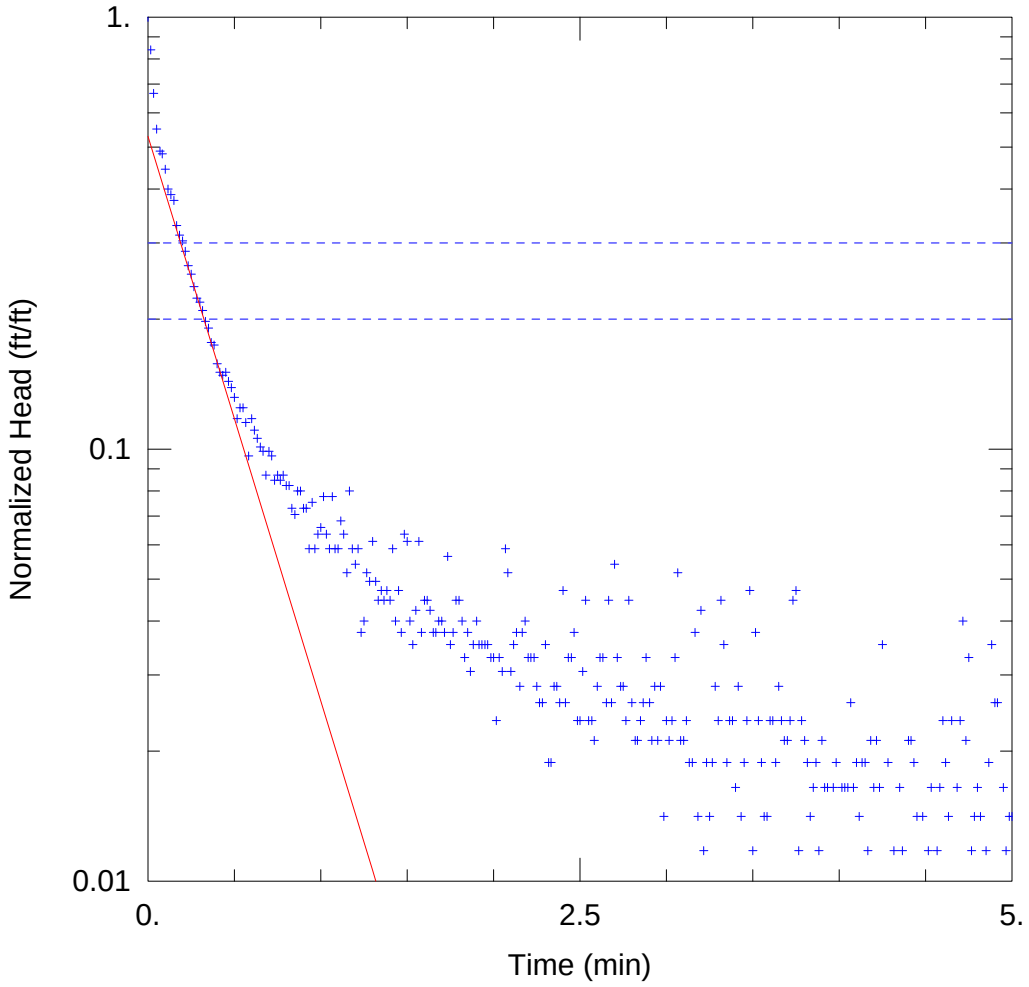
Saturated Thickness: 51.29 ft
Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (MW-115)

Initial Displacement: 0.596 ft
Total Well Penetration Depth: 51.29 ft
Casing Radius: 0.167 ft
Static Water Column Height: 51.29 ft
Screen Length: 51.29 ft
Well Radius: 0.333 ft

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice
K = 5.727 ft/day
y0 = 0.2059 ft



MW-115S SLUG L FALLING HEAD

Data Set: S:\...\MW-115S_SlugLFallingHeadGraphHo.aqt
Date: 07/08/14 Time: 14:09:59

PROJECT INFORMATION

Company: Rio Algom
Project: 1350.21
Location: Lisbon
Test Well: MW-115S
Test Date: 2 Oct 2013

AQUIFER DATA

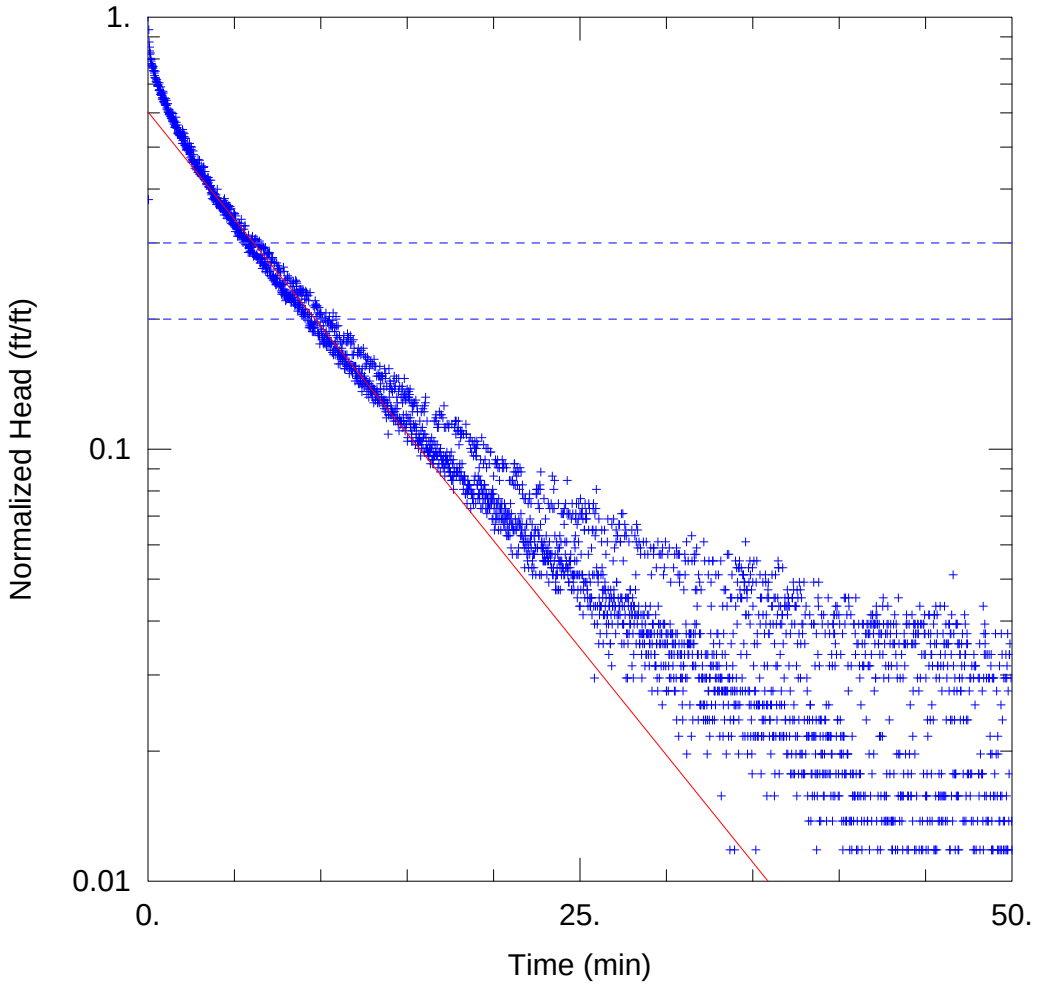
Saturated Thickness: 51.29 ft
Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (MW-115)

Initial Displacement: 0.425 ft
Total Well Penetration Depth: 51.29 ft
Casing Radius: 0.167 ft
Static Water Column Height: 51.29 ft
Screen Length: 51.29 ft
Well Radius: 0.333 ft

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice
K = 4.595 ft/day
y0 = 0.225 ft



MW-116 SLUG A FALLING HEAD

Data Set: S:\...\MW-116_SlugAFallingHeadSlugHo.aqt
Date: 07/08/14 Time: 14:11:11

PROJECT INFORMATION

Company: Rio Algom
Project: 1350.21
Location: Lisbon
Test Well: MW-116
Test Date: 3 Oct 2013

AQUIFER DATA

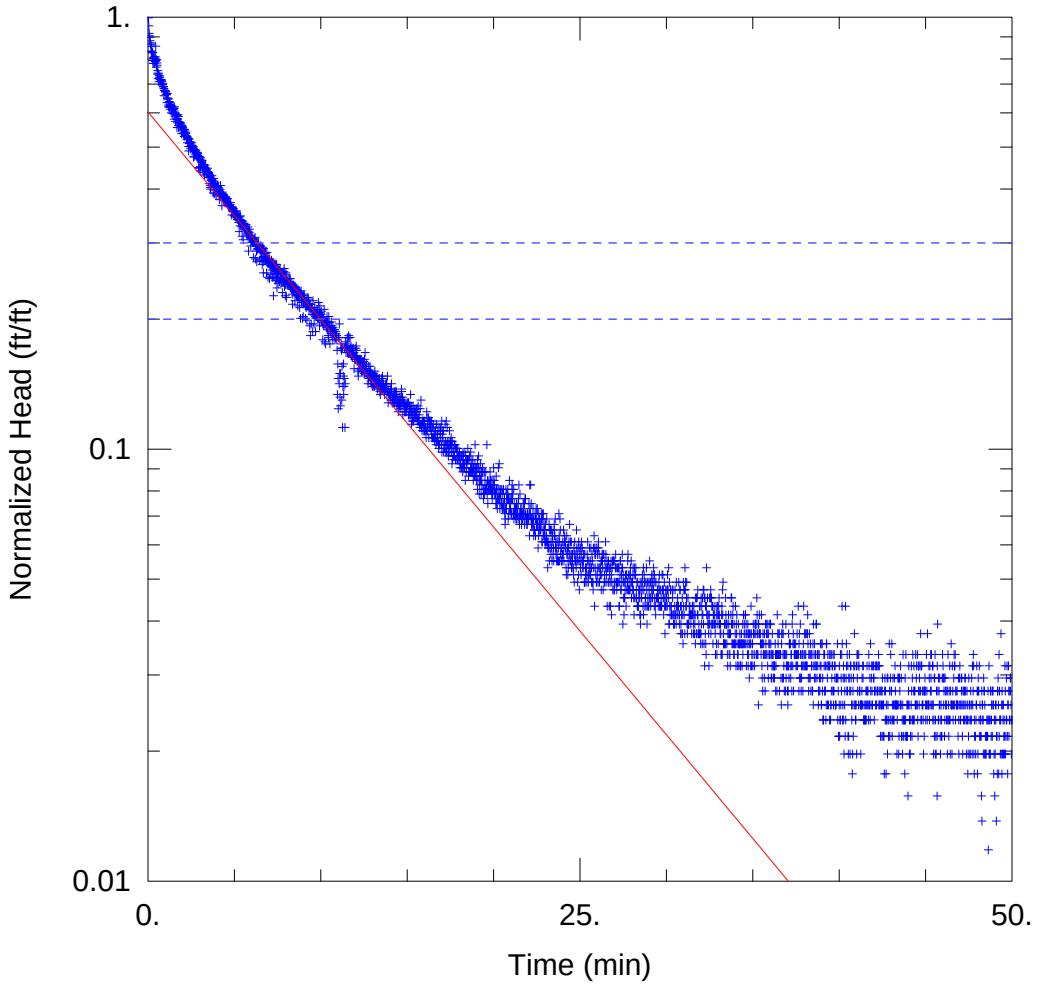
Saturated Thickness: 38.75 ft
Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (MW-116)

Initial Displacement: 0.508 ft
Total Well Penetration Depth: 38.75 ft
Casing Radius: 0.167 ft
Static Water Column Height: 38.75 ft
Screen Length: 20. ft
Well Radius: 0.333 ft

SOLUTION

Aquifer Model: Confined
Solution Method: Bouwer-Rice
K = 0.4082 ft/day
y0 = 0.3064 ft



MW-116 SLUG A RISING HEAD

Data Set: S:\...\MW-116_SlugARisingHeadSlugHo.aqt
Date: 07/08/14 Time: 14:12:45

PROJECT INFORMATION

Company: Rio Algom
Project: 1350.21
Location: Lisbon
Test Well: MW-116
Test Date: 3 Oct 2013

AQUIFER DATA

Saturated Thickness: 38.75 ft Anisotropy Ratio (Kz/Kr): 1.

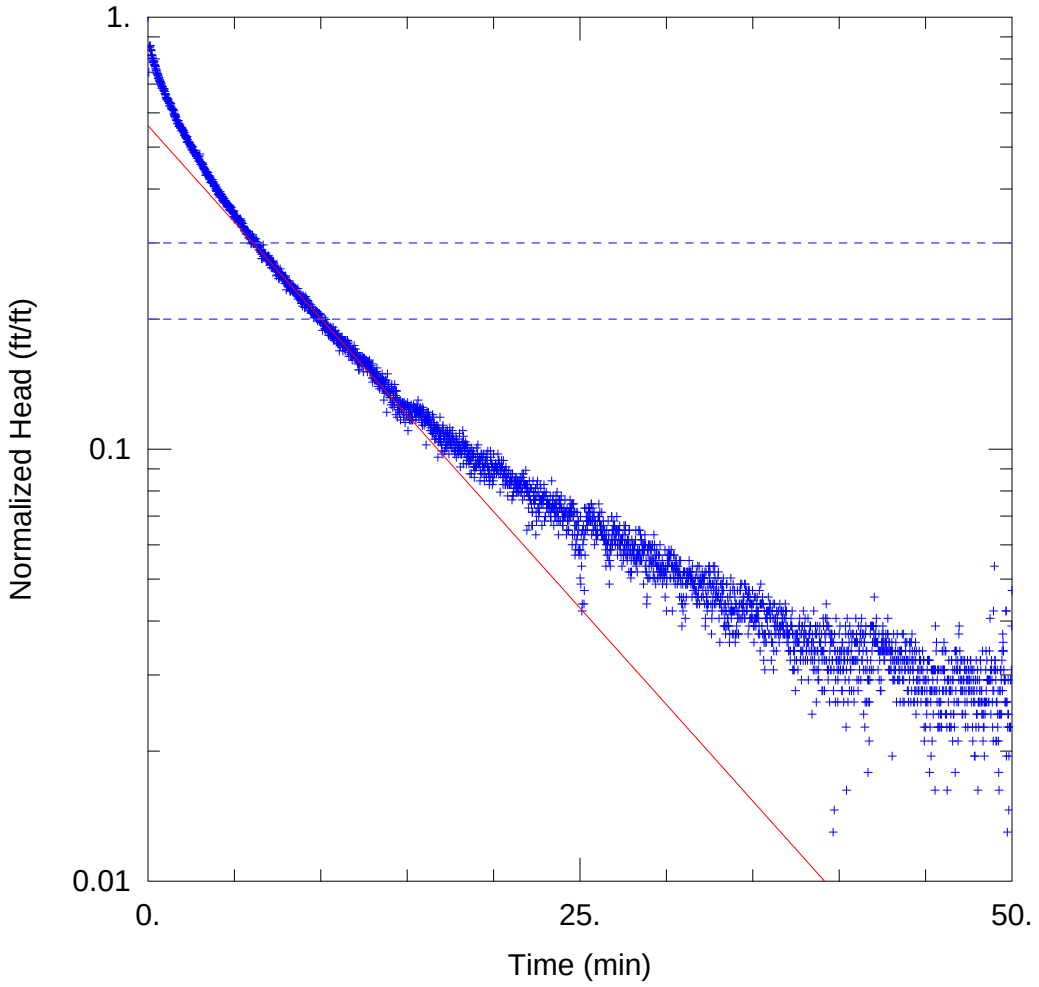
WELL DATA (MW-116)

Initial Displacement: 0.508 ft
Total Well Penetration Depth: 38.75 ft
Casing Radius: 0.167 ft
Static Water Column Height: 38.75 ft
Screen Length: 20. ft
Well Radius: 0.333 ft

SOLUTION

Aquifer Model: Confined
Solution Method: Bouwer-Rice

K = 0.3952 ft/day
y0 = 0.3064 ft



MW-116 SLUG G FALLING HEAD

Data Set: S:\...\MW-116_SlugGFallingHeadSlugHo.aqt
Date: 07/08/14 Time: 14:13:16

PROJECT INFORMATION

Company: Rio Algom
Project: 1350.21
Location: Lisbon
Test Well: MW-116
Test Date: 3 Oct 2013

AQUIFER DATA

Saturated Thickness: 38.75 ft Anisotropy Ratio (Kz/Kr): 1.

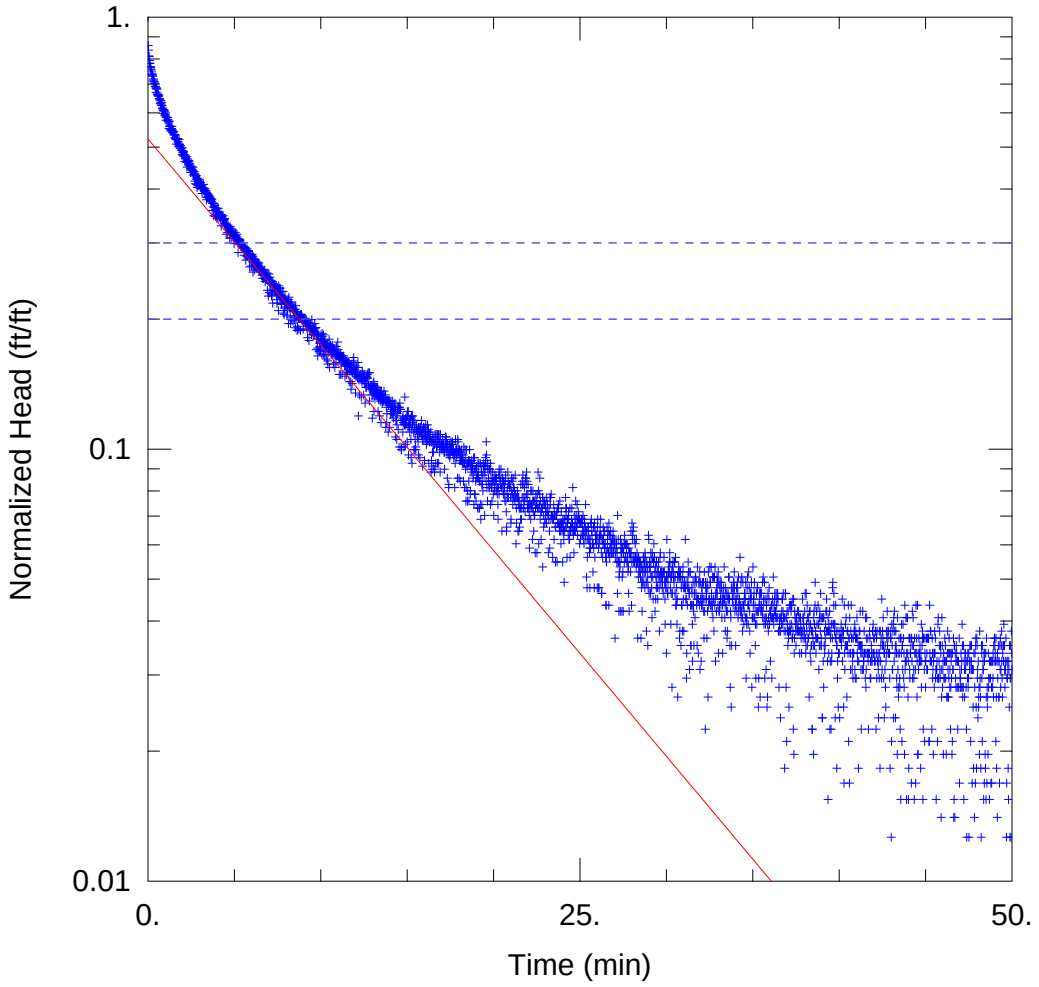
WELL DATA (MW-116)

Initial Displacement: 0.616 ft Static Water Column Height: 38.75 ft
Total Well Penetration Depth: 38.75 ft Screen Length: 20. ft
Casing Radius: 0.167 ft Well Radius: 0.333 ft

SOLUTION

Aquifer Model: Confined Solution Method: Bouwer-Rice

K = 0.3674 ft/day y0 = 0.3453 ft



MW-116 SLUG G RISING HEAD

Data Set: S:\...\MW-116_SlugGRisingHeadGraphHo.aqt
Date: 07/08/14 Time: 14:13:46

PROJECT INFORMATION

Company: Rio Algom
Project: 1350.21
Location: Lisbon
Test Well: MW-116
Test Date: 3 Oct 2013

AQUIFER DATA

Saturated Thickness: 38.75 ft Anisotropy Ratio (Kz/Kr): 1.

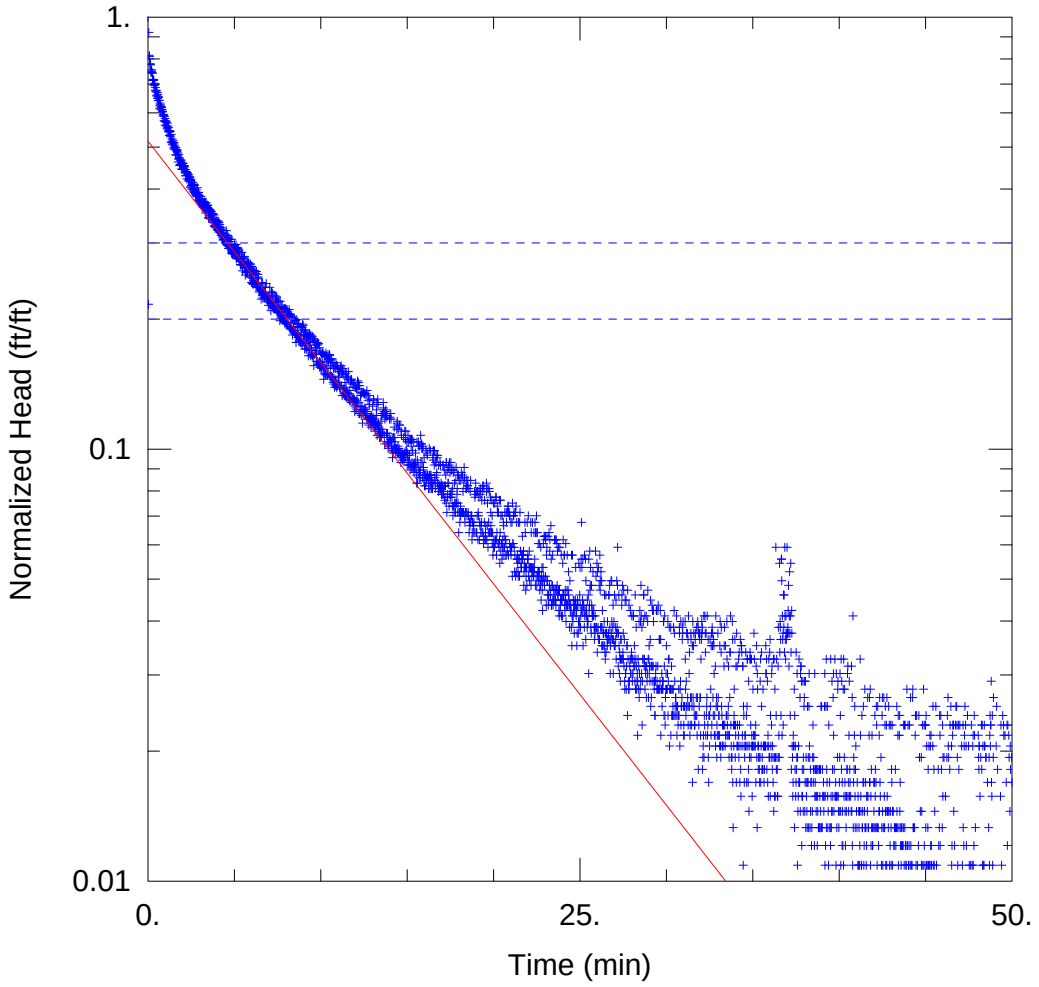
WELL DATA (MW-116)

Initial Displacement: 0.712 ft
Total Well Penetration Depth: 38.75 ft
Casing Radius: 0.167 ft
Static Water Column Height: 38.75 ft
Screen Length: 20. ft
Well Radius: 0.333 ft

SOLUTION

Aquifer Model: Confined
Solution Method: Bouwer-Rice

K = 0.3918 ft/day
y0 = 0.3719 ft



MW-116 SLUG I FALLING HEAD

Data Set: S:\...\MW-116_SlugIFallingHeadSlugHo.aqt
Date: 07/08/14 Time: 14:14:25

PROJECT INFORMATION

Company: Rio Algom
Project: 1350.21
Location: Lisbon
Test Well: MW-116
Test Date: 2 Oct 2013

AQUIFER DATA

Saturated Thickness: 38.75 ft Anisotropy Ratio (Kz/Kr): 1.

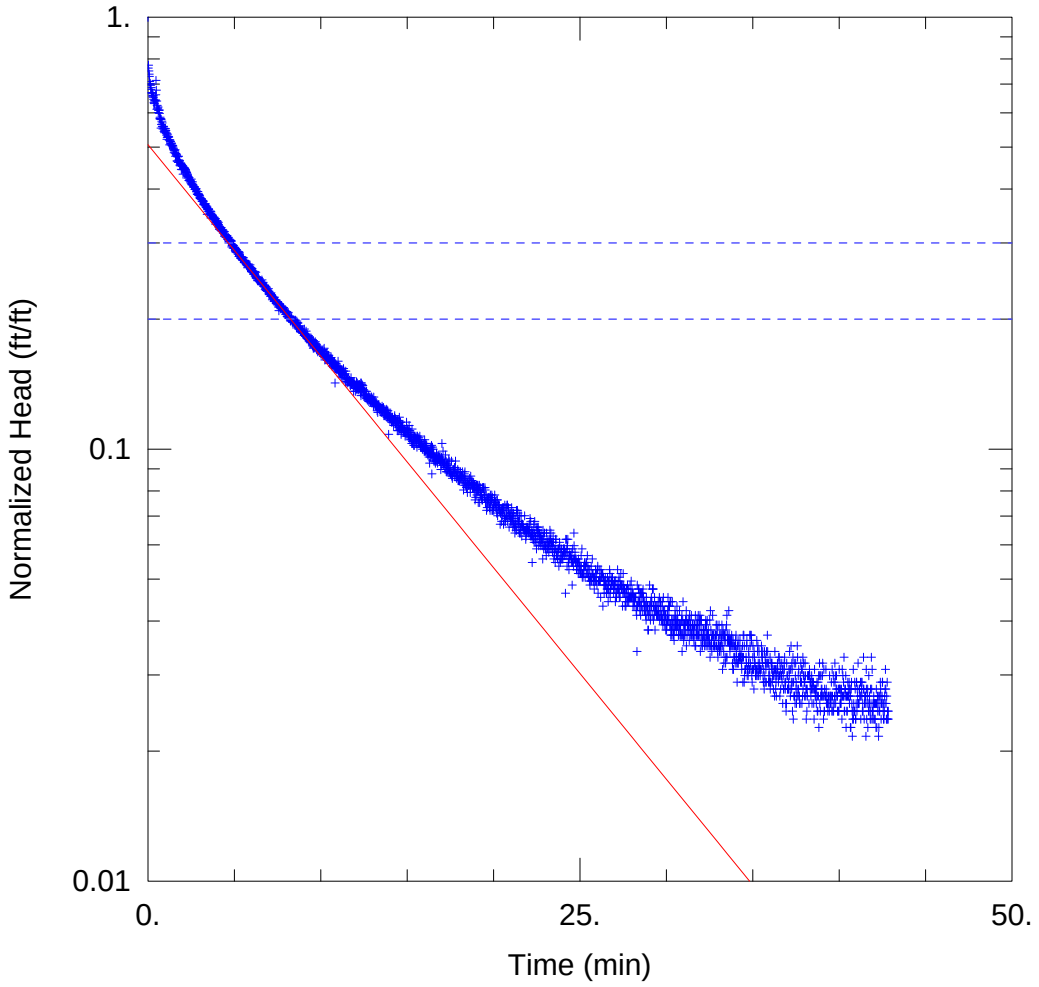
WELL DATA (MW-116)

Initial Displacement: 0.827 ft Static Water Column Height: 38.75 ft
Total Well Penetration Depth: 38.75 ft Screen Length: 20. ft
Casing Radius: 0.167 ft Well Radius: 0.333 ft

SOLUTION

Aquifer Model: Confined Solution Method: Bouwer-Rice

K = 0.4214 ft/day y0 = 0.4268 ft



MW-116 SLUG I RISING HEAD

Data Set: S:\...\MW-116_SlugIRisingHeadGraphHo.aqt
Date: 07/08/14 Time: 14:14:58

PROJECT INFORMATION

Company: Rio Algom
Project: 1350.21
Location: Lisbon
Test Well: MW-116
Test Date: 2 Oct 2013

AQUIFER DATA

Saturated Thickness: 38.75 ft Anisotropy Ratio (Kz/Kr): 1.

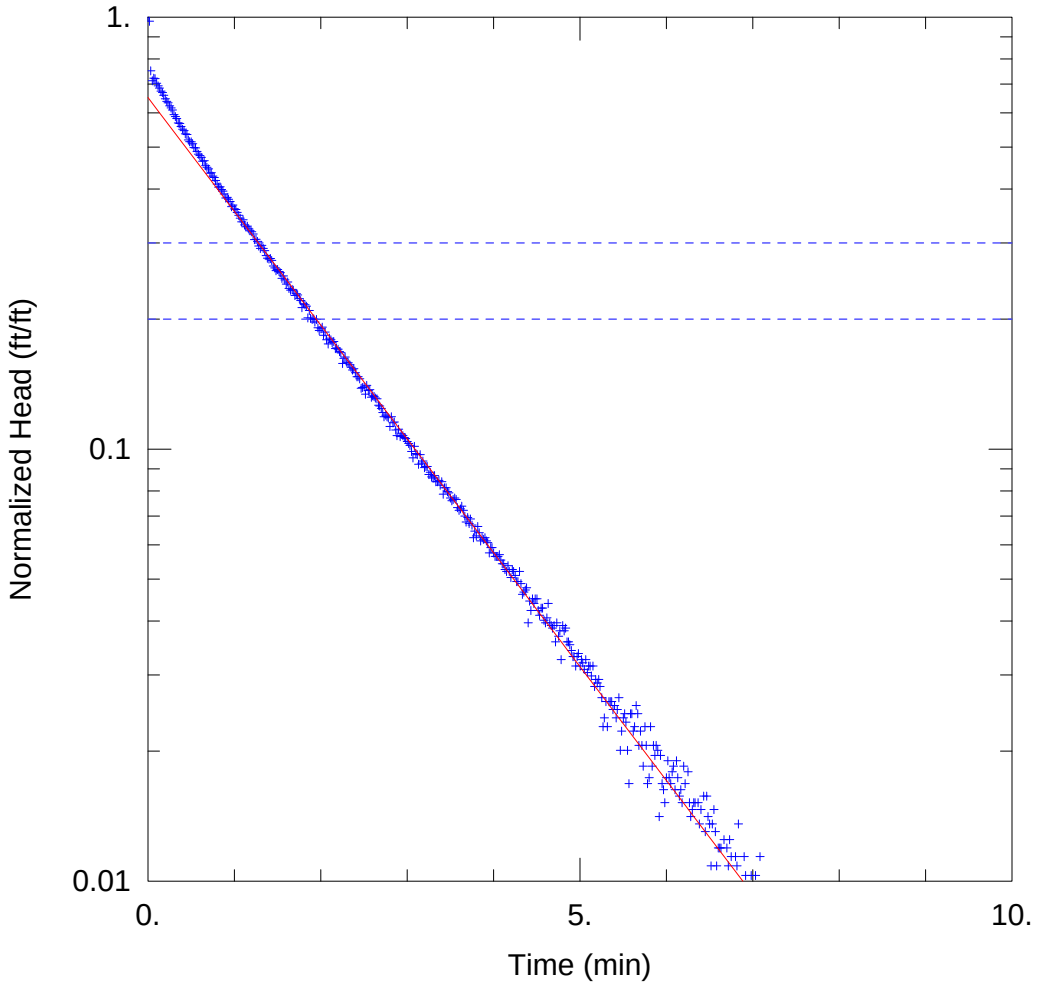
WELL DATA (MW-116)

Initial Displacement: 0.97 ft Static Water Column Height: 38.75 ft
Total Well Penetration Depth: 38.75 ft Screen Length: 20. ft
Casing Radius: 0.167 ft Well Radius: 0.333 ft

SOLUTION

Aquifer Model: Confined Solution Method: Bouwer-Rice

K = 0.4027 ft/day y0 = 0.4915 ft



MW-117M SLUG D FALLING HEAD

Data Set: S:\...\MW-117M_SlugDFallingHeadGraphHo.aqt
Date: 07/08/14 Time: 14:16:01

PROJECT INFORMATION

Company: Rio Algom
Project: 1350.21
Location: Lisbon
Test Well: MW-117M
Test Date: 03 Oct 2013

AQUIFER DATA

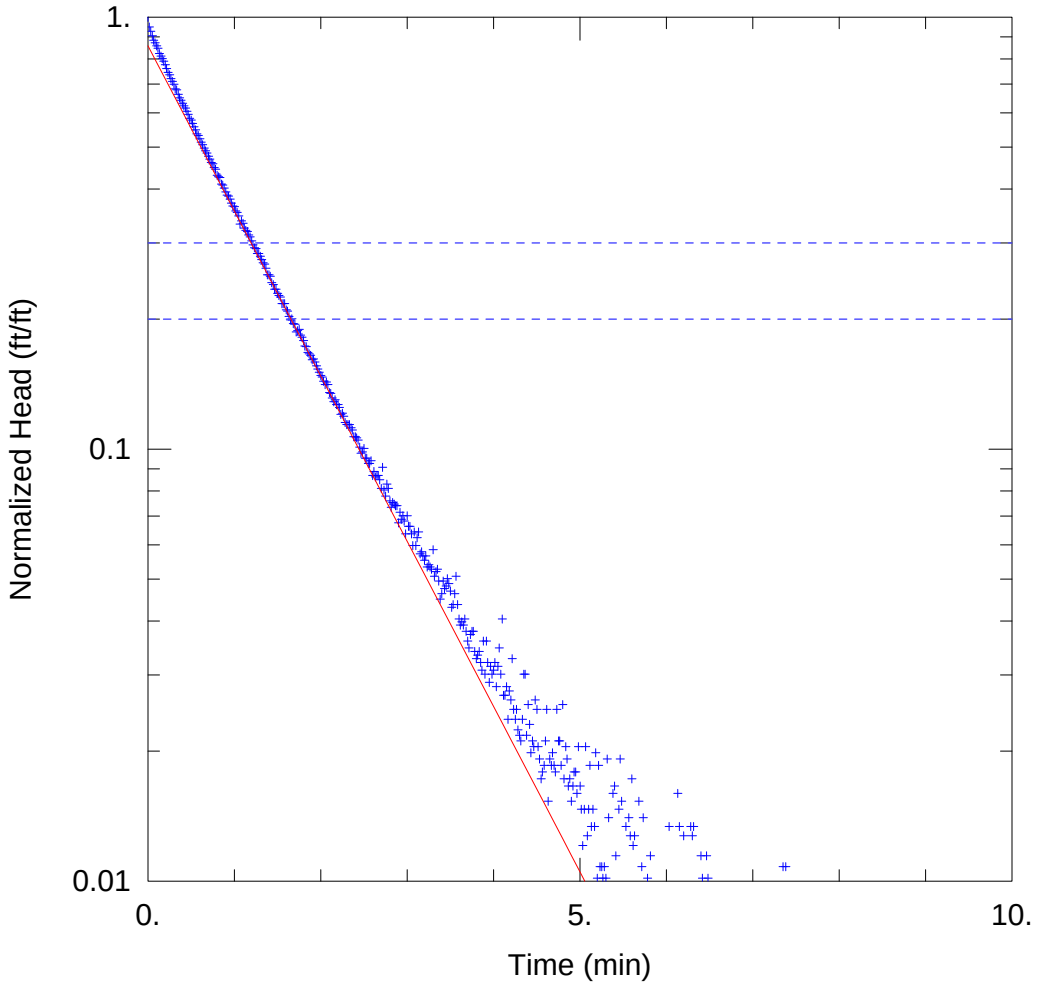
Saturated Thickness: 68.1 ft
Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (MW-117M)

Initial Displacement: 1.843 ft
Total Well Penetration Depth: 68.1 ft
Casing Radius: 0.167 ft
Static Water Column Height: 68.1 ft
Screen Length: 25. ft
Well Radius: 0.4167 ft

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice
K = 1.834 ft/day
y0 = 1.2 ft



MW-117M SLUG D RISING HEAD

Data Set: S:\...\MW-117M_SlugDRisingHeadGraphHo.aqt
Date: 07/08/14 Time: 14:16:31

PROJECT INFORMATION

Company: Rio Algom
Project: 1350.21
Location: Lisbon
Test Well: MW-117M
Test Date: 03 Oct 2013

AQUIFER DATA

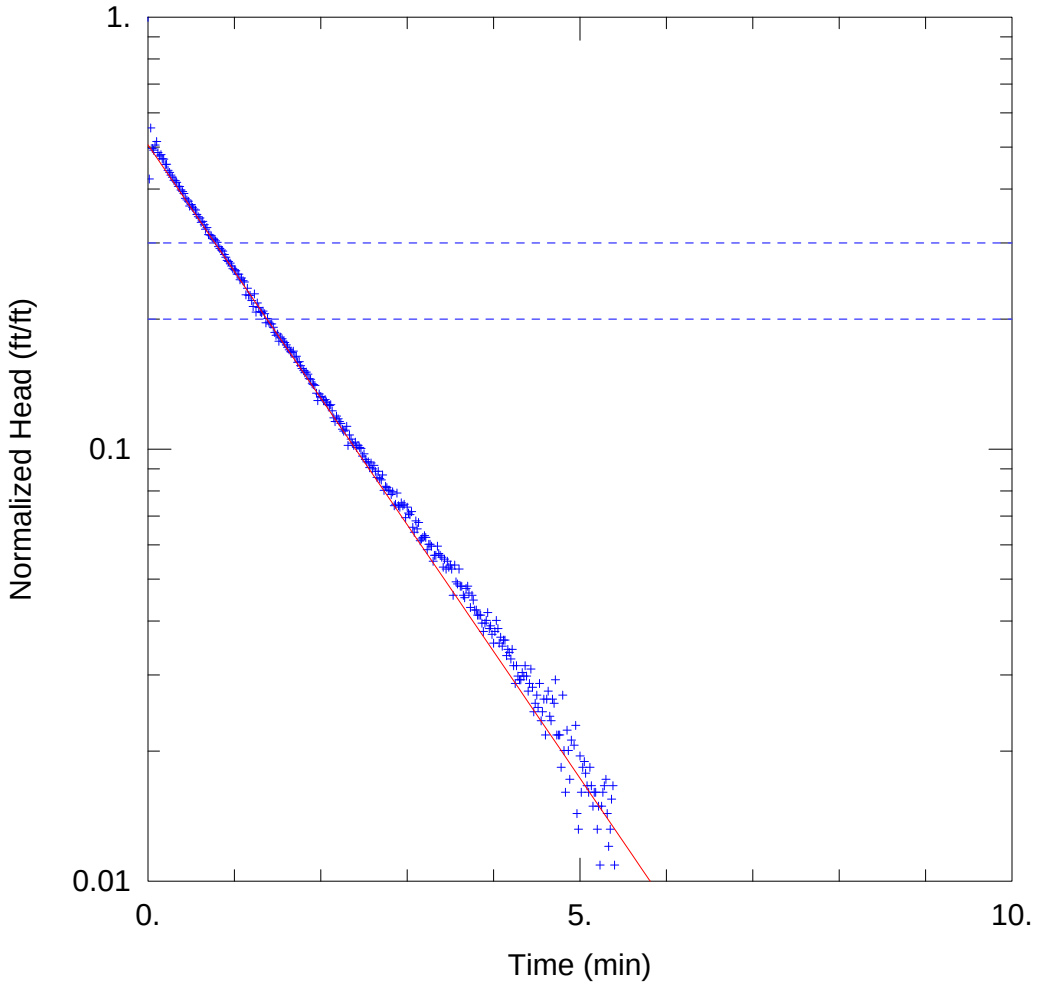
Saturated Thickness: 68.1 ft
Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (MW-117M)

Initial Displacement: 1.551 ft
Total Well Penetration Depth: 68.1 ft
Casing Radius: 0.167 ft
Static Water Column Height: 68.1 ft
Screen Length: 25. ft
Well Radius: 0.4167 ft

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice
K = 2.661 ft/day
y0 = 1.33 ft



MW-117M SLUG J FALLING HEAD

Data Set: S:\...\MW-117M_SlugJFallingHeadGraphHo.aqt
Date: 07/08/14 Time: 14:17:02

PROJECT INFORMATION

Company: Rio Algom
Project: 1350.21
Location: Lisbon
Test Well: MW-117M
Test Date: 03 Oct 2013

AQUIFER DATA

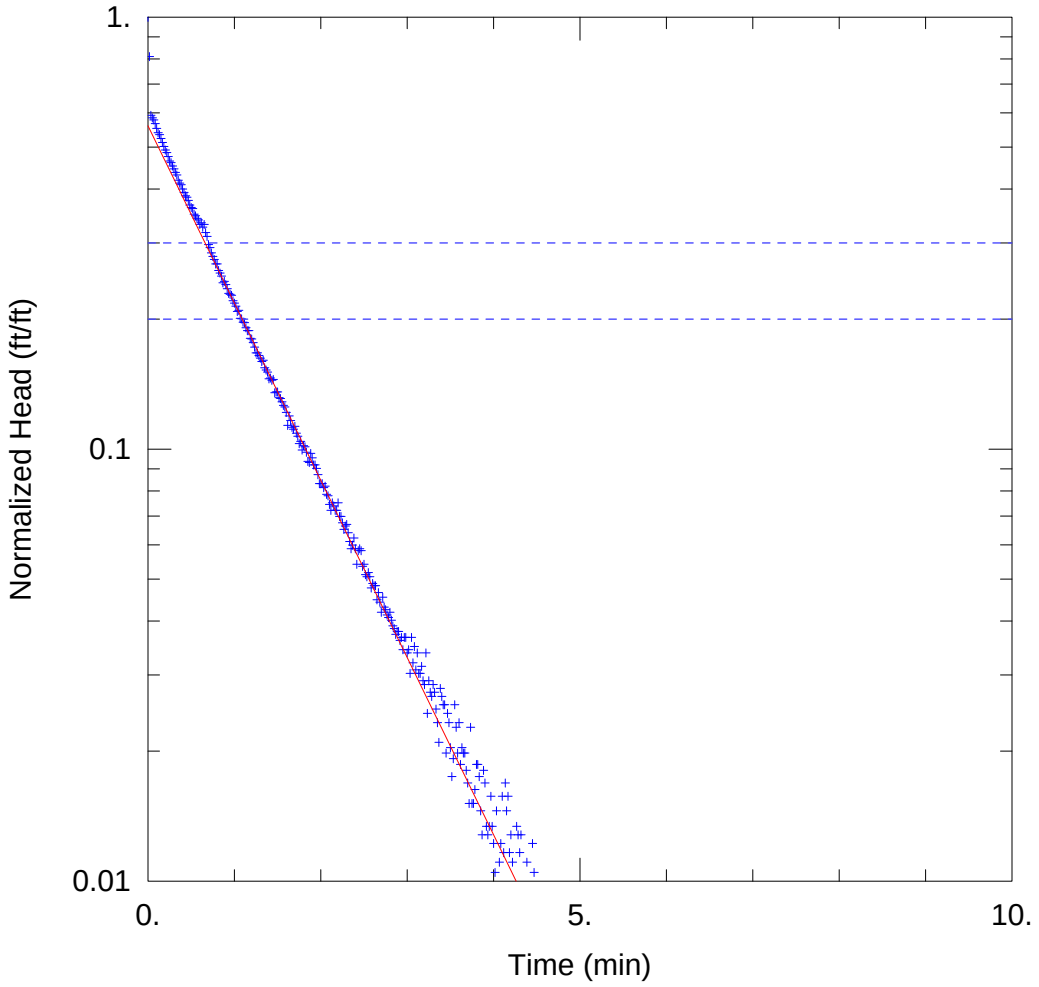
Saturated Thickness: 68.1 ft
Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (MW-117M)

Initial Displacement: 1.744 ft
Total Well Penetration Depth: 68.1 ft
Casing Radius: 0.167 ft
Static Water Column Height: 68.1 ft
Screen Length: 25. ft
Well Radius: 0.4167 ft

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice
K = 2.041 ft/day
y0 = 0.8828 ft



MW-117M SLUG J RISING HEAD

Data Set: S:\...\MW-117M_SlugJRisingHeadGraphHo.aqt
Date: 07/08/14 Time: 14:18:10

PROJECT INFORMATION

Company: Rio Algom
Project: 1350.21
Location: Lisbon
Test Well: MW-117M
Test Date: 03 Oct 2013

AQUIFER DATA

Saturated Thickness: 68.1 ft Anisotropy Ratio (Kz/Kr): 1.

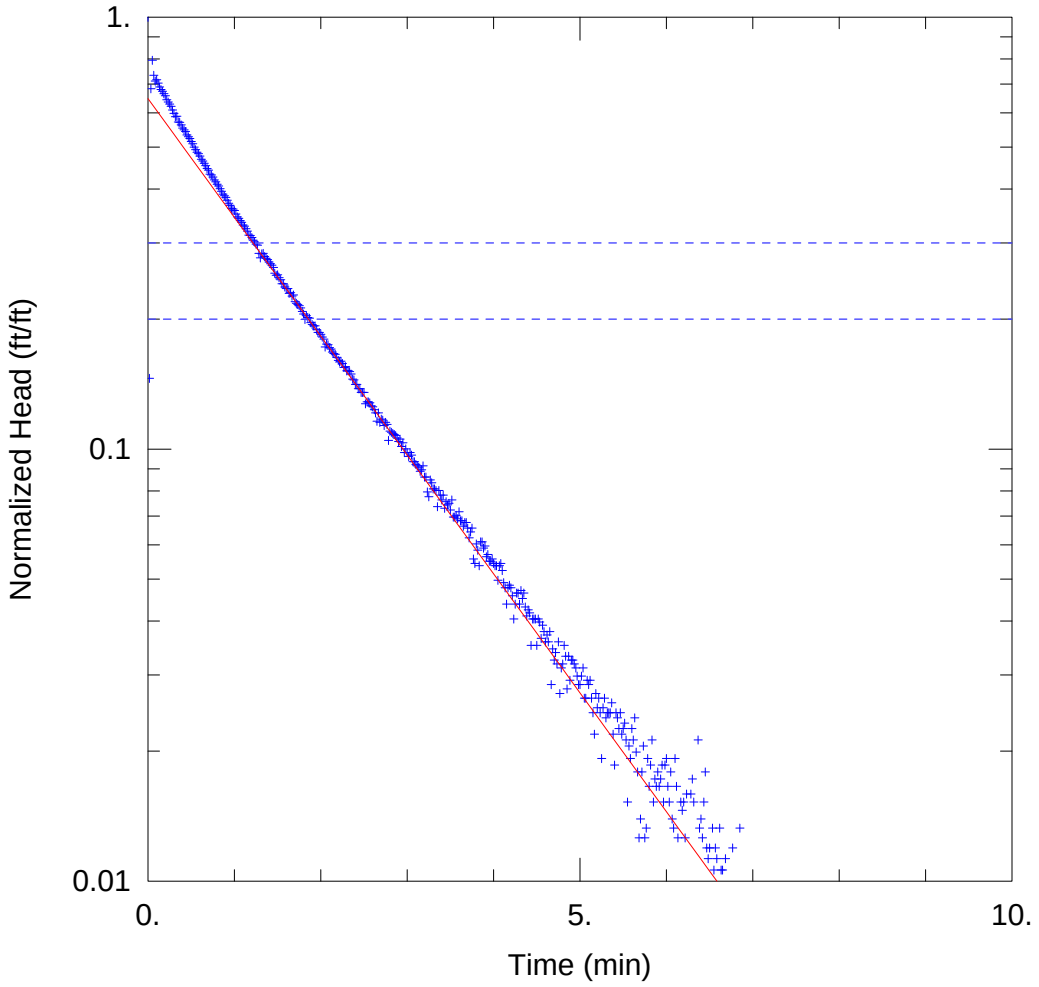
WELL DATA (MW-117M)

Initial Displacement: 1.718 ft
Total Well Penetration Depth: 68.1 ft
Casing Radius: 0.167 ft
Static Water Column Height: 68.1 ft
Screen Length: 25. ft
Well Radius: 0.4167 ft

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice

K = 2.856 ft/day
y0 = 0.9624 ft



MW-117M SLUG K FALLING HEAD

Data Set: S:\...\MW-117M_SlugKFallingHeadGraphHo.aqt
Date: 07/08/14 Time: 14:18:59

PROJECT INFORMATION

Company: Rio Algom
Project: 1350.21
Location: Lisbon
Test Well: MW-117M
Test Date: 03 Oct 2013

AQUIFER DATA

Saturated Thickness: 68.1 ft Anisotropy Ratio (Kz/Kr): 1.

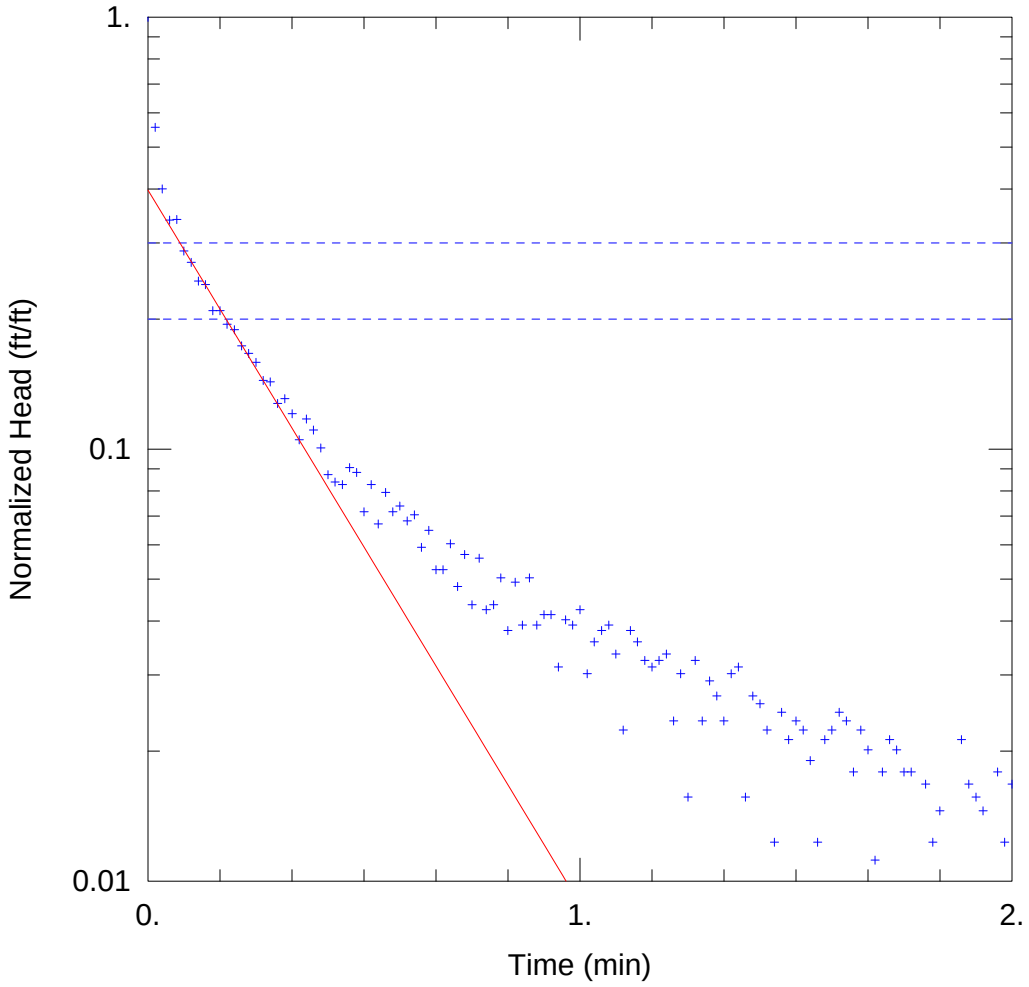
WELL DATA (MW-117M)

Initial Displacement: 1.508 ft
Total Well Penetration Depth: 68.1 ft
Casing Radius: 0.167 ft
Static Water Column Height: 68.1 ft
Screen Length: 25. ft
Well Radius: 0.4167 ft

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice

K = 1.915 ft/day
y0 = 0.9769 ft



MW-117S SLUG D FALLING HEAD

Data Set: S:\...\MW-117S_SlugDFallingHeadGraphHo.aqt
Date: 07/08/14 Time: 16:02:07

PROJECT INFORMATION

Company: Rio Algom
Project: 1350.21
Location: Lisbon
Test Well: MW-117S
Test Date: 03 Oct 2013

AQUIFER DATA

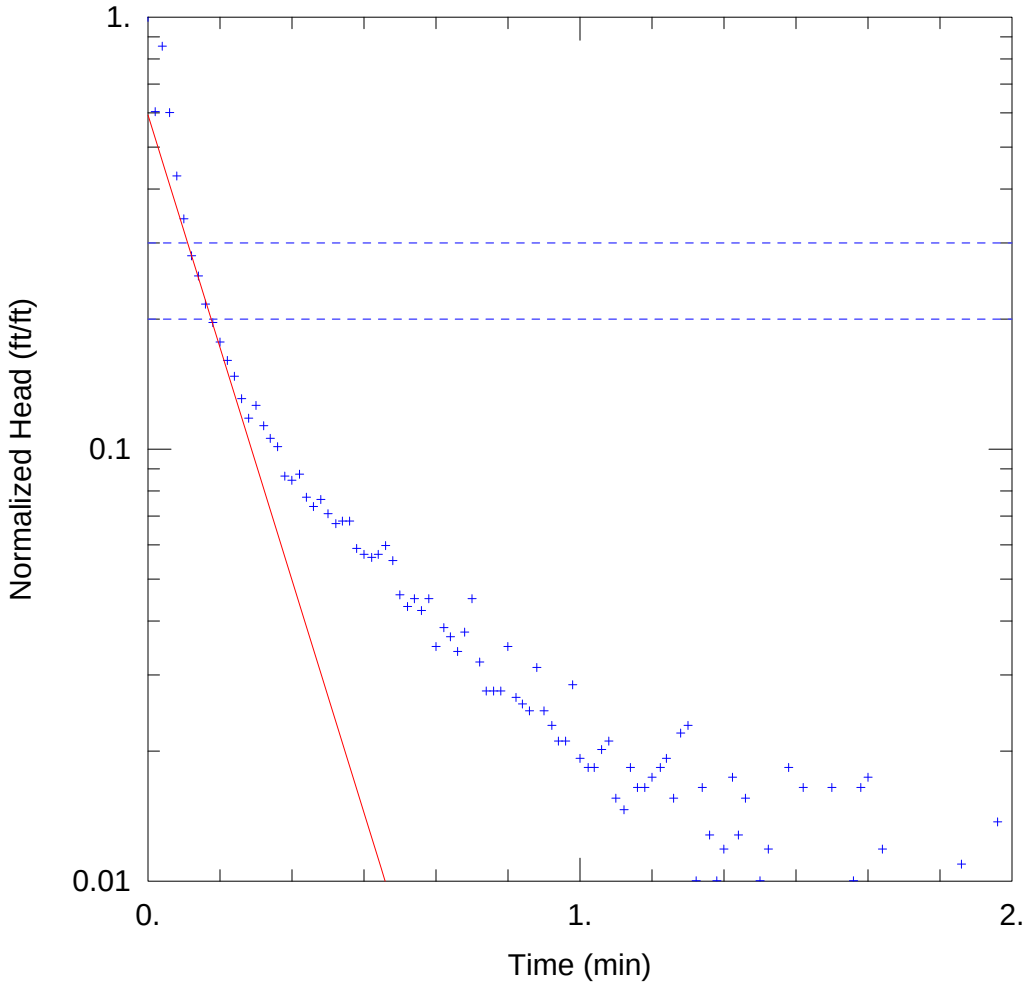
Saturated Thickness: 44.04 ft
Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (MW-117S)

Initial Displacement: 0.894 ft
Total Well Penetration Depth: 44.04 ft
Casing Radius: 0.167 ft
Static Water Column Height: 44.04 ft
Screen Length: 44.04 ft
Well Radius: 0.4167 ft

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice
K = 6.225 ft/day
y0 = 0.3555 ft



MW-117S SLUG D RISING HEAD

Data Set: S:\...\MW-117S_SlugDRisingHeadGraphHo.aqt
Date: 07/08/14 Time: 16:02:45

PROJECT INFORMATION

Company: Rio Algom
Project: 1350.21
Location: Lisbon
Test Well: MW-117S
Test Date: 03 Oct 2013

AQUIFER DATA

Saturated Thickness: 44.04 ft Anisotropy Ratio (Kz/Kr): 1.

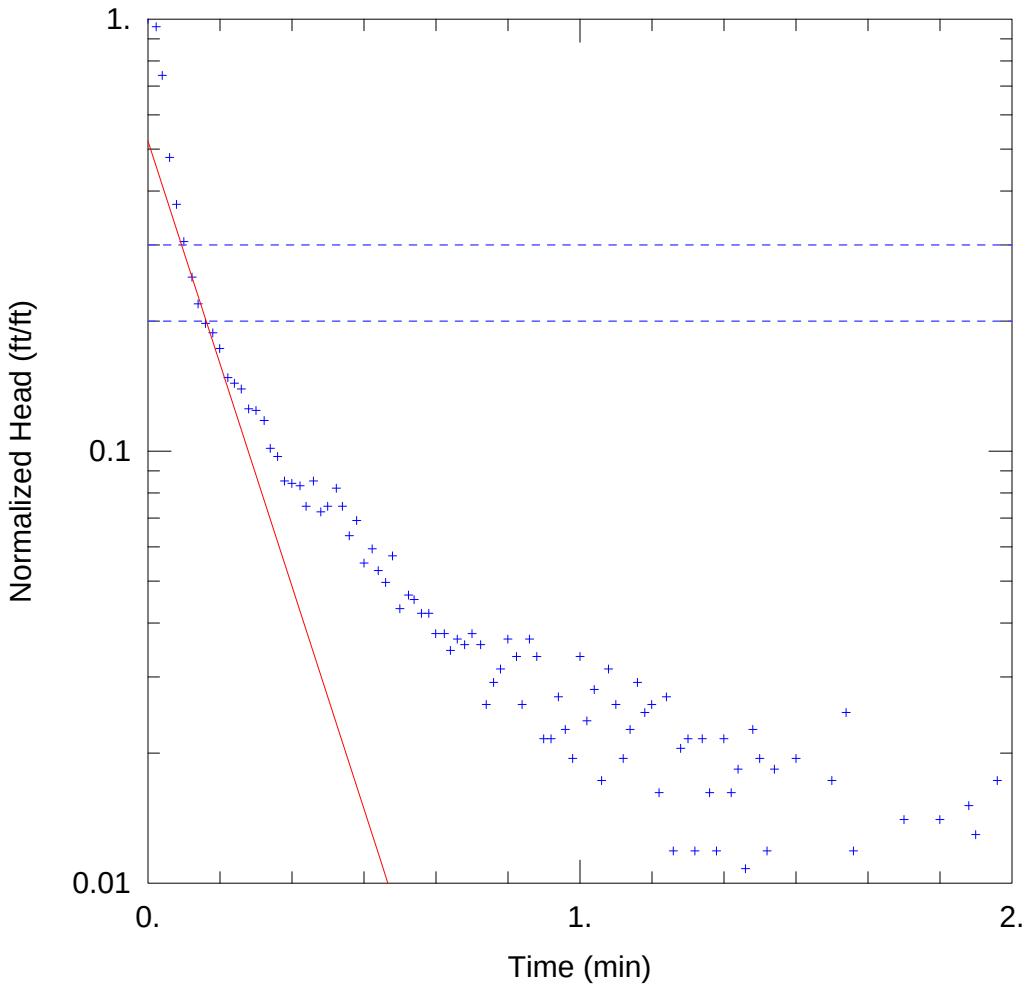
WELL DATA (MW-117S)

Initial Displacement: 1.084 ft
Total Well Penetration Depth: 44.04 ft
Casing Radius: 0.167 ft
Static Water Column Height: 44.04 ft
Screen Length: 44.04 ft
Well Radius: 0.4167 ft

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice

K = 12.17 ft/day
y0 = 0.6436 ft



MW-117S SLUG K RISING HEAD

Data Set: S:\...\MW-117S_SlugKRisingHeadGraphHo.aqt
Date: 07/08/14 Time: 16:07:03

PROJECT INFORMATION

Company: Rio Algom
Project: 1350.21
Location: Lisbon
Test Well: MW-117S
Test Date: 03 Oct 2013

AQUIFER DATA

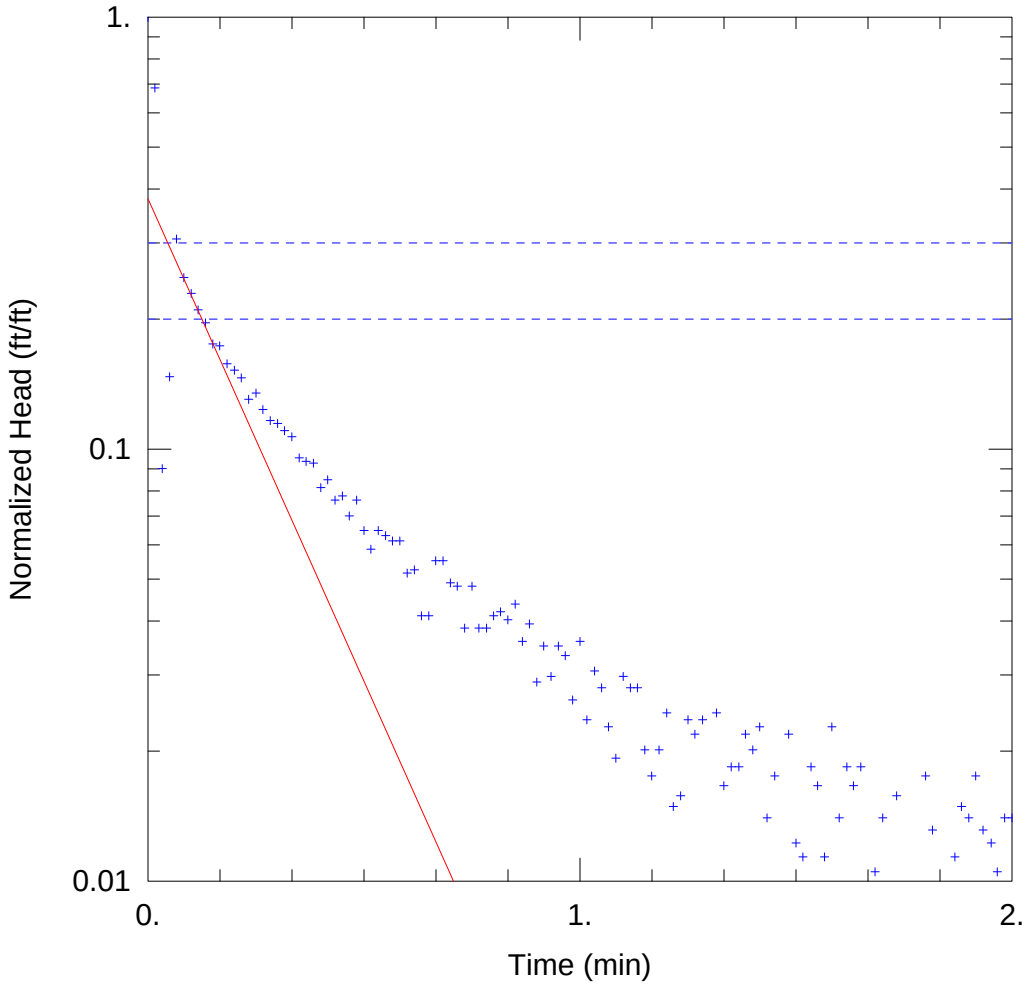
Saturated Thickness: 44.04 ft
Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (MW-117S)

Initial Displacement: 0.926 ft
Total Well Penetration Depth: 44.04 ft
Casing Radius: 0.167 ft
Static Water Column Height: 44.04 ft
Screen Length: 44.04 ft
Well Radius: 0.4167 ft

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice
K = 11.65 ft/day
y0 = 0.4831 ft



MW-117S SLUG L FALLING HEAD

Data Set: S:\...\MW-117S_SlugLFallingHeadGraphHo.aqt
Date: 07/08/14 Time: 16:07:46

PROJECT INFORMATION

Company: Rio Algom
Project: 1350.21
Location: Lisbon
Test Well: MW-117S
Test Date: 03 Oct 2013

AQUIFER DATA

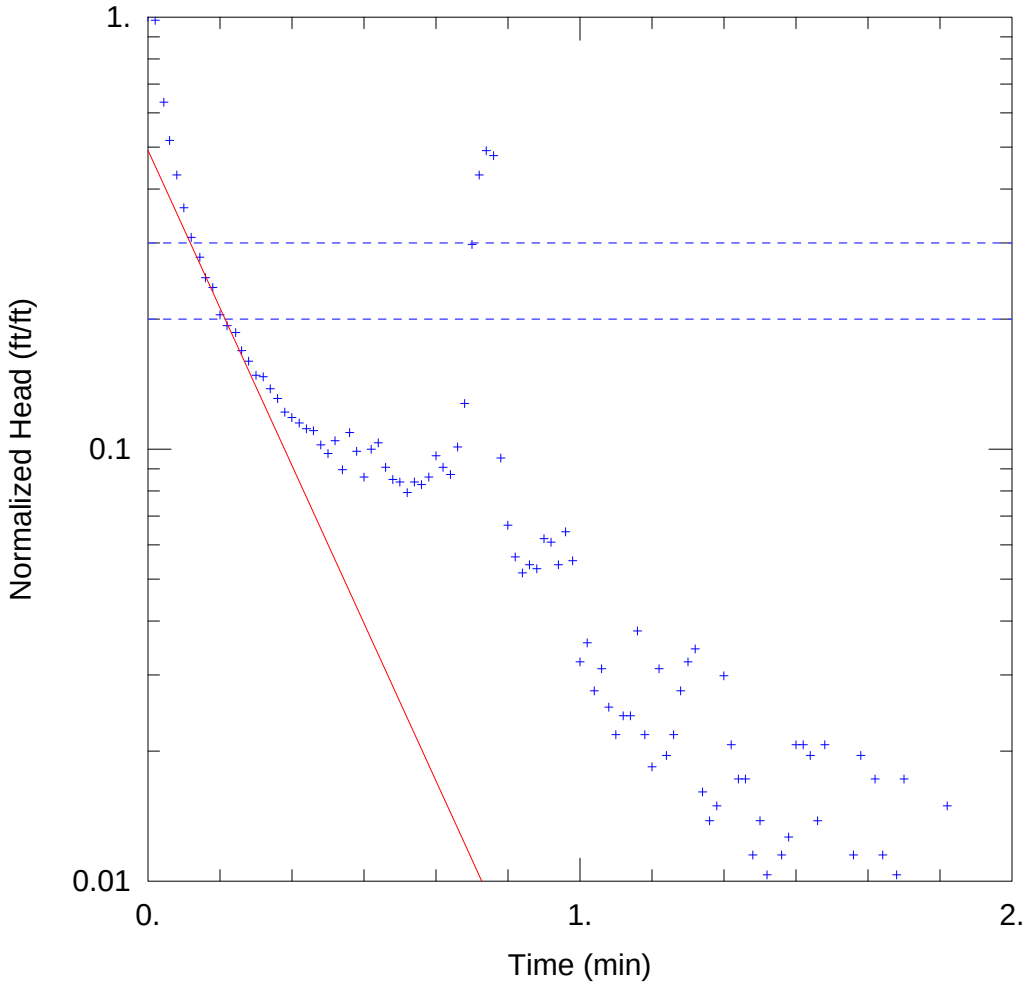
Saturated Thickness: 44.04 ft
Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (MW-117S)

Initial Displacement: 1.142 ft
Total Well Penetration Depth: 44.04 ft
Casing Radius: 0.167 ft
Static Water Column Height: 44.04 ft
Screen Length: 44.04 ft
Well Radius: 0.4167 ft

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice
K = 8.416 ft/day
y0 = 0.4338 ft



MW-117S SLUG L RISING HEAD

Data Set: S:\...\MW-117S_SlugLRisingHeadGraphHo.aqt
Date: 07/08/14 Time: 16:08:15

PROJECT INFORMATION

Company: Rio Algom
Project: 1350.21
Location: Lisbon
Test Well: MW-117S
Test Date: 03 Oct 2013

AQUIFER DATA

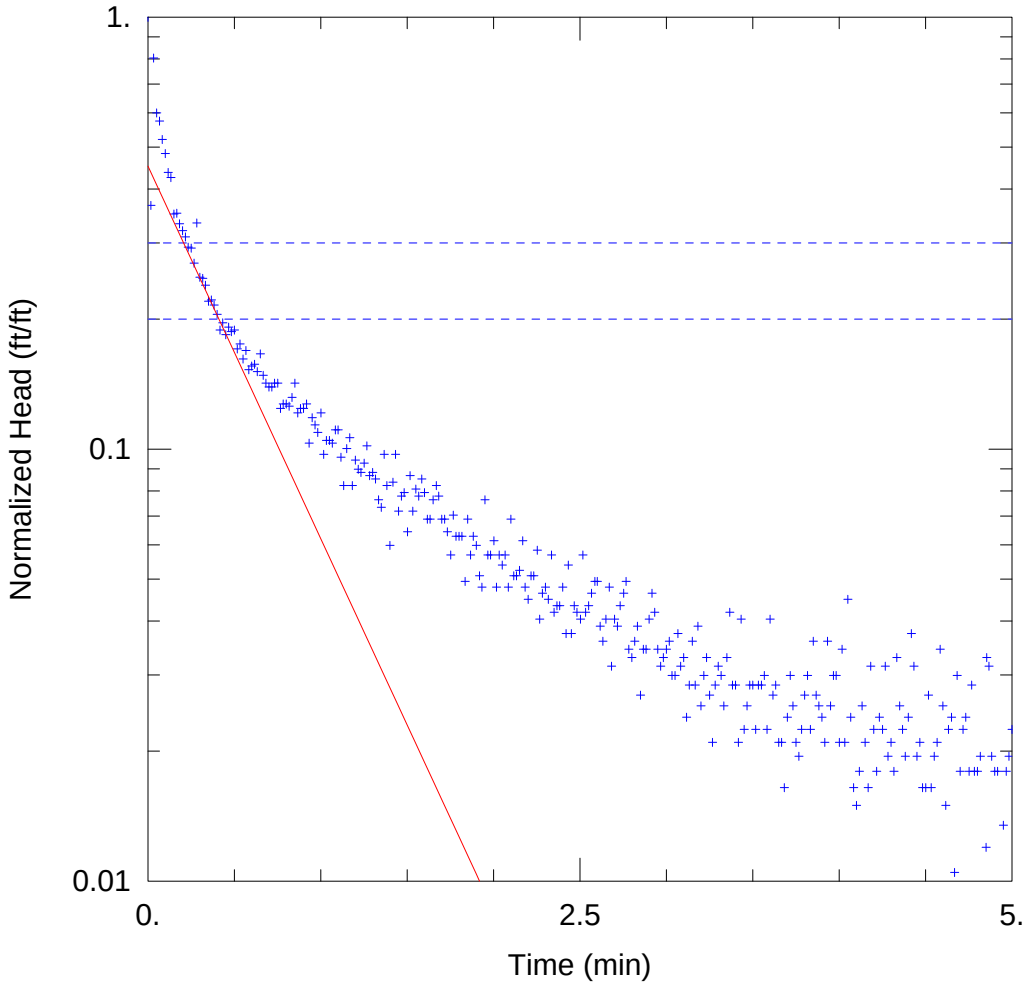
Saturated Thickness: 44.04 ft
Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (MW-117S)

Initial Displacement: 0.87 ft
Total Well Penetration Depth: 44.04 ft
Casing Radius: 0.167 ft
Static Water Column Height: 44.04 ft
Screen Length: 44.04 ft
Well Radius: 0.4167 ft

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice
K = 8.249 ft/day
y0 = 0.4279 ft



MW-118 SLUG C FALLING HEAD

Data Set: S:\...\MW-118_SlugCFallingHeadGraphHo.aqt
Date: 07/08/14 Time: 16:15:13

PROJECT INFORMATION

Company: Rio Algom
Project: 1350.21
Location: Lisbon
Test Well: MW-118
Test Date: 01 Oct 2013

AQUIFER DATA

Saturated Thickness: 56.67 ft Anisotropy Ratio (Kz/Kr): 1.

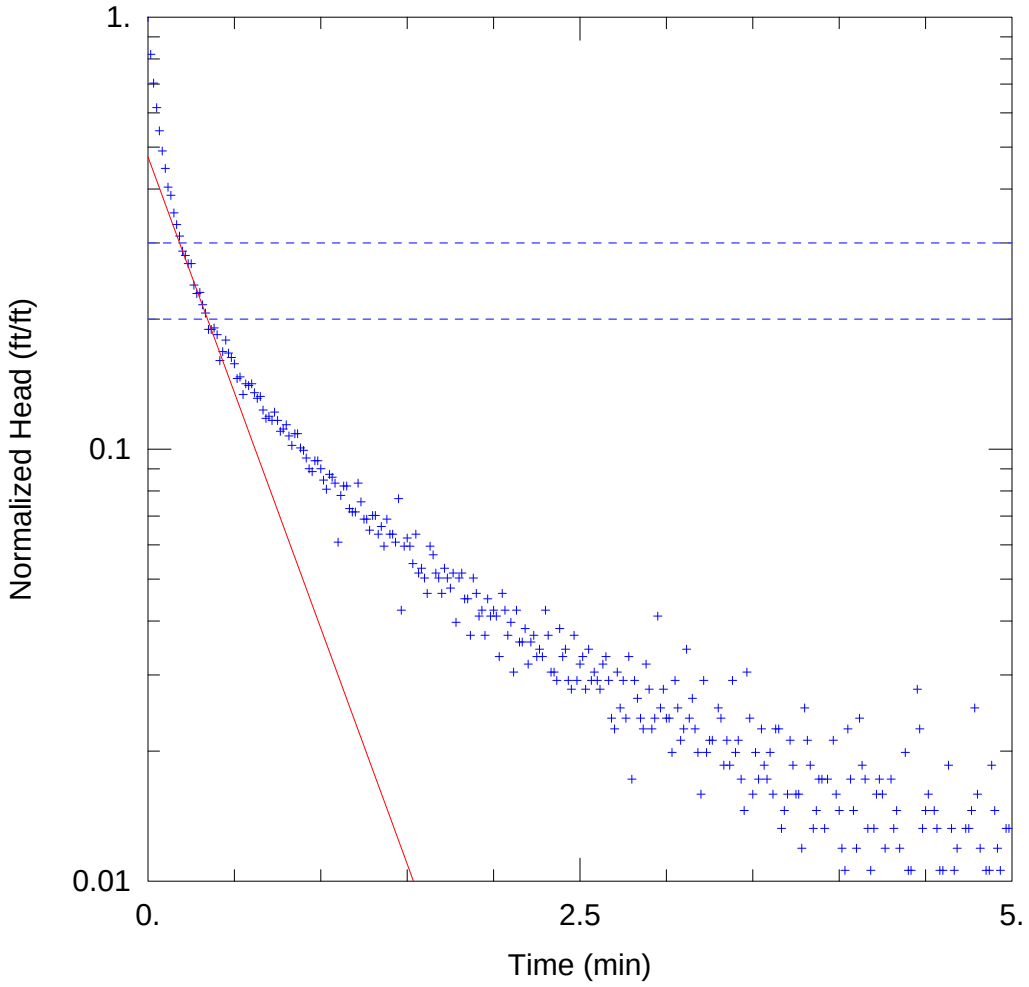
WELL DATA (MW-118)

Initial Displacement: 0.668 ft Static Water Column Height: 50.67 ft
Total Well Penetration Depth: 56.67 ft Screen Length: 56.67 ft
Casing Radius: 0.167 ft Well Radius: 0.333 ft

SOLUTION

Aquifer Model: Unconfined Solution Method: Bouwer-Rice

K = 2.805 ft/day y0 = 0.3018 ft



MW-118 SLUG C RISING HEAD

Data Set: S:\...\MW-118_SlugCRisingHeadGraphHo.aqt
Date: 07/08/14 Time: 16:15:48

PROJECT INFORMATION

Company: Rio Algom
Project: 1350.21
Location: Lisbon
Test Well: MW-118
Test Date: 01 Oct 2013

AQUIFER DATA

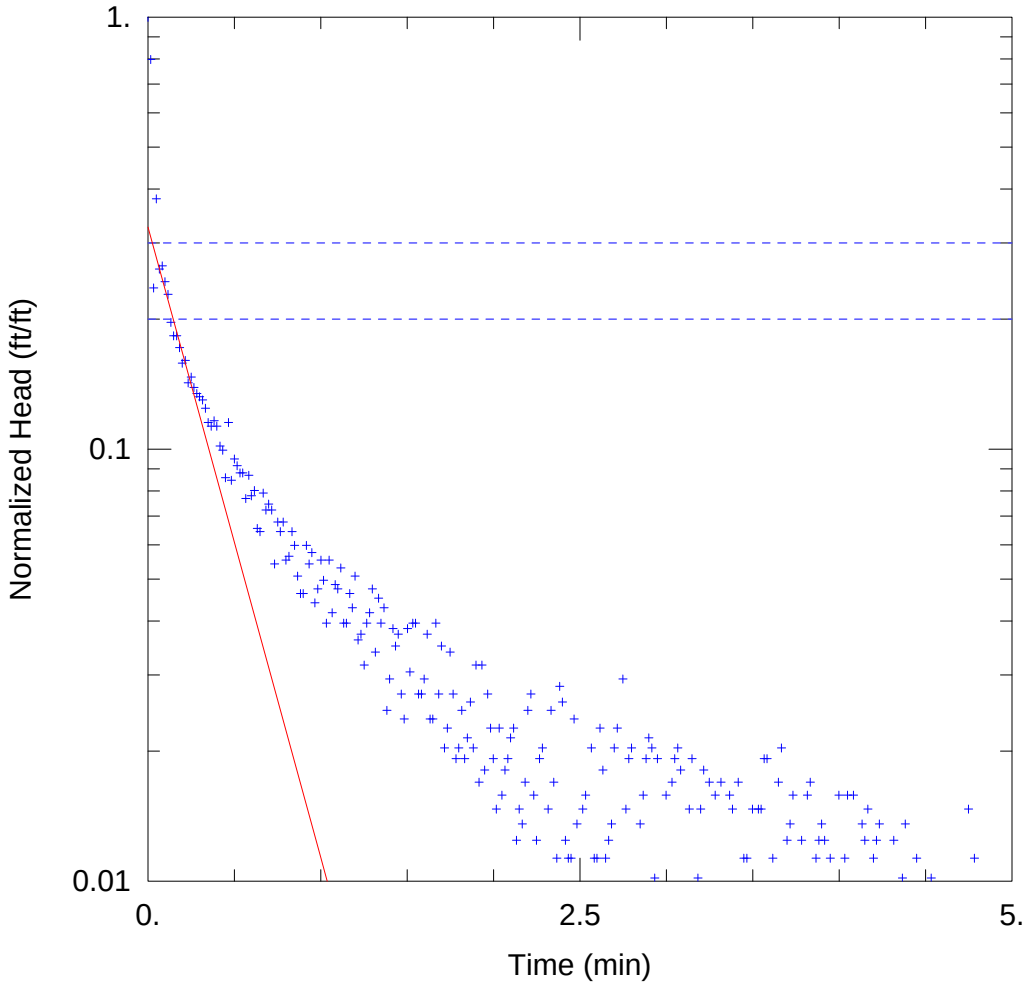
Saturated Thickness: 56.67 ft
Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (MW-118)

Initial Displacement: 0.755 ft
Total Well Penetration Depth: 56.67 ft
Casing Radius: 0.167 ft
Static Water Column Height: 50.67 ft
Screen Length: 56.67 ft
Well Radius: 0.333 ft

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice
K = 3.549 ft/day
y0 = 0.3585 ft



MW-118 SLUG F FALLING HEAD

Data Set: S:\...\MW-118_SlugFFallingHeadSlugHo.aqt
Date: 07/08/14 Time: 16:16:26

PROJECT INFORMATION

Company: Rio Algom
Project: 1350.21
Location: Lisbon
Test Well: MW-118
Test Date: 01 Oct 2013

AQUIFER DATA

Saturated Thickness: 56.67 ft Anisotropy Ratio (Kz/Kr): 1.

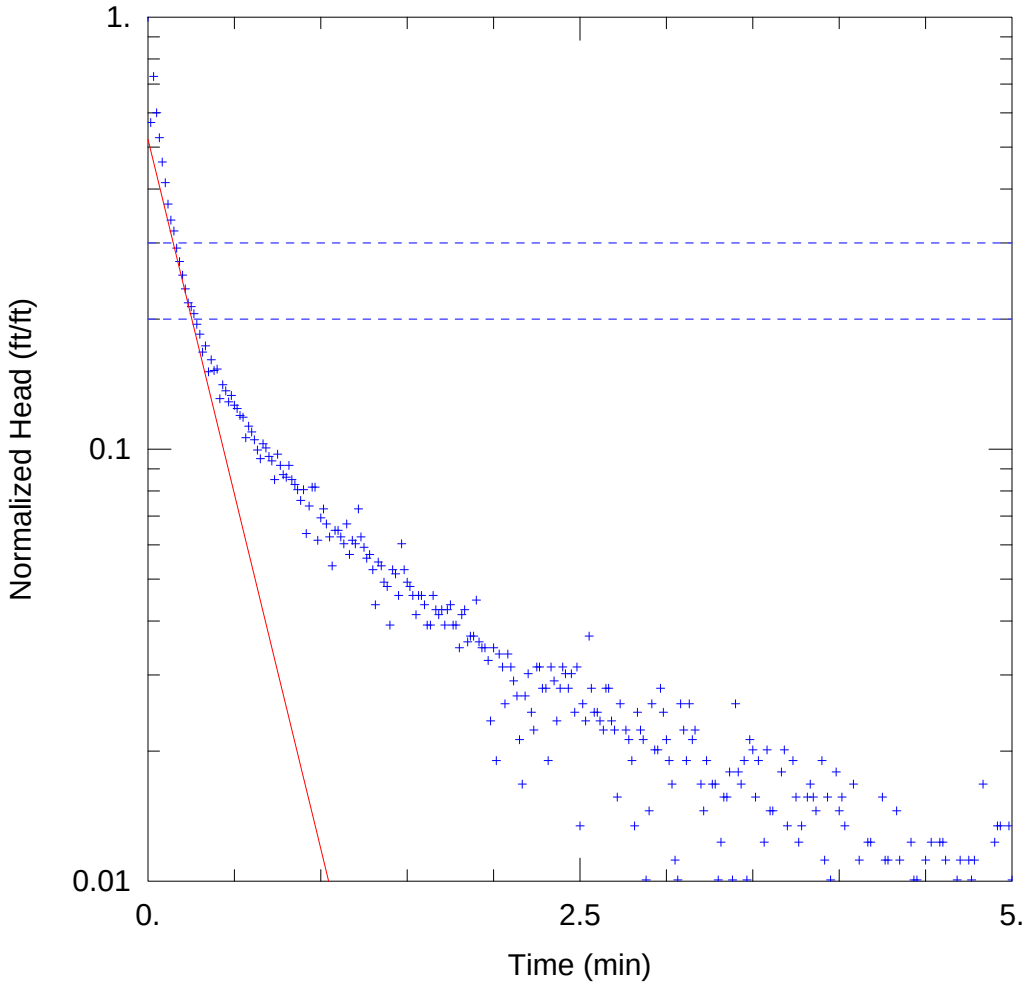
WELL DATA (MW-118)

Initial Displacement: 0.885 ft Static Water Column Height: 50.67 ft
Total Well Penetration Depth: 56.67 ft Screen Length: 56.67 ft
Casing Radius: 0.167 ft Well Radius: 0.333 ft

SOLUTION

Aquifer Model: Unconfined Solution Method: Bouwer-Rice

K = 4.746 ft/day y0 = 0.2888 ft



MW-118 SLUG F RISING HEAD

Data Set: S:\...\MW-118_SlugFRisingHeadGraphHo.aqt
Date: 07/08/14 Time: 16:17:38

PROJECT INFORMATION

Company: Rio Algom
Project: 1350.21
Location: Lisbon
Test Well: MW-118
Test Date: 01 Oct 2013

AQUIFER DATA

Saturated Thickness: 56.67 ft Anisotropy Ratio (Kz/Kr): 1.

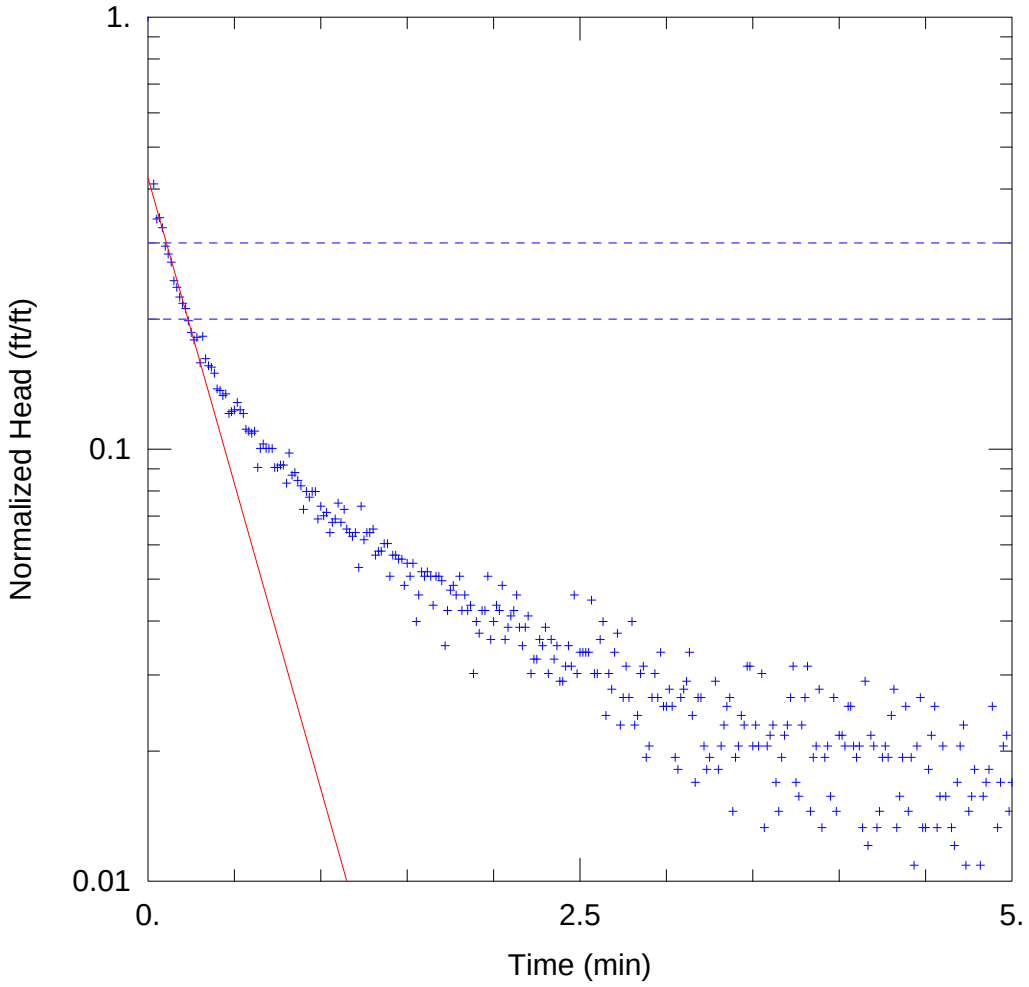
WELL DATA (MW-118)

Initial Displacement: 0.894 ft Static Water Column Height: 50.67 ft
Total Well Penetration Depth: 56.67 ft Screen Length: 56.67 ft
Casing Radius: 0.167 ft Well Radius: 0.333 ft

SOLUTION

Aquifer Model: Unconfined Solution Method: Bouwer-Rice

K = 5.342 ft/day y0 = 0.4663 ft



MW-118 SLUG I FALLING HEAD

Data Set: S:\...\MW-118_SlugIFallingHeadSlugHo.aqt
Date: 07/08/14 Time: 18:21:46

PROJECT INFORMATION

Company: Rio Algom
Project: 1350.21
Location: Lisbon
Test Well: MW-118
Test Date: 01 Oct 2013

AQUIFER DATA

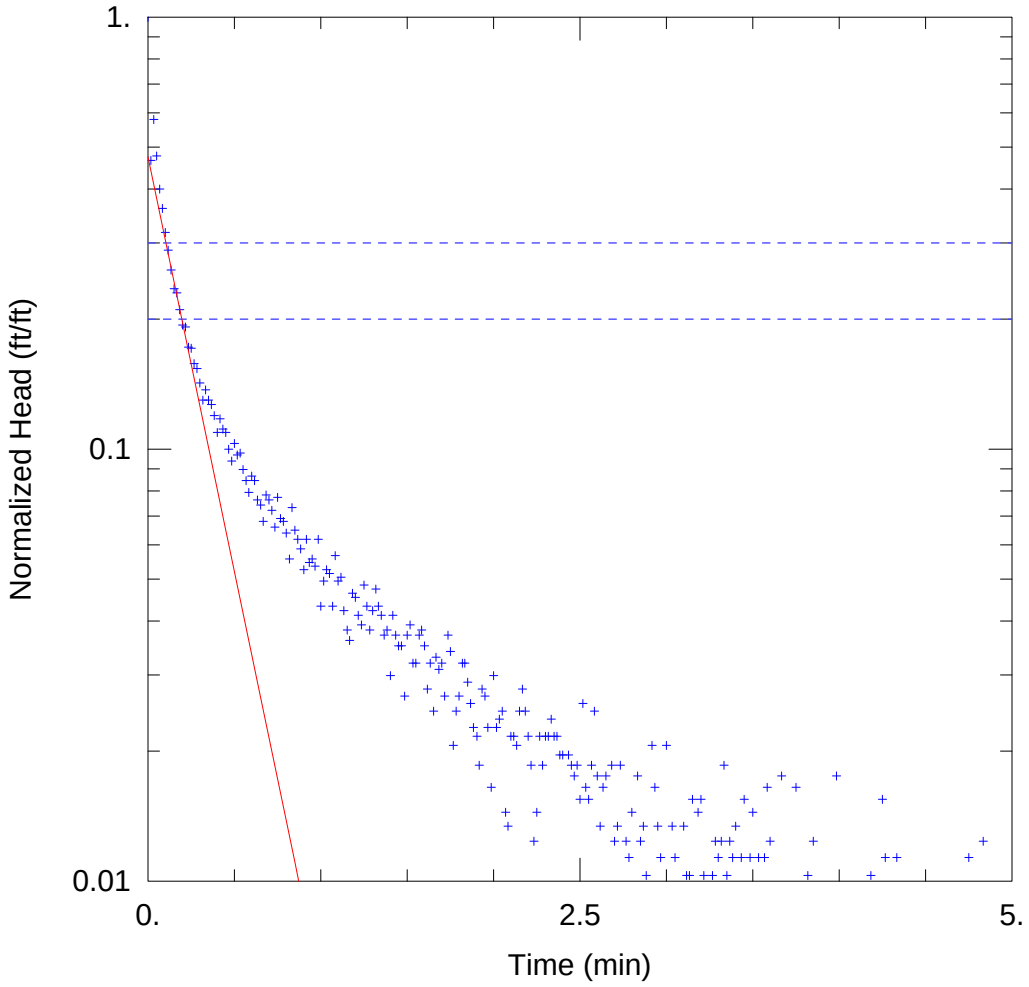
Saturated Thickness: 56.67 ft
Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (MW-118)

Initial Displacement: 0.827 ft
Total Well Penetration Depth: 56.67 ft
Casing Radius: 0.167 ft
Static Water Column Height: 50.67 ft
Screen Length: 56.67 ft
Well Radius: 0.333 ft

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice
K = 4.601 ft/day
y0 = 0.351 ft



MW-118 SLUG I RISING HEAD

Data Set: S:\...\MW-118_SlugIRisingHeadGraphHo.aqt
Date: 07/08/14 Time: 18:22:21

PROJECT INFORMATION

Company: Rio Algom
Project: 1350.21
Location: Lisbon
Test Well: MW-118
Test Date: 01 Oct 2013

AQUIFER DATA

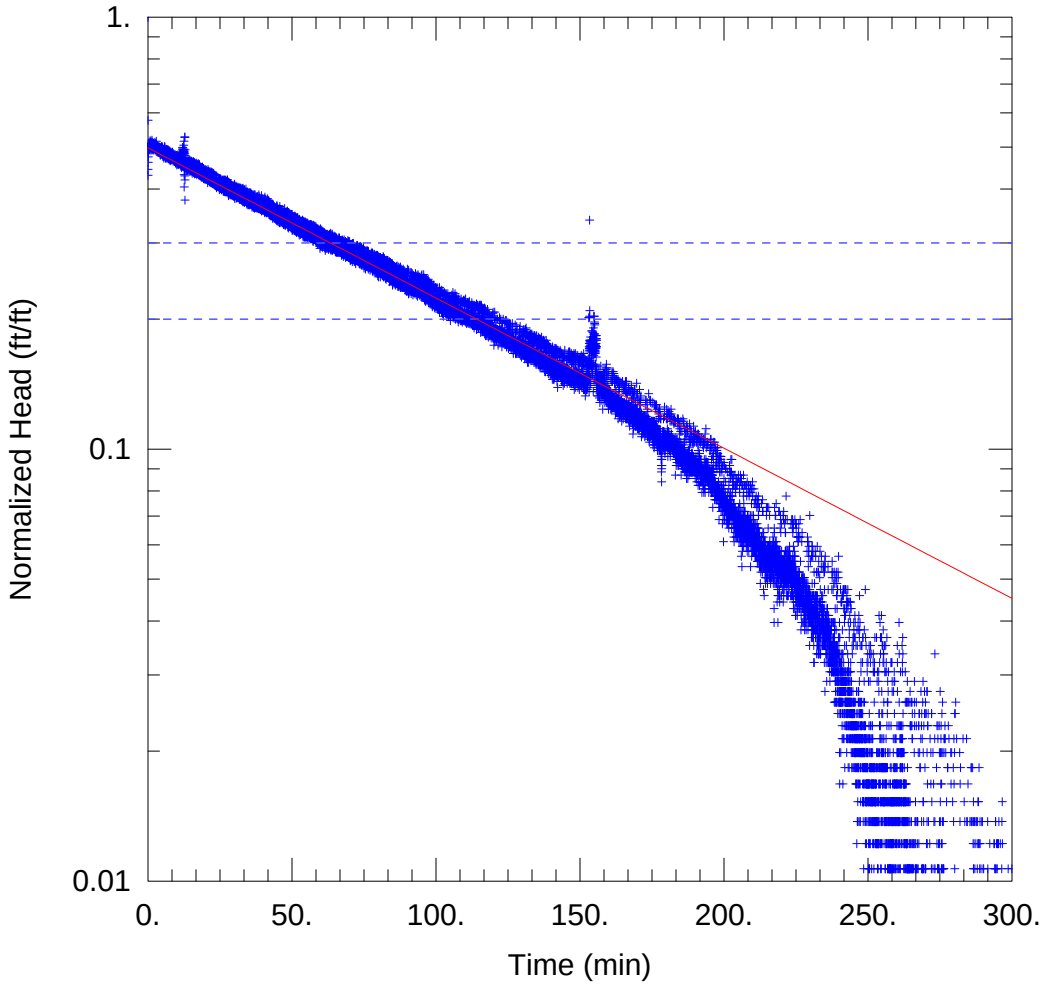
Saturated Thickness: 56.67 ft
Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (MW-118)

Initial Displacement: 0.97 ft
Total Well Penetration Depth: 56.67 ft
Casing Radius: 0.167 ft
Static Water Column Height: 50.67 ft
Screen Length: 56.67 ft
Well Radius: 0.333 ft

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice
K = 6.246 ft/day
y0 = 0.4607 ft



MW-119 SLUG G FALLING HEAD

Data Set: S:\...\MW-119_SlugGFallingHeadGraphHo.aqt
Date: 07/08/14 Time: 18:23:10

PROJECT INFORMATION

Company: Rio Algom
Project: 1350.22
Location: Lisbon
Test Well: MW-109
Test Date: 1 Oct 2013

AQUIFER DATA

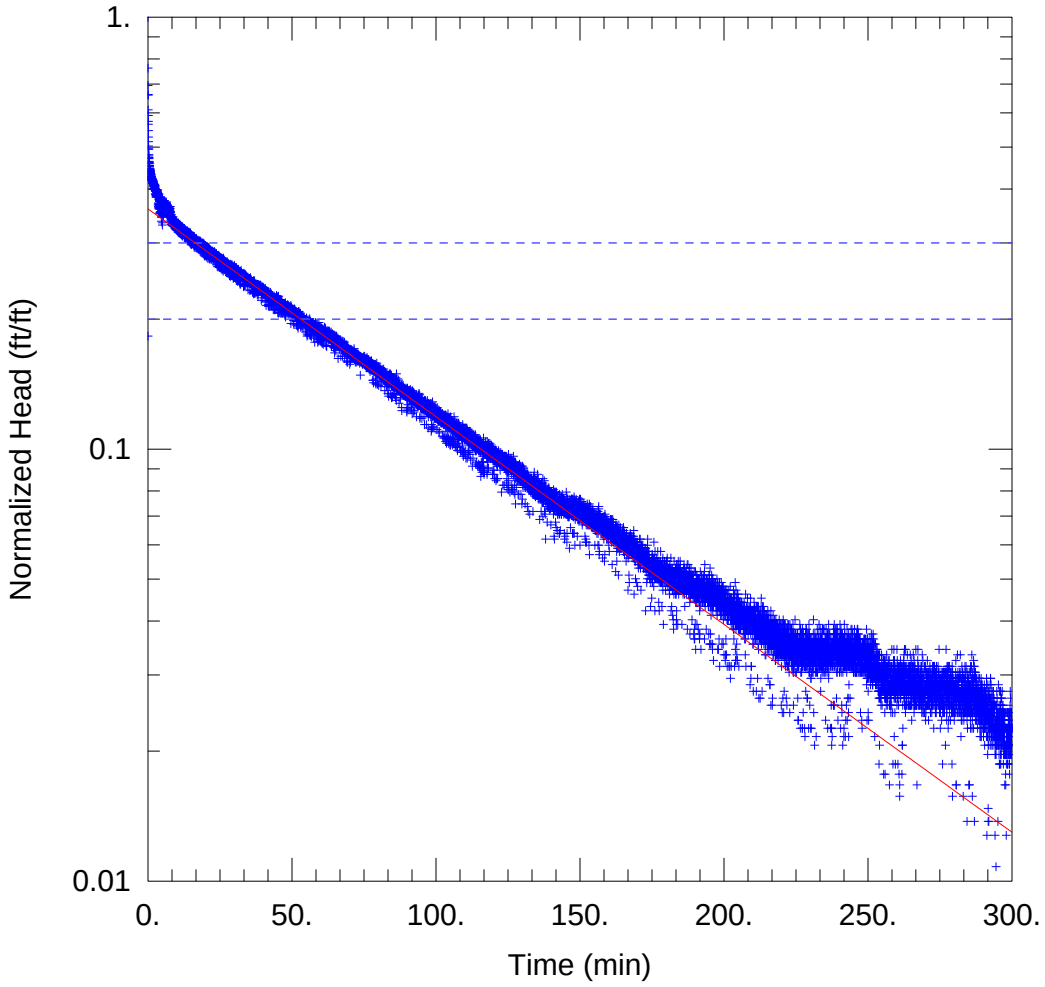
Saturated Thickness: 4.19 ft
Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (MW-119)

Initial Displacement: 0.655 ft
Total Well Penetration Depth: 23.74 ft
Casing Radius: 0.167 ft
Static Water Column Height: 4.19 ft
Screen Length: 19.55 ft
Well Radius: 0.333 ft

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice
K = 0.1038 ft/day
y0 = 0.3263 ft



MW-119 SLUG G RISING HEAD

Data Set: S:\...\MW-119_SlugGRisingHeadGraphHo.aqt
Date: 07/08/14 Time: 18:23:52

PROJECT INFORMATION

Company: Rio Algom
Project: 1350.22
Location: Lisbon
Test Well: MW-109
Test Date: 1 Oct 2013

AQUIFER DATA

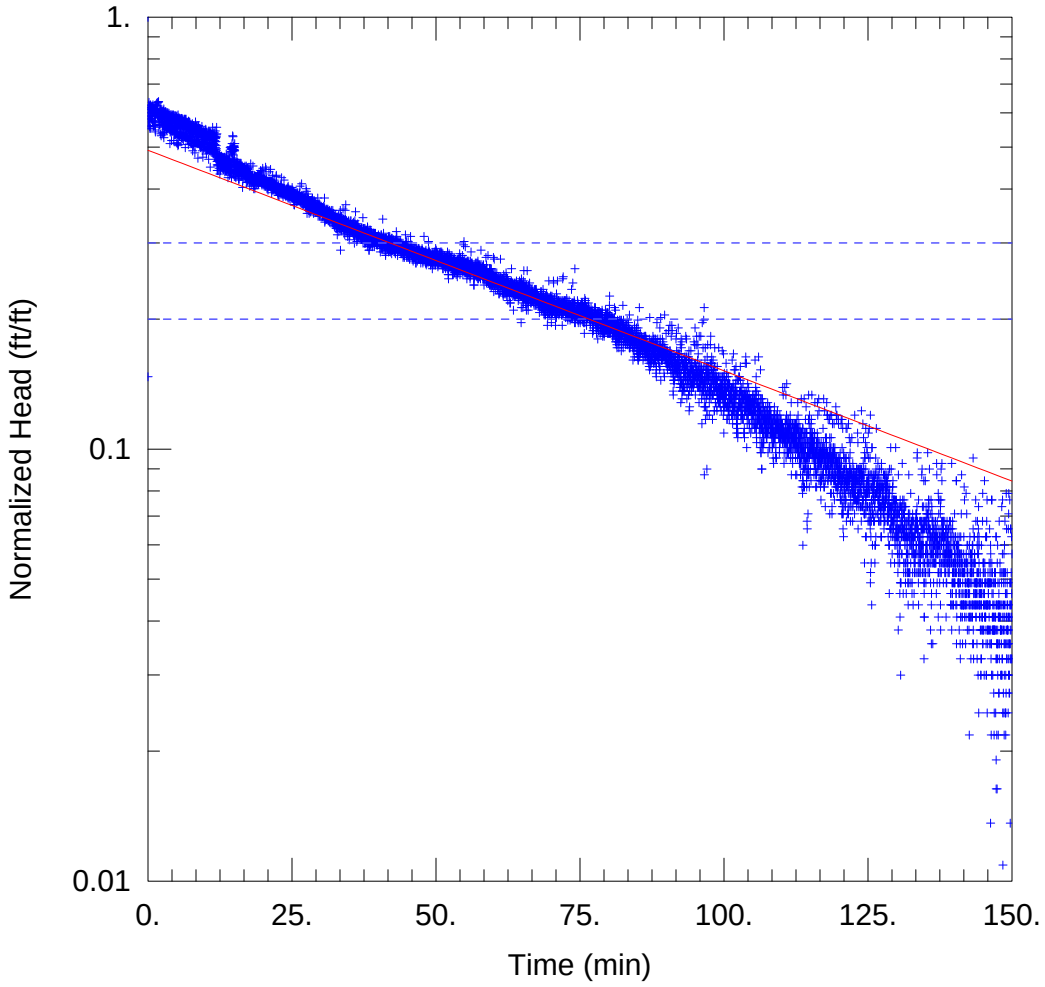
Saturated Thickness: 4.19 ft
Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (MW-119)

Initial Displacement: 1.018 ft
Total Well Penetration Depth: 23.74 ft
Casing Radius: 0.167 ft
Static Water Column Height: 4.19 ft
Screen Length: 19.55 ft
Well Radius: 0.333 ft

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice
K = 0.1436 ft/day
y0 = 0.3662 ft



MW-119 SLUG H FALLING HEAD

Data Set: S:\...\MW-119_SlugHFallingHeadGraphHo.aqt
Date: 07/08/14 Time: 18:24:32

PROJECT INFORMATION

Company: Rio Algom
Project: 1350.22
Location: Lisbon
Test Well: MW-109
Test Date: 1 Oct 2013

AQUIFER DATA

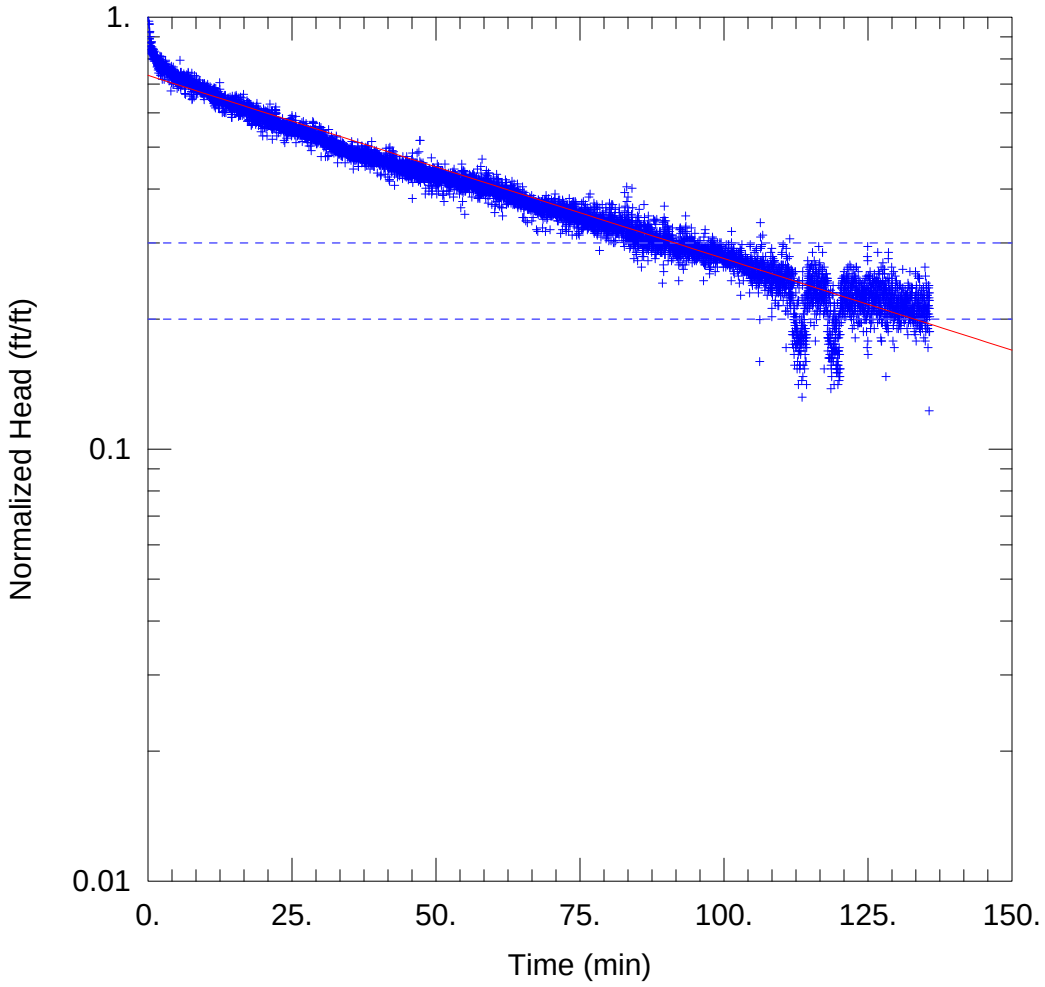
Saturated Thickness: 4.19 ft
Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (MW-119)

Initial Displacement: 0.367 ft
Total Well Penetration Depth: 23.74 ft
Casing Radius: 0.167 ft
Static Water Column Height: 4.19 ft
Screen Length: 19.55 ft
Well Radius: 0.333 ft

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice
K = 0.1524 ft/day
y0 = 0.1805 ft



MW-119 SLUG H RISING HEAD

Data Set: S:\...\MW-119_SlugHRisingHeadSlugHo.aqt
Date: 07/08/14 Time: 18:25:22

PROJECT INFORMATION

Company: Rio Algom
Project: 1350.22
Location: Lisbon
Test Well: MW-109
Test Date: 1 Oct 2013

AQUIFER DATA

Saturated Thickness: 4.19 ft Anisotropy Ratio (Kz/Kr): 1.

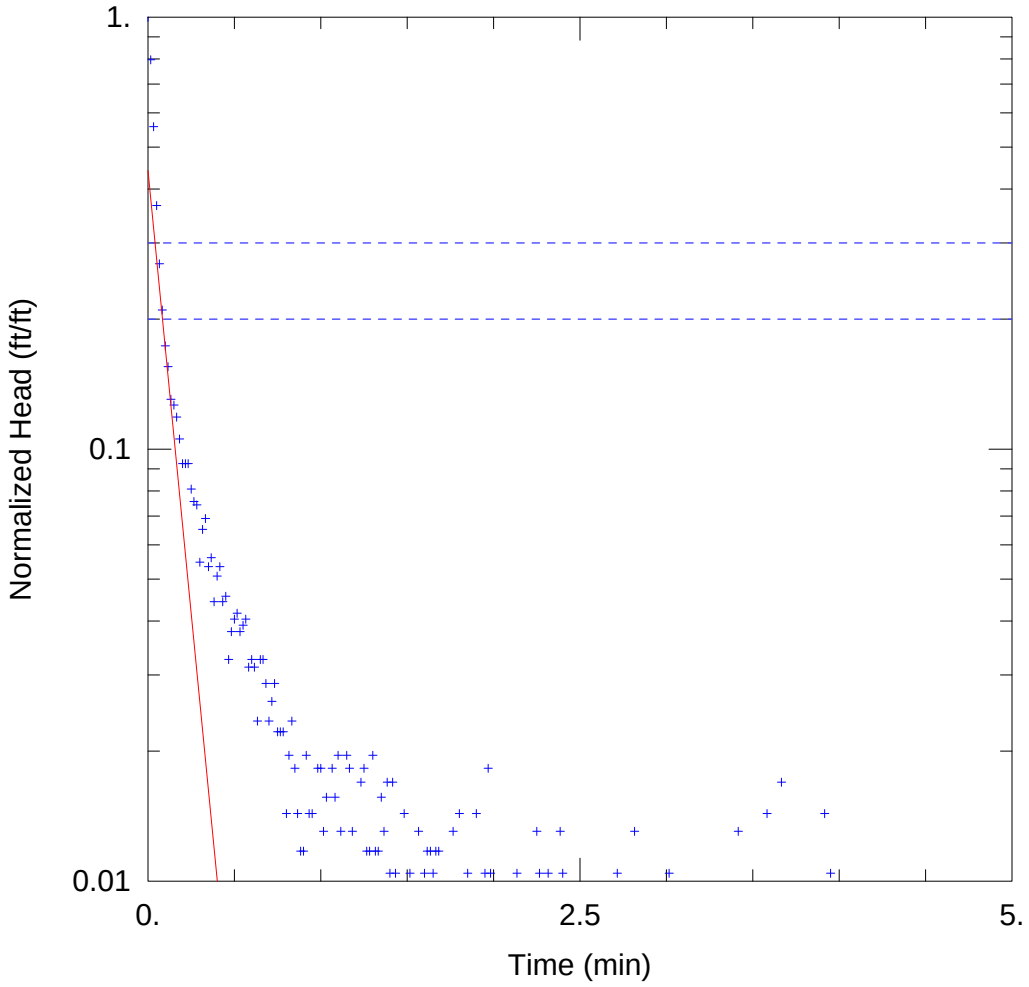
WELL DATA (MW-119)

Initial Displacement: 0.326 ft Static Water Column Height: 4.19 ft
Total Well Penetration Depth: 23.74 ft Screen Length: 19.55 ft
Casing Radius: 0.167 ft Well Radius: 0.333 ft

SOLUTION

Aquifer Model: Unconfined Solution Method: Bouwer-Rice

K = 0.1266 ft/day y0 = 0.239 ft



MW-120 SLUG C RISING HEAD

Data Set: S:\...\MW-120_SlugCRisingHeadGraphHo.aqt
Date: 07/08/14 Time: 18:26:48

PROJECT INFORMATION

Company: Rio Algom
Project: 1350.21
Location: Lisbon
Test Well: MW-120
Test Date: 03 Oct 2013

AQUIFER DATA

Saturated Thickness: 120.7 ft Anisotropy Ratio (Kz/Kr): 1.

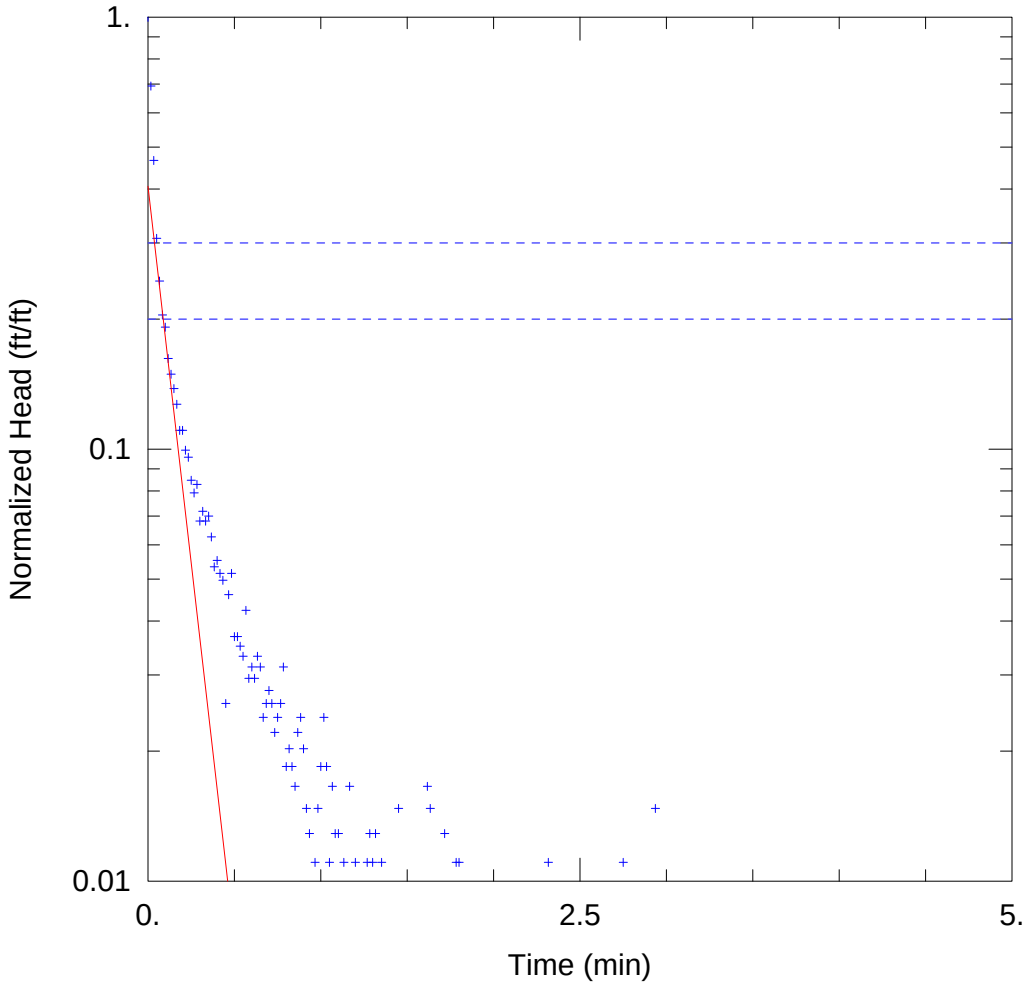
WELL DATA (MW-120)

Initial Displacement: 0.767 ft
Total Well Penetration Depth: 120.7 ft
Casing Radius: 0.167 ft
Static Water Column Height: 120.7 ft
Screen Length: 120.7 ft
Well Radius: 0.333 ft

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice

K = 7.39 ft/day
y0 = 0.3385 ft



MW-120 SLUG F RISING HEAD

Data Set: S:\...\MW-120_SlugFRisingHeadGraphHo.aqt
Date: 07/08/14 Time: 18:28:01

PROJECT INFORMATION

Company: Rio Algom
Project: 1350.21
Location: Lisbon
Test Well: MW-120
Test Date: 03 Oct 2013

AQUIFER DATA

Saturated Thickness: 120.7 ft Anisotropy Ratio (Kz/Kr): 1.

WELL DATA (MW-120)

Initial Displacement: 0.543 ft
Total Well Penetration Depth: 120.7 ft
Casing Radius: 0.167 ft
Static Water Column Height: 120.7 ft
Screen Length: 120.7 ft
Well Radius: 0.333 ft

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice

K = 6.283 ft/day
y0 = 0.2204 ft

MONTGOMERY & ASSOCIATES

APPENDIX G

GROUNDWATER ELEVATION AND CHEMISTRY TIME SERIES PLOTS

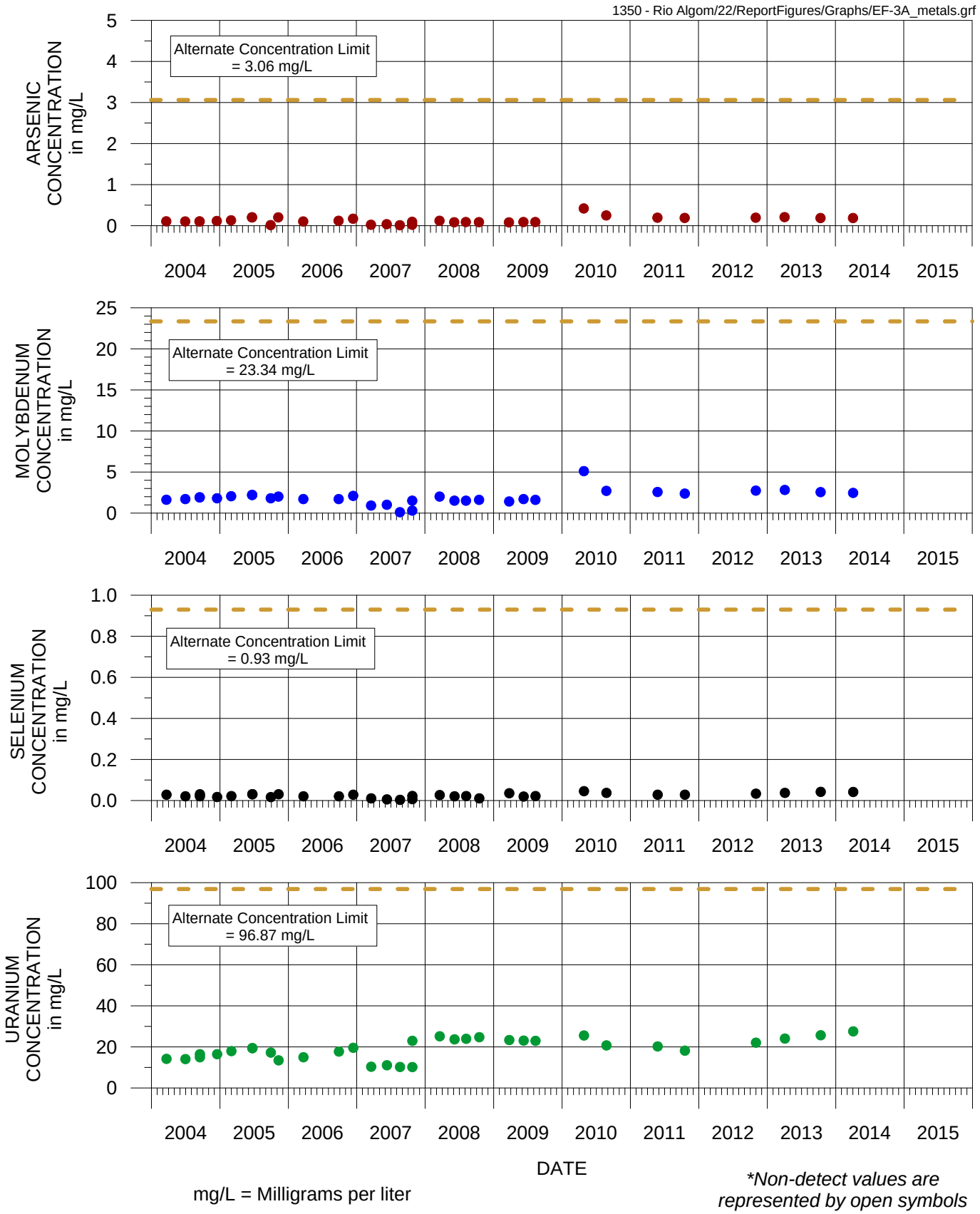
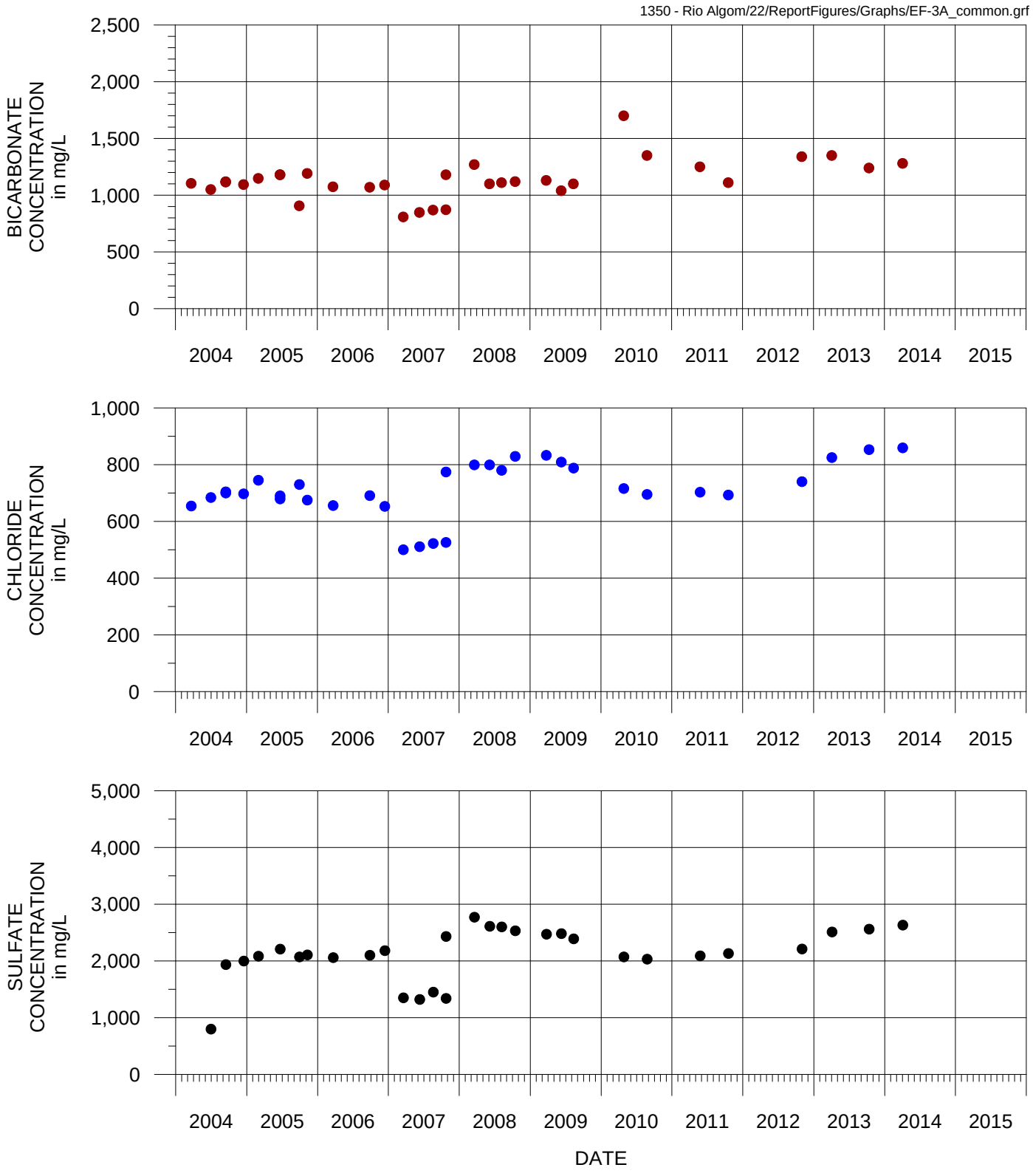


FIGURE G-1. TIME SERIES GRAPHS OF ARSENIC, MOLYBDENUM, SELENIUM, AND URANIUM CONCENTRATIONS FOR POINT OF COMPLIANCE WELL EF-3A RIO ALGOM MINING, LISBON FACILITY

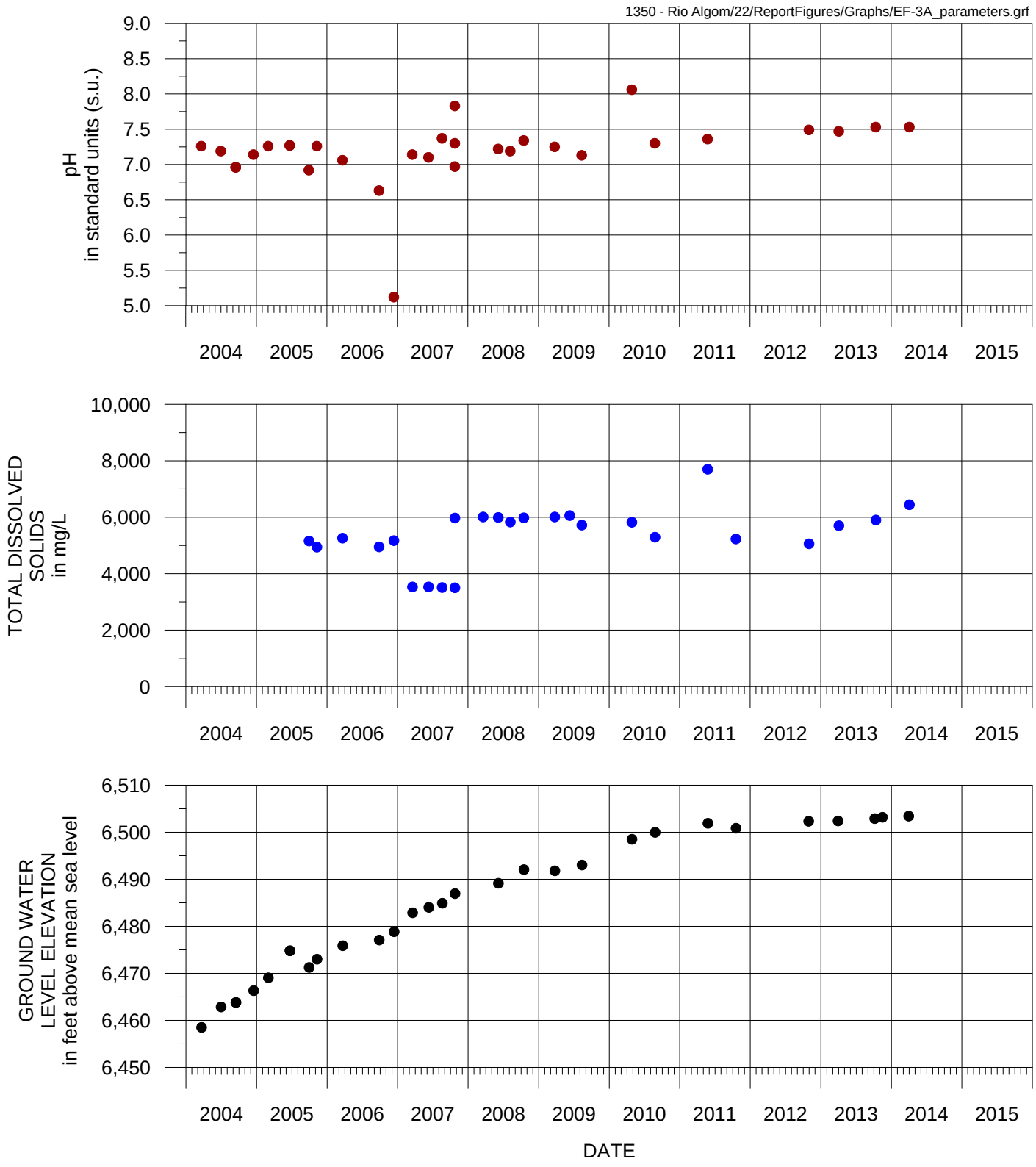
MONTGOMERY & ASSOCIATES



mg/L = Milligrams per liter

FIGURE G-2. TIME SERIES GRAPHS OF BICARBONATE, CHLORIDE, AND SULFATE CONCENTRATIONS FOR POINT OF COMPLIANCE WELL EF-3A RIO ALGOM MINING, LISBON FACILITY

MONTGOMERY & ASSOCIATES



mg/L = Milligrams per liter

FIGURE G-3. TIME SERIES GRAPHS OF pH AND TOTAL DISSOLVED SOLIDS CONCENTRATIONS AND GROUND WATER LEVEL ELEVATION FOR POINT OF COMPLIANCE WELL EF-3A RIO ALGOM MINING, LISBON FACILITY

MONTGOMERY & ASSOCIATES

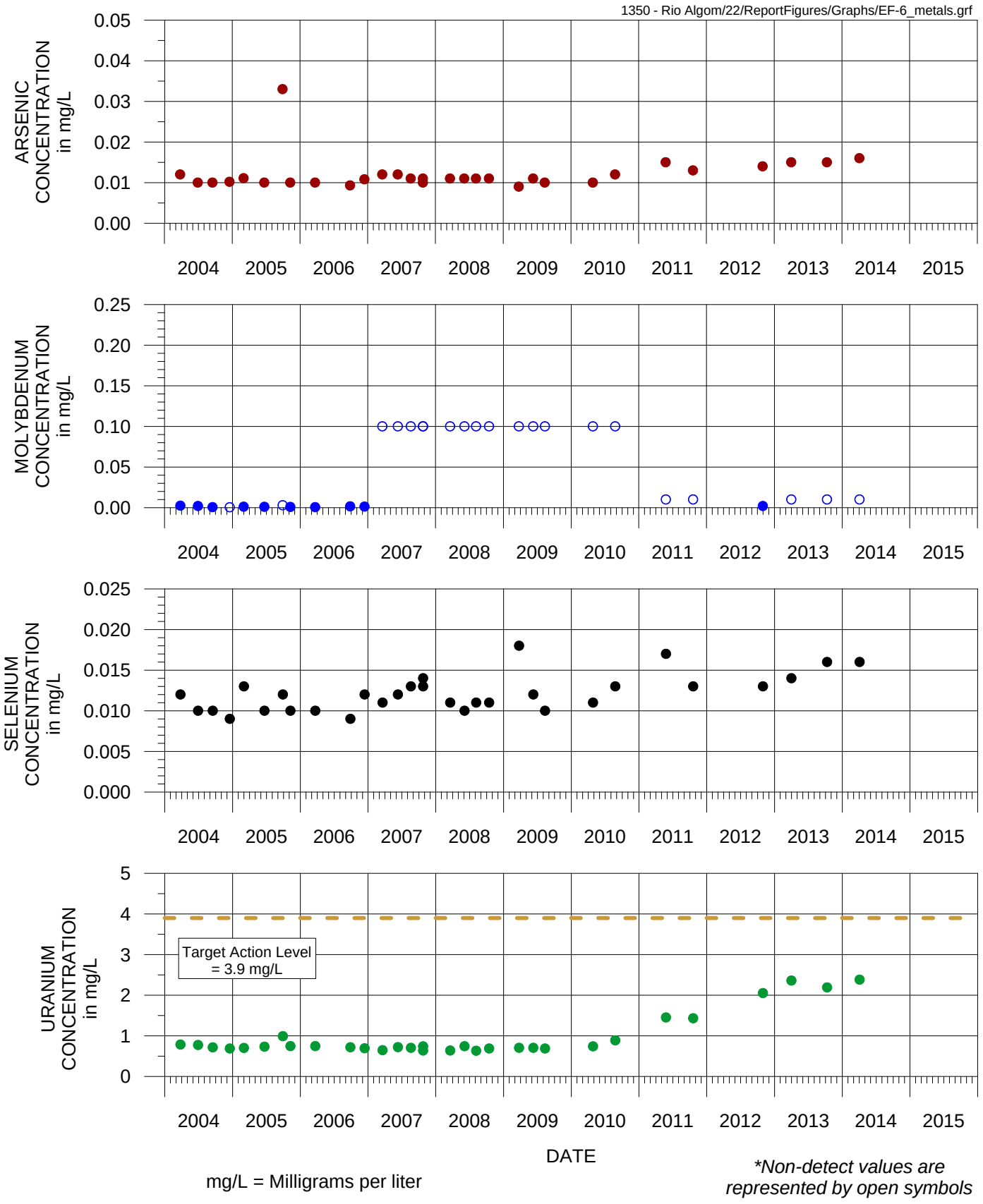
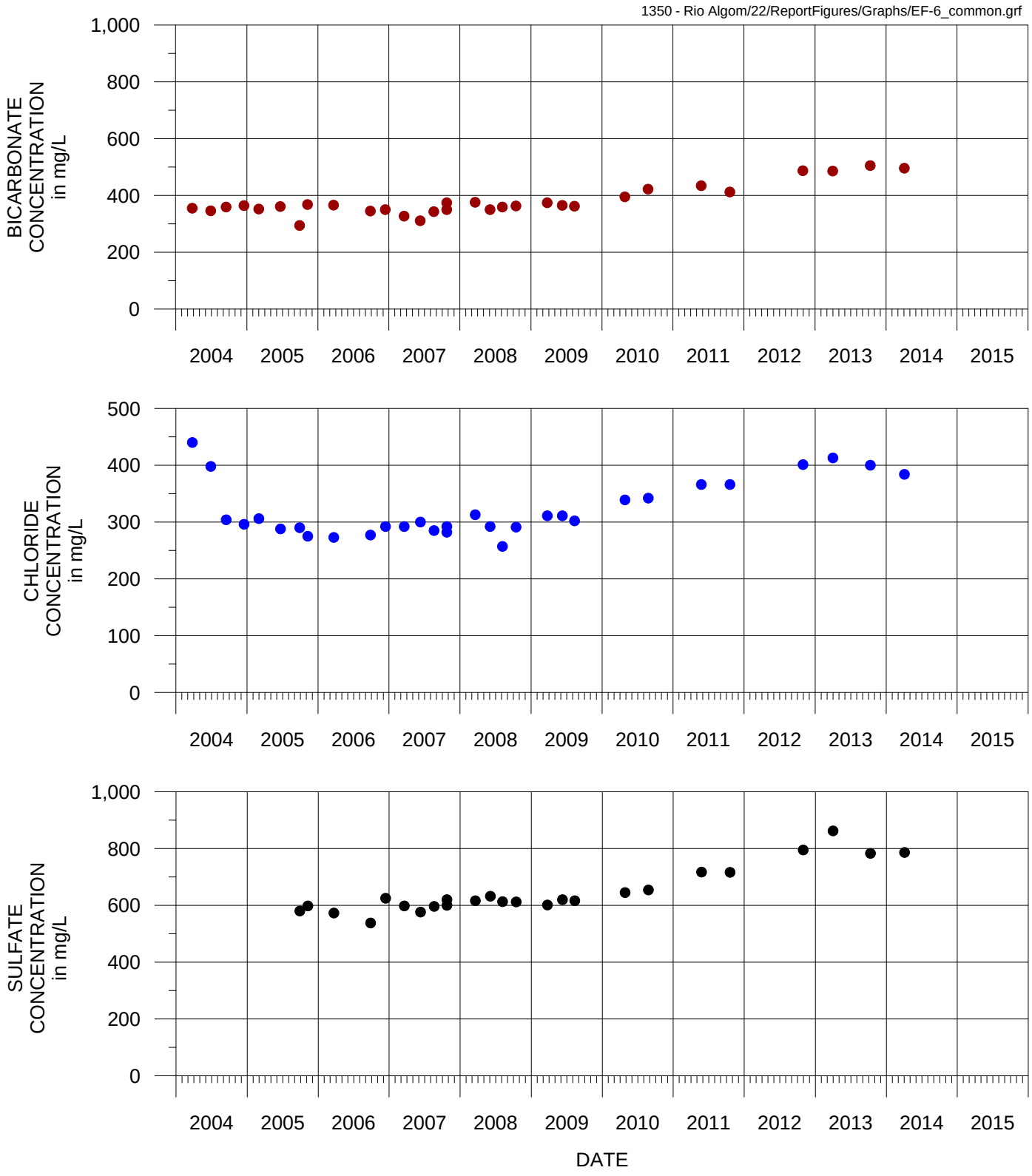


FIGURE G-4. TIME SERIES GRAPHS OF ARSENIC, MOLYBDENUM, SELENIUM, AND URANIUM CONCENTRATIONS FOR TREND WELL EF-6
RIO ALGOM MINING, LISBON FACILITY

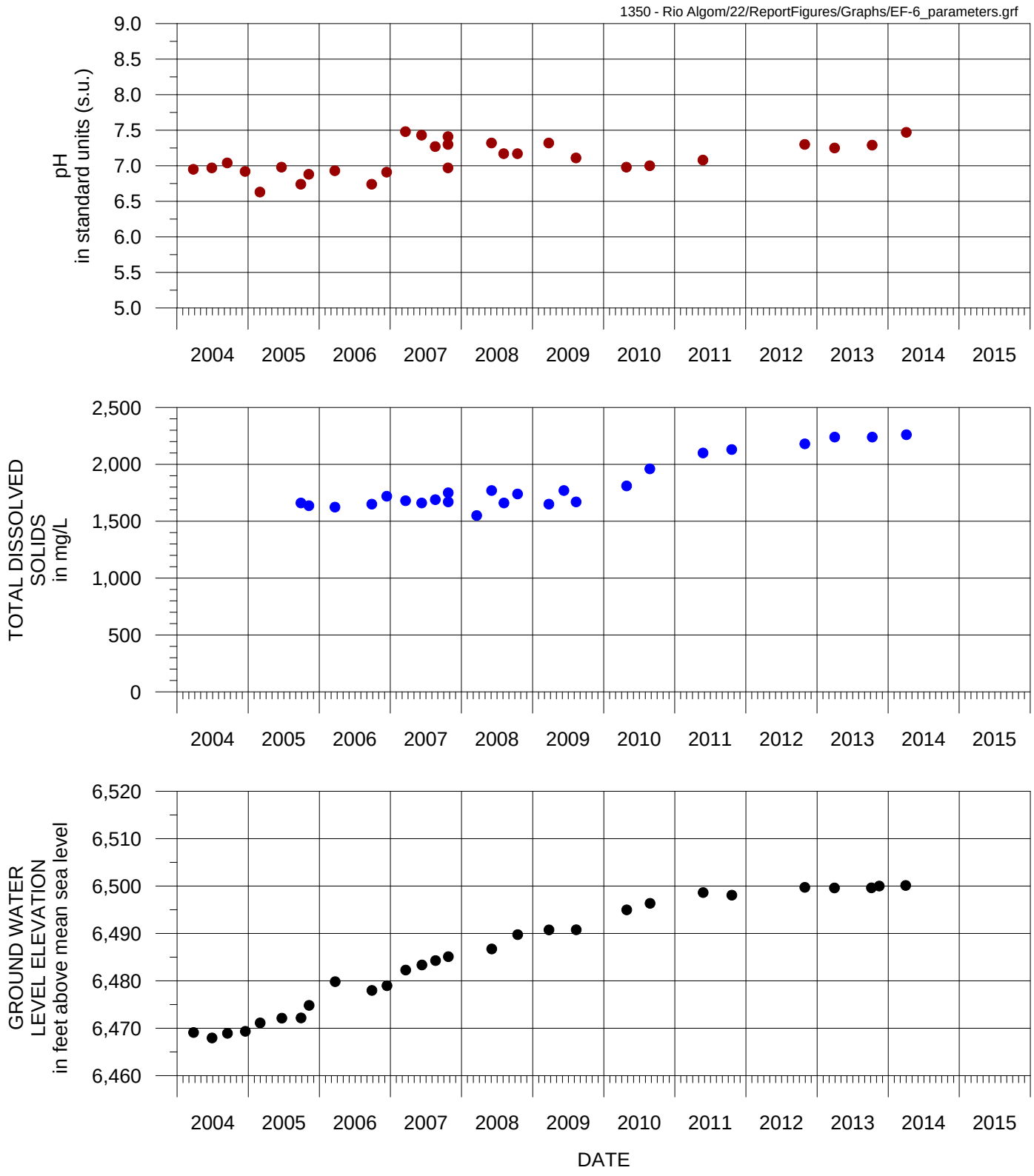
MONTGOMERY & ASSOCIATES



mg/L = Milligrams per liter

FIGURE G-5. TIME SERIES GRAPHS OF BICARBONATE, CHLORIDE, AND SULFATE CONCENTRATIONS FOR TREND WELL EF-6 RIO ALGOM MINING, LISBON FACILITY

MONTGOMERY & ASSOCIATES



mg/L = Milligrams per liter

FIGURE G-6. TIME SERIES GRAPHS OF pH AND TOTAL DISSOLVED SOLIDS, CONCENTRATIONS AND GROUND WATER LEVEL ELEVATION FOR TREND WELL EF-6 RIO ALGOM MINING, LISBON FACILITY

MONTGOMERY & ASSOCIATES

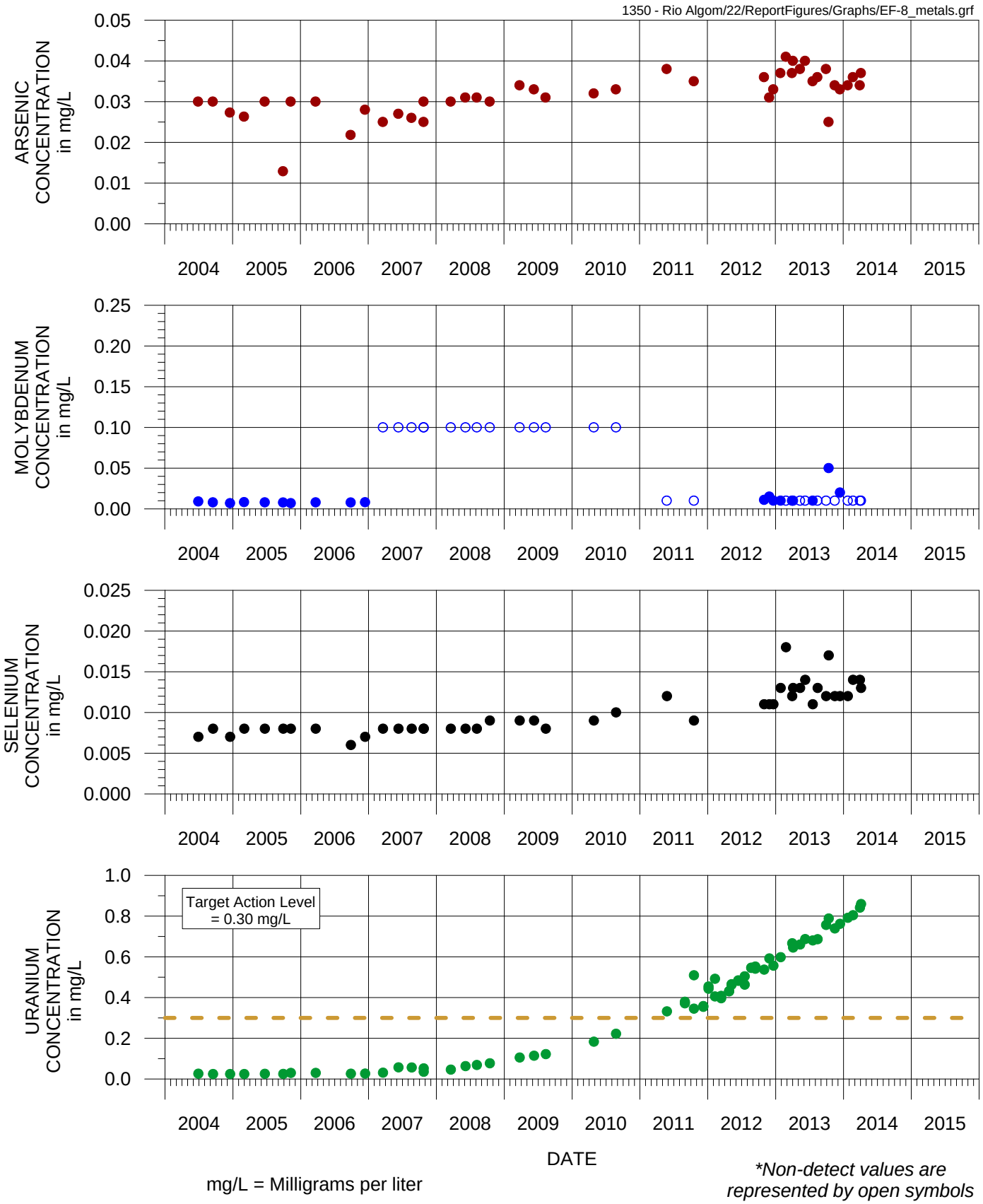
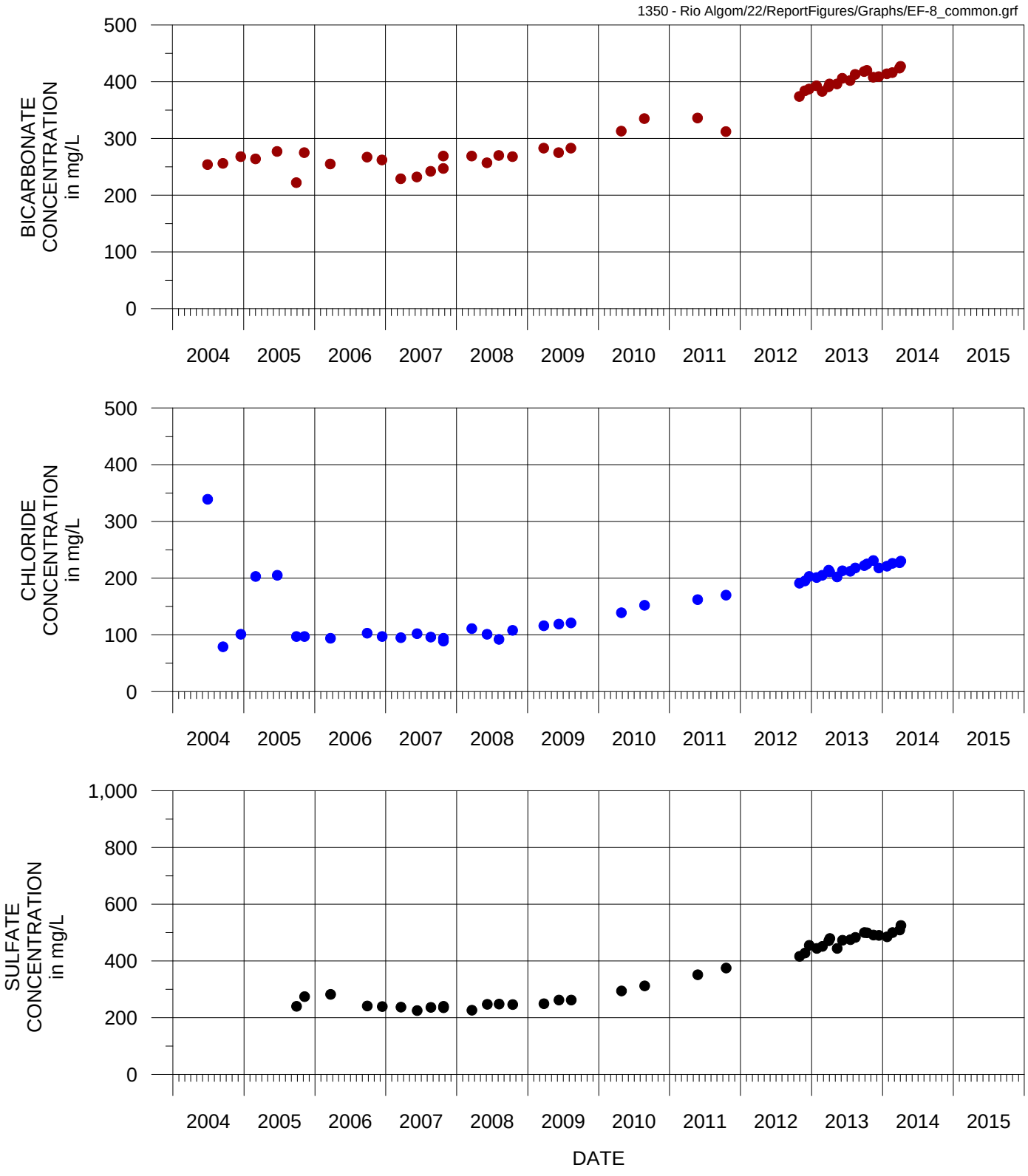


FIGURE G-7. TIME SERIES GRAPHS OF ARSENIC, MOLYBDENUM, SELENIUM, AND URANIUM CONCENTRATIONS FOR TREND WELL EF-8
RIO ALGOM MINING, LISBON FACILITY

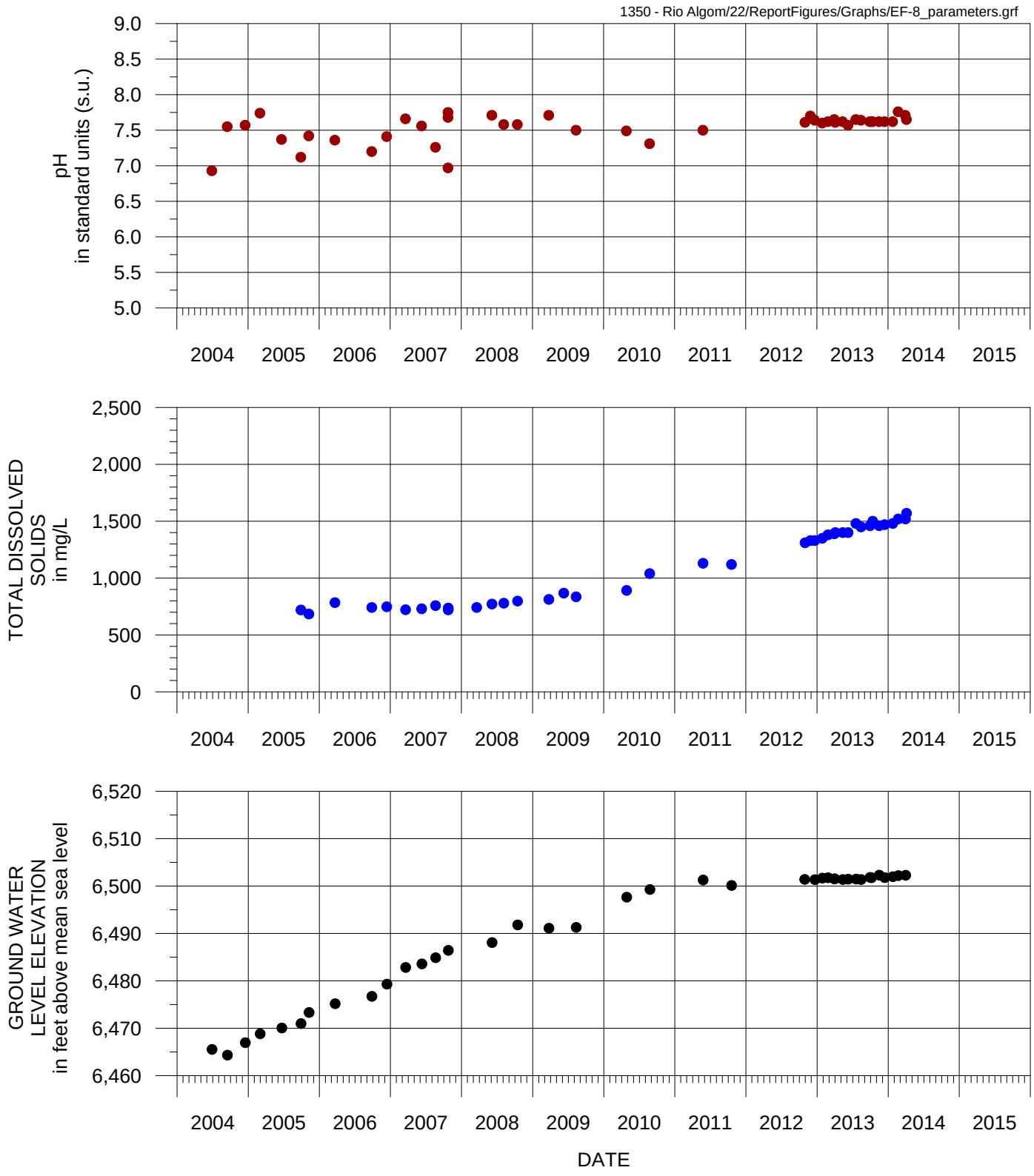
MONTGOMERY & ASSOCIATES



mg/L = Milligrams per liter

FIGURE G-8. TIME SERIES GRAPHS OF BICARBONATE, CHLORIDE, AND SULFATE CONCENTRATIONS FOR TREND WELL EF-8 RIO ALGOM MINING, LISBON FACILITY

MONTGOMERY & ASSOCIATES



mg/L = Milligrams per liter

FIGURE G-9. TIME SERIES GRAPHS OF pH AND TOTAL DISSOLVED SOLIDS, CONCENTRATIONS AND GROUND WATER LEVEL ELEVATION FOR TREND WELL EF-8 RIO ALGOM MINING, LISBON FACILITY

MONTGOMERY & ASSOCIATES

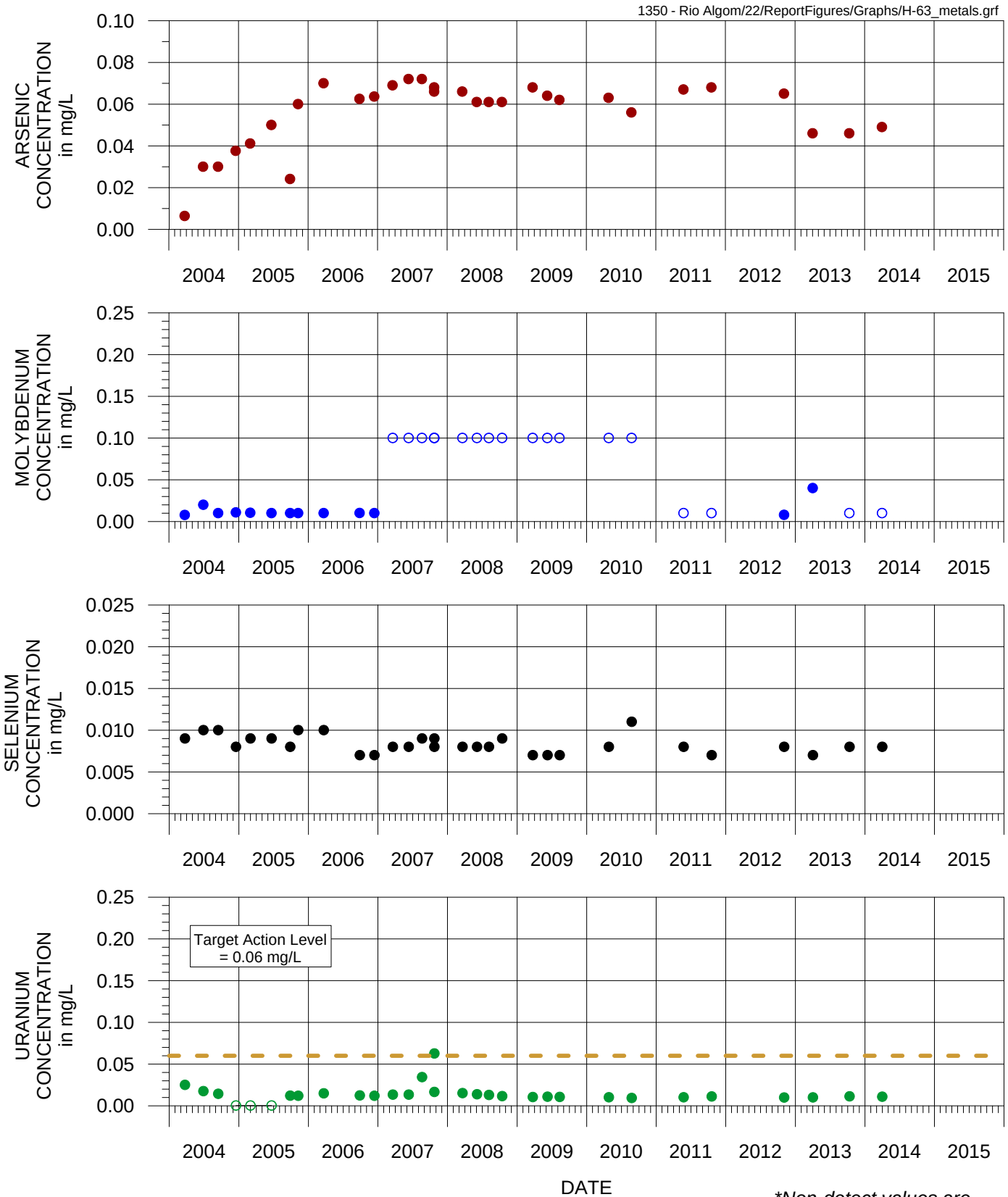
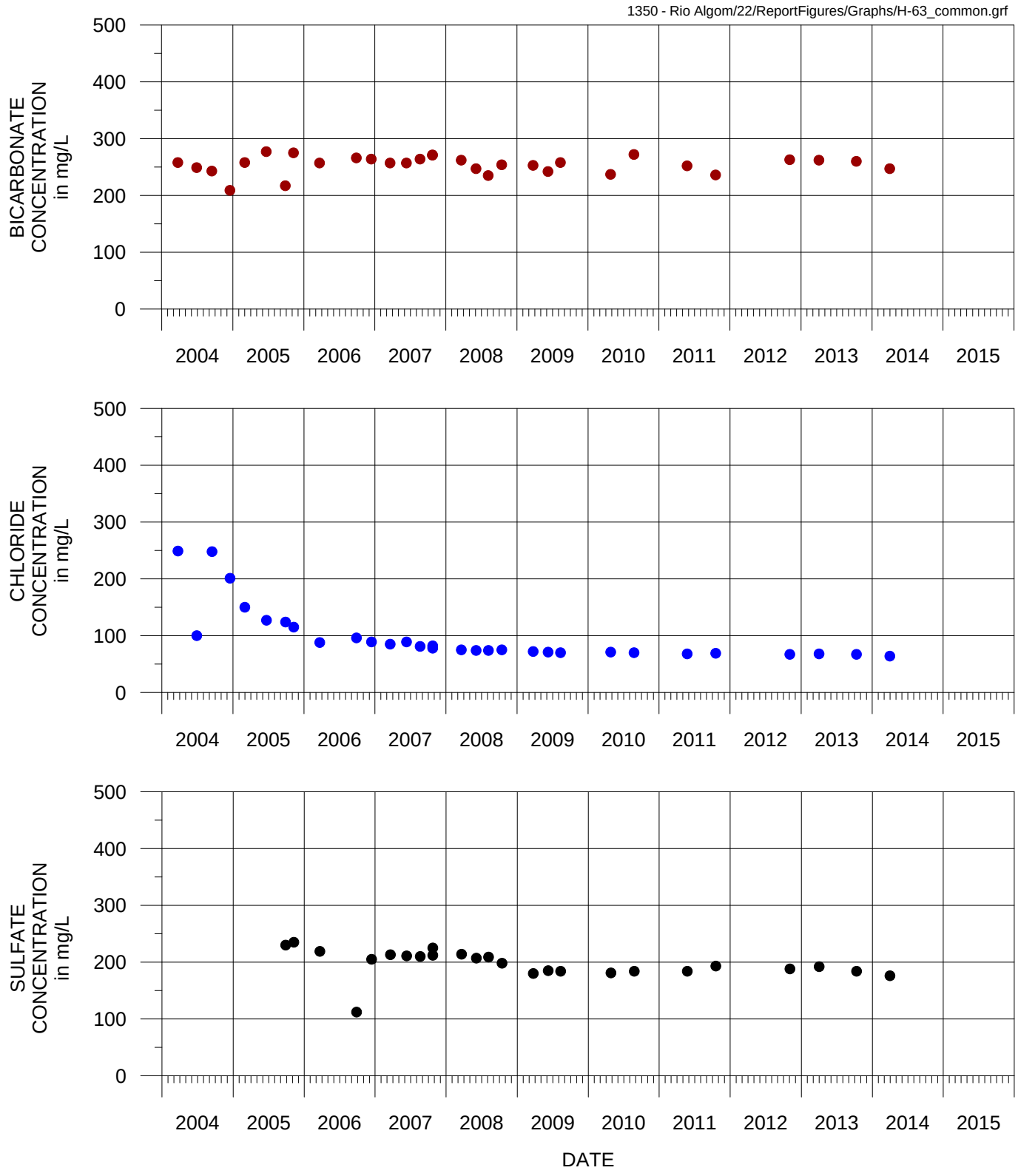


FIGURE G-10. TIME SERIES GRAPHS OF ARSENIC, MOLYBDENUM, SELENIUM, AND URANIUM CONCENTRATIONS FOR TREND WELL H-63
RIO ALGOM MINING, LISBON FACILITY

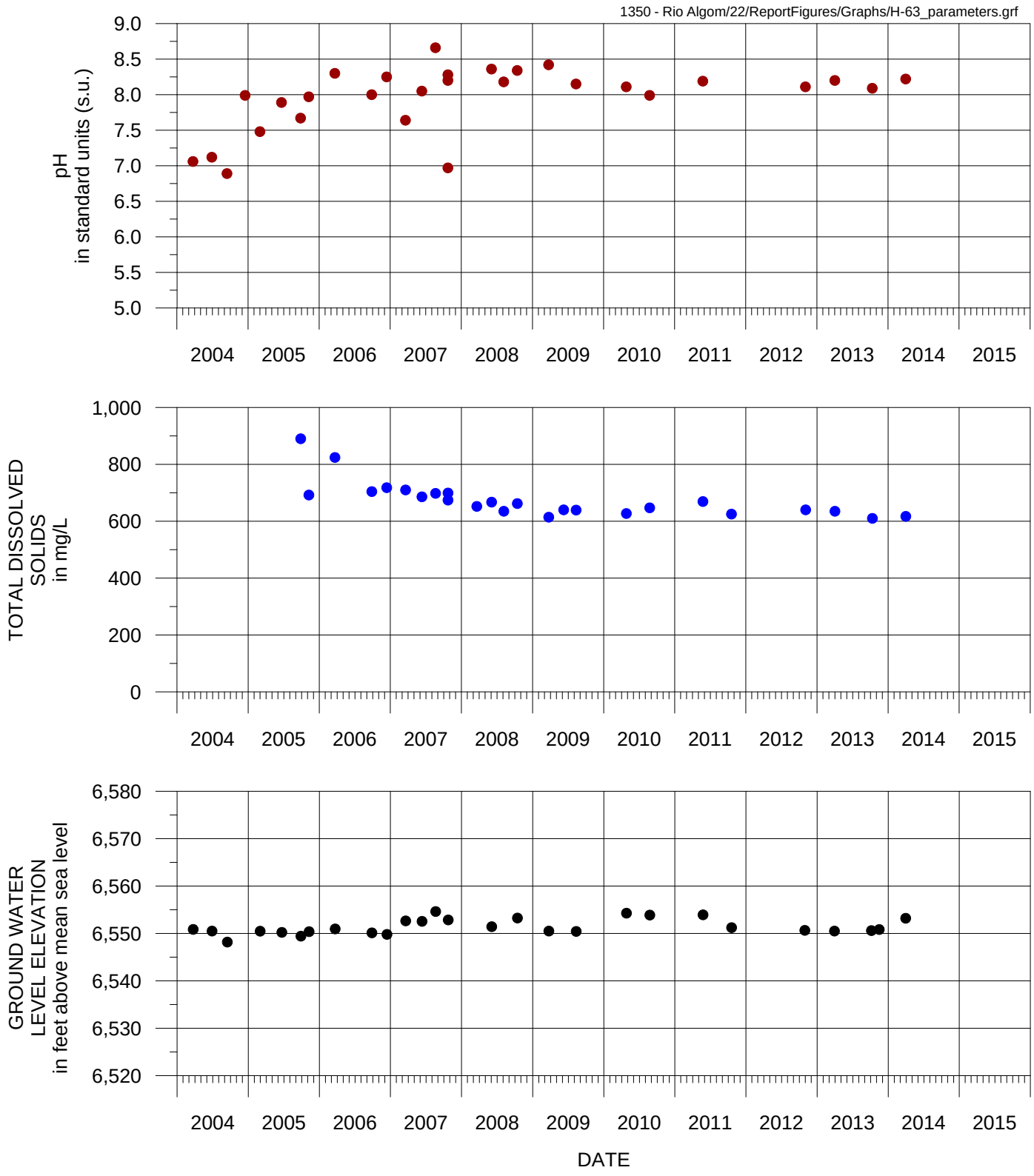
MONTGOMERY & ASSOCIATES



mg/L = Milligrams per liter

FIGURE G-11. TIME SERIES GRAPHS OF BICARBONATE, CHLORIDE, AND SULFATE CONCENTRATIONS FOR TREND WELL H-63 RIO ALGOM MINING, LISBON FACILITY

MONTGOMERY & ASSOCIATES



mg/L = Milligrams per liter

FIGURE G-12. TIME SERIES GRAPHS OF pH AND TOTAL DISSOLVED SOLIDS, CONCENTRATIONS AND GROUND WATER LEVEL ELEVATION FOR TREND WELL H-63
RIO ALGOM MINING, LISBON FACILITY

MONTGOMERY & ASSOCIATES

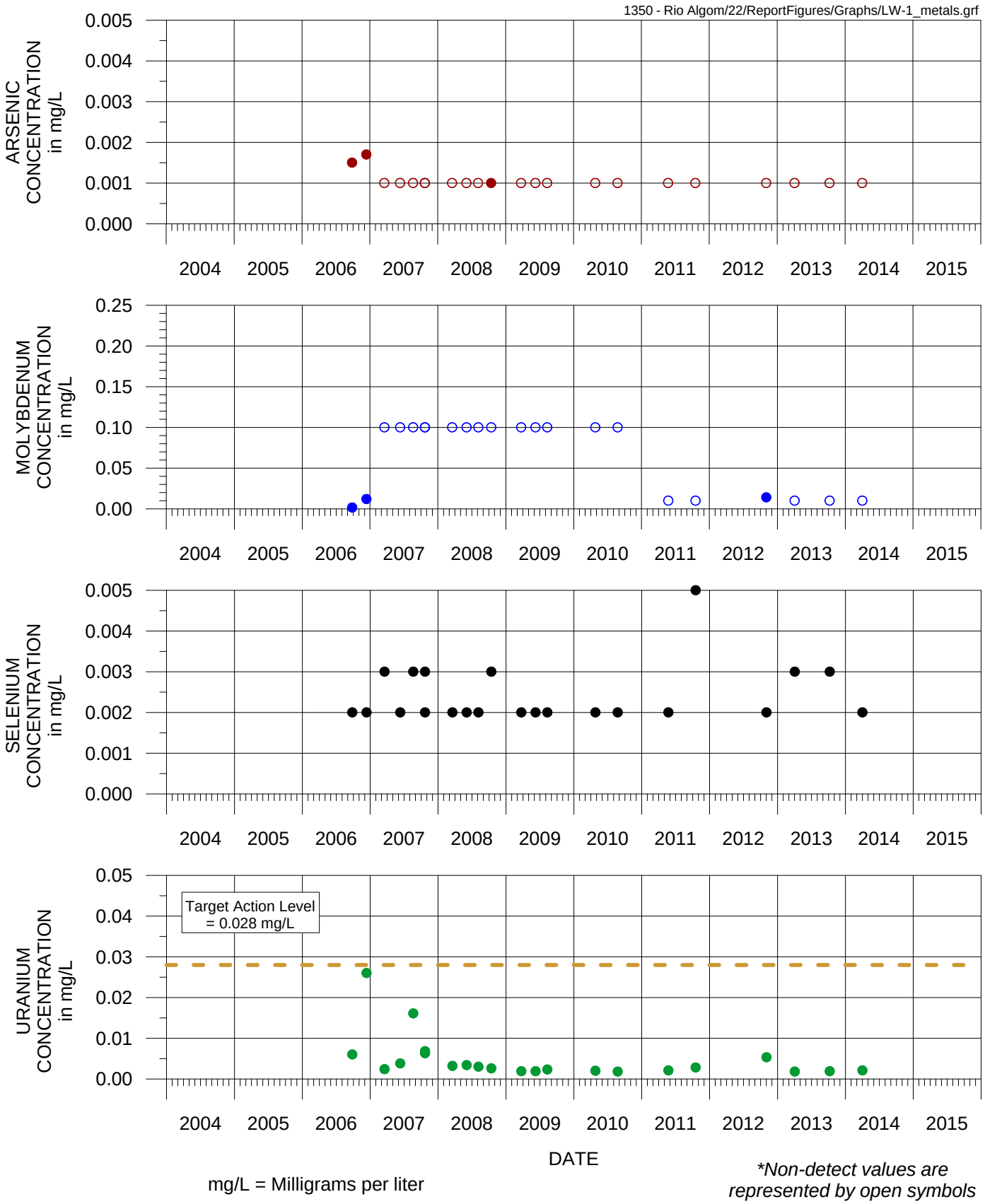
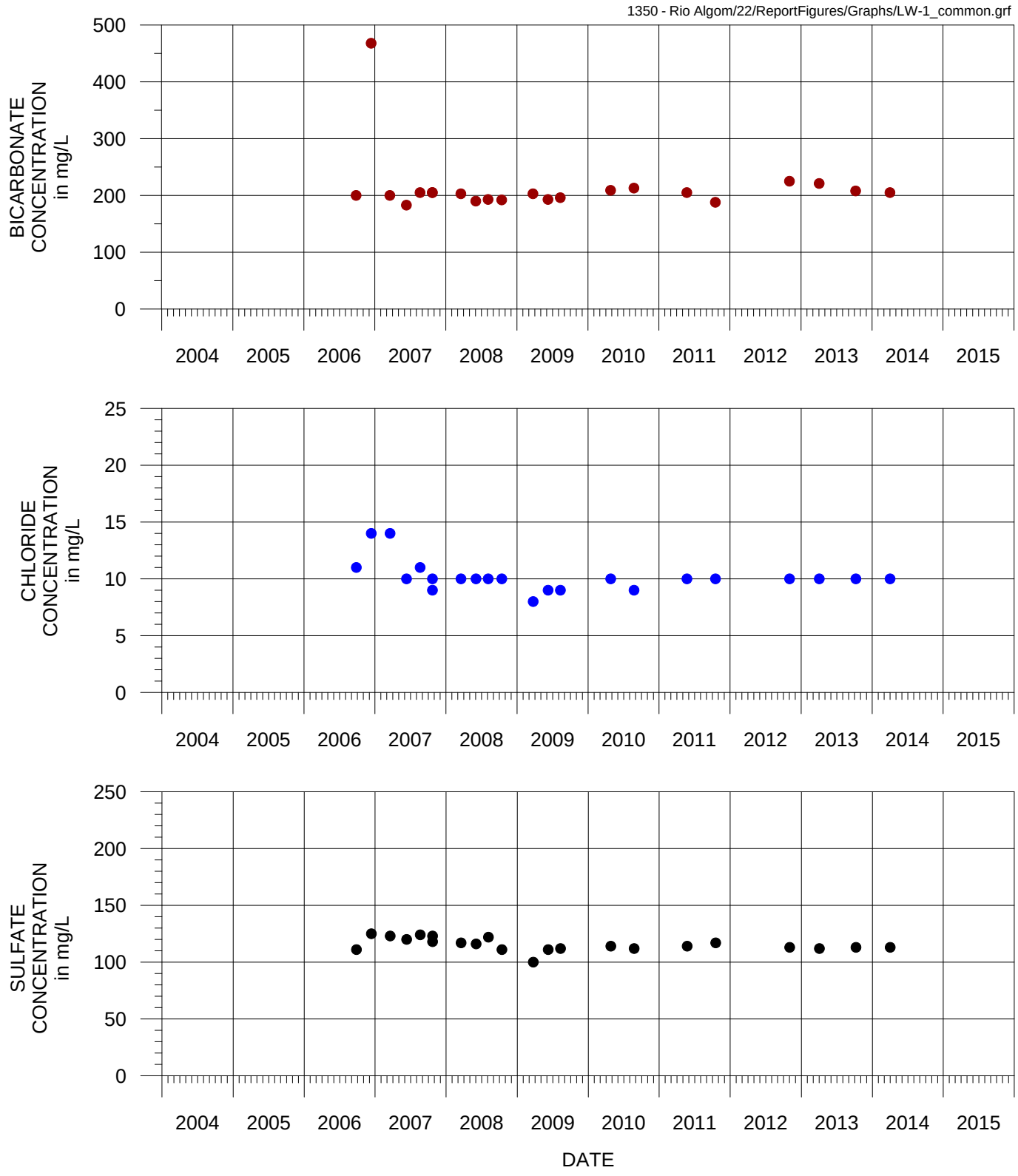


FIGURE G-13. TIME SERIES GRAPHS OF ARSENIC, MOLYBDENUM, SELENIUM, AND URANIUM CONCENTRATIONS FOR TREND WELL LW-1
RIO ALGOM MINING, LISBON FACILITY

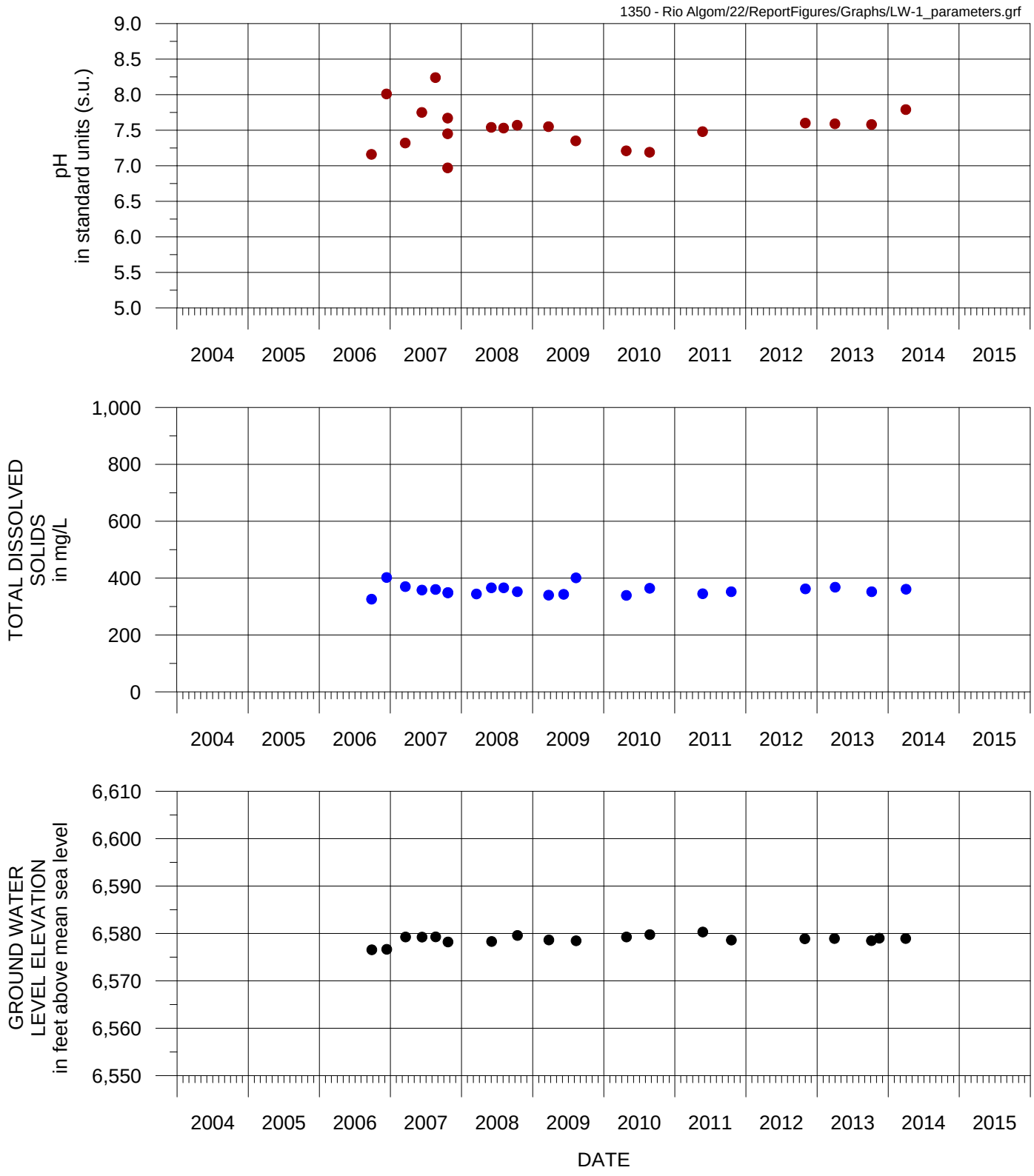
MONTGOMERY & ASSOCIATES



mg/L = Milligrams per liter

FIGURE G-14. TIME SERIES GRAPHS OF BICARBONATE, CHLORIDE, AND SULFATE CONCENTRATIONS FOR TREND WELL LW-1 RIO ALGOM MINING, LISBON FACILITY

MONTGOMERY & ASSOCIATES



mg/L = Milligrams per liter

FIGURE G-15. TIME SERIES GRAPHS OF pH AND TOTAL DISSOLVED SOLIDS, CONCENTRATIONS AND GROUND WATER LEVEL ELEVATION FOR TREND WELL LW-1
RIO ALGOM MINING, LISBON FACILITY

MONTGOMERY & ASSOCIATES

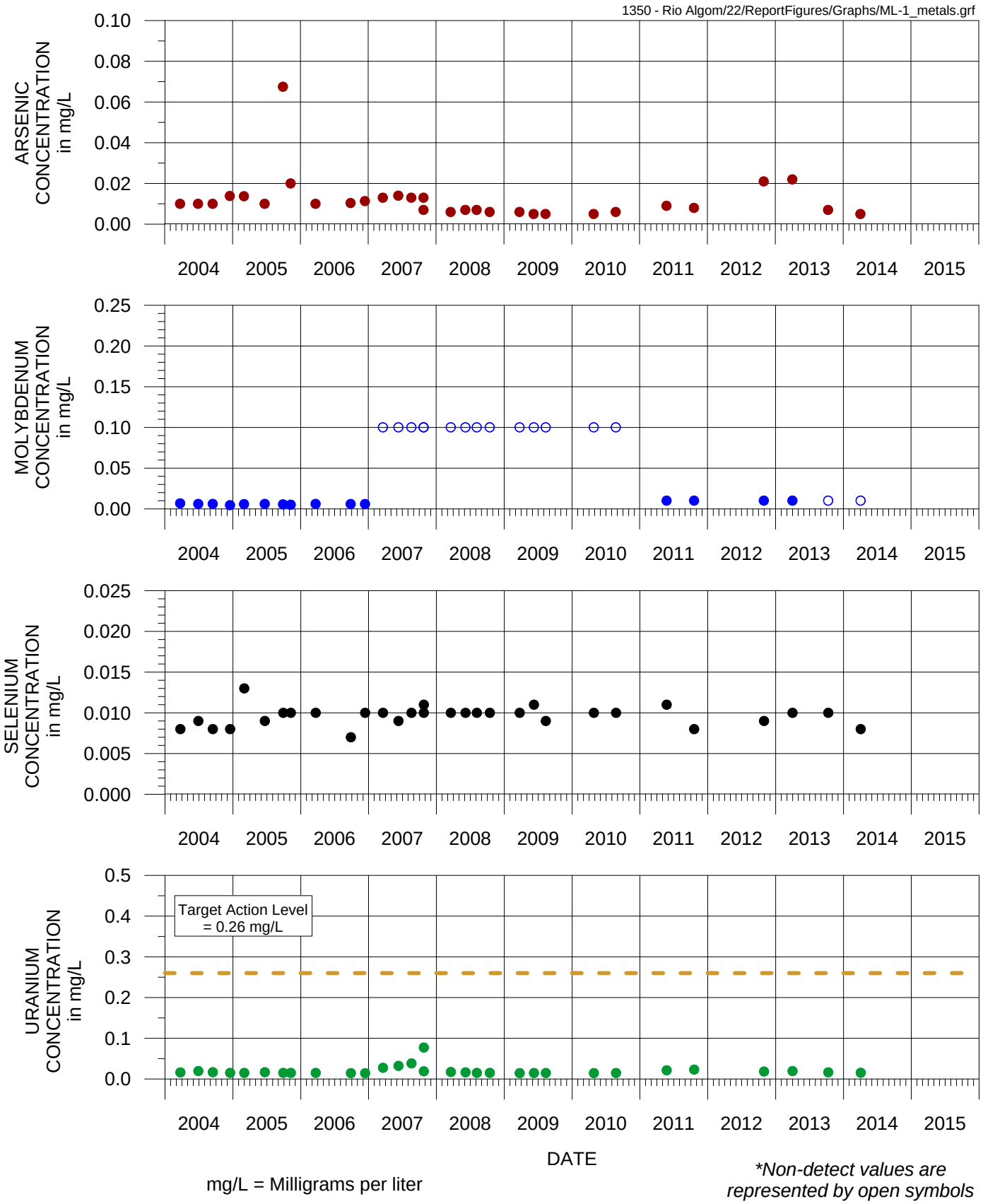
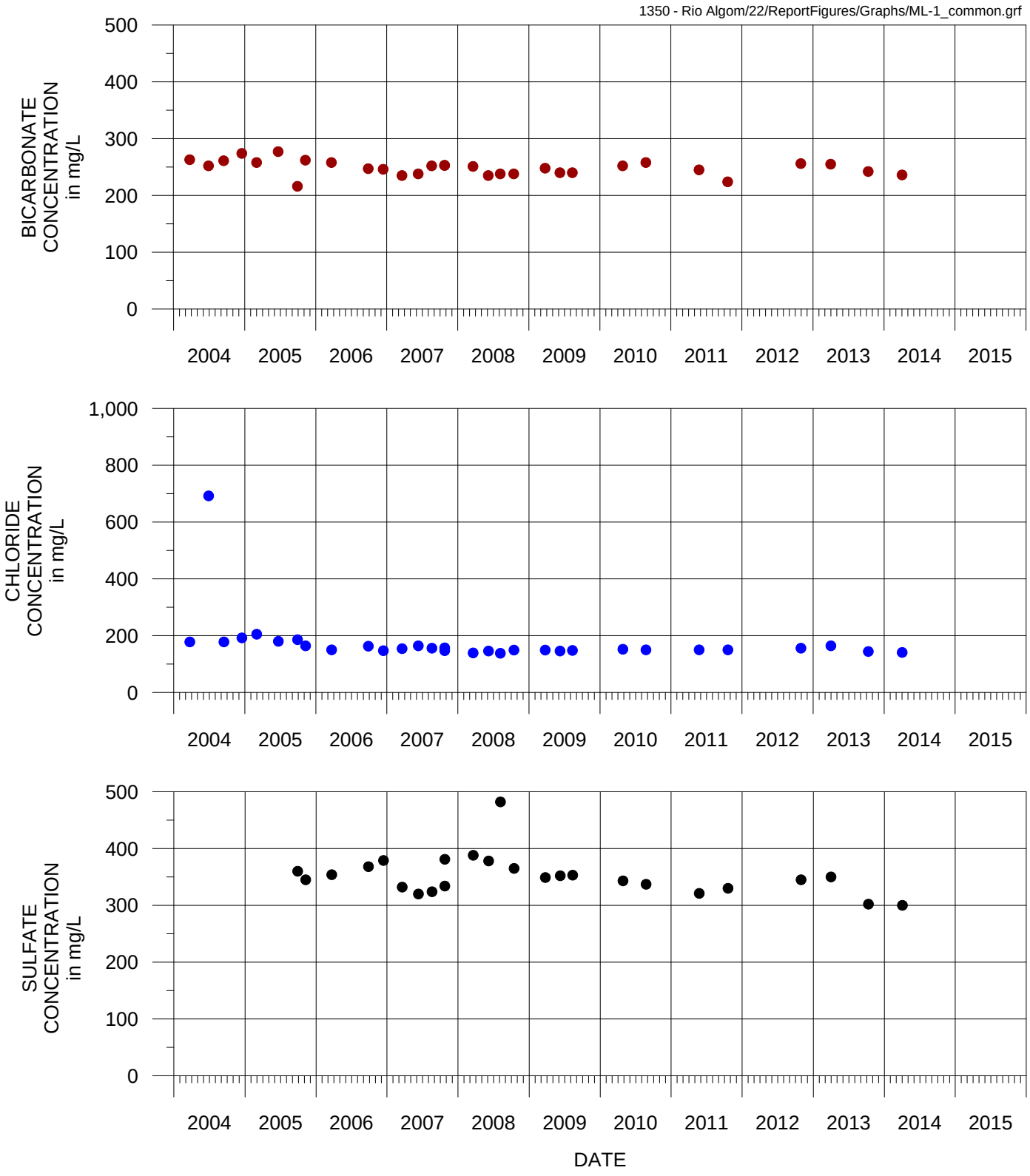


FIGURE G-16. TIME SERIES GRAPHS OF ARSENIC, MOLYBDENUM, SELENIUM, AND URANIUM CONCENTRATIONS FOR TREND WELL ML-1
RIO ALGOM MINING, LISBON FACILITY

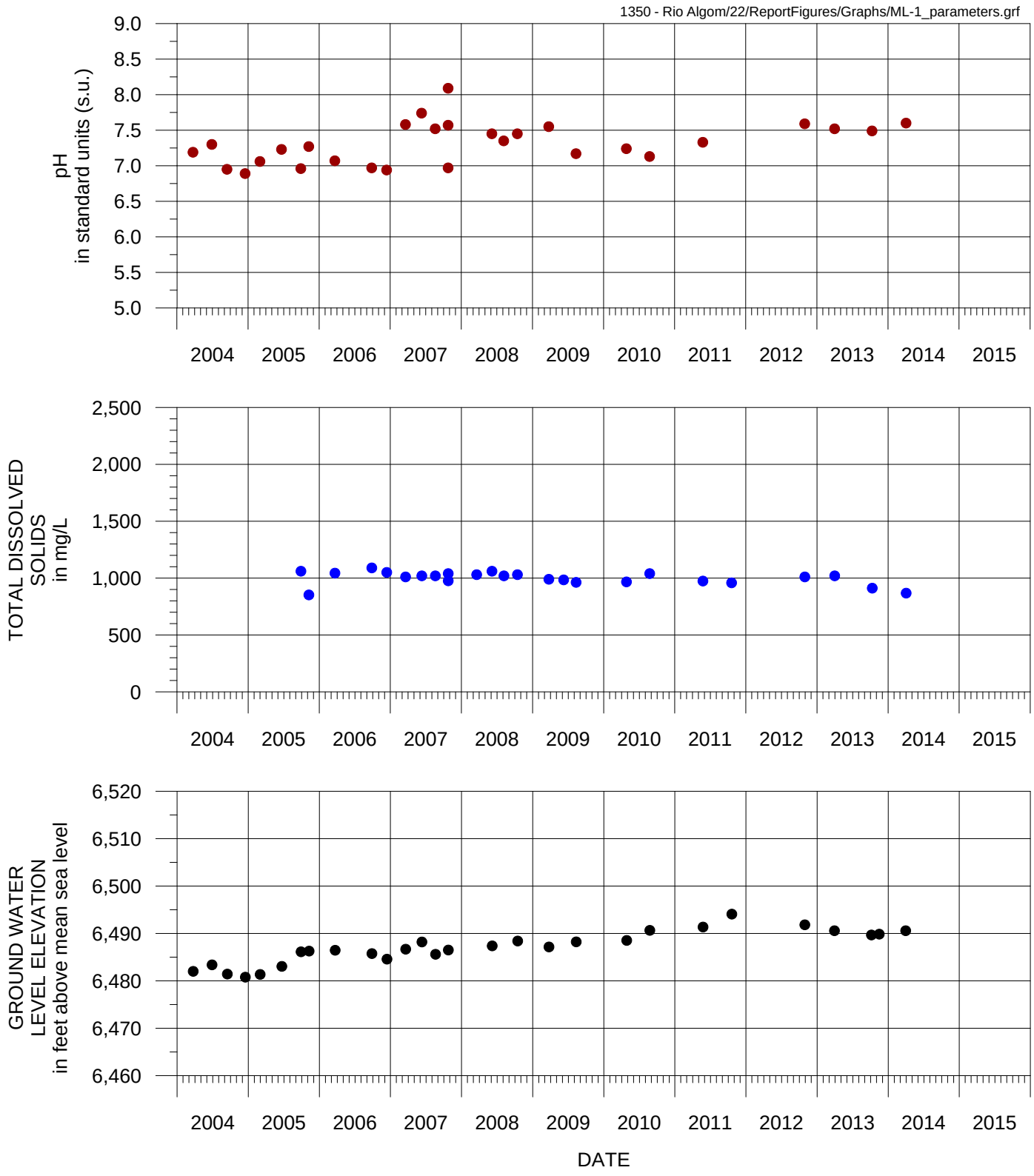
MONTGOMERY & ASSOCIATES



mg/L = Milligrams per liter

FIGURE G-17. TIME SERIES GRAPHS OF BICARBONATE, CHLORIDE, AND SULFATE CONCENTRATIONS FOR TREND WELL ML-1 RIO ALGOM MINING, LISBON FACILITY

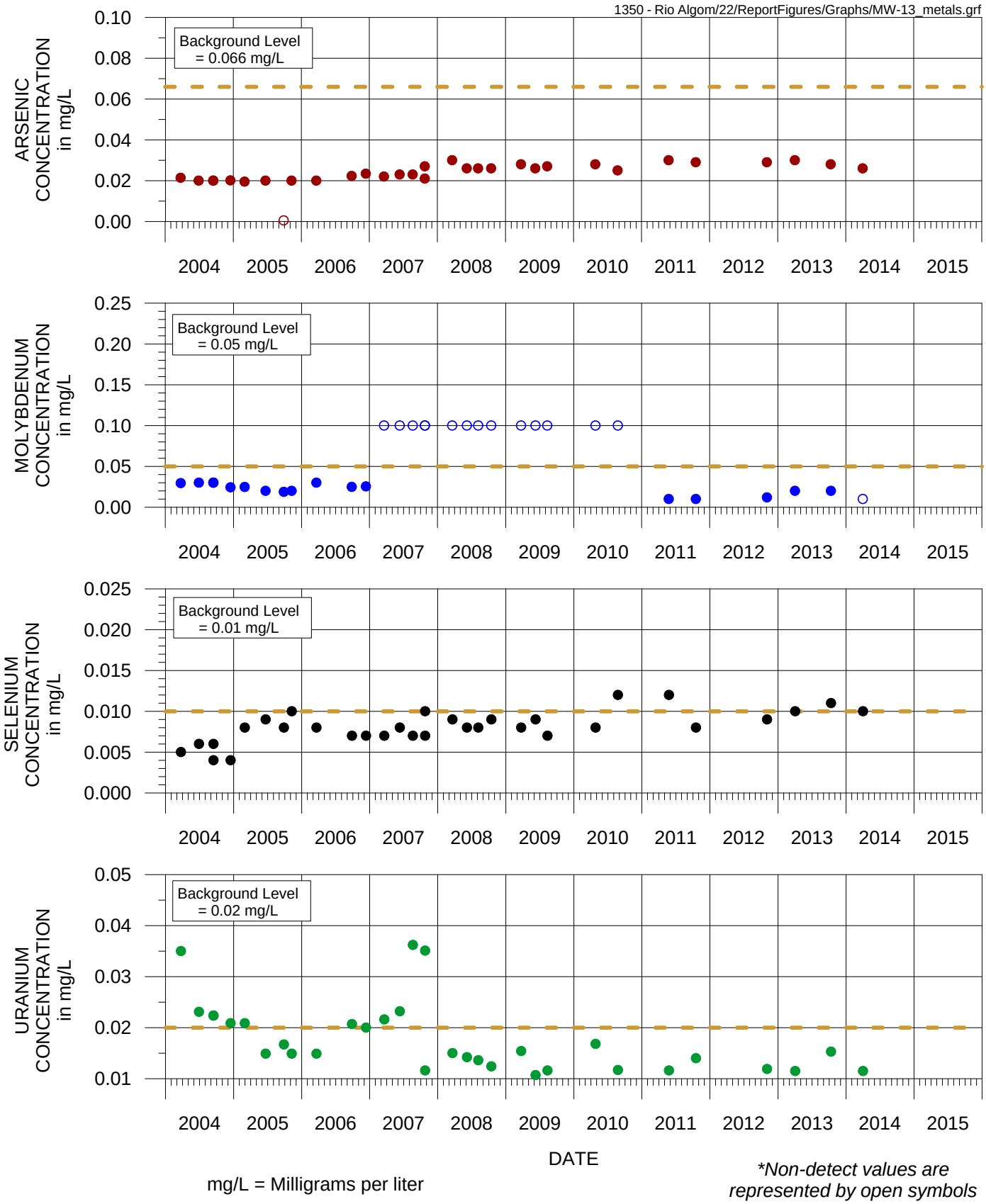
MONTGOMERY & ASSOCIATES



mg/L = Milligrams per liter

FIGURE G-18. TIME SERIES GRAPHS OF pH AND TOTAL DISSOLVED SOLIDS, CONCENTRATIONS AND GROUND WATER LEVEL ELEVATION FOR TREND WELL ML-1
RIO ALGOM MINING, LISBON FACILITY

MONTGOMERY & ASSOCIATES

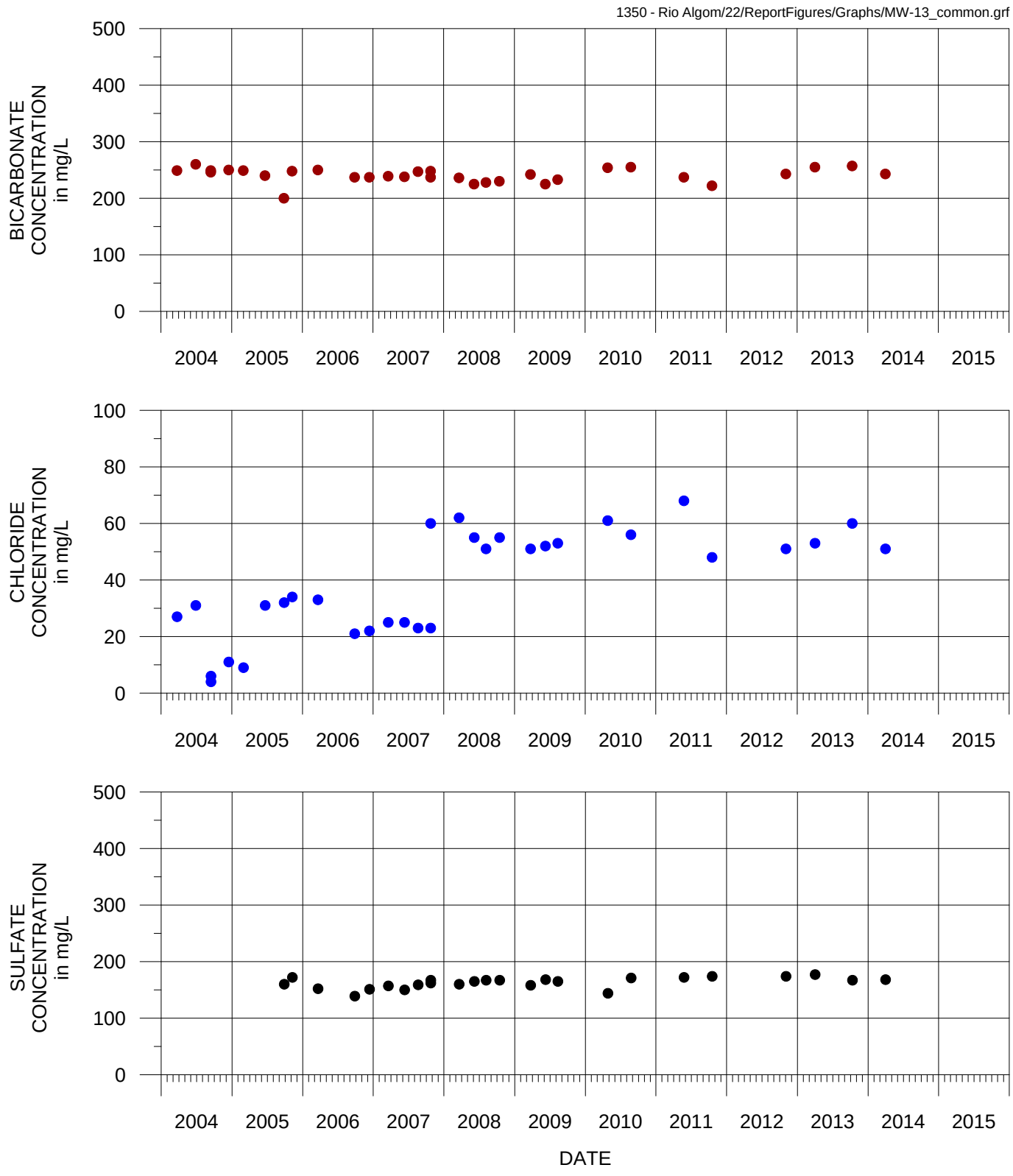


mg/L = Milligrams per liter

**Non-detect values are represented by open symbols*

FIGURE G-19. TIME SERIES GRAPHS OF ARSENIC, MOLYBDENUM, SELENIUM, AND URANIUM CONCENTRATIONS FOR MONITOR BACKGROUND WELL MW-13 RIO ALGOM MINING, LISBON FACILITY

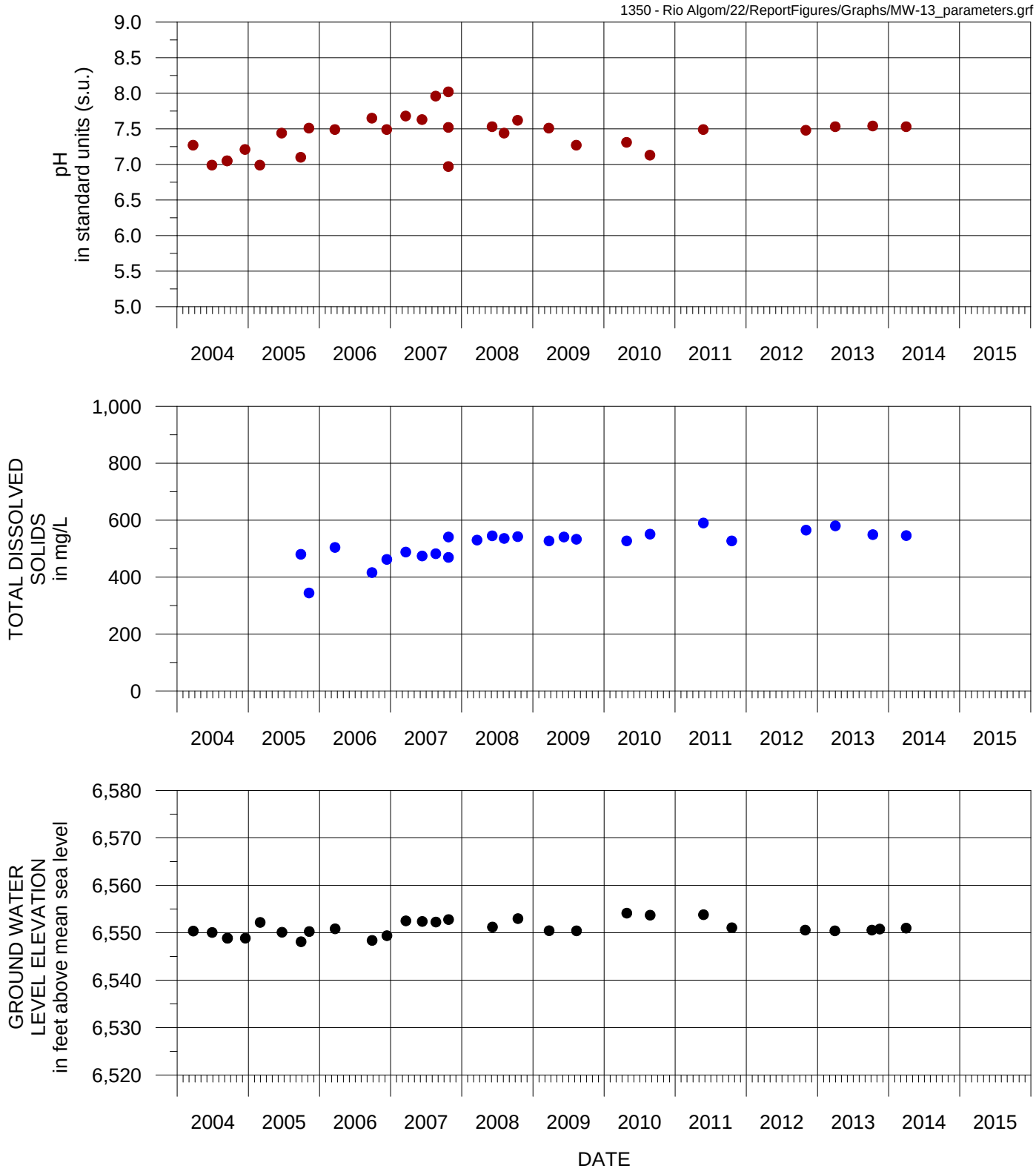
MONTGOMERY & ASSOCIATES



mg/L = Milligrams per liter

FIGURE G-20. TIME SERIES GRAPHS OF BICARBONATE, CHLORIDE, AND SULFATE CONCENTRATIONS FOR MONITOR BACKGROUND WELL MW-13 RIO ALGOM MINING, LISBON FACILITY

MONTGOMERY & ASSOCIATES



mg/L = Milligrams per liter

FIGURE G-21. TIME SERIES GRAPHS OF pH AND TOTAL DISSOLVED SOLIDS, CONCENTRATIONS AND GROUND WATER LEVEL ELEVATION FOR MONITOR BACKGROUND WELL MW-13 RIO ALGOM MINING, LISBON FACILITY

MONTGOMERY & ASSOCIATES

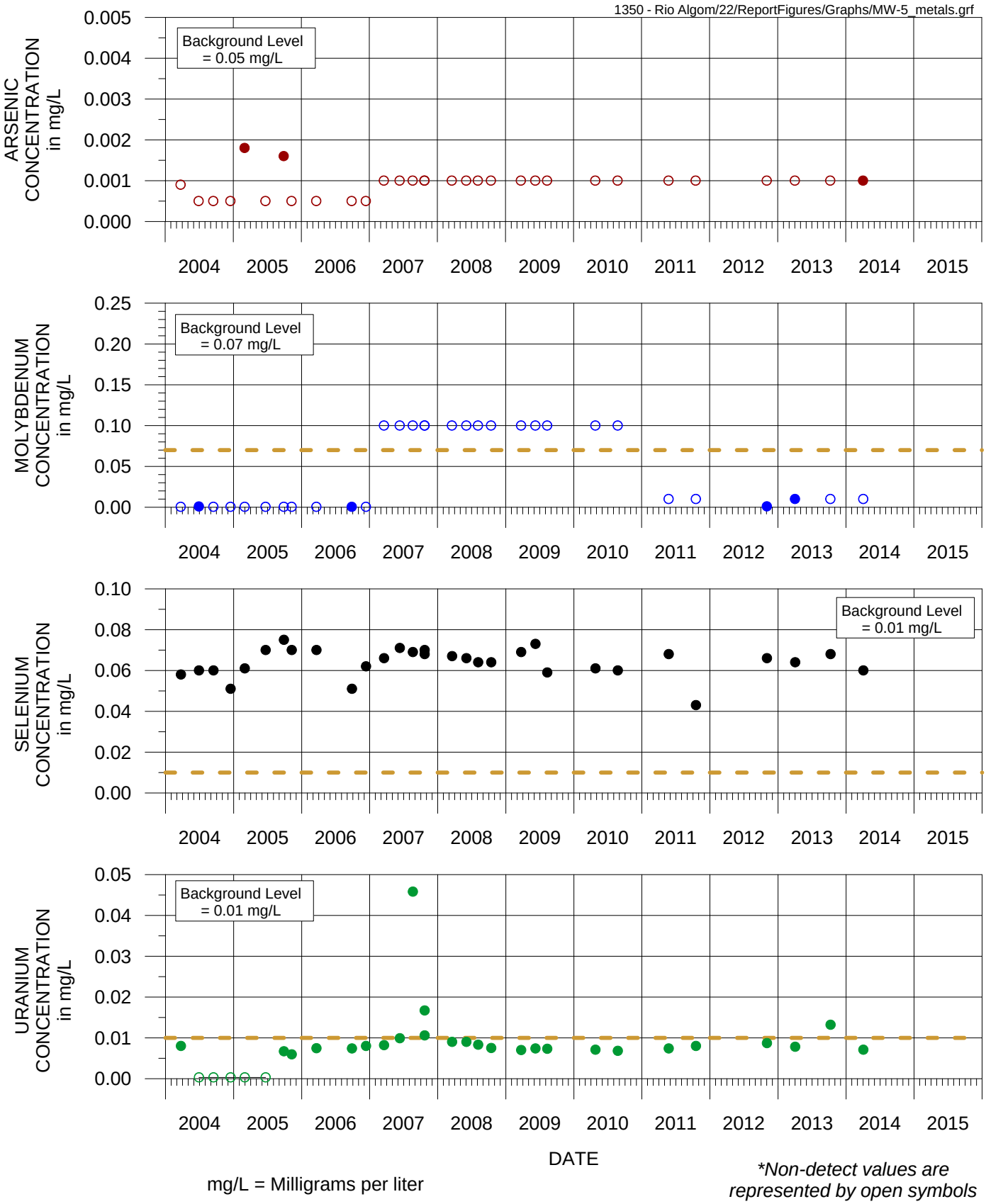
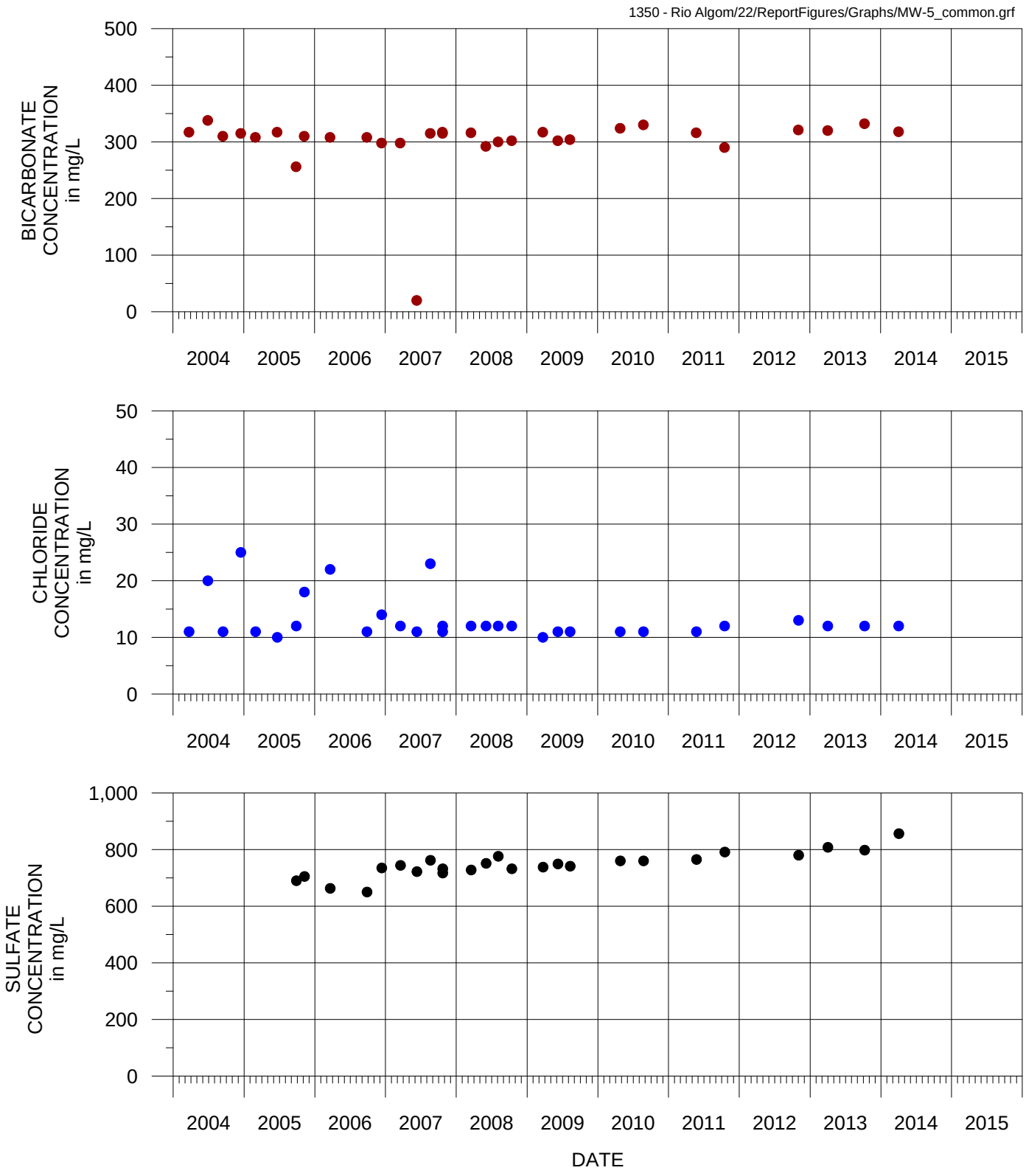


FIGURE G-22. TIME SERIES GRAPHS OF ARSENIC, MOLYBDENUM, SELENIUM, AND URANIUM CONCENTRATIONS FOR MONITOR BACKGROUND WELL MW-5 RIO ALGOM MINING, LISBON FACILITY

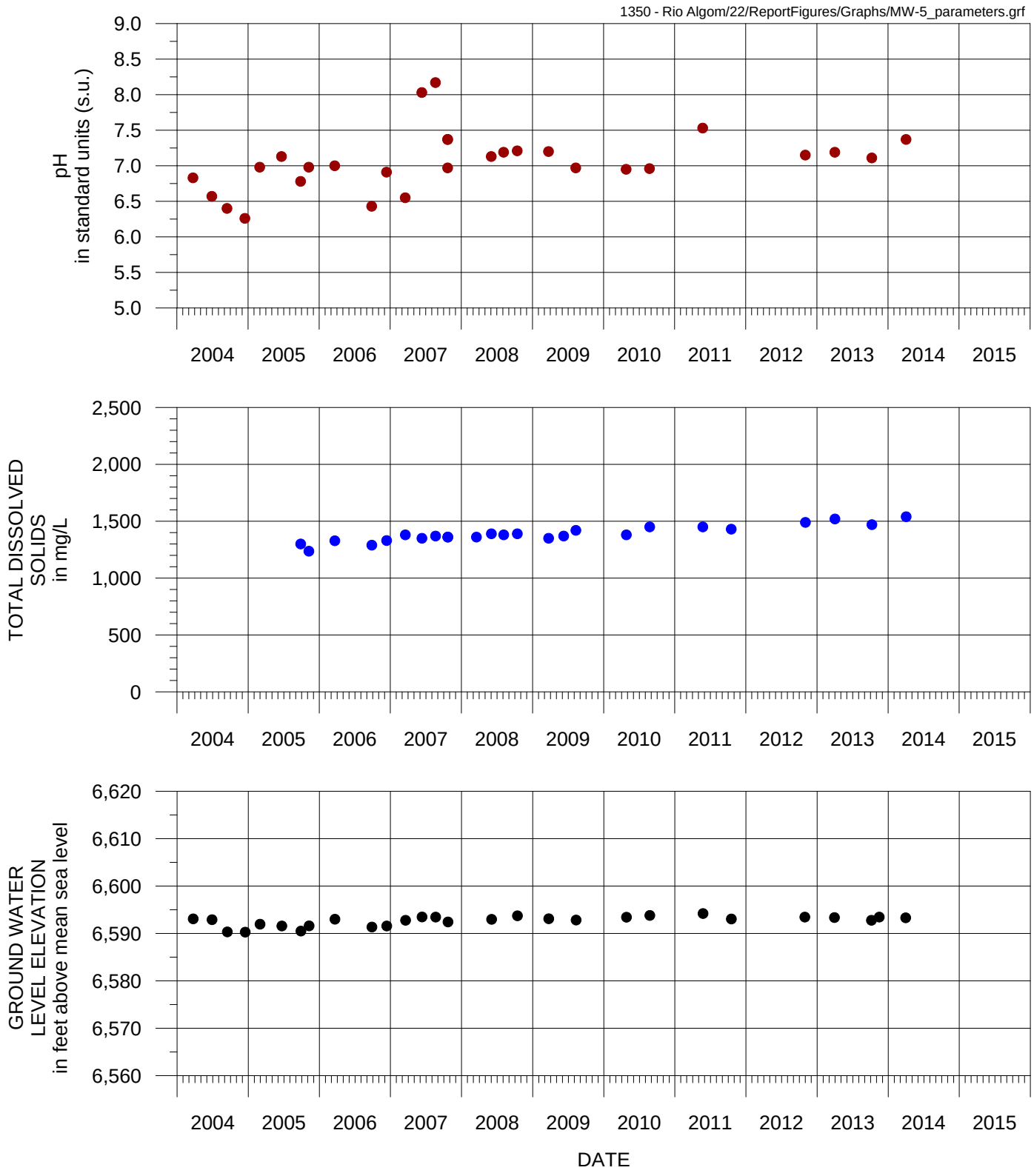
MONTGOMERY & ASSOCIATES



mg/L = Milligrams per liter

FIGURE G-23. TIME SERIES GRAPHS OF BICARBONATE, CHLORIDE, AND SULFATE CONCENTRATIONS FOR MONITOR BACKGROUND WELL MW-5 RIO ALGOM MINING, LISBON FACILITY

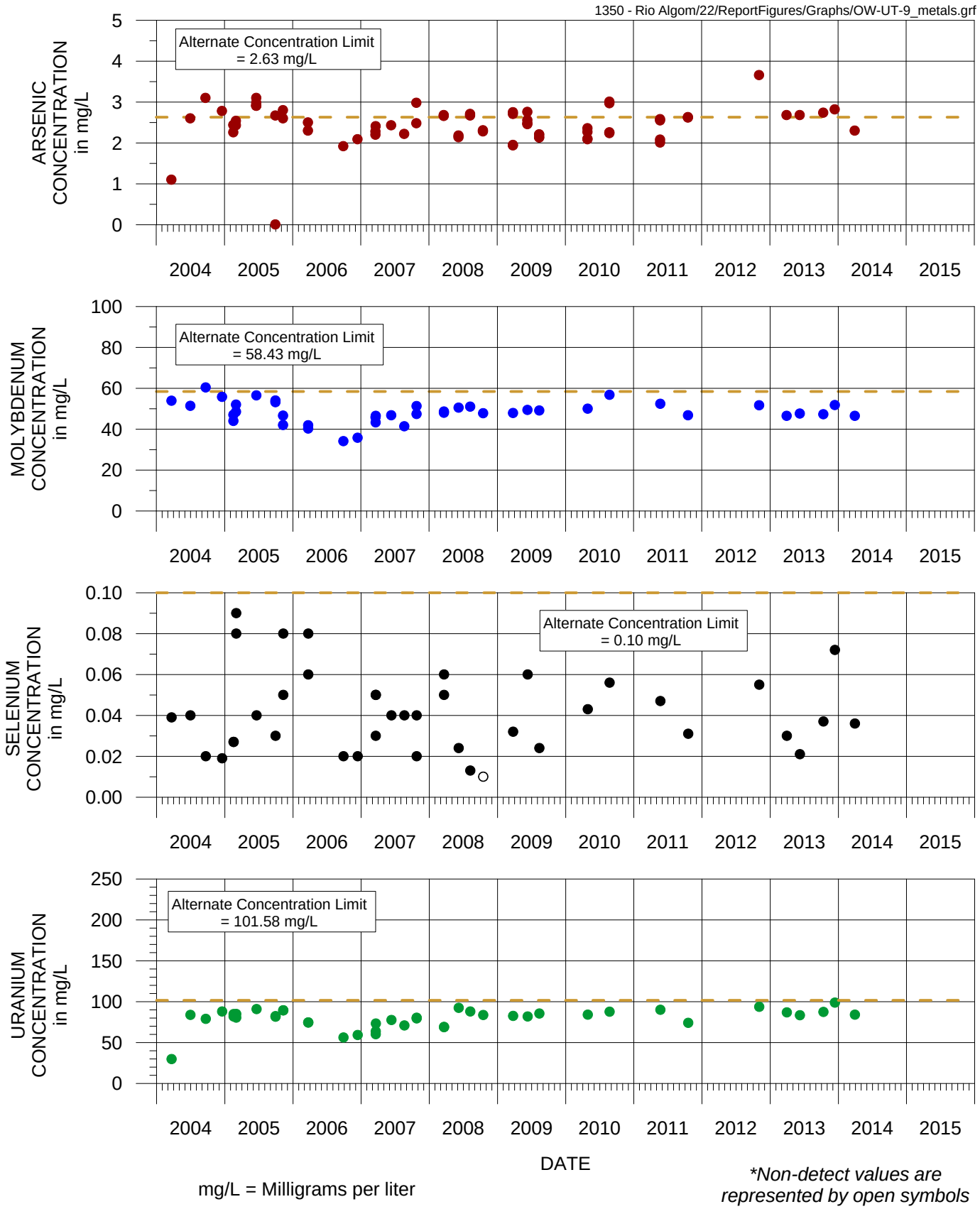
MONTGOMERY & ASSOCIATES



mg/L = Milligrams per liter

FIGURE G-24. TIME SERIES GRAPHS OF pH AND TOTAL DISSOLVED SOLIDS, CONCENTRATIONS AND GROUND WATER LEVEL ELEVATION FOR MONITOR BACKGROUND WELL MW-5 RIO ALGOM MINING, LISBON FACILITY

MONTGOMERY & ASSOCIATES

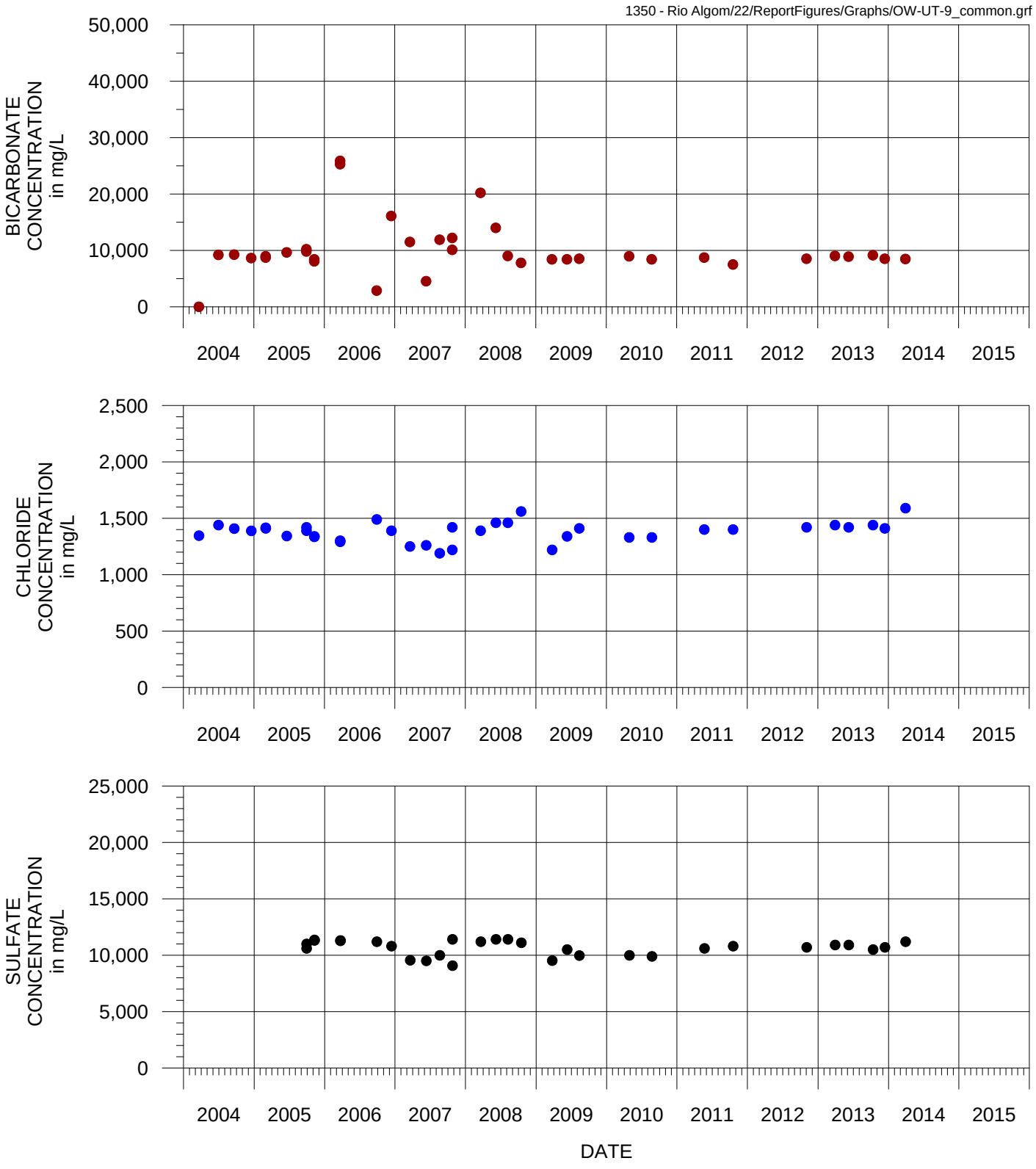


mg/L = Milligrams per liter

**Non-detect values are represented by open symbols*

FIGURE G-25. TIME SERIES GRAPHS OF ARSENIC, MOLYBDENUM, SELENIUM, AND URANIUM CONCENTRATIONS FOR POINT OF COMPLIANCE WELL OW-UT-9 RIO ALGOM MINING, LISBON FACILITY

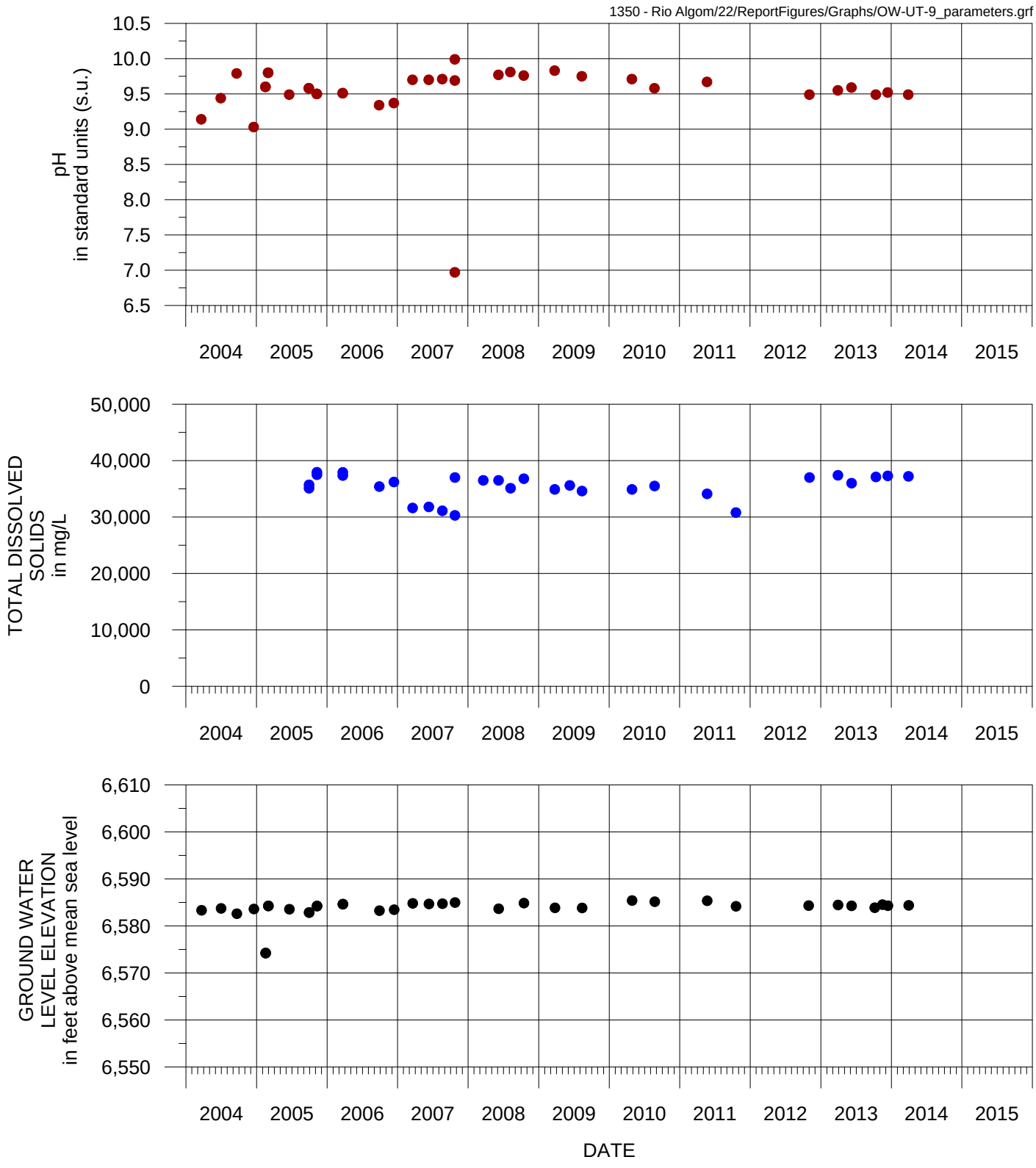
MONTGOMERY & ASSOCIATES



mg/L = Milligrams per liter

FIGURE G-26. TIME SERIES GRAPHS OF BICARBONATE, CHLORIDE, AND SULFATE CONCENTRATIONS FOR POINT OF COMPLIANCE WELL OW-UT-9 RIO ALGOM MINING, LISBON FACILITY

MONTGOMERY & ASSOCIATES



mg/L = Milligrams per liter

FIGURE G-27. TIME SERIES GRAPHS OF pH AND TOTAL DISSOLVED SOLIDS CONCENTRATIONS AND GROUND WATER LEVEL ELEVATION FOR POINT OF COMPLIANCE WELL OW-UT-9 RIO ALGOM MINING, LISBON FACILITY

MONTGOMERY & ASSOCIATES

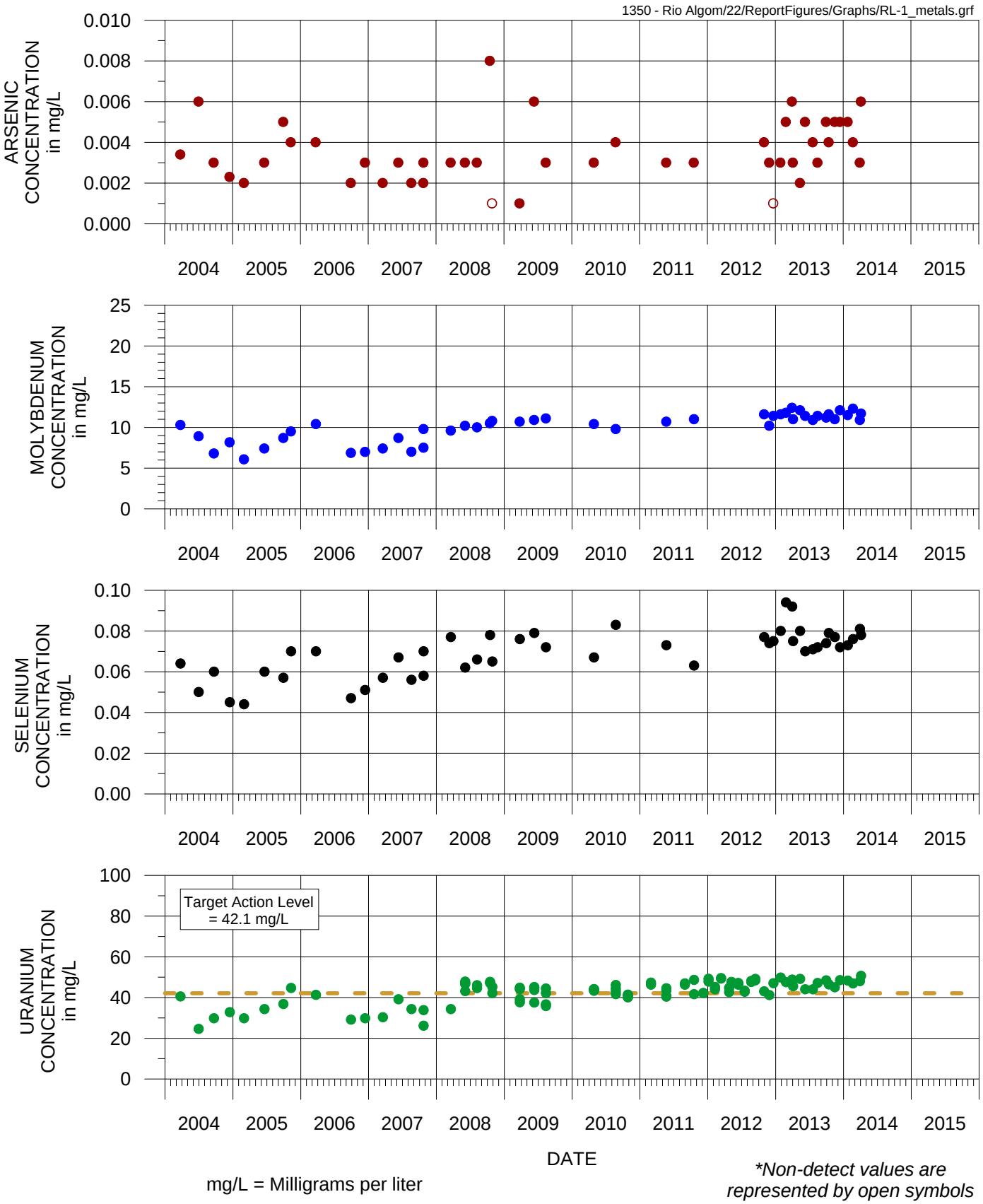
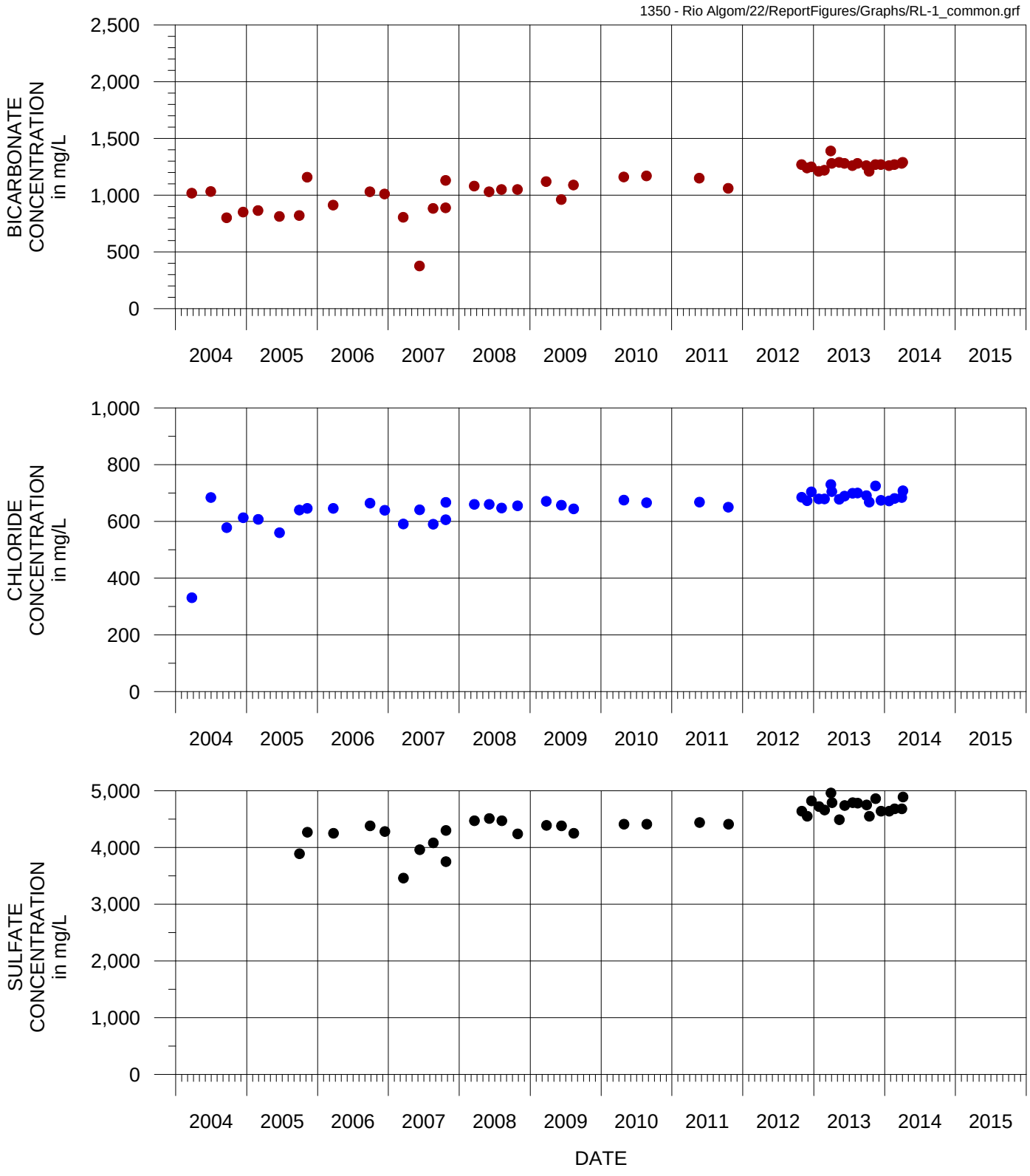


FIGURE G-28. TIME SERIES GRAPHS OF ARSENIC, MOLYBDENUM, SELENIUM, AND URANIUM CONCENTRATIONS FOR TREND WELL RL-1
RIO ALGOM MINING, LISBON FACILITY

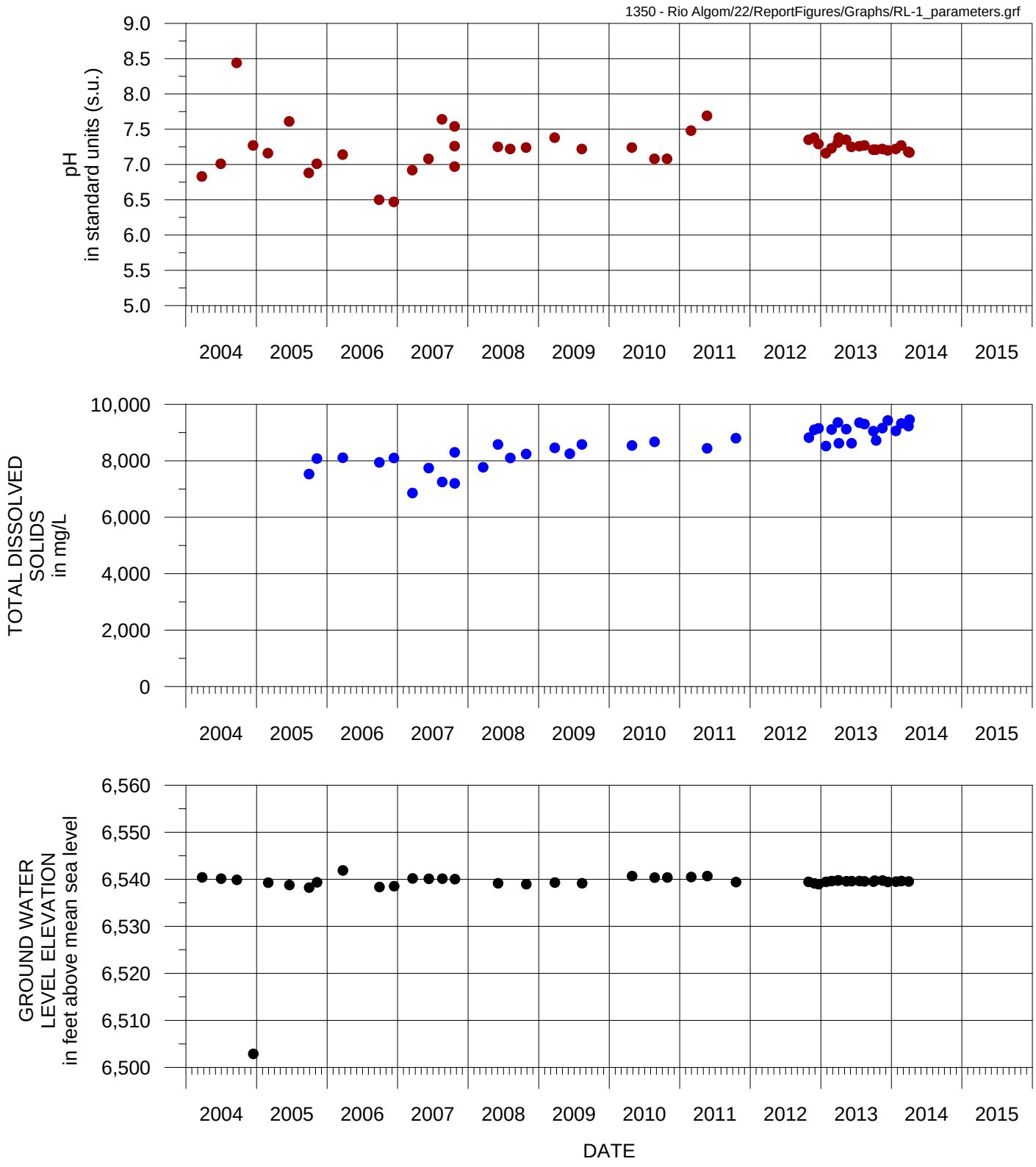
MONTGOMERY & ASSOCIATES



mg/L = Milligrams per liter

FIGURE G-29. TIME SERIES GRAPHS OF BICARBONATE, CHLORIDE, AND SULFATE CONCENTRATIONS FOR TREND WELL RL-1 RIO ALGOM MINING, LISBON FACILITY

MONTGOMERY & ASSOCIATES



mg/L = Milligrams per liter

FIGURE G-30. TIME SERIES GRAPHS OF pH AND TOTAL DISSOLVED SOLIDS, CONCENTRATIONS AND GROUND WATER LEVEL ELEVATION FOR TREND WELL RL-1
RIO ALGOM MINING, LISBON FACILITY

MONTGOMERY & ASSOCIATES

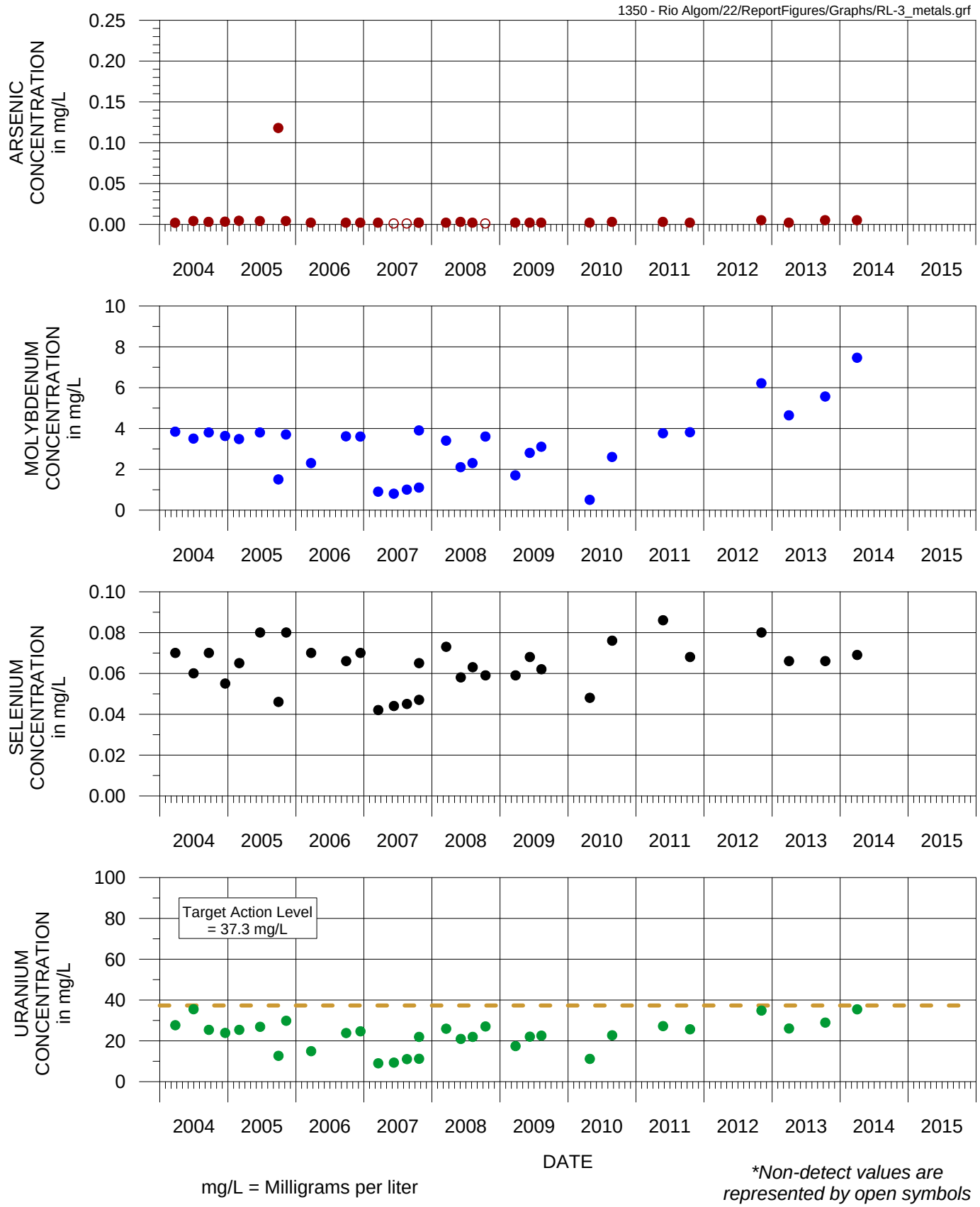
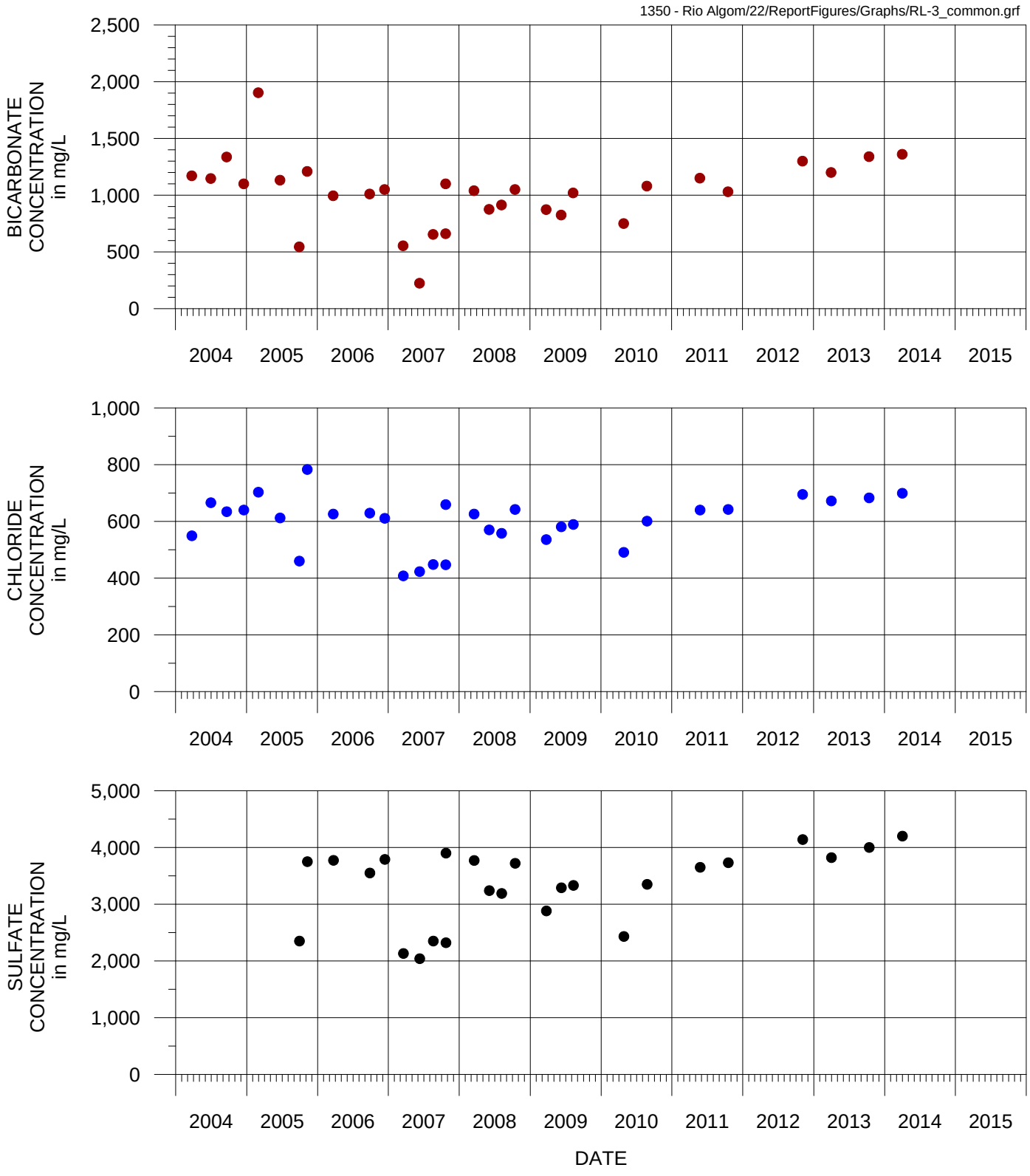


FIGURE G-31. TIME SERIES GRAPHS OF ARSENIC, MOLYBDENUM, SELENIUM, AND URANIUM CONCENTRATIONS FOR TREND WELL RL-3
RIO ALGOM MINING, LISBON FACILITY

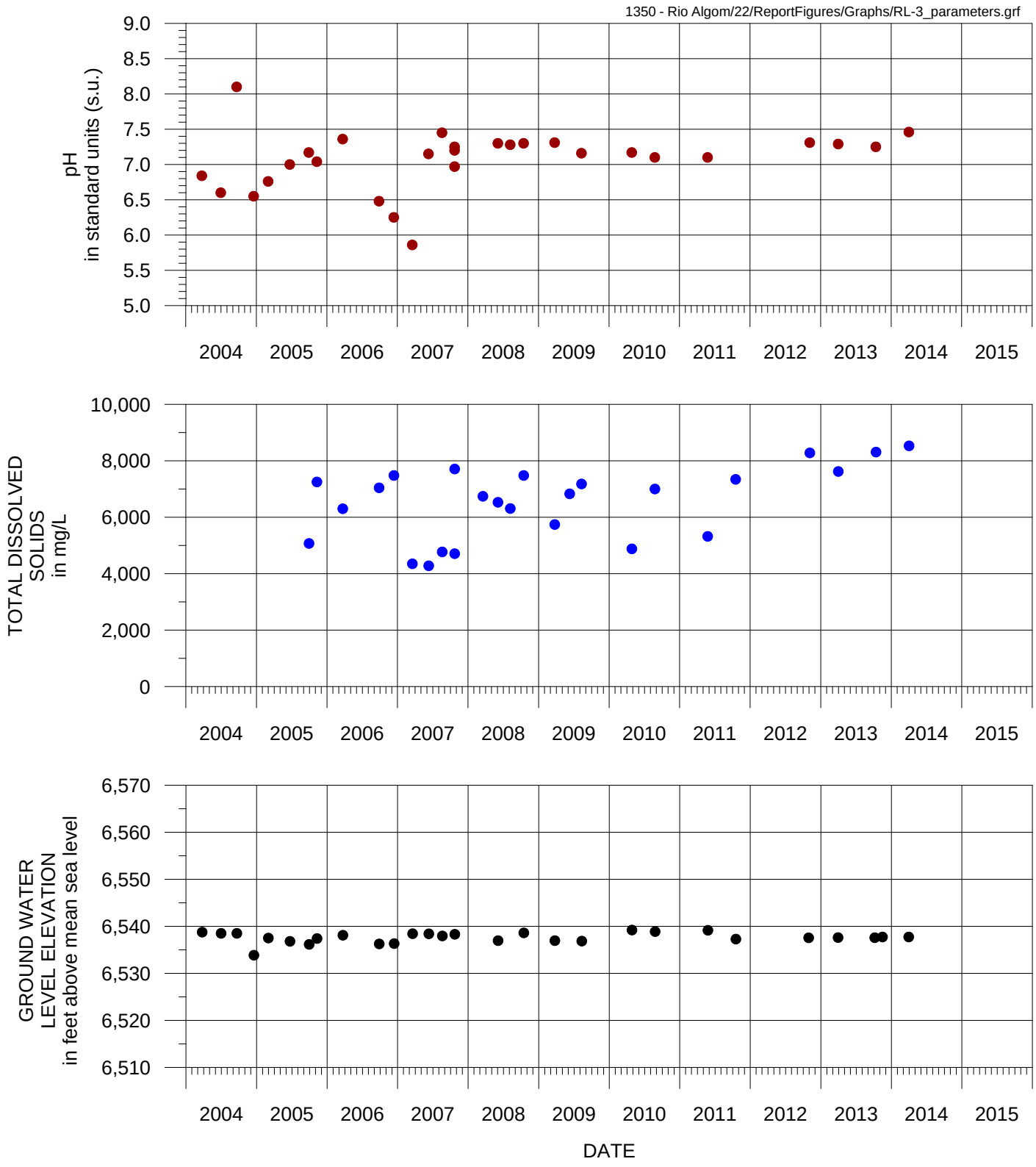
MONTGOMERY & ASSOCIATES



mg/L = Milligrams per liter

FIGURE G-32. TIME SERIES GRAPHS OF BICARBONATE, CHLORIDE, AND SULFATE CONCENTRATIONS FOR TREND WELL RL-3 RIO ALGOM MINING, LISBON FACILITY

MONTGOMERY & ASSOCIATES



mg/L = Milligrams per liter

FIGURE G-33. TIME SERIES GRAPHS OF pH AND TOTAL DISSOLVED SOLIDS, CONCENTRATIONS AND GROUND WATER LEVEL ELEVATION FOR TREND WELL RL-3
RIO ALGOM MINING, LISBON FACILITY

MONTGOMERY & ASSOCIATES

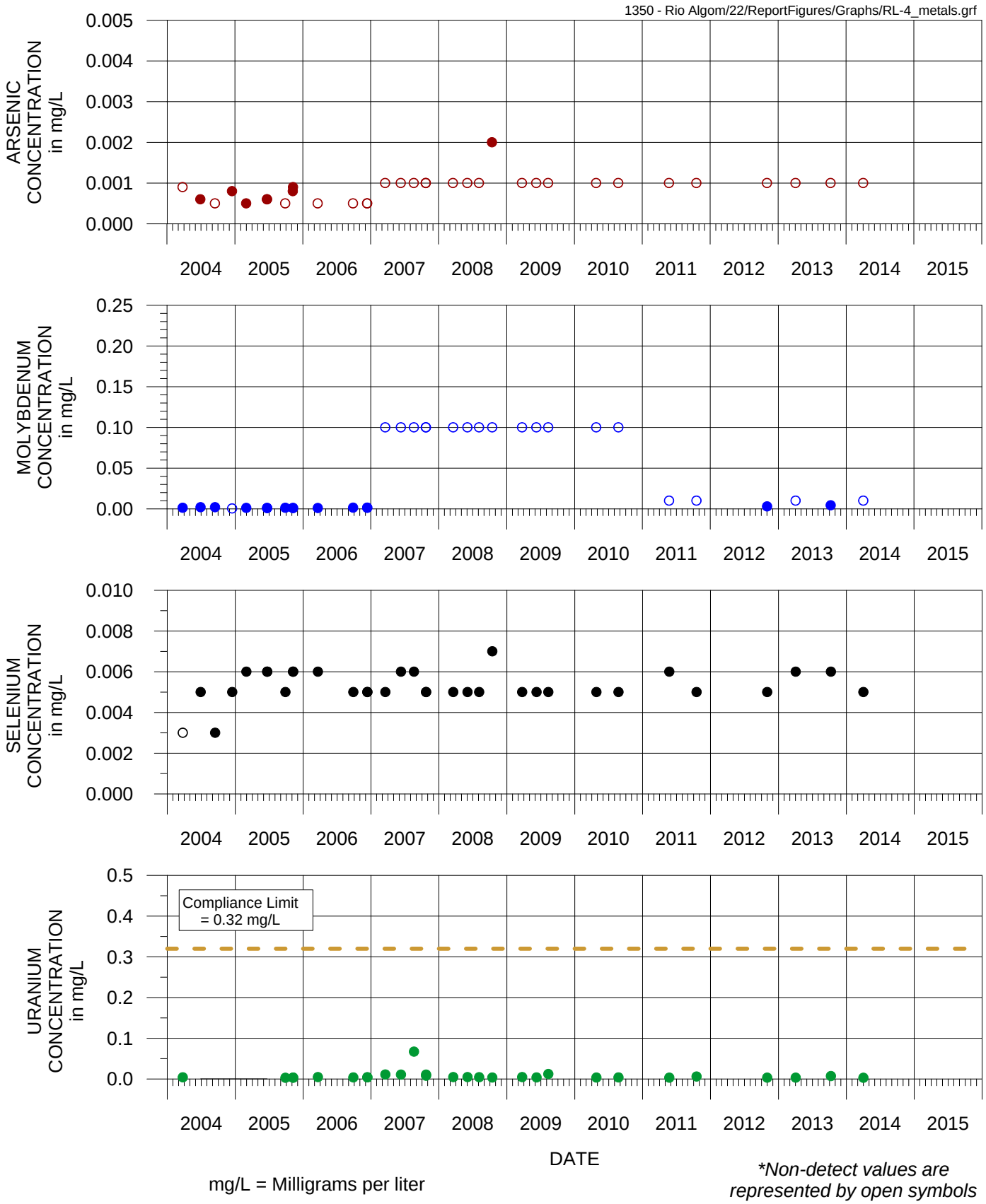
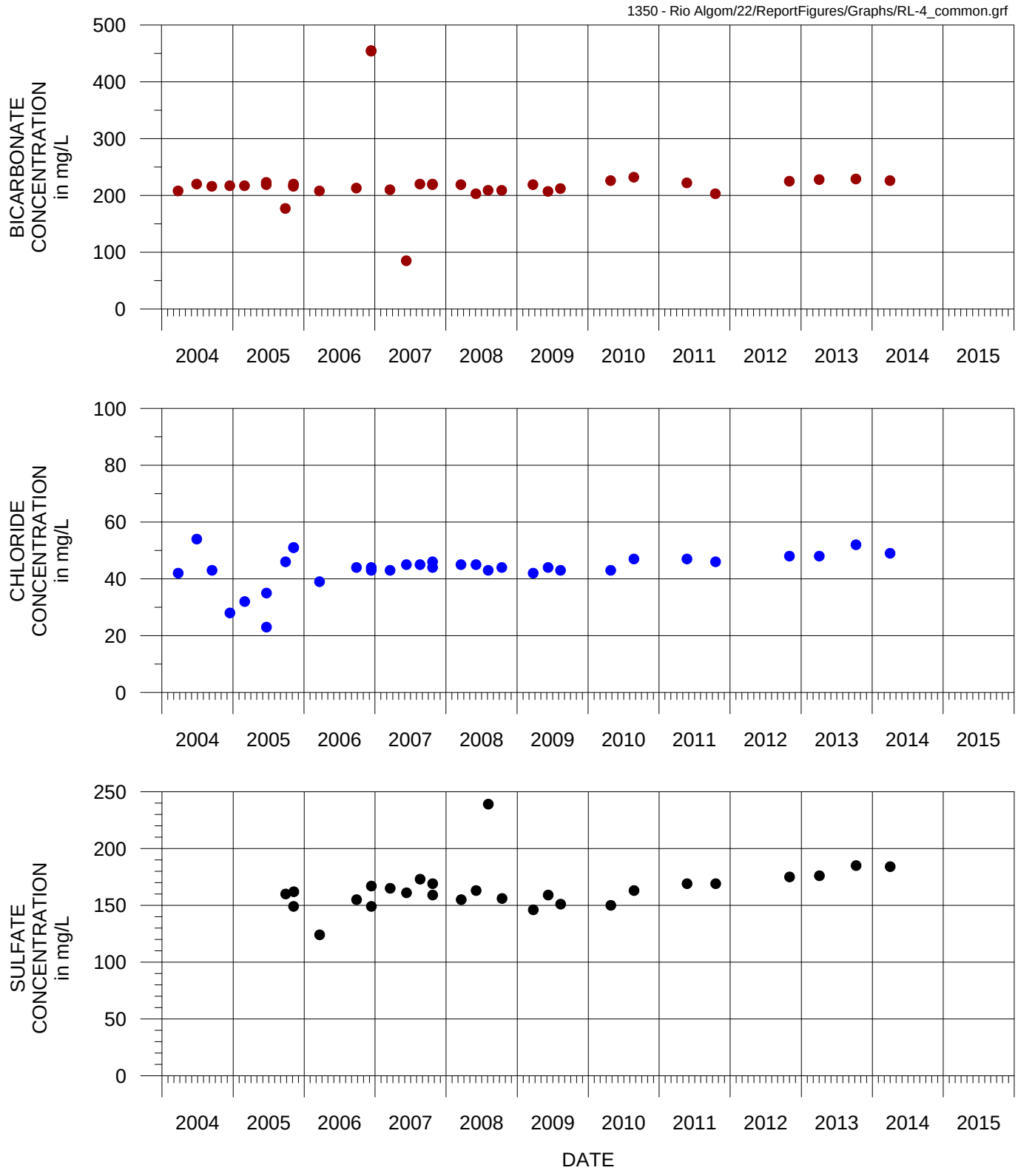


FIGURE G-34. TIME SERIES GRAPHS OF ARSENIC, MOLYBDENUM, SELENIUM, AND URANIUM CONCENTRATIONS FOR POINT OF EXPOSURE WELL RL-4 RIO ALGOM MINING, LISBON FACILITY

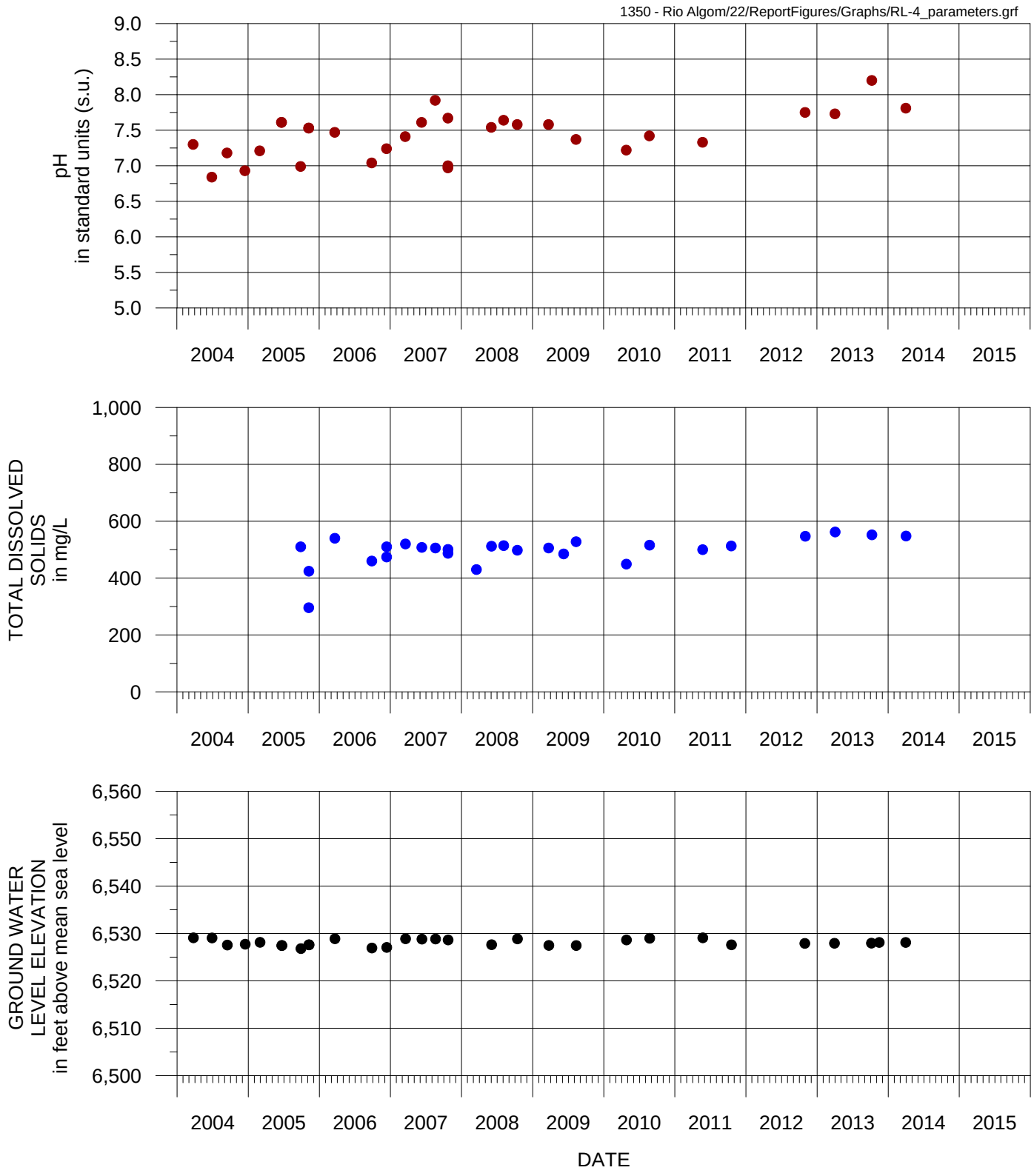
MONTGOMERY & ASSOCIATES



mg/L = Milligrams per liter

FIGURE G-35. TIME SERIES GRAPHS OF BICARBONATE, CHLORIDE, AND SULFATE CONCENTRATIONS FOR POINT OF EXPOSURE WELL RL-4 RIO ALGOM MINING, LISBON FACILITY

MONTGOMERY & ASSOCIATES



mg/L = Milligrams per liter

FIGURE G-36. TIME SERIES GRAPHS OF pH AND TOTAL DISSOLVED SOLIDS, CONCENTRATIONS AND GROUND WATER LEVEL ELEVATION FOR POINT OF EXPOSURE WELL RL-4 RIO ALGOM MINING, LISBON FACILITY

MONTGOMERY & ASSOCIATES

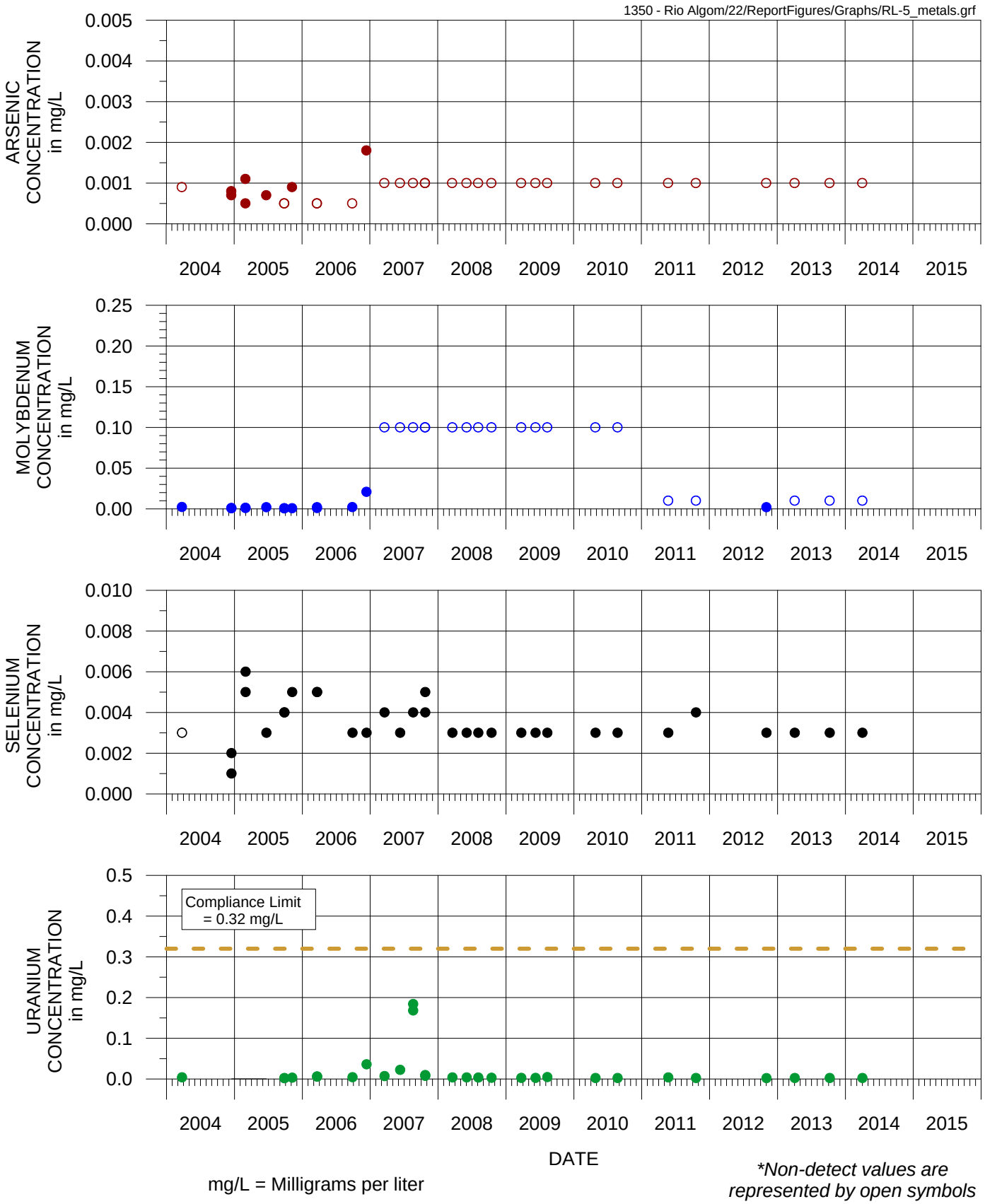
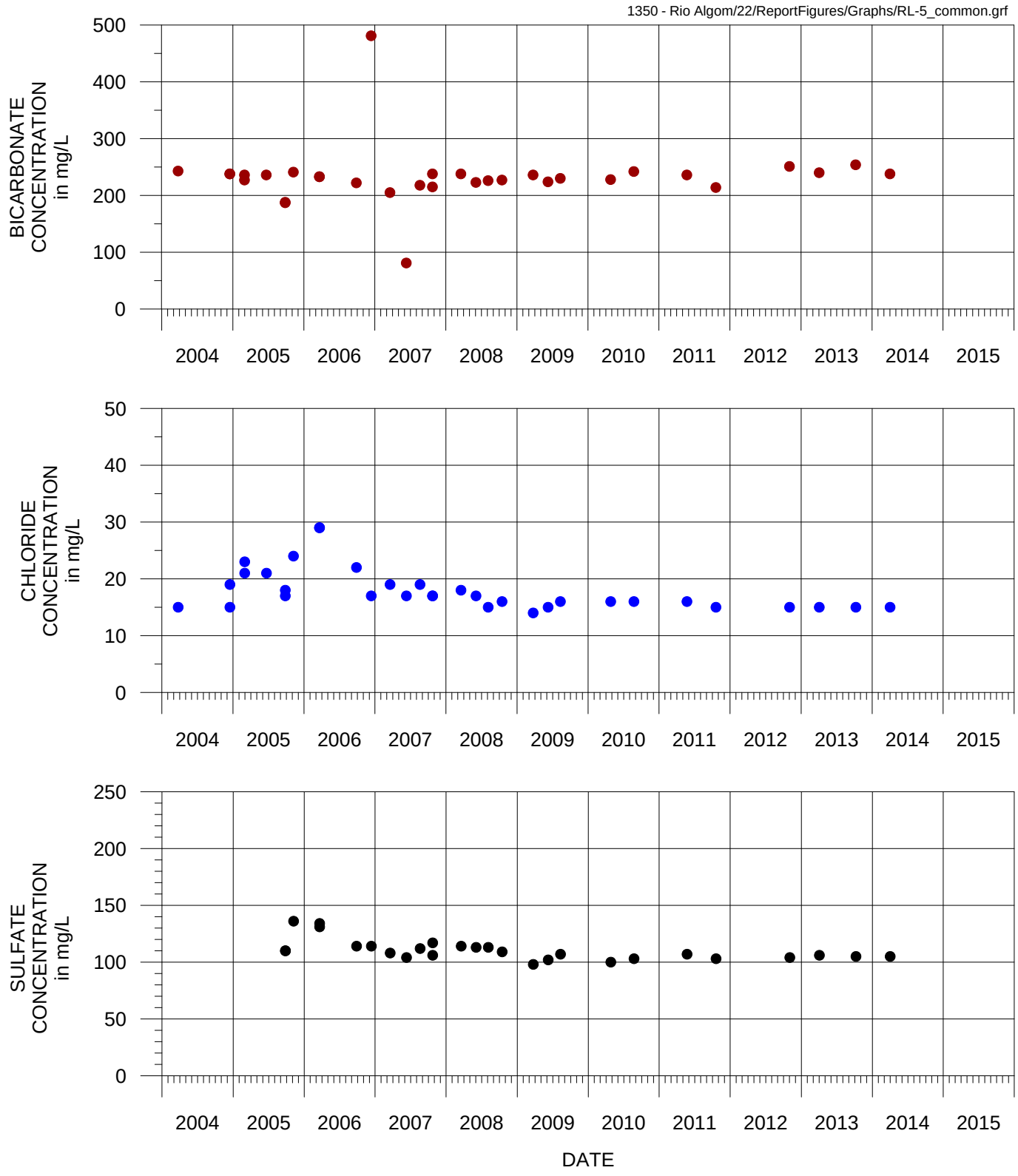


FIGURE G-37. TIME SERIES GRAPHS OF ARSENIC, MOLYBDENUM, SELENIUM, AND URANIUM CONCENTRATIONS FOR POINT OF EXPOSURE WELL RL-5 RIO ALGOM MINING, LISBON FACILITY

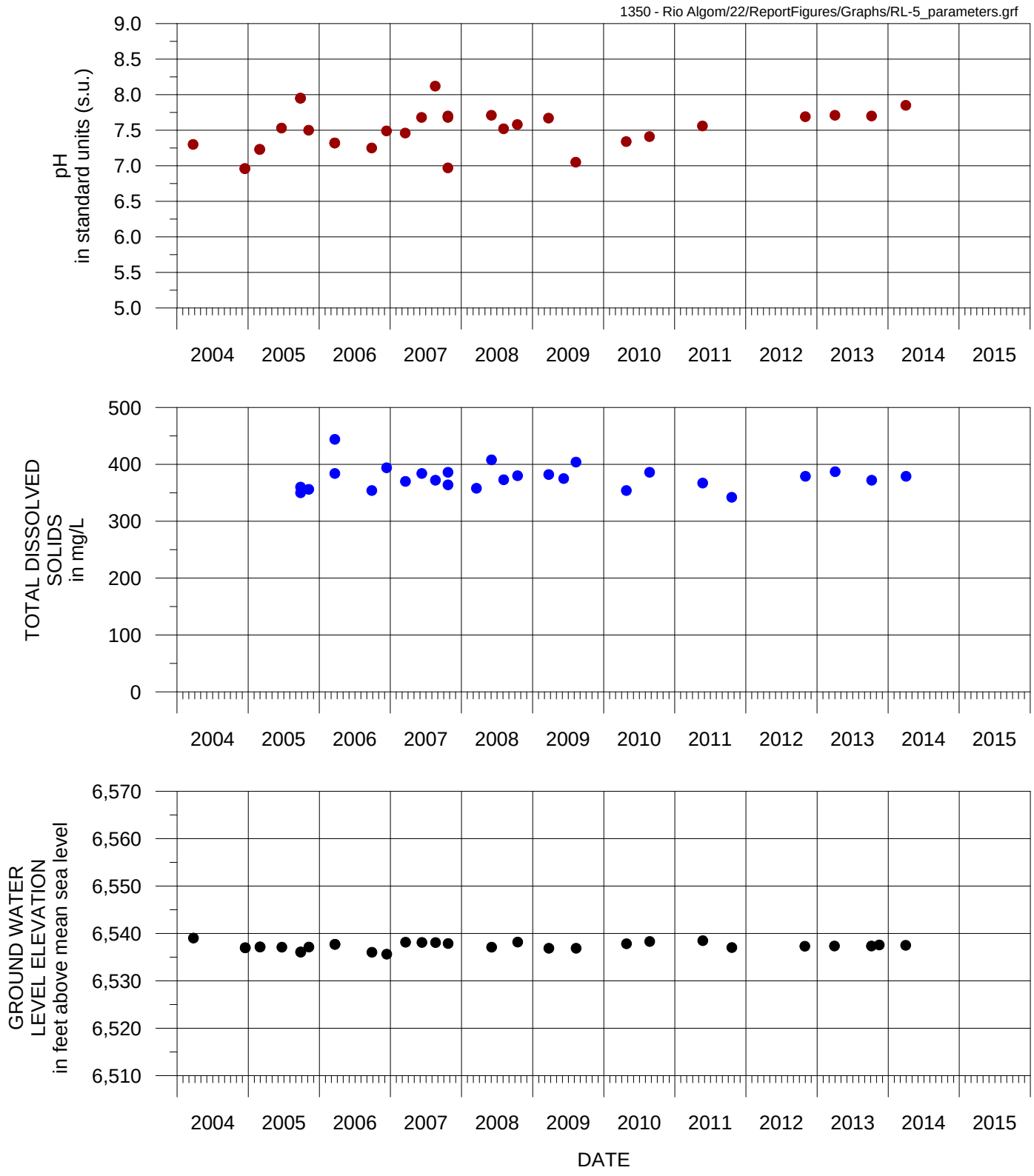
MONTGOMERY & ASSOCIATES



mg/L = Milligrams per liter

FIGURE G-38. TIME SERIES GRAPHS OF BICARBONATE, CHLORIDE, AND SULFATE CONCENTRATIONS FOR POINT OF EXPOSURE WELL RL-5 RIO ALGOM MINING, LISBON FACILITY

MONTGOMERY & ASSOCIATES



mg/L = Milligrams per liter

FIGURE G-39. TIME SERIES GRAPHS OF pH AND TOTAL DISSOLVED SOLIDS, CONCENTRATIONS AND GROUND WATER LEVEL ELEVATION FOR POINT OF EXPOSURE WELL RL-5 RIO ALGOM MINING, LISBON FACILITY

MONTGOMERY & ASSOCIATES

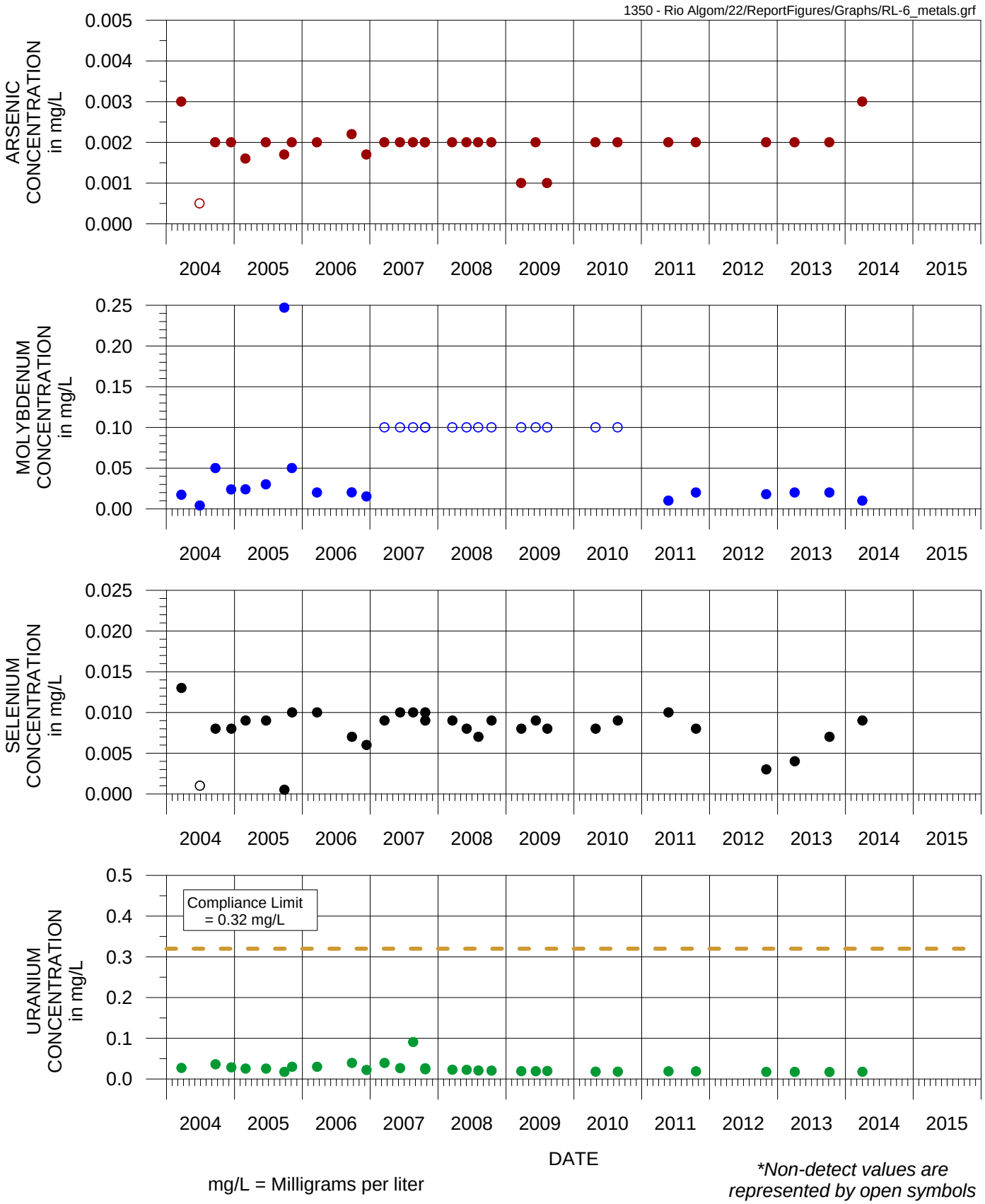
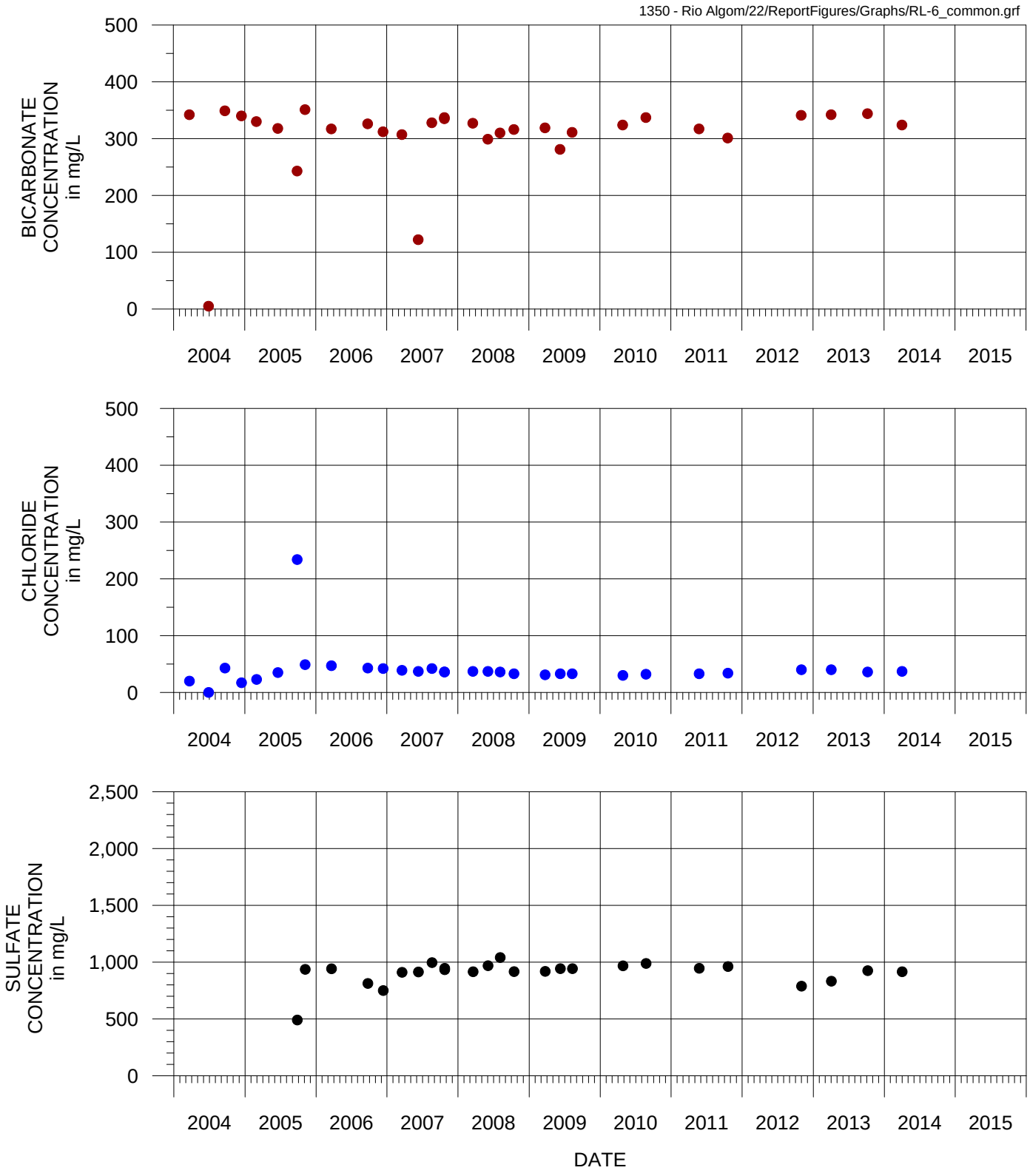


FIGURE G-40. TIME SERIES GRAPHS OF ARSENIC, MOLYBDENUM, SELENIUM, AND URANIUM CONCENTRATIONS FOR POINT OF EXPOSURE WELL RL-6 RIO ALGOM MINING, LISBON FACILITY

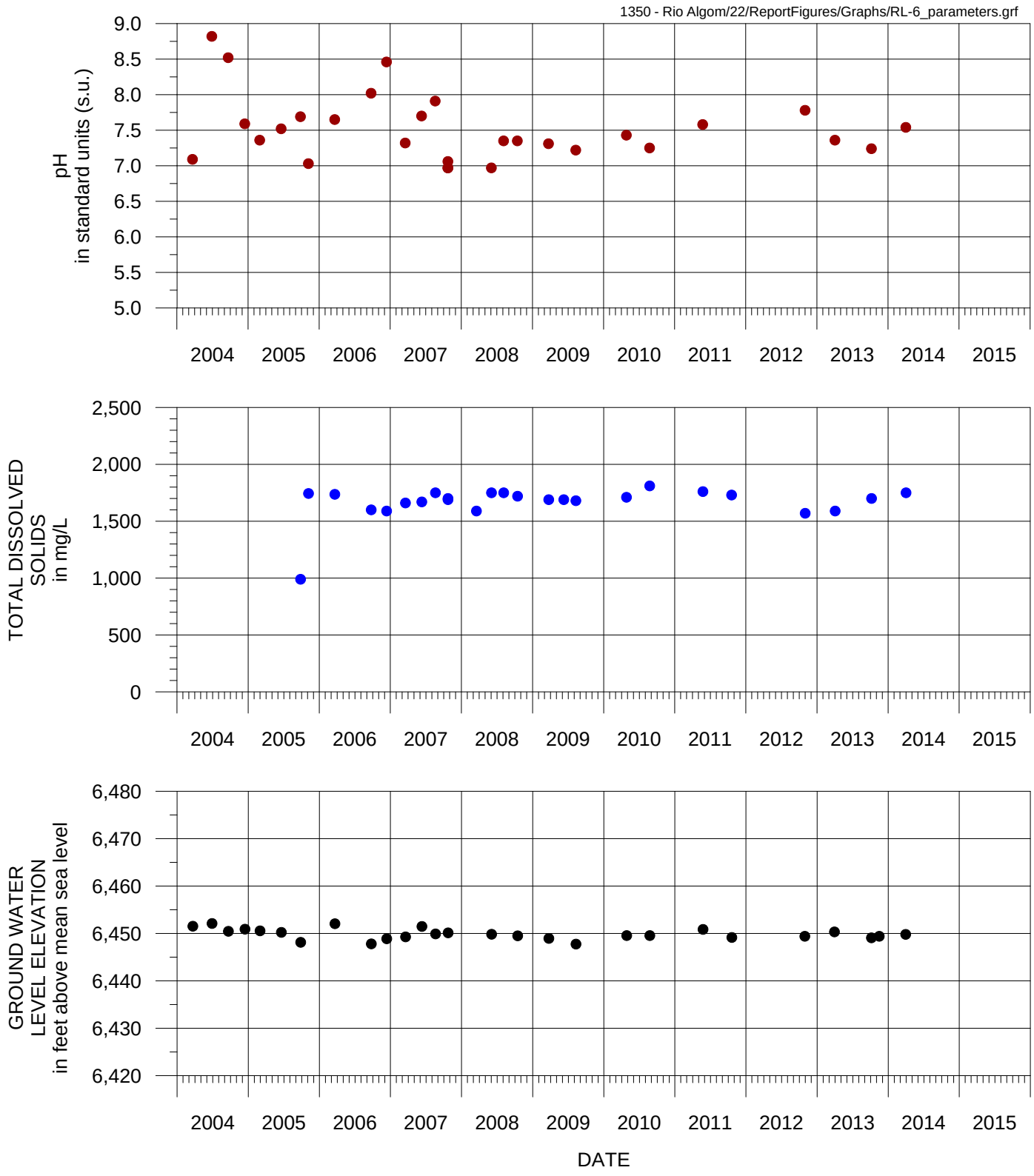
MONTGOMERY & ASSOCIATES



mg/L = Milligrams per liter

FIGURE G-41. TIME SERIES GRAPHS OF BICARBONATE, CHLORIDE, AND SULFATE CONCENTRATIONS FOR POINT OF EXPOSURE WELL RL-6 RIO ALGOM MINING, LISBON FACILITY

MONTGOMERY & ASSOCIATES



mg/L = Milligrams per liter

FIGURE G-42. TIME SERIES GRAPHS OF pH AND TOTAL DISSOLVED SOLIDS, CONCENTRATIONS AND GROUND WATER LEVEL ELEVATION FOR POINT OF EXPOSURE WELL RL-6 RIO ALGOM MINING, LISBON FACILITY

MONTGOMERY & ASSOCIATES

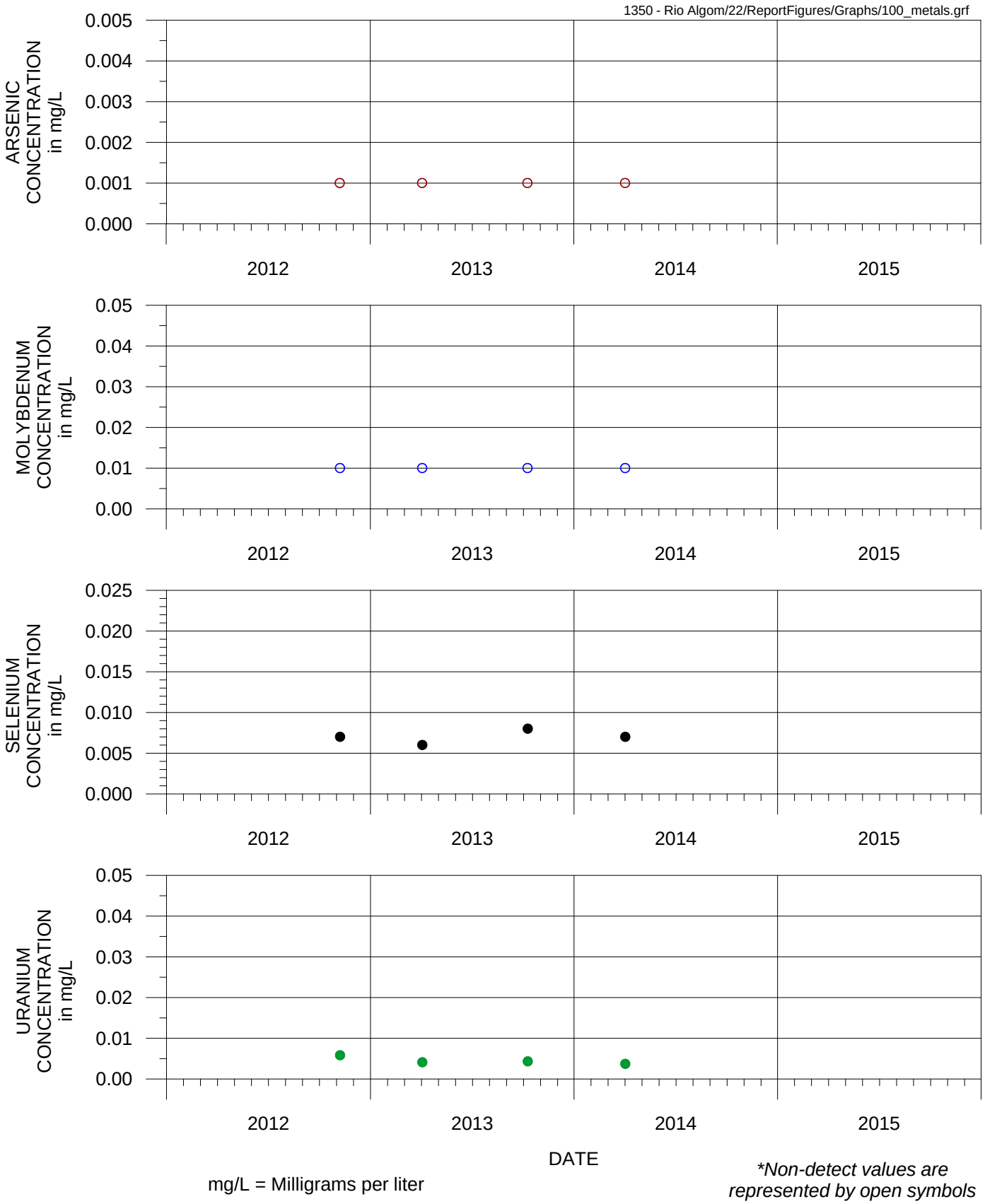
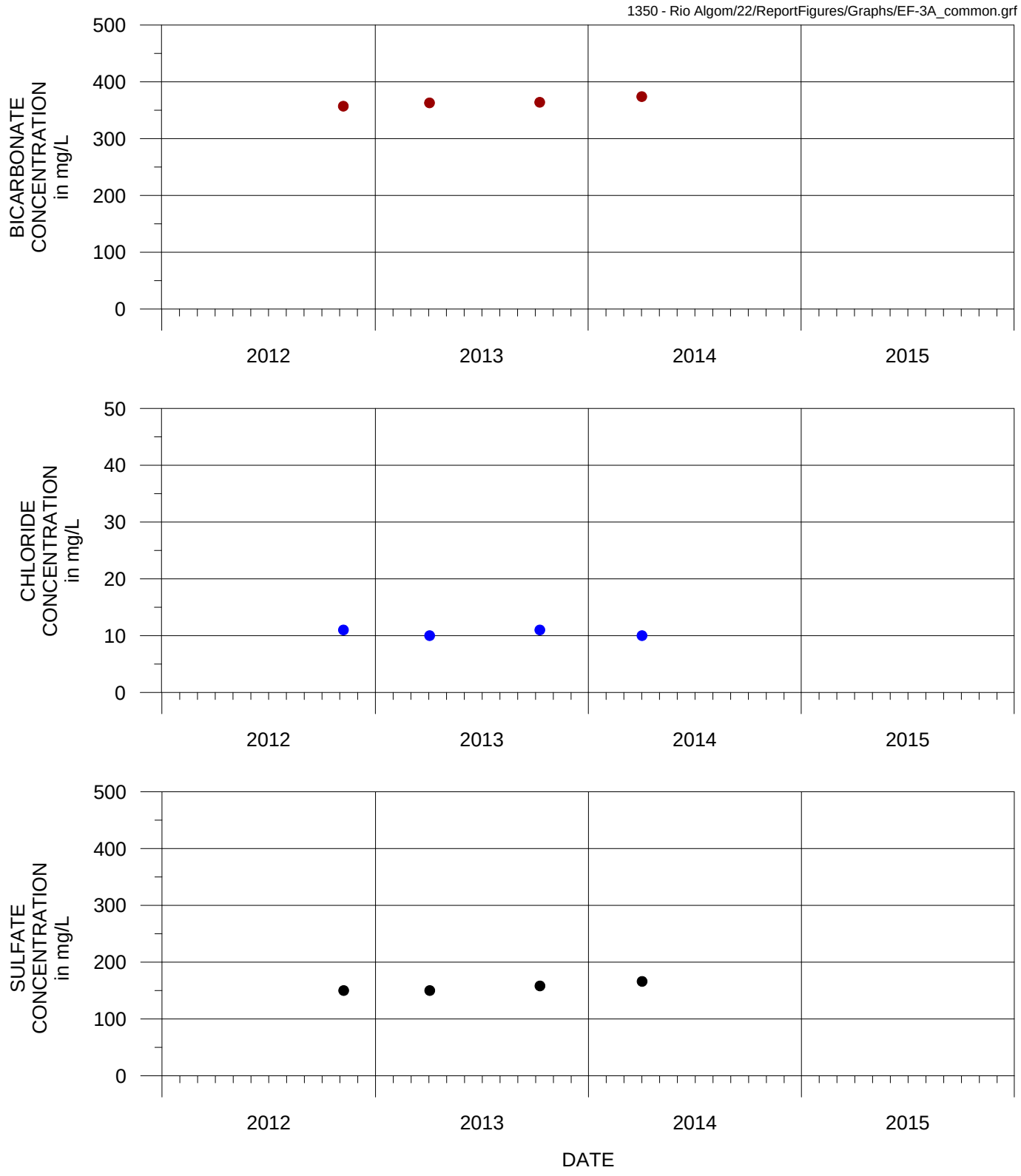


FIGURE G-43. TIME SERIES GRAPHS OF ARSENIC, MOLYBDENUM, SELENIUM, AND URANIUM CONCENTRATIONS FOR MONITOR WELL MW-100
RIO ALGOM MINING, LISBON FACILITY

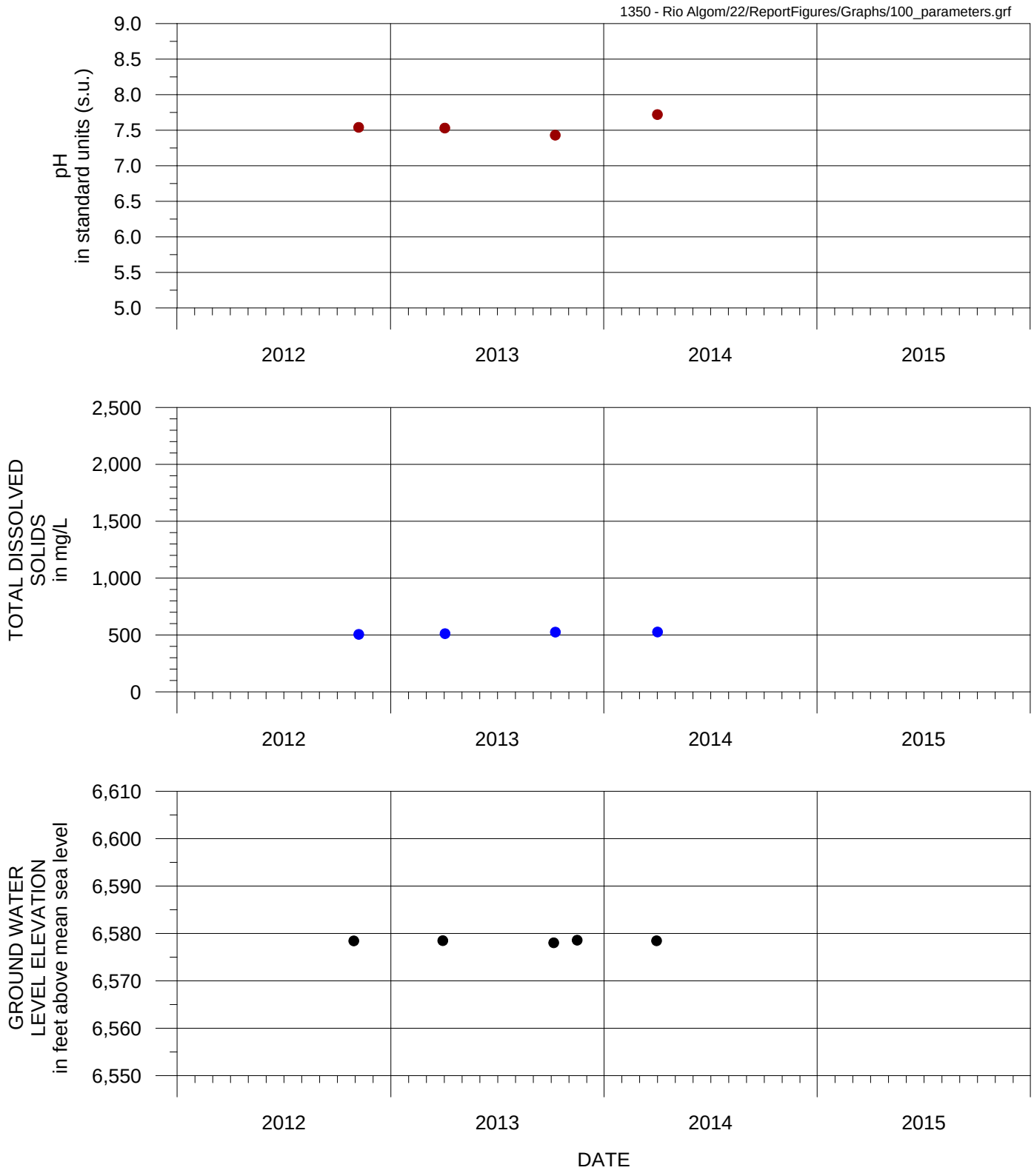
MONTGOMERY & ASSOCIATES



mg/L = Milligrams per liter

FIGURE G-44. TIME SERIES GRAPHS OF BICARBONATE, CHLORIDE, AND SULFATE CONCENTRATIONS FOR MONITOR WELL MW-100 RIO ALGOM MINING, LISBON FACILITY

MONTGOMERY & ASSOCIATES



mg/L = Milligrams per liter

FIGURE G-45. TIME SERIES GRAPHS OF pH AND TOTAL DISSOLVED SOLIDS CONCENTRATIONS AND GROUND WATER LEVEL ELEVATION FOR MONITOR WELL MW-100 RIO ALGOM MINING, LISBON FACILITY

MONTGOMERY & ASSOCIATES

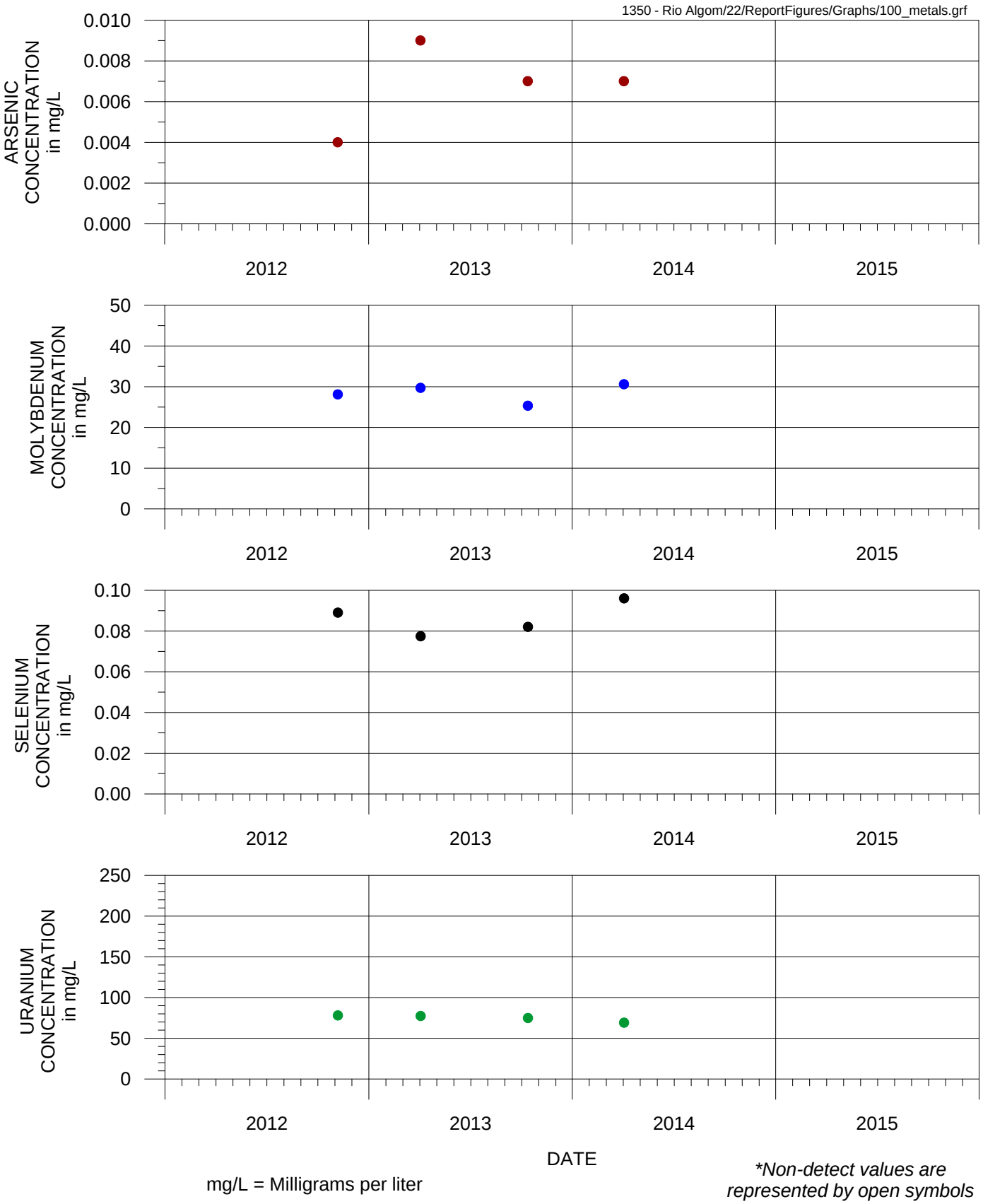
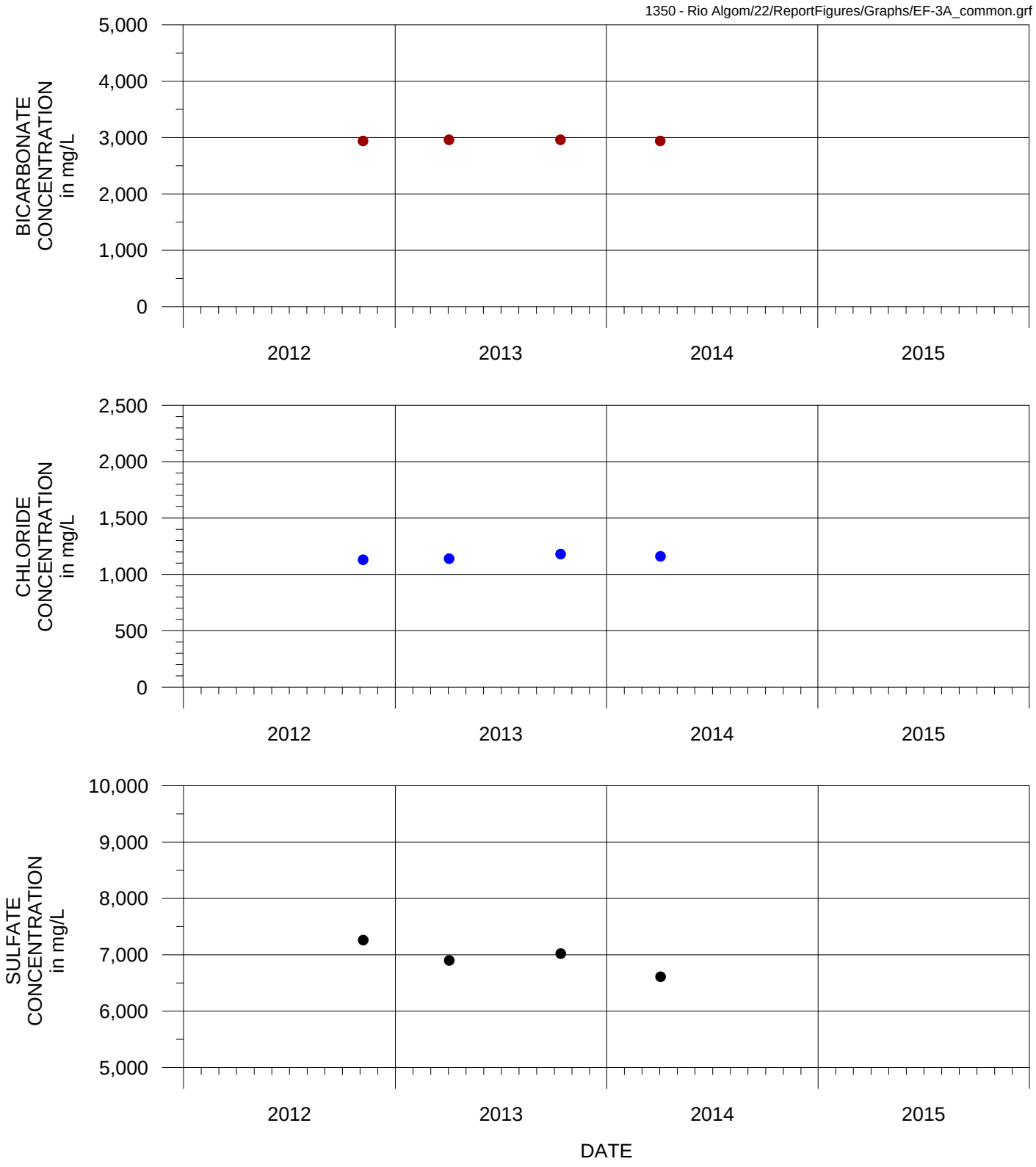


FIGURE G-46. TIME SERIES GRAPHS OF ARSENIC, MOLYBDENUM, SELENIUM, AND URANIUM CONCENTRATIONS FOR MONITOR WELL MW-101
RIO ALGOM MINING, LISBON FACILITY

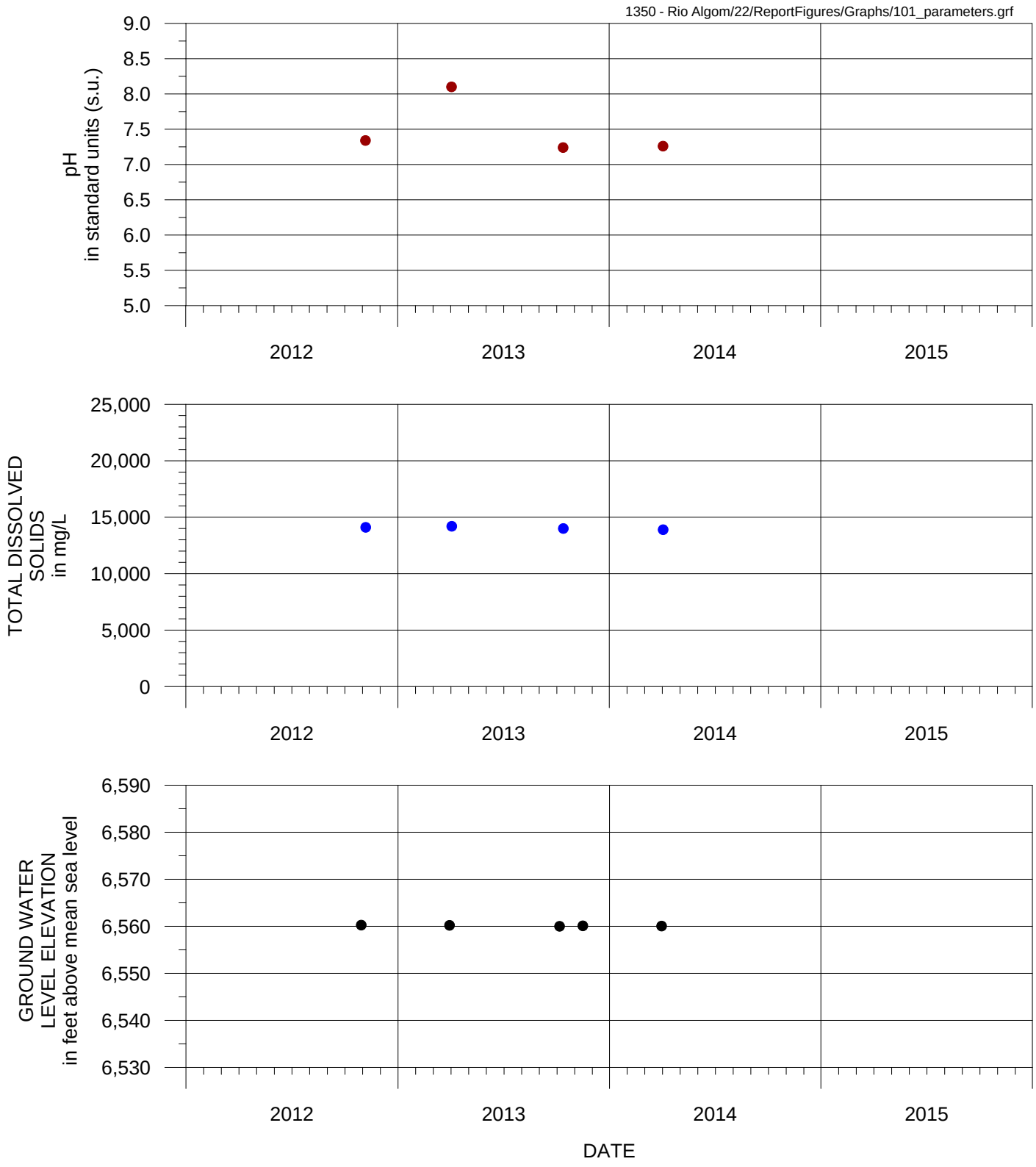
MONTGOMERY & ASSOCIATES



mg/L = Milligrams per liter

FIGURE G-47. TIME SERIES GRAPHS OF BICARBONATE, CHLORIDE, AND SULFATE CONCENTRATIONS FOR MONITOR WELL MW-101 RIO ALGOM MINING, LISBON FACILITY

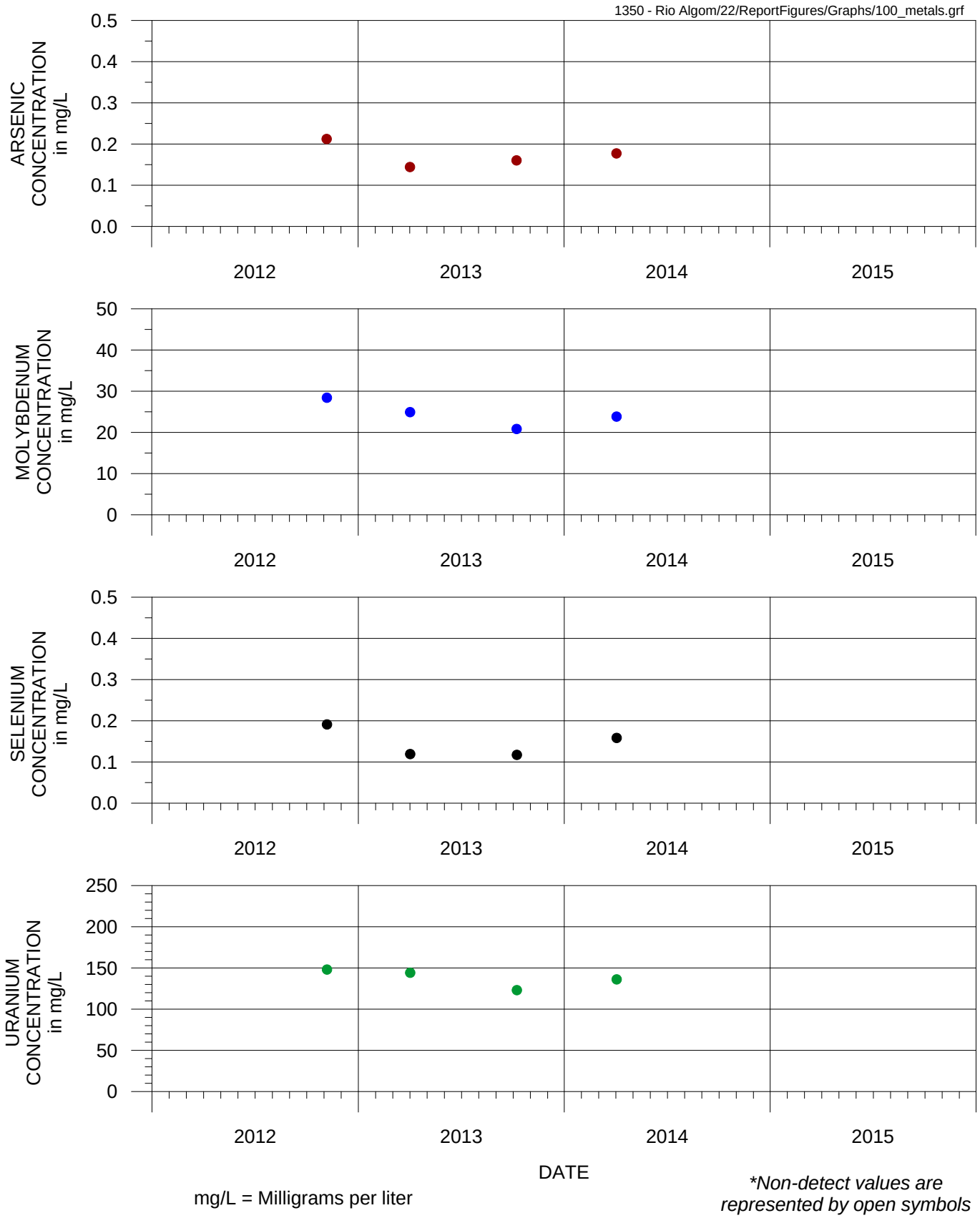
MONTGOMERY & ASSOCIATES



mg/L = Milligrams per liter

FIGURE G-48. TIME SERIES GRAPHS OF pH AND TOTAL DISSOLVED SOLIDS CONCENTRATIONS AND GROUND WATER LEVEL ELEVATION FOR MONITOR WELL MW-101
RIO ALGOM MINING, LISBON FACILITY

MONTGOMERY & ASSOCIATES

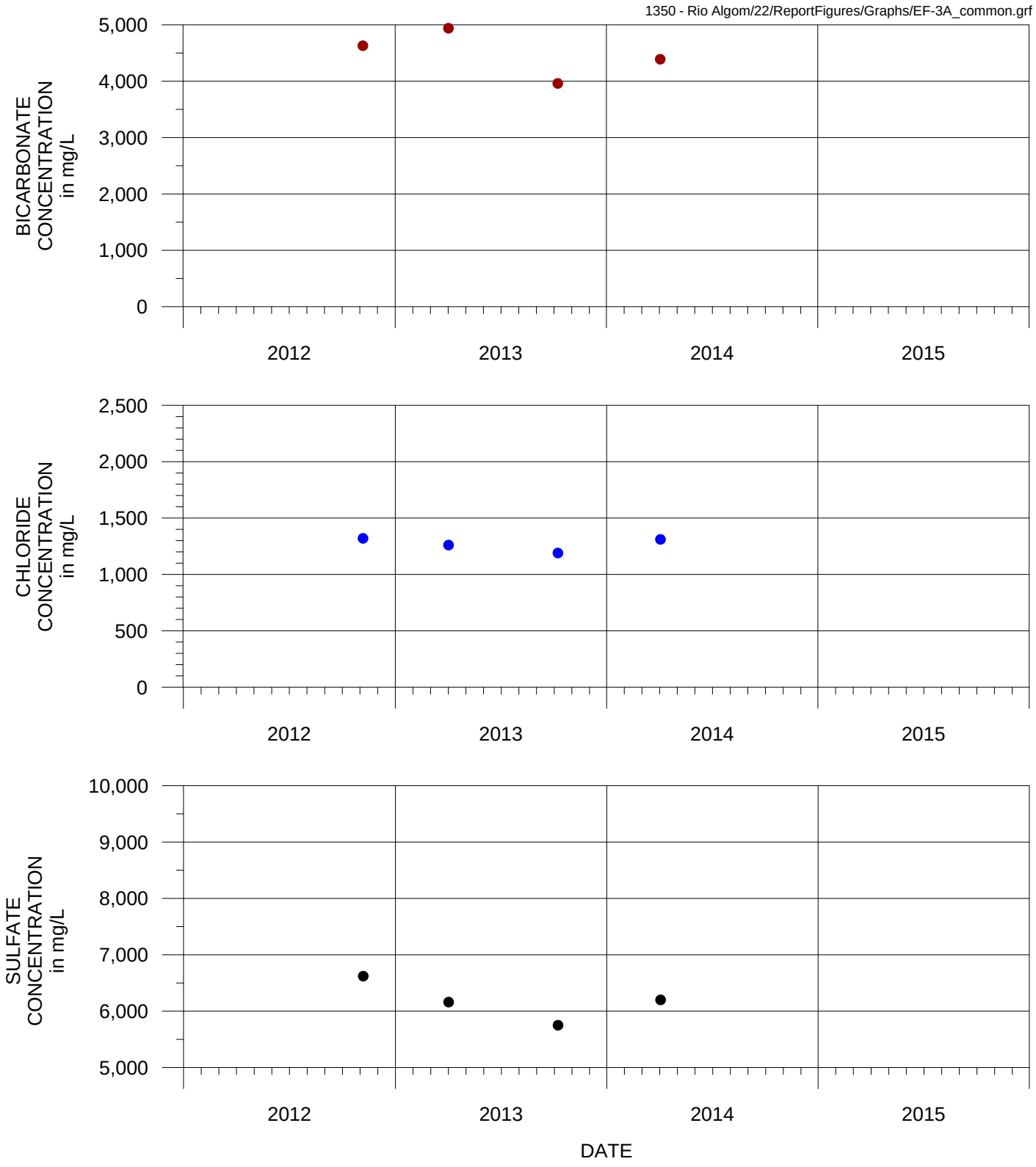


mg/L = Milligrams per liter

**Non-detect values are represented by open symbols*

FIGURE G-49. TIME SERIES GRAPHS OF ARSENIC, MOLYBDENUM, SELENIUM, AND URANIUM CONCENTRATIONS FOR MONITOR WELL MW-102 RIO ALGOM MINING, LISBON FACILITY

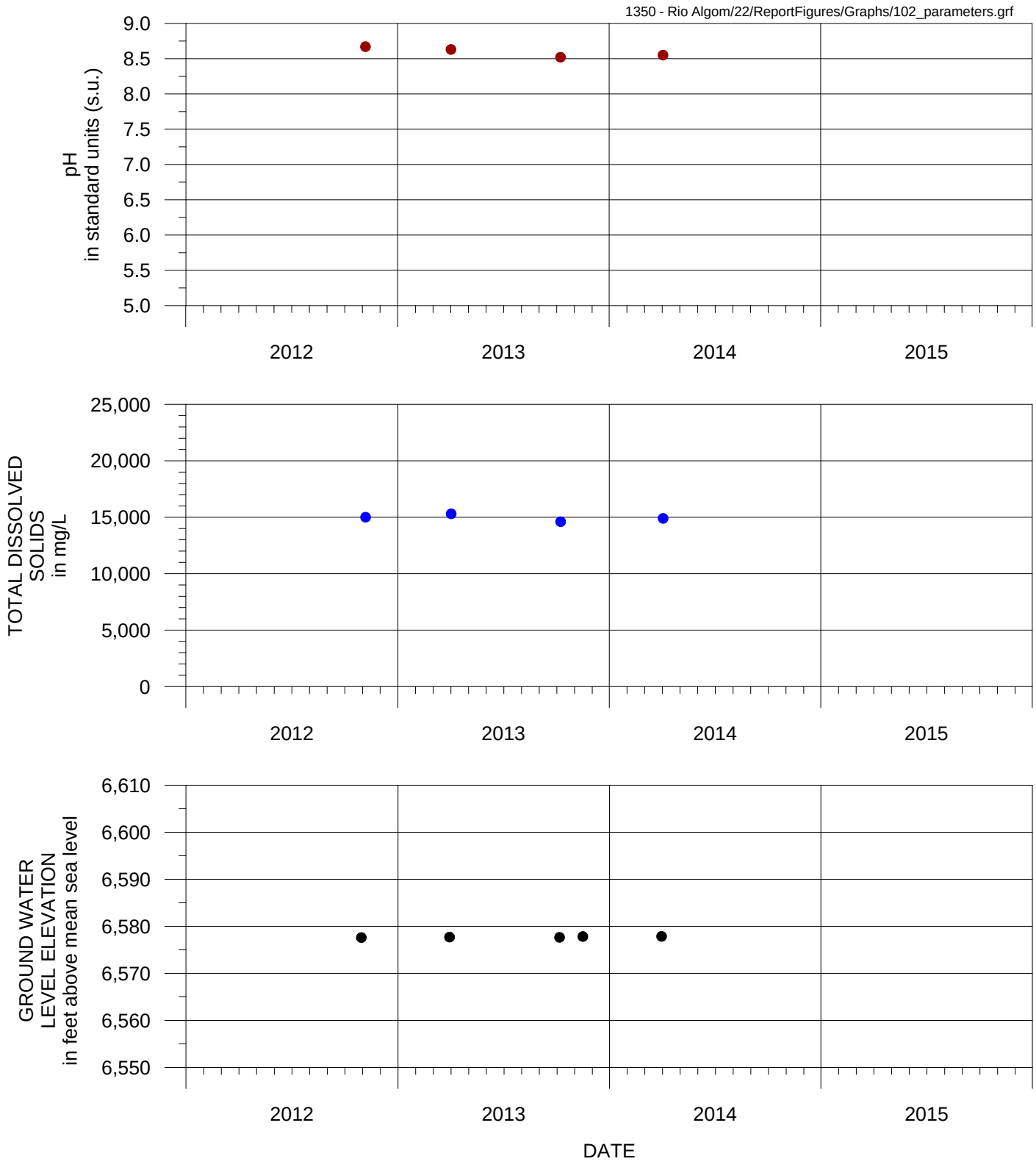
MONTGOMERY & ASSOCIATES



mg/L = Milligrams per liter

FIGURE G-50. TIME SERIES GRAPHS OF BICARBONATE, CHLORIDE, AND SULFATE CONCENTRATIONS FOR MONITOR WELL MW-102 RIO ALGOM MINING, LISBON FACILITY

MONTGOMERY & ASSOCIATES



mg/L = Milligrams per liter

FIGURE G-51. TIME SERIES GRAPHS OF pH AND TOTAL DISSOLVED SOLIDS CONCENTRATIONS AND GROUND WATER LEVEL ELEVATION FOR MONITOR WELL MW-102
RIO ALGOM MINING, LISBON FACILITY

MONTGOMERY & ASSOCIATES

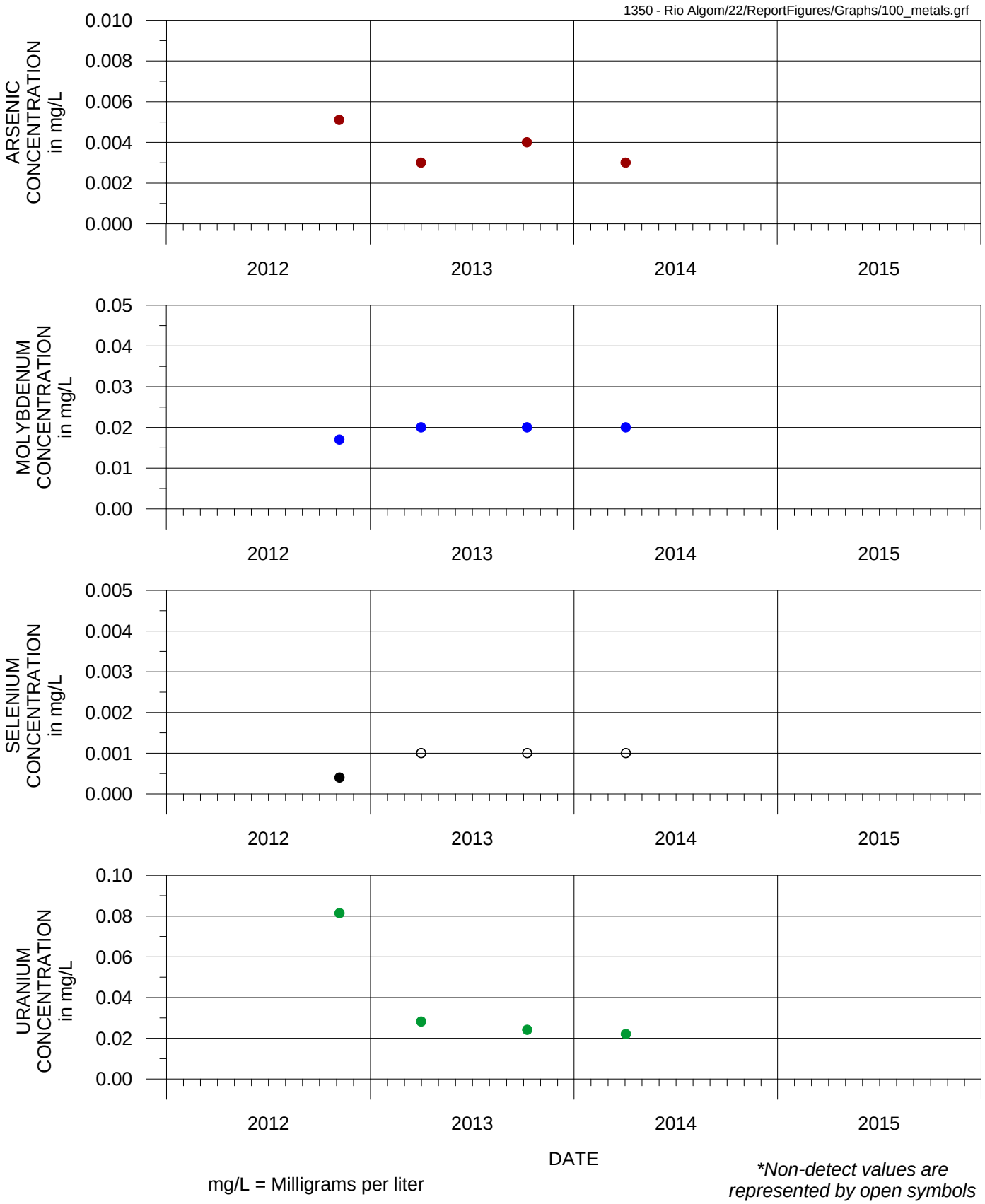
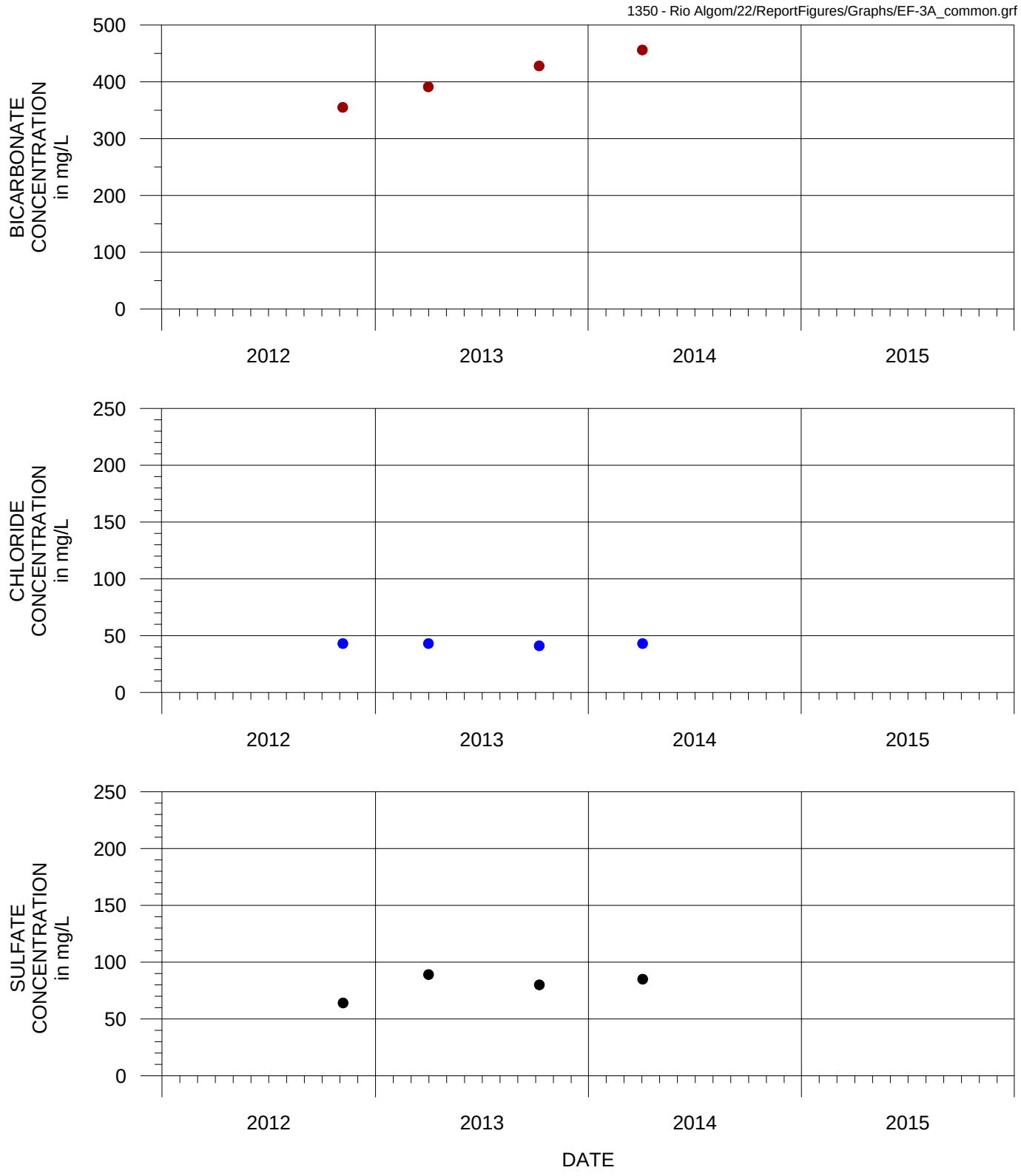


FIGURE G-52. TIME SERIES GRAPHS OF ARSENIC, MOLYBDENUM, SELENIUM, AND URANIUM CONCENTRATIONS FOR MONITOR WELL MW-102DB RIO ALGOM MINING, LISBON FACILITY

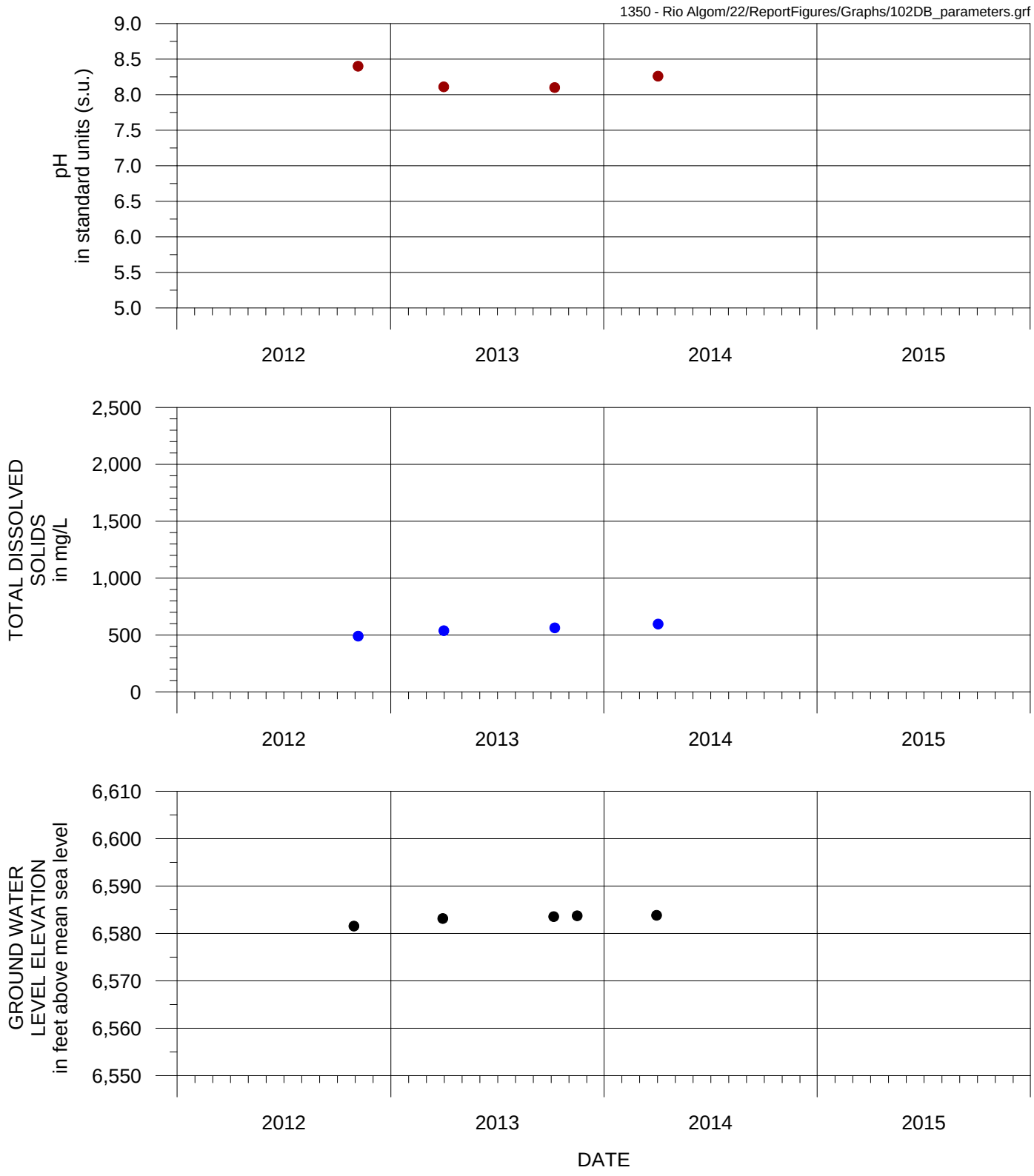
MONTGOMERY & ASSOCIATES



mg/L = Milligrams per liter

FIGURE G-53. TIME SERIES GRAPHS OF BICARBONATE, CHLORIDE, AND SULFATE CONCENTRATIONS FOR MONITOR WELL MW-102DB RIO ALGOM MINING, LISBON FACILITY

MONTGOMERY & ASSOCIATES



mg/L = Milligrams per liter

FIGURE G-54. TIME SERIES GRAPHS OF pH AND TOTAL DISSOLVED SOLIDS CONCENTRATIONS AND GROUND WATER LEVEL ELEVATION FOR MONITOR WELL MW-102DB RIO ALGOM MINING, LISBON FACILITY

MONTGOMERY & ASSOCIATES

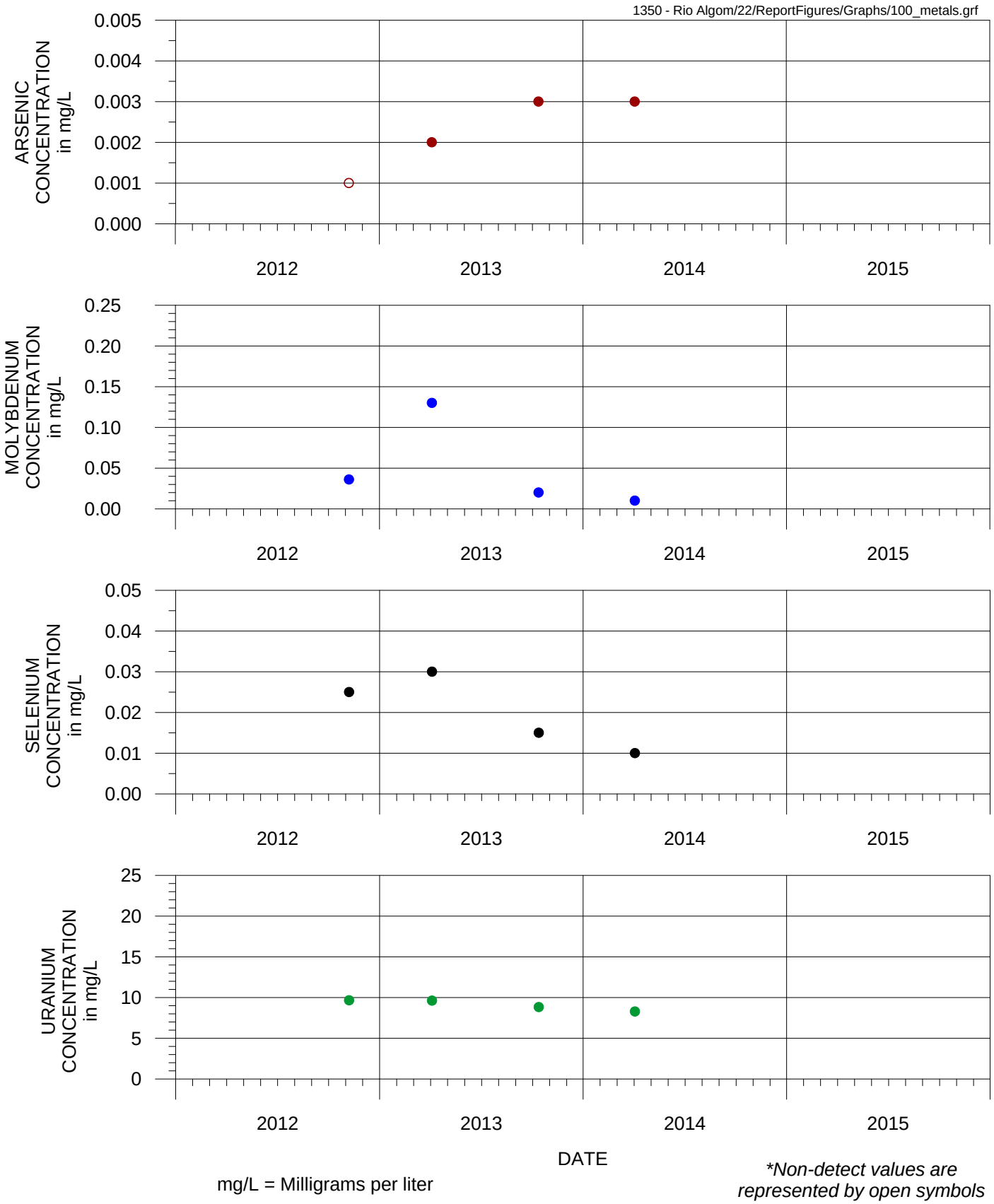
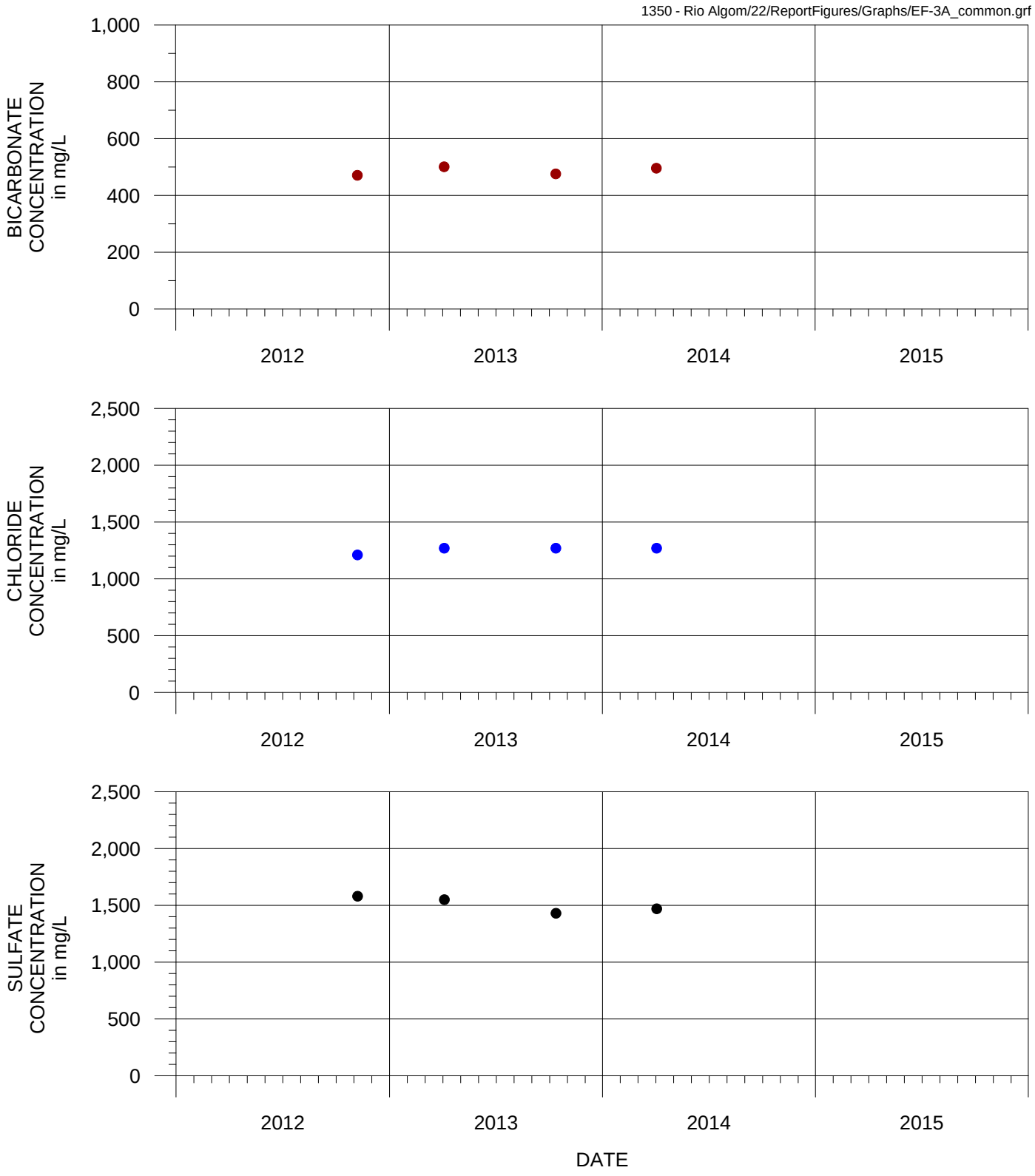


FIGURE G-55. TIME SERIES GRAPHS OF ARSENIC, MOLYBDENUM, SELENIUM, AND URANIUM CONCENTRATIONS FOR MONITOR WELL MW-103
RIO ALGOM MINING, LISBON FACILITY

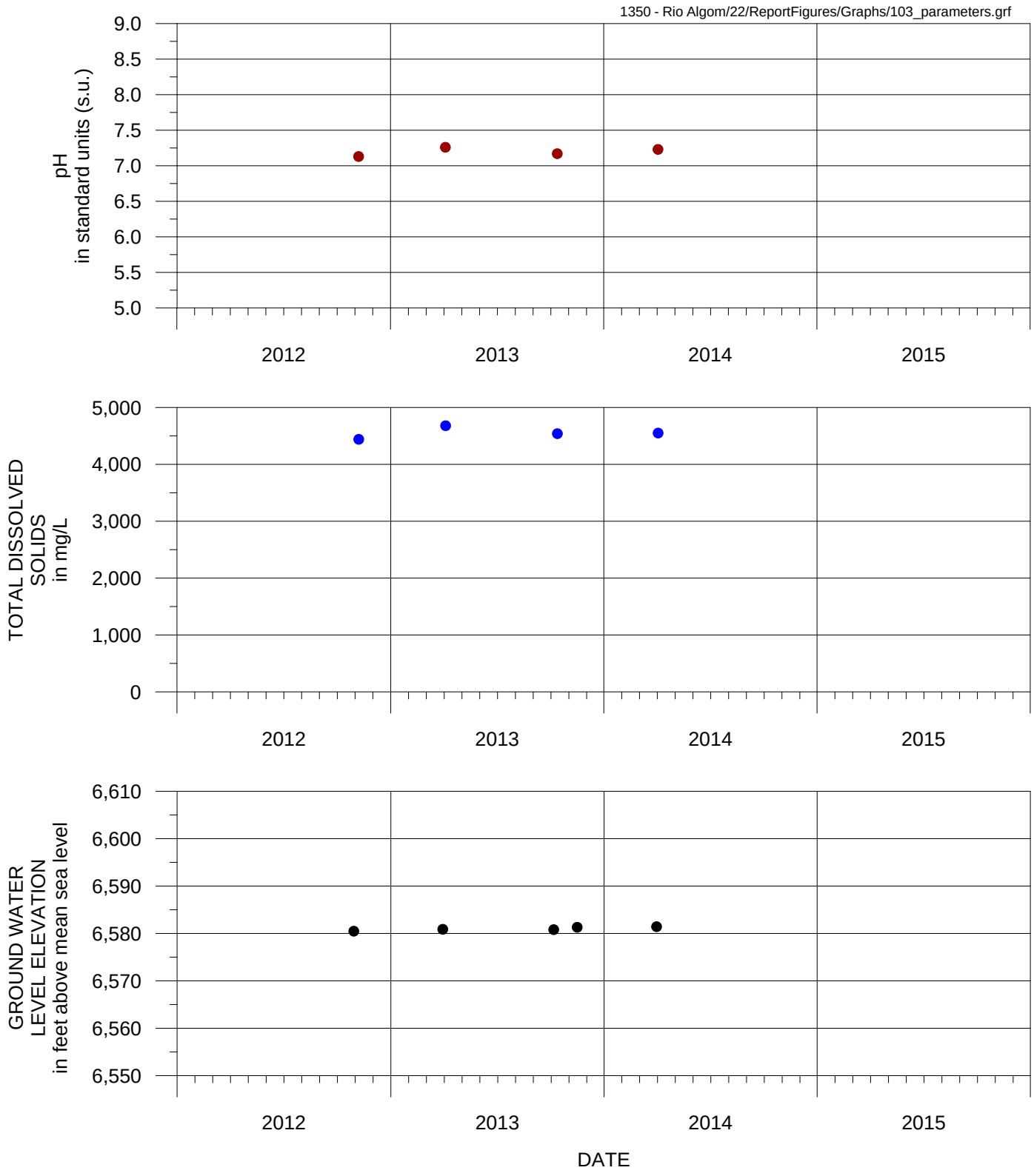
MONTGOMERY & ASSOCIATES



mg/L = Milligrams per liter

FIGURE G-56. TIME SERIES GRAPHS OF BICARBONATE, CHLORIDE, AND SULFATE CONCENTRATIONS FOR MONITOR WELL MW-103 RIO ALGOM MINING, LISBON FACILITY

MONTGOMERY & ASSOCIATES



mg/L = Milligrams per liter

FIGURE G-57. TIME SERIES GRAPHS OF pH AND TOTAL DISSOLVED SOLIDS CONCENTRATIONS AND GROUND WATER LEVEL ELEVATION FOR MONITOR WELL MW-103 RIO ALGOM MINING, LISBON FACILITY

MONTGOMERY & ASSOCIATES

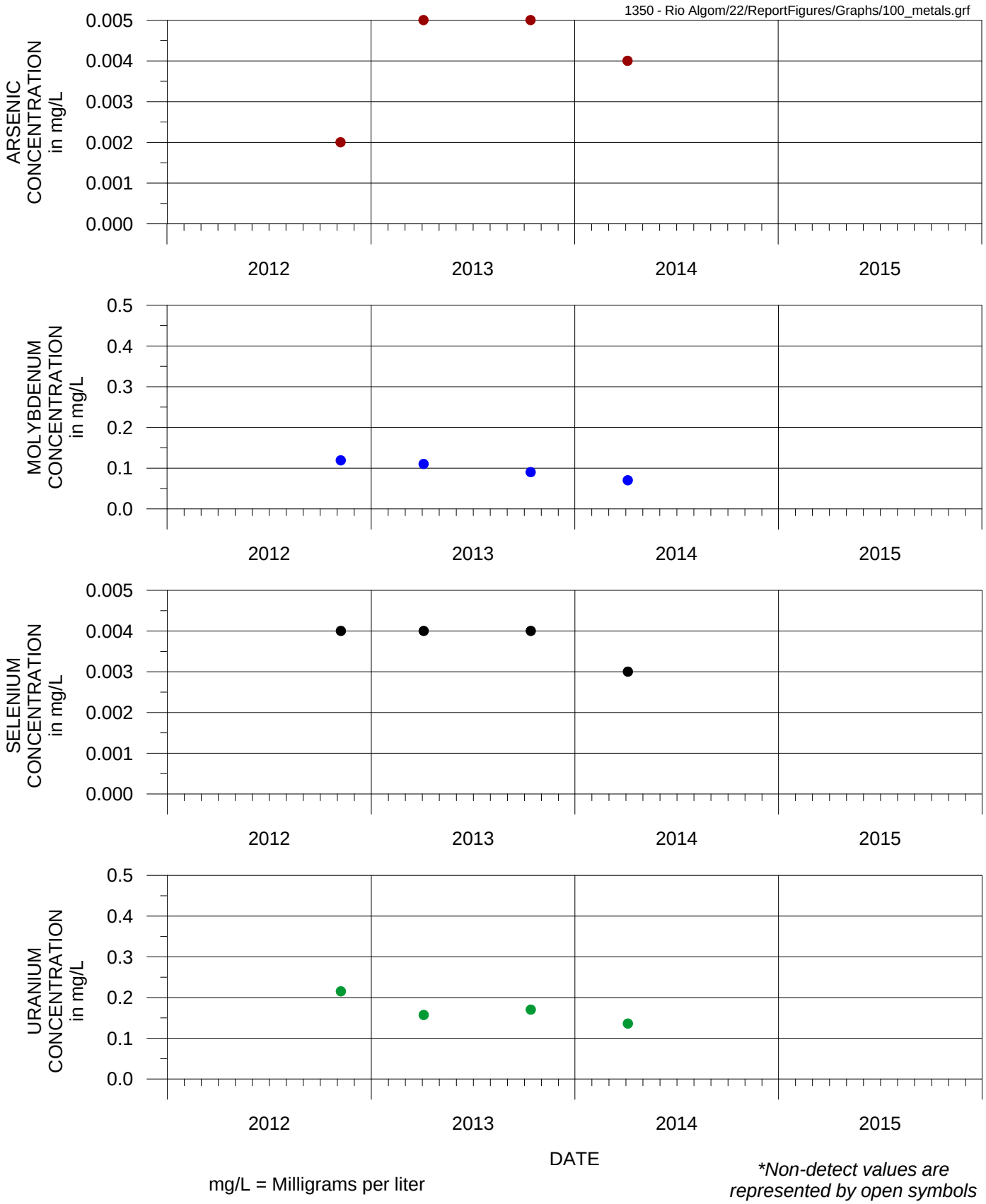
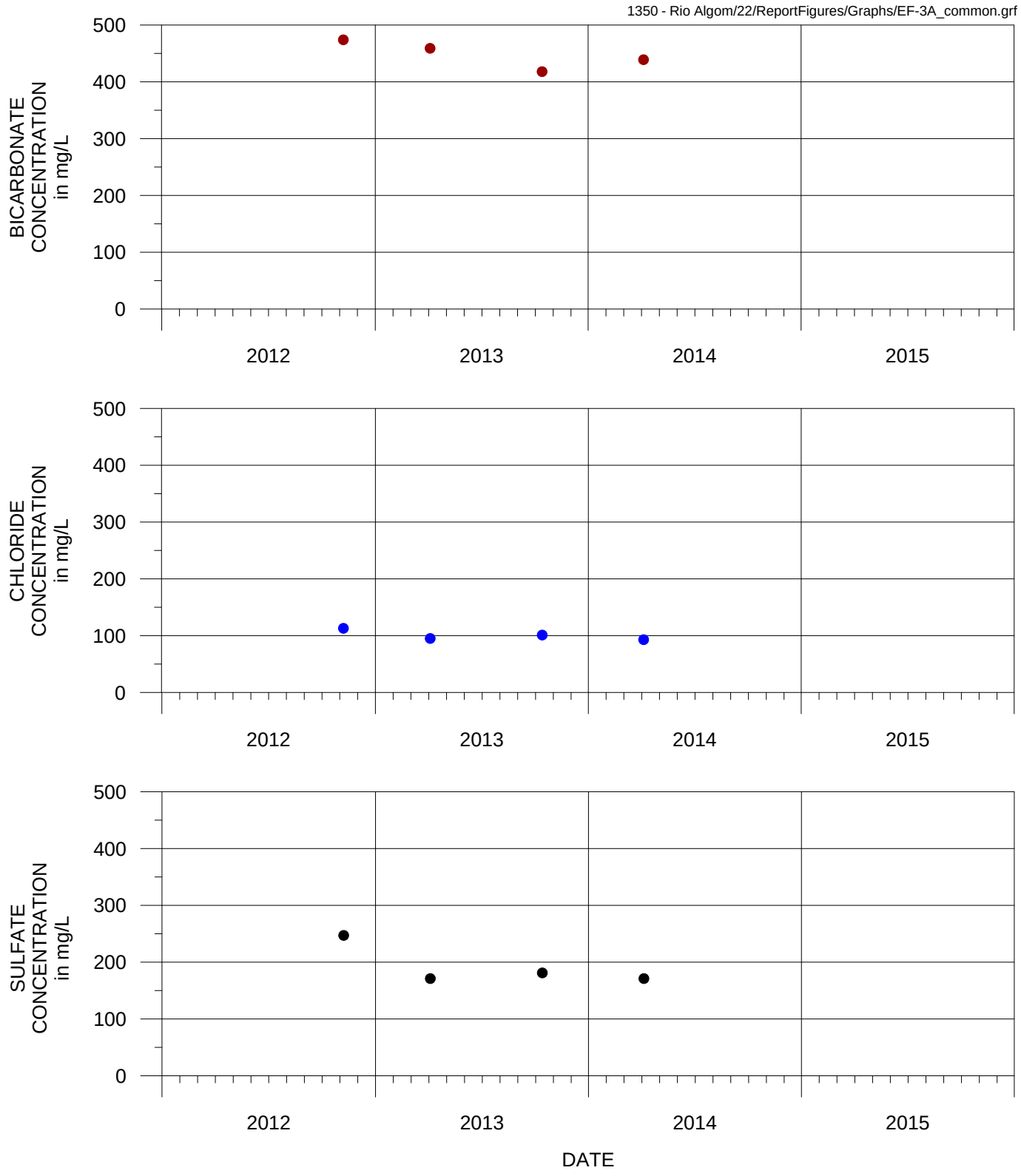


FIGURE G-58. TIME SERIES GRAPHS OF ARSENIC, MOLYBDENUM, SELENIUM, AND URANIUM CONCENTRATIONS FOR MONITOR WELL MW-104
RIO ALGOM MINING, LISBON FACILITY

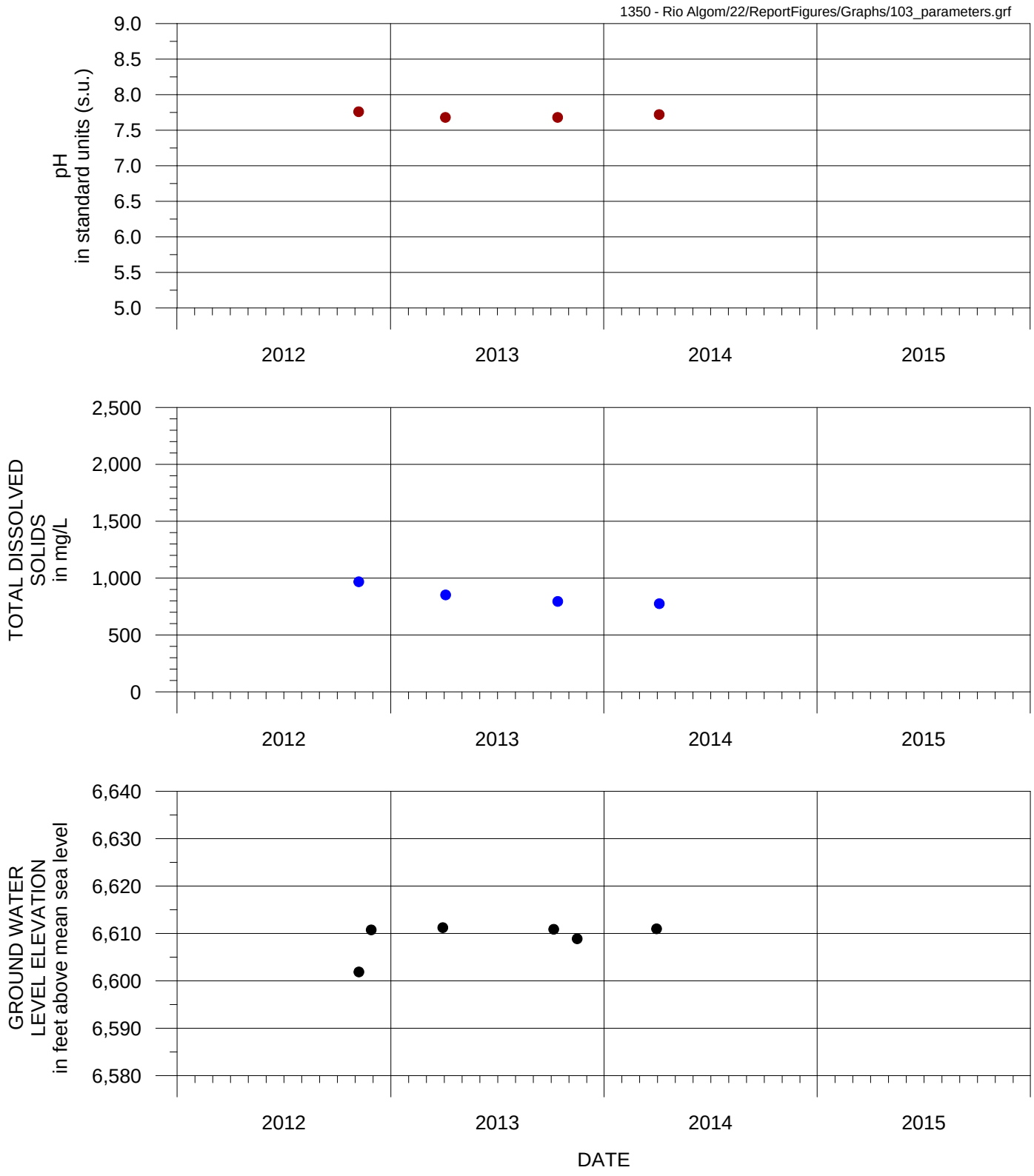
MONTGOMERY & ASSOCIATES



mg/L = Milligrams per liter

FIGURE G-59. TIME SERIES GRAPHS OF BICARBONATE, CHLORIDE, AND SULFATE CONCENTRATIONS FOR MONITOR WELL MW-104 RIO ALGOM MINING, LISBON FACILITY

MONTGOMERY & ASSOCIATES



mg/L = Milligrams per liter

FIGURE G-60. TIME SERIES GRAPHS OF pH AND TOTAL DISSOLVED SOLIDS CONCENTRATIONS AND GROUND WATER LEVEL ELEVATION FOR MONITOR WELL MW-104 RIO ALGOM MINING, LISBON FACILITY

MONTGOMERY & ASSOCIATES

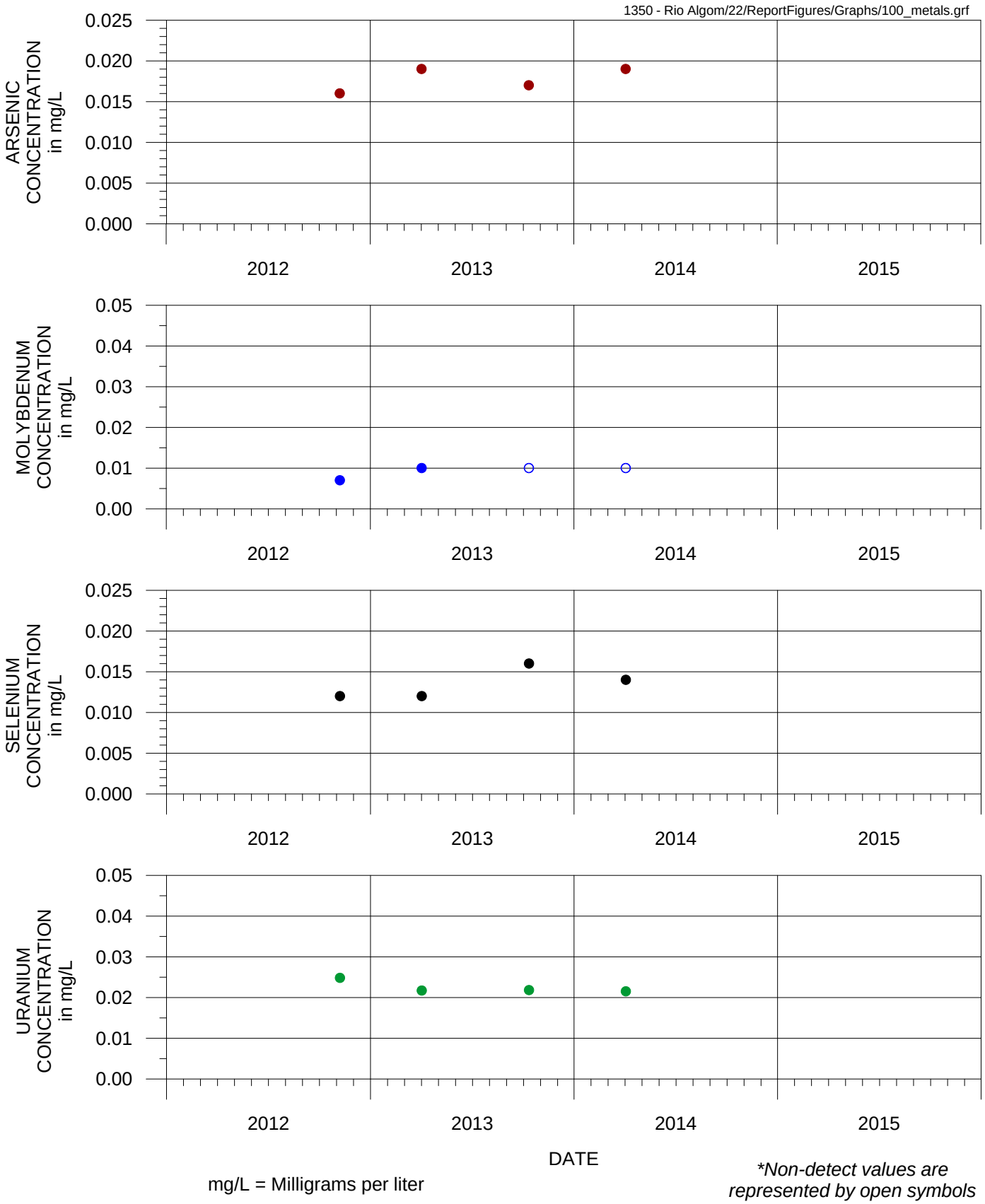
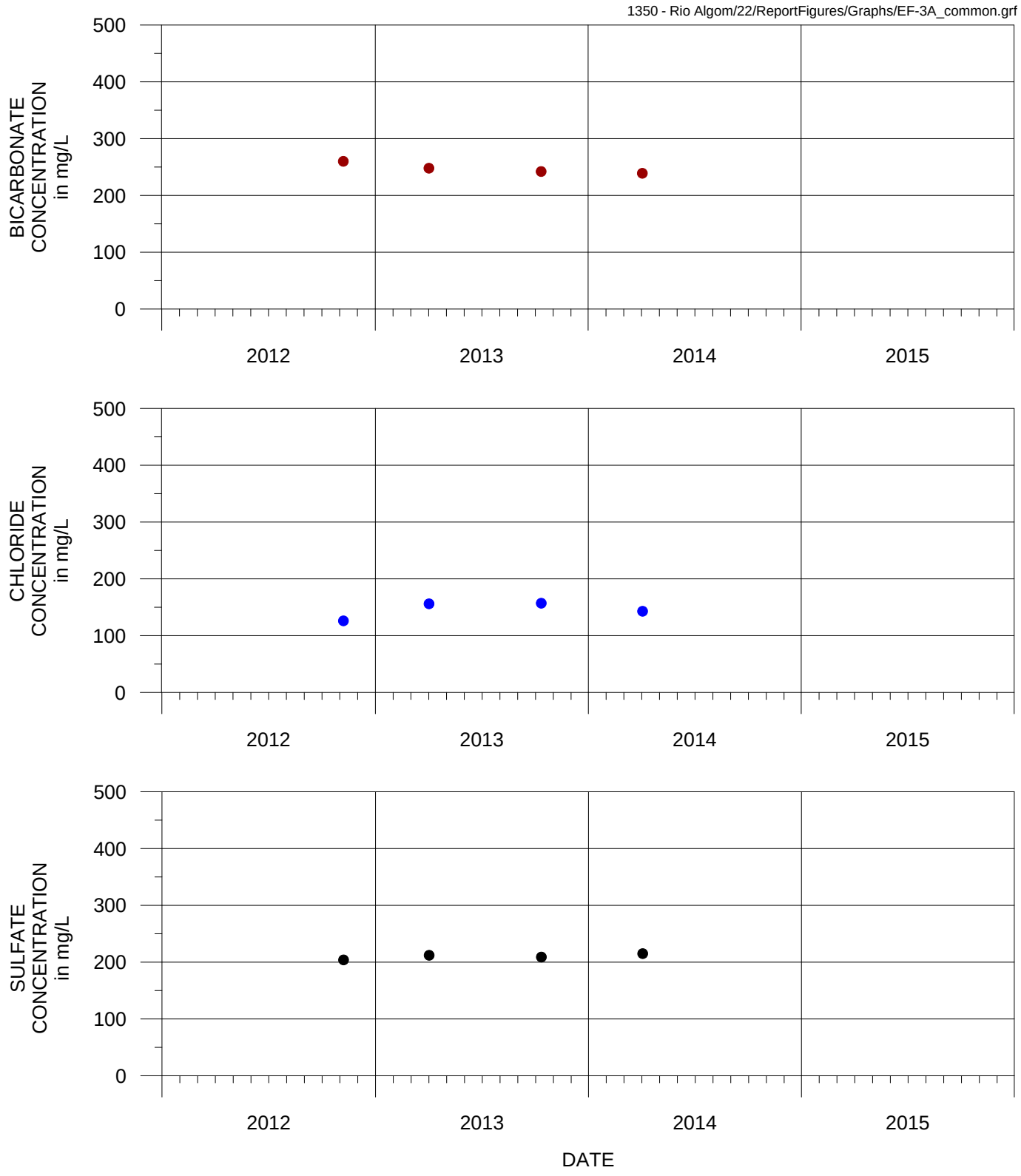


FIGURE G-61. TIME SERIES GRAPHS OF ARSENIC, MOLYBDENUM, SELENIUM, AND URANIUM CONCENTRATIONS FOR MONITOR WELL MW-105
RIO ALGOM MINING, LISBON FACILITY

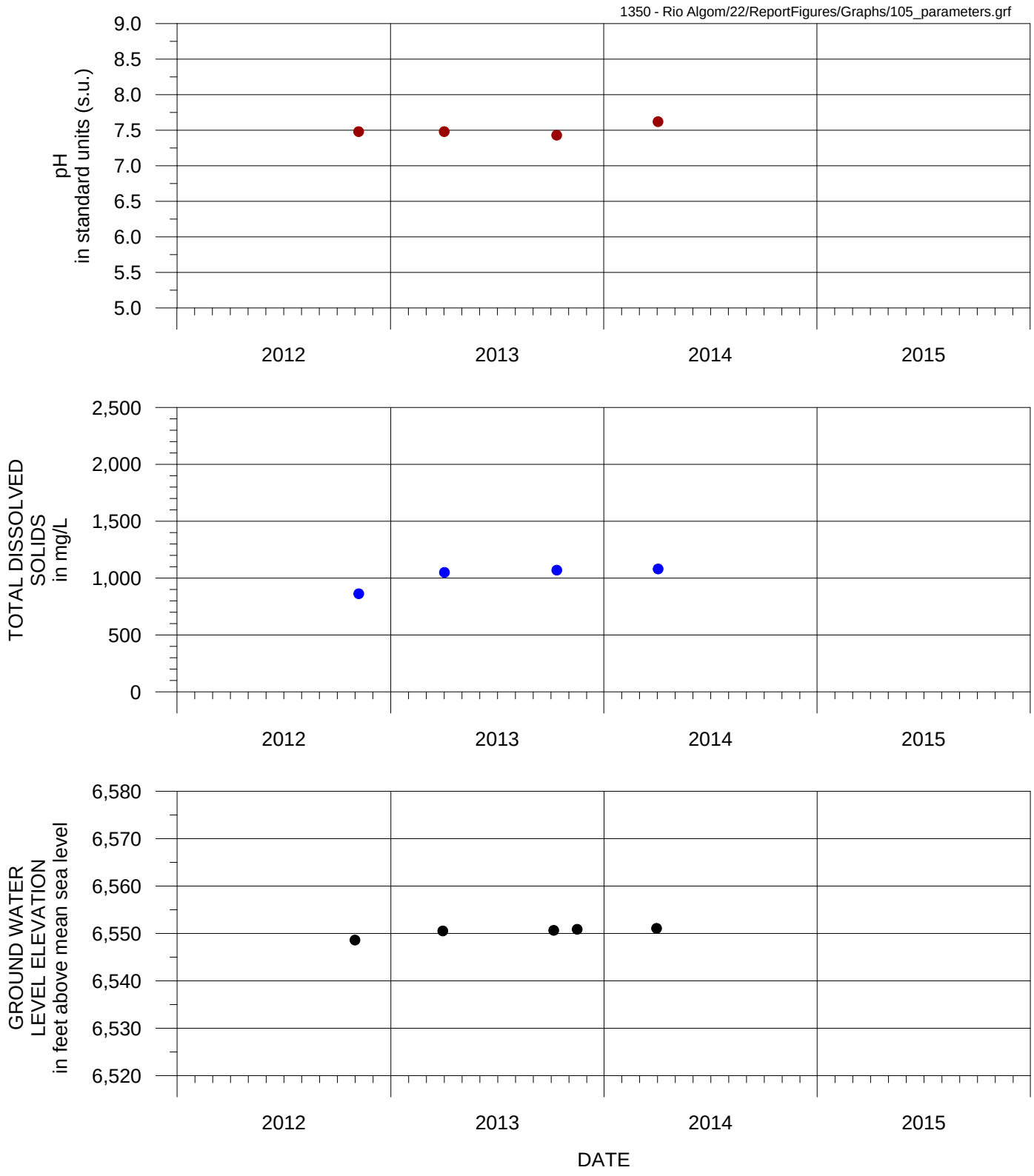
MONTGOMERY & ASSOCIATES



mg/L = Milligrams per liter

FIGURE G-62. TIME SERIES GRAPHS OF BICARBONATE, CHLORIDE, AND SULFATE CONCENTRATIONS FOR MONITOR WELL MW-105 RIO ALGOM MINING, LISBON FACILITY

MONTGOMERY & ASSOCIATES



mg/L = Milligrams per liter

FIGURE G-63. TIME SERIES GRAPHS OF pH AND TOTAL DISSOLVED SOLIDS CONCENTRATIONS AND GROUND WATER LEVEL ELEVATION FOR MONITOR WELL MW-105 RIO ALGOM MINING, LISBON FACILITY

MONTGOMERY & ASSOCIATES

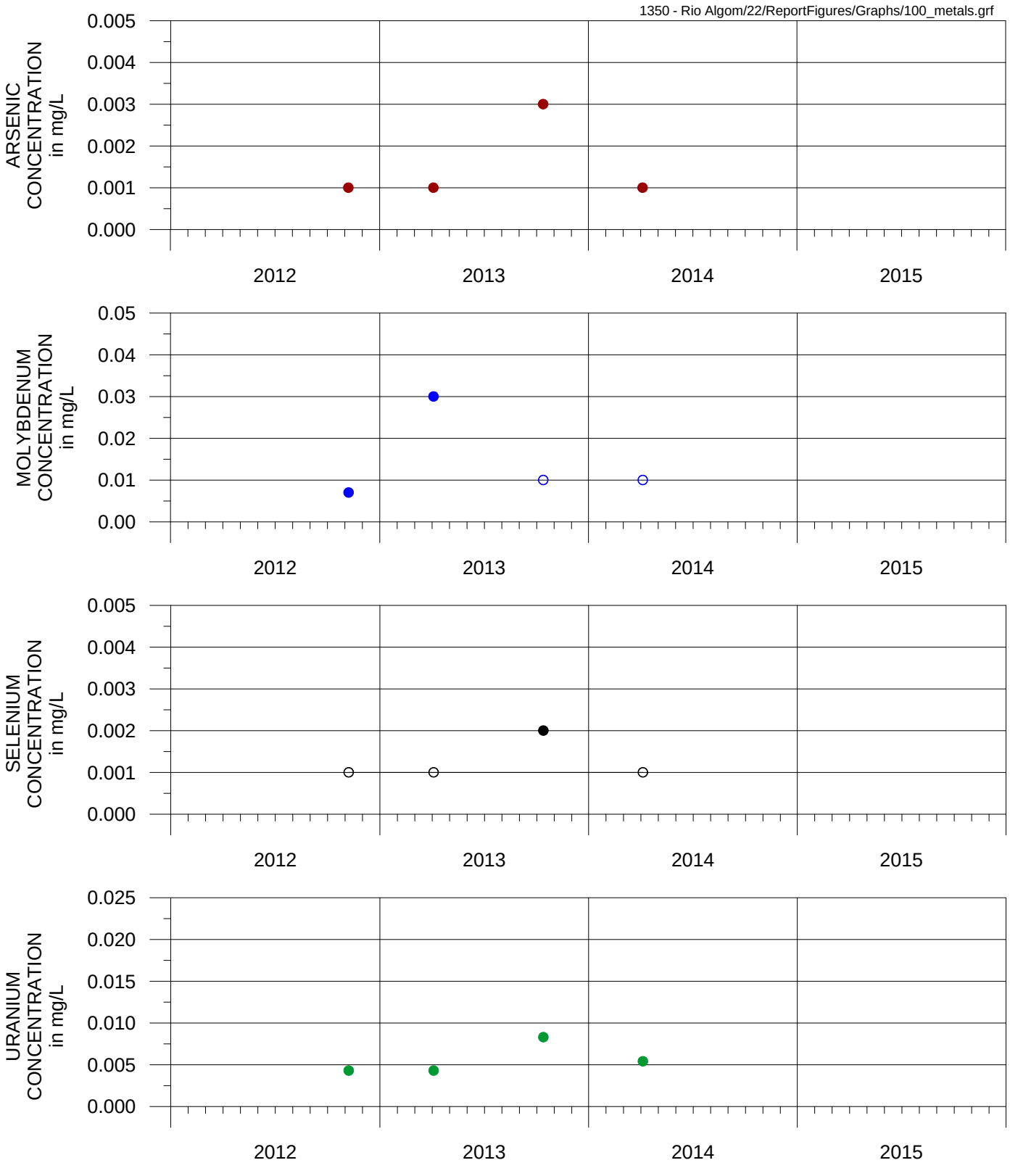
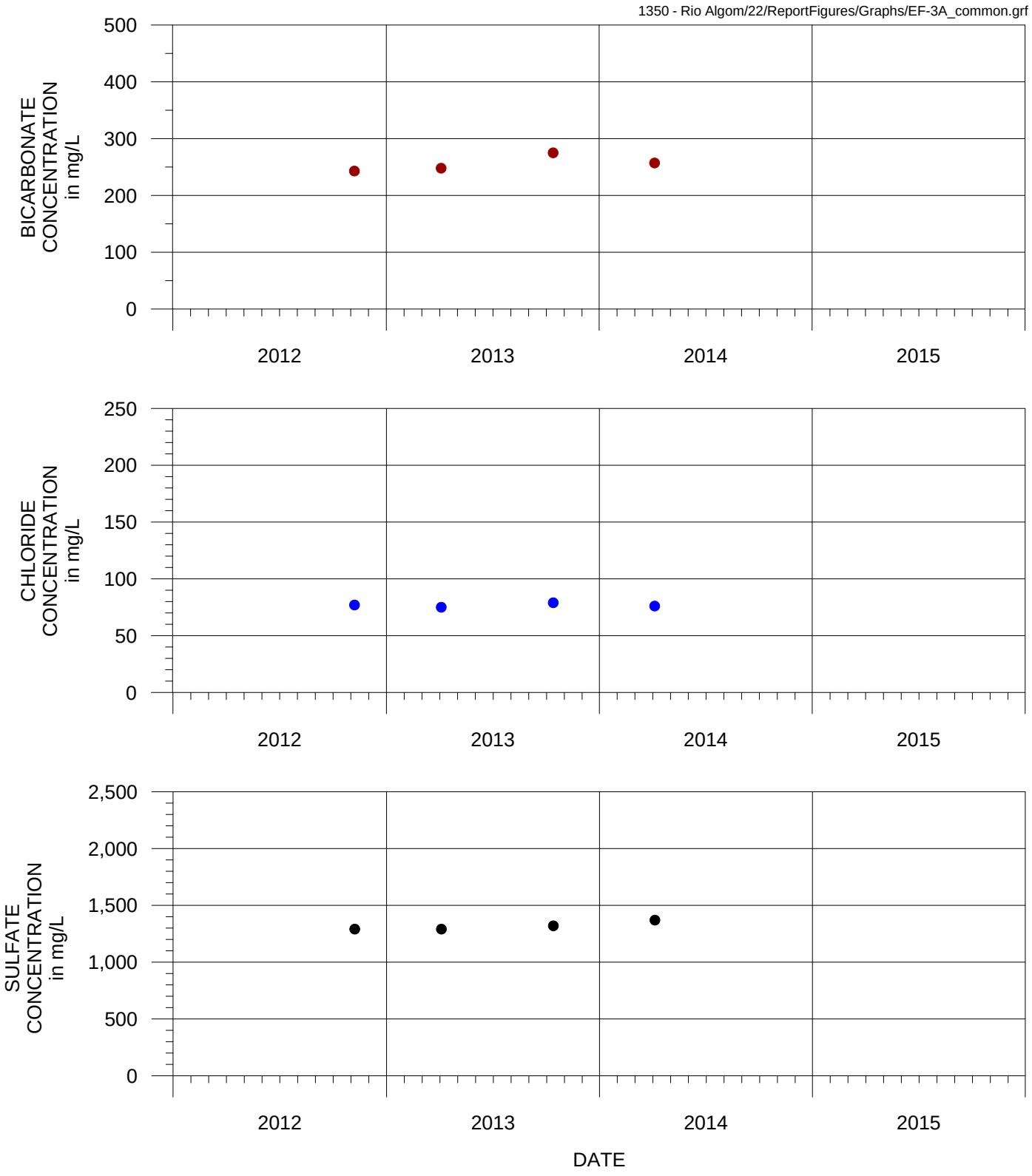


FIGURE G-64. TIME SERIES GRAPHS OF ARSENIC, MOLYBDENUM, SELENIUM, AND URANIUM CONCENTRATIONS FOR MONITOR WELL MW-105 RIO ALGOM MINING, LISBON FACILITY

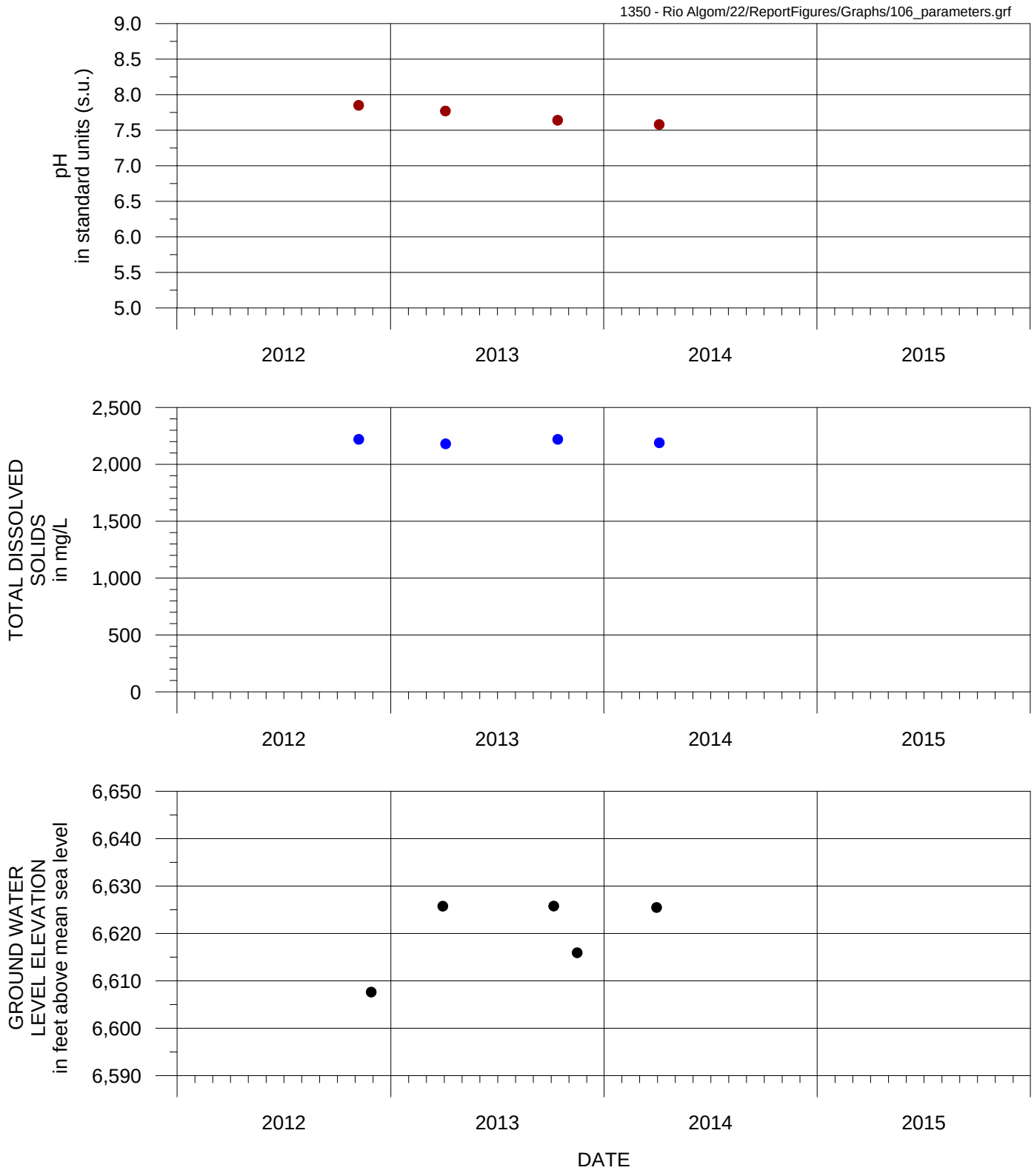
MONTGOMERY & ASSOCIATES



mg/L = Milligrams per liter

FIGURE G-65. TIME SERIES GRAPHS OF BICARBONATE, CHLORIDE, AND SULFATE CONCENTRATIONS FOR MONITOR WELL MW-106 RIO ALGOM MINING, LISBON FACILITY

MONTGOMERY & ASSOCIATES



mg/L = Milligrams per liter

FIGURE G-66. TIME SERIES GRAPHS OF pH AND TOTAL DISSOLVED SOLIDS CONCENTRATIONS AND GROUND WATER LEVEL ELEVATION FOR MONITOR WELL MW-106 RIO ALGOM MINING, LISBON FACILITY

MONTGOMERY & ASSOCIATES

APPENDIX H

WATER QUALITY SUMMARY TABLE

TABLE H-1. SUMMARY OF ROUTINE PARAMETERS, COMMON CONSTITUENTS, AND TRACE METALS IN GROUNDWATER
RIO ALGOM MINING LLC, LISBON FACILITY

WELL NAME	SAMPLE IDENTIFIER	SAMPLE DATE	QC SAMPLE CODE[a]	SAMPLE METHOD[b]	ROUTINE PARAMETERS[c]					DISSOLVED COMMON CONSTITUENTS (mg/L)[d]										DISSOLVED TRACE METALS (mg/L)[e]					
					LAB		FIELD																			
					pH (s.u.)	EC (µmhos/cm)	T (°C)	pH (s.u.)	EC (µS/cm)	Ca	Mg	Na	K	Cl	CO_3	HCO_3	SO_4	TDS	LAB[f]	As	Fe	Mo	Se	U	LAB
EF-3A	3373	3/22/2004		▫	---	---	17	7.26	5,924	---	---	---	---	*654*	---	1,104	---	---	▫	**0.104**	---	1.62	0.028	***14.1***	Energy
EF-3A	3385B	7/1/2004		▫	---	---	12.9	7.19	5,128	---	---	---	---	*684*	---	1,050	*798*	---	▫	**0.1** [g]	---	1.7 [g]	0.02 [g]	***14.0*** [g]	Energy
EF-3A	3399B	9/16/2004		▫	---	---	16.8	6.96	5,968	---	---	---	---	*700*	---	1,116	*1,934*	---	▫	**0.1**	---	1.9	0.02	***14.9***	Energy
EF-3A	3400B	9/16/2004	dup	▫	---	---	16.8	6.96	5,968	---	---	---	---	*704*	---	1,119	---	---	▫	**0.1**	---	1.9	0.03	***16.4***	Energy
EF-3A	3416B	12/17/2004		▫	---	---	9.9	7.14	5,243	---	---	---	---	*697*	---	1,094	*1,997*	---	▫	**0.112**	---	1.80	0.017	***16.4***	Energy
EF-3A	3439B	3/3/2005		▫	---	---	11.7	7.26	5,239	---	---	---	---	*745*	---	1,148	*2,083*	---	▫	**0.128**	---	2.04	0.021	***17.9***	Energy
EF-3A	3455B	6/23/2005		▫	---	---	12.9	7.27	5,628	---	---	---	---	*690*	---	1,180	*2,208*	---	▫	**0.2**	---	2.2	0.03	***19.4***	Energy
EF-3A	3456B	6/23/2005	dup	▫	---	---	12.9	7.27	5,628	---	---	---	---	*679*	---	1,180	---	---	▫	**0.2**	---	2.2	0.03	***19.4***	Energy
EF-3A	▫	9/30/2005		▫	---	---	12.2	6.92	7,200	---	---	---	---	*730*	---	906	*2,070*	*5,160*	▫	0.011	---	1.8	0.016	***17.2***	▫
EF-3A	3490B	11/10/2005		▫	---	---	11.9	7.26	4,971	---	---	---	---	*675*	---	1,192	*2,106*	*4,940*	▫	**0.2**	---	2.0	0.03	***13.4***	Energy
EF-3A	3507B	3/23/2006		▫	---	---	12.3	7.06	5,563	---	---	---	---	*656*	---	1,074	*2,058*	*5,260*	▫	**0.1**	---	1.7	0.02	***14.9***	Energy
EF-3A	3554	9/28/2006		▫	---	---	12.3	6.63	5,847	---	---	---	---	*691*	<1	1,070	*2,100*	*4,950*	Energy	**0.116**	---	1.70	0.020	***17.7***	Energy
EF-3A	3570 ABC	12/14/2006		▫	---	---	11.2	**5.12**	4,559	---	---	---	---	*653*	<1	1,090	*2,180*	*5,170*	Energy	**0.166**	---	2.09	0.028	***19.5***	Energy
EF-3A	EF-3A	3/19/2007		▫	---	---	12.3	7.14	5,280	---	---	---	---	*500*	---	808	*1,350*	*3,530*	Energy	0.019	---	0.9	0.010	***10.3***	Energy
EF-3A	EF-3A	6/11/2007		▫	---	---	13.4	7.1	5,050	---	---	---	---	*511*	---	848	*1,320*	*3,530*	Energy	0.033	---	1.0	0.005	***11.0***	Energy
EF-3A	EF-3A	8/20/2007		▫	---	---	13.9	7.37	5,350	---	---	---	---	*522*	---	869	*1,450*	*3,510*	Energy	0.009	---	0.1	0.003	***10.2***	Energy
EF-3A	WPK-EF-3A	10/25/2007		▫	7.3	---	12.8	7.83	5,160	---	---	---	---	*774*	---	1,180	*2,430*	*5,970*	Energy	**0.093**	---	1.5	0.022	***22.9***	Energy
EF-3A	RAM-EF-3A	10/25/2007	dup	▫	6.97	---	---	---	---	---	---	---	---	*526*	---	872	*1,340*	*3,500*	Energy	0.021	---	0.3	0.006	***10.1***	Energy
EF-3A	EF-3A	3/19/2008		▫	---	---	---	---	---	---	---	---	---	*799*	---	1,270	*2,770*	*6,010*	Energy	**0.118**	---	2.0	0.026	***25.1***	Energy
EF-3A	EF-3A	6/6/2008		▫	---	---	14.2	7.22	7,750	---	---	---	---	*799*	---	1,100	*2,610*	*5,990*	Energy	**0.082**	---	1.5	0.020	***23.6***	Energy
EF-3A	EF-3A	8/7/2008		▫	7.19	---	---	---	---	---	---	---	---	*780*	---	1,110	*2,600*	*5,830*	Energy	**0.086**	---	1.5	0.021	***23.9***	Energy
EF-3A	EF-3A	10/16/2008		▫	---	---	11.4	7.34	7,980	---	---	---	---	*829*	---	1,120	*2,530*	*5,980*	Energy	**0.083**	---	1.6	0.010	***24.7***	Energy
EF-3A	EF-3A	3/25/2009		▫	---	---	11.4	7.25	7,900	---	---	---	---	*833*	---	1,130	*2,470*	*6,010*	Energy	**0.079**	---	1.4	0.035	***23.3***	Energy
EF-3A	EF-3A	6/10/2009		▫	---	---	---	---	---	---	---	---	---	*809*	---	1,040	*2,480*	*6,060*	Energy	**0.087**	---	1.7	0.019	***23.0***	Energy
EF-3A	EF-3A	8/12/2009		▫	---	---	15.9	7.13	7,840	---	---	---	---	*788*	---	1,100	*2,390*	*5,720*	Energy	**0.088**	---	1.6	0.021	***22.9***	Energy
EF-3A	EF-3A	4/28/2010		▫	---	---	13.5	8.06	6,990	---	---	---	---	*716*	---	1,700	*2,070*	*5,820*	Energy	**0.417**	---	5.1	0.045	***25.5***	Energy
EF-3A	EF-3A	8/26/2010		▫	---	---	---	7.3	---	---	---	---	---	*695*	---	1,350	*2,030*	*5,290*	Energy	**0.248**	---	2.7	0.037	***20.7***	Energy
EF-3A	EF-3A	5/26/2011		▫	---	---	---	7.36	---	---	---	---	---	*703*	---	1,250	*2,090*	*7,700*	Energy	**0.192**	---	2.56	0.028	***20.2***	Energy
EF-3A	EF-3A	10/19/2011		▫	---	---	---	---	---	---	---	---	---	*693*	---	1,110	*2,130*	*5,230*	Energy	**0.188**	---	2.36	0.028	***18.1***	Energy
EF-3A	6226	11/1/2012		HS	7.47	6,840	10.8	7.3	7,091	210	111	1,660	12	*705*	<5	1,200	*2,100*	*4,860*	Energy	**0.16**	---	2.56	0.030	***20.0***	Energy
EF-3A	6227	11/1/2012		LF	7.39	6,770	12.5	7.0	9,995	235	117	1,550	13	*722*	<5	1,090	*2,140*	*4,880*	Energy	**0.128**	---	1.87	0.028	***19***	Energy
EF-3A	6228	11/1/2012	dup	LF	7.35	6,750	12.5	7.0	9,995	233	116	1,550	13	*702*	<5	1,100	*2,090*	*4,770*	Energy	**0.129**	---	1.85	0.028	***19***	Energy
EF-3A	6229	11/1/2012		P	7.49	7,300	12.7	7.2	8,000	205	108	1,780	12	*740*	<5	1,340	*2,210*	*5,060*	Energy	**0.192**	---	2.72	0.033	***22***	Energy
EF-3A	6360	4/5/2013		HS	7.47	6,660	12.4	6.6	5,795	205	108	1,460	11	*660*	<5	1,150	*1,940*	*4,790*	Energy	**0.175**	<0.03	2.25	0.032	***20***	Energy
EF-3A	6361	4/5/2013		LF	7.13	7,820	11.7	**6.4**	6,164	316	156	1,570	15	*825*	<5	1,150	*2,510*	*5,700*	Energy	**0.079**	0.05	1.61	0.033	***24***	Energy
EF-3A	6362	4/5/2013		P	7.42	7,500	12.4	6.8	5,775	199	105	1,650	11	*729*	<5	1,340	*2,170*	*5,270*	Energy	**0.206**	0.03	2.81	0.037	***22***	Energy
EF-3A	6363	4/5/2013	dup	P	7.40	7,510	12.4	6.8	5,775	203	108	1,660	11	*729*	<5	1,350	*2,170*	*5,350*	Energy	**0.194**	0.04	2.81	0.036	***23***	Energy
EF-3A	6966	10/13/2013		HS	7.53	6,160	12.8	7.3	6,870	194	102	1,510	11	*621*	<5	1,090	*1,730*	*4,280*	Energy	**0.185**	<0.03	2.54	0.036	***21.3***	Energy
EF-3A	6967	10/13/2013		LF	7.17	7,930	12.2	7.0	8,495	313	155	1,530	14	*853*	<5	1,240	*2,560*	*5,900*	Energy	**0.088**	0.04	1.93	0.042	***25.6***	Energy
EF-3A	7062	12/14/2013		LF	7.32	6,990	9.9	7.2	7,364	232	118	1,510	11	*693*	<5	1,160	*2,110*	*5,310*	Energy	**0.125**	<0.03	1.98	0.03	***20.5***	Energy
EF-3A	7077	4/5/2014		HS	7.53	6,590	11.7	7.3	6,407	180	95	1,320	10	*664*	<5	1,180	*1,950*	*5,180*	Energy	**0.184**	<0.03	2.45	0.034	***22.7***	Energy
EF-3A	7078	4/5/2014		LF	7.12	8,070	11.4	7.0	8,472	298	147	1,440	14	*859*	<5	1,280	*2,630*	*6,440*	Energy	**0.099**	<0.03	2.03	0.041	***27.5***	Energy

TABLE H-1. SUMMARY OF ROUTINE PARAMETERS, COMMON CONSTITUENTS, AND TRACE METALS IN GROUNDWATER
RIO ALGOM MINING LLC, LISBON FACILITY

WELL NAME	SAMPLE IDENTIFIER	SAMPLE DATE	QC SAMPLE CODE[a]	SAMPLE METHOD[b]	ROUTINE PARAMETERS[c]					DISSOLVED COMMON CONSTITUENTS (mg/L)[d]										DISSOLVED TRACE METALS (mg/L)[e]					
					LAB		FIELD																			
					pH (s.u.)	EC (µmhos/cm)	T (°C)	pH (s.u.)	EC (µS/cm)	Ca	Mg	Na	K	Cl	CO_3	HCO_3	SO_4	TDS	LAB[f]	As	Fe	Mo	Se	U	LAB
EF-6	3358	3/26/2004		▫	---	---	11.1	6.95	2,184	---	---	---	---	*440*	---	355	---	---	▫	0.0120	---	0.0024	0.012	***0.783***	Energy
EF-6	3382B	6/29/2004		▫	---	---	16.6	6.97	2,032	---	---	---	---	*398*	---	346	---	---	▫	0.01 [g]	---	0.002 [g]	0.01 [g]	***0.773*** [g]	Energy
EF-6	3398B	9/16/2004		▫	---	---	14.5	7.04	2,243	---	---	---	---	*304*	---	359	---	---	▫	0.01	---	0.0006	0.01	***0.715***	Energy
EF-6	3415B	12/17/2004		▫	---	---	9.9	6.92	1,952	---	---	---	---	*296*	---	364	---	---	▫	0.0102	---	<0.0005	0.009	***0.685***	Energy
EF-6	3438B	3/3/2005		▫	---	---	11.4	6.63	1,883	---	---	---	---	*306*	---	352	---	---	▫	0.0111	---	0.0011	0.013	***0.700***	Energy
EF-6	3454B	6/22/2005		▫	---	---	18.3	6.98	1,821	---	---	---	---	*288*	---	361	---	---	▫	0.01	---	0.001	0.01	***0.730***	Energy
EF-6	▫	9/29/2005		▫	---	---	20.2	6.74	2,330	---	---	---	---	*290*	---	294	*580*	*1,660*	▫	0.033	---	<0.003	0.012	***0.989***	▫
EF-6	3489B	11/9/2005		▫	---	---	12.8	6.88	1,750	---	---	---	---	*275*	---	368	*598*	*1,636*	▫	0.01	---	0.0009	0.01	***0.745***	Energy
EF-6	3506B	3/23/2006		▫	---	---	12.4	6.93	2,031	---	---	---	---	*273*	---	366	*573*	*1,624*	▫	0.01	---	0.0006	0.01	***0.745***	Energy
EF-6	3552	9/28/2006		▫	---	---	15	6.74	1,817	---	---	---	---	*277*	<1	345	*538*	*1,650*	Energy	0.0093	---	0.0016	0.009	***0.716***	Energy
EF-6	3569 ABC	12/14/2006		▫	---	---	10.2	6.91	2,022	---	---	---	---	*292*	<1	350	*625*	*1,720*	Energy	0.0108	---	0.0013	0.012	***0.693***	Energy
EF-6	EF-6	3/20/2007		▫	---	---	11.6	7.48	2,580	---	---	---	---	*292*	---	327	*598*	*1,680*	Energy	0.012	---	<0.1	0.011	***0.646***	Energy
EF-6	EF-6	6/11/2007		▫	---	---	13.5	7.43	2,420	---	---	---	---	*300*	---	311	*576*	*1,660*	Energy	0.012	---	<0.1	0.012	***0.720***	Energy
EF-6	EF-6	8/20/2007		▫	---	---	13.9	7.27	2,580	---	---	---	---	*285*	---	343	*596*	*1,690*	Energy	0.011	---	<0.1	0.013	***0.704***	Energy
EF-6	WPK-EF-6	10/25/2007		▫	7.3	---	10.8	7.41	2,620	---	---	---	---	*292*	---	374	*620*	*1,750*	Energy	0.010	---	<0.1	0.013	***0.638***	Energy
EF-6	RAM-EF-6	10/25/2007	dup	▫	6.97	---	---	---	---	---	---	---	---	*282*	---	350	*600*	*1,670*	Energy	0.011	---	<0.1	0.014	***0.739***	Energy
EF-6	EF-6	3/19/2008		▫	---	---	---	---	---	---	---	---	---	*313*	---	376	*616*	*1,550*	Energy	0.011	---	<0.1	0.011	***0.637***	Energy
EF-6	EF-6	6/4/2008		▫	---	---	12.7	7.32	2,400	---	---	---	---	*292*	---	350	*632*	*1,770*	Energy	0.011	---	<0.1	0.010	***0.742***	Energy
EF-6	EF-6	8/6/2008		▫	7.17	---	---	---	---	---	---	---	---	*257*	---	359	*613*	*1,660*	Energy	0.011	---	<0.1	0.011	***0.632***	Energy
EF-6	EF-6	10/15/2008		▫	---	---	16	7.17	2,400	---	---	---	---	*291*	---	363	*612*	*1,740*	Energy	0.011	---	<0.1	0.011	***0.686***	Energy
EF-6	EF-6	3/25/2009		▫	---	---	10	7.32	2,540	---	---	---	---	*311*	---	374	*601*	*1,650*	Energy	0.009	---	<0.1	0.018	***0.702***	Energy
EF-6	EF-6	6/10/2009		▫	---	---	---	---	---	---	---	---	---	*311*	---	365	*620*	*1,770*	Energy	0.011	---	<0.1	0.012	***0.702***	Energy
EF-6	EF-6	8/12/2009		▫	---	---	26.1	7.11	2,450	---	---	---	---	*302*	---	362	*616*	*1,670*	Energy	0.010	---	<0.1	0.010	***0.688***	Energy
EF-6	EF-6	4/28/2010		▫	---	---	18.5	6.98	2,580	---	---	---	---	*339*	---	395	*645*	*1,810*	Energy	0.010	---	<0.1	0.011	***0.740***	Energy
EF-6	EF-6	8/26/2010		▫	---	---	---	7	---	---	---	---	---	*342*	---	422	*654*	*1,960*	Energy	0.012	---	<0.1	0.013	***0.886***	Energy
EF-6	EF-6	5/26/2011		▫	---	---	---	7.08	---	---	---	---	---	*366*	---	434	*717*	*2,100*	Energy	0.015	---	<0.01	0.017	***1.45***	Energy
EF-6	EF-6	10/20/2011		▫	---	---	---	---	---	---	---	---	---	*366*	---	412	*716*	*2,130*	Energy	0.013	---	<0.01	0.013	***1.43***	Energy
EF-6	6214	10/30/2012		HS	7.27	3,140	14.8	7.1	2,970	217	57	459	6	*401*	<5	479	*795*	*2,170*	Energy	0.014	---	<0.001	0.013	***2.05***	Energy
EF-6	6215	10/30/2012		LF	7.3	3,110	13.4	7.0	2,692	215	55	430	6	*388*	<5	487	*789*	*2,180*	Energy	0.013	---	0.002	0.013	***1.77***	Energy
EF-6	6216	10/30/2012		P	7.21	3,010	12.7	7.0	2,587	218	58	388	6	*373*	<5	455	*775*	*2,080*	Energy	0.013	---	<0.001	0.012	***1.55***	Energy
EF-6	6329	4/2/2013		HS	7.25	3,340	12.9	7.0	4,201	212	56	465	6	*413*	<5	486	*818*	*2,240*	Energy	0.015	<0.03	<0.01	0.013	***2.36***	Energy
EF-6	6330	4/2/2013	dup	HS	7.25	3,310	12.9	7.0	4,201	210	55	457	6	*406*	<5	470	*804*	*2,190*	Energy	0.015	<0.03	<0.01	0.014	***2.31***	Energy
EF-6	6331	4/2/2013		LF	7.22	3,370	11.8	7.1	3,187	212	56	445	6	*400*	<5	479	*803*	*2,230*	Energy	0.015	<0.03	<0.01	0.014	***2***	Energy
EF-6	6332	4/2/2013		P	7.18	3,240	12.3	7.0	3,227	244	65	375	6	*378*	<5	472	*862*	*2,180*	Energy	0.013	<0.03	<0.01	0.011	***1.15***	Energy
EF-6	6951	10/11/2013		HS	7.23	3,200	13.2	7.1	3,470	204	53	464	6	*400*	<5	505	*783*	*2,210*	Energy	0.015	<0.03	<0.01	0.016	***2.19***	Energy
EF-6	6952	10/11/2013	dup	HS	7.22	3,180	13.2	7.1	3,470	207	54	472	6	*394*	<5	491	*772*	*2,230*	Energy	0.014	<0.03	<0.01	0.016	***2.15***	Energy
EF-6	6953	10/11/2013		LF	7.29	3,190	12.0	7.1	3,444	211	54	484	6	*393*	<5	494	*778*	*2,240*	Energy	0.015	<0.03	<0.01	0.016	***2.13***	Energy
EF-6	7139	4/5/2014		HS	7.33	3,150	11.0	7.1	3,128	186	49	427	5	*380*	<5	487	*764*	*2,220*	Energy	0.016	<0.03	<0.01	0.016	***2.38***	Energy
EF-6	7140	4/5/2014		LF	7.25	3,200	11.6	7.0	3,310	189	49	436	5	*384*	<5	495	*786*	*2,250*	Energy	0.016	<0.03	<0.01	0.016	***2.30***	Energy
EF-6	7072	4/5/2014	dup	LF	7.47	3,200	11.6	7.0	3,310	189	49	437	5	*384*	<5	496	*786*	*2,260*	Energy	0.016	<0.03	<0.01	0.016	***2.36***	Energy
EF-8	3383B	6/29/2004		▫	---	---	14.3	6.93	923	---	---	---	---	*339*	---	254	---	---	▫	0.03 [g]	---	0.009 [g]	0.007 [g]	0.025 [g]	Energy
EF-8	3397B	9/16/2004		▫	---	---	14.4	7.55	1,114	---	---	---	---	79	---	256	---	---	▫	0.03	---	0.008	0.008	0.024	Energy
EF-8	3414B	12/17/2004		▫	---	---	10.3	7.57	878	---	---	---	---	101	---	268	---	---	▫	0.0273	---	0.0070	0.007	0.024	Energy
EF-8	3437B	3/3/2005		▫	---	---	11.2	7.74	878	---	---	---	---	203	---	264	---	---	▫	0.0263	---	0.0082	0.008	0.024	Energy

TABLE H-1. SUMMARY OF ROUTINE PARAMETERS, COMMON CONSTITUENTS, AND TRACE METALS IN GROUNDWATER
RIO ALGOM MINING LLC, LISBON FACILITY

WELL NAME	SAMPLE IDENTIFIER	SAMPLE DATE	QC SAMPLE CODE[a]	SAMPLE METHOD[b]	ROUTINE PARAMETERS[c]					DISSOLVED COMMON CONSTITUENTS (mg/L)[d]										DISSOLVED TRACE METALS (mg/L)[e]					
					LAB		FIELD																			
					pH (s.u.)	EC (µmhos/cm)	T (°C)	pH (s.u.)	EC (µS/cm)	Ca	Mg	Na	K	Cl	CO_3	HCO_3	SO_4	TDS	LAB[f]	As	Fe	Mo	Se	U	LAB
EF-8	3453B	6/22/2005		▫	---	---	16.2	7.37	877	---	---	---	---	205	---	277	---	---	▫	0.03	---	0.008	0.008	0.025	Energy
EF-8	▫	9/29/2005		▫	---	---	13.7	7.12	650	---	---	---	---	97	---	222	240	*720*	▫	0.0129	---	0.0078	0.008	0.025	▫
EF-8	3488B	11/9/2005		▫	---	---	13.1	7.42	805	---	---	---	---	97	---	275	*274*	*684*	▫	0.03	---	0.007	0.008	0.030	Energy
EF-8	3505B	3/23/2006		▫	---	---	12.1	7.36	970	---	---	---	---	94	---	255	*282*	*784*	▫	0.03	---	0.008	0.008	0.030	Energy
EF-8	3551	9/28/2006		▫	---	---	14.5	7.2	888	---	---	---	---	103	<1	267	241	*742*	Energy	0.0218	---	0.0078	0.006	0.025	Energy
EF-8	3568 ABC	12/14/2006		▫	---	---	10.3	7.41	880	---	---	---	---	97	<1	262	239	*748*	Energy	0.0280	---	0.0081	0.007	0.026	Energy
EF-8	EF-8	3/20/2007		▫	---	---	11.5	7.66	1,168	---	---	---	---	95	---	229	237	*722*	Energy	0.025	---	<0.1	0.008	**0.031**	Energy
EF-8	EF-8	6/11/2007		▫	---	---	14.2	7.56	1,084	---	---	---	---	102	---	232	225	*730*	Energy	0.027	---	<0.1	0.008	**0.057**	Energy
EF-8	EF-8	8/21/2007		▫	---	---	14.1	7.26	1,201	---	---	---	---	96	---	242	236	*758*	Energy	0.026	---	<0.1	0.008	**0.056**	Energy
EF-8	WPK-EF-8	10/25/2007		▫	7.75	---	11.6	7.68	1,189	---	---	---	---	89	---	269	235	*736*	Energy	0.030	---	<0.1	0.008	**0.035**	Energy
EF-8	RAM-EF-8	10/25/2007	dup	▫	6.97	---	---	---	---	---	---	---	---	94	---	247	240	*721*	Energy	0.025	---	<0.1	0.008	**0.052**	Energy
EF-8	EF-8	3/19/2008		▫	---	---	---	---	---	---	---	---	---	111	---	269	226	*742*	Energy	0.030	---	<0.1	0.008	**0.045**	Energy
EF-8	EF-8	6/6/2008		▫	---	---	13.1	7.71	1,162	---	---	---	---	101	---	257	247	*772*	Energy	0.031	---	<0.1	0.008	**0.063**	Energy
EF-8	EF-8	8/6/2008		▫	7.58	---	---	---	---	---	---	---	---	92	---	270	248	*779*	Energy	0.031	---	<0.1	0.008	**0.068**	Energy
EF-8	EF-8	10/15/2008		▫	---	---	14.1	7.58	1,187	---	---	---	---	108	---	268	246	*798*	Energy	0.030	---	<0.1	0.009	**0.077**	Energy
EF-8	EF-8	3/25/2009		▫	---	---	10.5	7.71	1,278	---	---	---	---	116	---	283	249	*813*	Energy	0.034	---	<0.1	0.009	***0.105***	Energy
EF-8	EF-8	6/10/2009		▫	---	---	---	---	---	---	---	---	---	119	---	275	*262*	*868*	Energy	0.033	---	<0.1	0.009	***0.114***	Energy
EF-8	EF-8	8/12/2009		▫	---	---	17.7	7.5	1,304	---	---	---	---	121	---	283	*262*	*835*	Energy	0.031	---	<0.1	0.008	***0.122***	Energy
EF-8	EF-8	4/28/2010		▫	---	---	13.4	7.49	1,398	---	---	---	---	139	---	313	*294*	*892*	Energy	0.032	---	<0.1	0.009	***0.183***	Energy
EF-8	EF-8	8/25/2010		▫	---	---	---	7.31	---	---	---	---	---	152	---	335	*312*	*1,040*	Energy	0.033	---	<0.1	0.010	***0.222***	Energy
EF-8	EF-8	5/26/2011		▫	---	---	---	7.5	---	---	---	---	---	162	---	336	*351*	*1,130*	Energy	0.038	---	<0.01	0.012	***0.332***	Energy
EF-8	EF-8	8/31/2011		▫	---	---	---	---	---	---	---	---	---	---	---	---	---	---	▫	---	---	---	---	***0.371***	Energy
EF-8	EF-8A	8/31/2011	dup	▫	---	---	---	---	---	---	---	---	---	---	---	---	---	---	▫	---	---	---	---	***0.379***	Energy
EF-8	EF-8	10/19/2011		▫	---	---	---	---	---	---	---	---	---	170	---	312	*375*	*1,120*	Energy	0.035	---	<0.01	0.009	***0.345***	Energy
EF-8	EF-8A	10/19/2011	dup	▫	---	---	---	---	---	---	---	---	---	---	---	---	---	---	▫	---	---	---	---	***0.509***	Energy
EF-8	EF-8	12/8/2011		▫	---	---	---	---	---	---	---	---	---	---	---	---	---	---	▫	---	---	---	---	***0.354***	Energy
EF-8	EF-8A	12/8/2011	dup	▫	---	---	---	---	---	---	---	---	---	---	---	---	---	---	▫	---	---	---	---	***0.358***	Energy
EF-8	EF-8	1/5/2012		LF	---	---	---	---	---	---	---	---	---	---	---	---	---	---	▫	---	---	---	---	***0.443***	Energy
EF-8	EF-8-A	1/5/2012	dup	LF	---	---	---	---	---	---	---	---	---	---	---	---	---	---	▫	---	---	---	---	***0.454***	Energy
EF-8	EF-8-A	2/9/2012		LF	---	---	---	---	---	---	---	---	---	---	---	---	---	---	▫	---	---	---	---	***0.405***	Energy
EF-8	EF-8-B	2/9/2012	dup	LF	---	---	---	---	---	---	---	---	---	---	---	---	---	---	▫	---	---	---	---	***0.492***	Energy
EF-8	EF-8-A	3/13/2012		LF	---	---	---	---	---	---	---	---	---	---	---	---	---	---	▫	---	---	---	---	***0.396***	Energy
EF-8	EF-8B	3/13/2012	dup	LF	---	---	---	---	---	---	---	---	---	---	---	---	---	---	▫	---	---	---	---	***0.408***	Energy
EF-8	EF-8-A	4/25/2012		LF	---	---	---	---	---	---	---	---	---	---	---	---	---	---	▫	---	---	---	---	***0.430***	Energy
EF-8	EF-8-B	4/25/2012	dup	LF	---	---	---	---	---	---	---	---	---	---	---	---	---	---	▫	---	---	---	---	***0.431***	Energy
EF-8	EF-8-A	5/8/2012		LF	---	---	---	---	---	---	---	---	---	---	---	---	---	---	▫	---	---	---	---	***0.463***	Energy
EF-8	EF-8-B	5/8/2012	dup	LF	---	---	---	---	---	---	---	---	---	---	---	---	---	---	▫	---	---	---	---	***0.465***	Energy
EF-8	EF-8-A	6/13/2012		LF	---	---	---	---	---	---	---	---	---	---	---	---	---	---	▫	---	---	---	---	***0.484***	Energy
EF-8	EF-8-B	6/13/2012	dup	LF	---	---	---	---	---	---	---	---	---	---	---	---	---	---	▫	---	---	---	---	***0.482***	Energy
EF-8	EF-8-A	7/18/2012		LF	---	---	---	---	---	---	---	---	---	---	---	---	---	---	▫	---	---	---	---	***0.504***	Energy
EF-8	EF-8-B	7/18/2012	dup	LF	---	---	---	---	---	---	---	---	---	---	---	---	---	---	▫	---	---	---	---	***0.463***	Energy
EF-8	EF-8-A	8/22/2012		LF	---	---	---	---	---	---	---	---	---	---	---	---	---	---	▫	---	---	---	---	***0.545***	Energy
EF-8	EF-8-B	8/22/2012	dup	LF	---	---	---	---	---	---	---	---	---	---	---	---	---	---	▫	---	---	---	---	***0.546***	Energy
EF-8	EF-8-A	9/13/2012		LF	---	---	---	---	---	---	---	---	---	---	---	---	---	---	▫	---	---	---	---	***0.541***	Energy
EF-8	EF-8-B	9/13/2012	dup	LF	---	---	---	---	---	---	---	---	---	---	---	---	---	---	▫	---	---	---	---	***0.552***	Energy
EF-8	6222	10/31/2012		HS	7.61	1,670	12.3	7.6	3,041	209	51	135	5	174	<5	350	*363*	*1,140*	Energy	0.036	---	0.009	0.011	***0.523***	Energy

TABLE H-1. SUMMARY OF ROUTINE PARAMETERS, COMMON CONSTITUENTS, AND TRACE METALS IN GROUNDWATER
RIO ALGOM MINING LLC, LISBON FACILITY

WELL NAME	SAMPLE IDENTIFIER	SAMPLE DATE	QC SAMPLE CODE[a]	SAMPLE METHOD[b]	ROUTINE PARAMETERS[c]					DISSOLVED COMMON CONSTITUENTS (mg/L)[d]										DISSOLVED TRACE METALS (mg/L)[e]					
					LAB		FIELD																			
					pH (s.u.)	EC (µmhos/cm)	T (°C)	pH (s.u.)	EC (µS/cm)	Ca	Mg	Na	K	Cl	CO_3	HCO_3	SO_4	TDS	LAB[f]	As	Fe	Mo	Se	U	LAB
EF-8	6223	10/31/2012		LF	7.61	1,820	12.2	7.4	2,066	206	55	144	5	191	<5	370	*413*	*1,270*	Energy	0.034	---	0.011	0.011	***0.515***	Energy
EF-8	6224	10/31/2012		P	7.59	1,840	12.7	7.4	2,069	209	56	144	6	190	<5	374	*416*	*1,270*	Energy	0.036	---	0.008	0.011	***0.537***	Energy
EF-8	6225	10/31/2012	dup	P	7.59	1,840	12.7	7.4	2,069	209	55	146	5	190	<5	374	*416*	*1,310*	Energy	0.035	---	0.008	0.010	***0.528***	Energy
EF-8	6302	11/28/2012		LF	7.7	1,860	10.3	7.7	1,775	205	54	150	5	195	<5	384	*428*	*1,330*	Energy	0.031	---	0.015	0.011	***0.592***	Energy
EF-8	6306	12/20/2012		LF	7.64	1,920	7.7	7.2	1,909	206	55	147	5	203	<5	387	*455*	*1,330*	Energy	0.033	---	0.010	0.011	***0.556***	Energy
EF-8	6307	1/28/2013		LF	7.6	1,950	9.2	7.4	1,940	223	58	166	6	201	<5	393	*444*	*1,350*	Energy	0.037	---	0.01	0.013	***0.598***	Energy
EF-8	6309	2/26/2013		LF	7.62	1,940	7.6	7.6	2,299	206	54	151	5	205	<5	383	*451*	*1,380*	Energy	0.041	---	<0.01	0.018	***0.6***	Energy
EF-8	6311	3/31/2013		LF	7.65	2,090	12.6	7.4	1,506	205	54	153	5	209	<5	391	*464*	*1,390*	Energy	0.036	<0.03	<0.01	0.012	***0.666***	Energy
EF-8	6324	4/1/2013		HS	7.61	1,710	12.0	7.5	1,943	196	51	140	5	179	<5	316	*341*	*1,100*	Energy	0.036	<0.03	0.01	0.011	***0.62***	Energy
EF-8	6325	4/1/2013		P	7.63	2,060	12.7	7.6	1,421	206	54	152	5	214	<5	384	*471*	*1,360*	Energy	0.037	<0.03	<0.01	0.011	***0.633***	Energy
EF-8	6366	4/5/2013		LF	7.61	2,010	12.0	7.2	1,567	209	55	155	5	211	<5	396	*479*	*1,400*	Energy	0.040	<0.03	0.01	0.013	***0.645***	Energy
EF-8	6406	5/13/2013		LF	7.62	2,030	15.6	7.1	1,980	213	56	162	5	202	<5	396	*444*	*1,400*	Energy	0.038	<0.03	<0.01	0.013	***0.660***	Energy
EF-8	6452	6/9/2013		LF	7.57	1,980	14.7	7.9	2,322	218	57	167	5	213	<5	406	*473*	*1,400*	Energy	0.040	<0.03	<0.01	0.014	***0.687***	Energy
EF-8	6455	7/20/2013		LF	7.65	2,060	15.0	7.2	2,036	222	58	169	5	212	<5	402	*475*	*1,480*	Energy	0.035	<0.03	0.01	0.011	***0.680***	Energy
EF-8	6457	8/15/2013		LF	7.64	2,040	16.2	7.4	1,845	215	57	163	5	218	<5	413	*483*	*1,450*	Energy	0.036	<0.03	<0.01	0.013	***0.686***	Energy
EF-8	6460	9/30/2013		LF	7.62	2,100	12.0	7.5	2,343	225	59	174	5	222	<5	418	*500*	*1,460*	Energy	0.038	<0.03	<0.01	0.012	***0.756***	Energy
EF-8	6978	10/14/2013		HS	7.62	2,070	9.9	7.5	2,578	205	55	159	5	219	<5	401	*475*	*1,430*	Energy	0.011	<0.03	0.05	0.015	***0.655***	Energy
EF-8	6979	10/14/2013		LF	7.57	2,130	10.6	7.4	2,293	225	59	179	5	225	<5	420	*499*	*1,500*	Energy	0.025	<0.03	0.01	0.017	***0.788***	Energy
EF-8	6948	11/16/2013		LF	7.62	2,100	10.3	7.4	2,110	223	58	185	6	231	<5	408	*491*	*1,460*	Energy	0.034	<0.03	<0.01	0.012	***0.739***	Energy
EF-8	7064	12/14/2013		LF	7.62	2,110	9.2	7.6	2,224	228	56	166	6	218	<5	409	*490*	*1,470*	Energy	0.033	<0.03	0.02	0.012	***0.762***	Energy
EF-8	7065	12/14/2013	dup	LF	---	---	9.2	7.6	2,224	---	---	---	---	---	---	---	---	---	Energy	---	---	---	---	***0.739***	Energy
EF-8	7068	1/25/2014		LF	7.62	2,140	10.1	7.4	2,208	220	58	176	5	221	<5	414	*485*	*1,480*	Energy	0.034	<0.03	<0.01	0.012	***0.791***	Energy
EF-8	7070	2/22/2014		LF	7.76	2,170	10.6	7.4	2,550	232	60	196	6	226	<5	416	*500*	*1,520*	Energy	0.036	<0.03	<0.01	0.014	***0.804***	Energy
EF-8	7102	3/31/2014		LF	7.71	2,260	11.1	8.3	2,254	204	54	166	5	227	<5	424	*509*	*1,520*	Energy	0.034	<0.03	<0.01	0.014	***0.841***	Energy
EF-8	7193	4/6/2014		LF	7.64	2,180	10.7	7.6	2,274	220	57	176	5	230	<5	426	*525*	*1,570*	Energy	0.035	0.06	<0.01	0.013	***0.849***	Energy
EF-8	7194	4/6/2014	dup	LF	7.65	2,190	10.7	7.6	2,274	216	56	172	5	222	<5	427	*505*	*1,550*	Energy	0.037	0.11	<0.01	0.013	***0.859***	Energy
H-63	3342	3/24/2004		▫	---	---	16.8	7.06	1,173	---	---	---	---	249	---	258	---	---	▫	0.0064	---	0.0078	0.009	0.0250	Energy
H-63	3384B	6/29/2004		▫	---	---	13.5	7.12	1,754	---	---	---	---	100	---	249	---	---	▫	0.03 [g]	---	0.02 [g]	0.01 [g]	0.0176 [g]	Energy
H-63	3395B	9/15/2004		▫	---	---	8.9	6.89	1,581	---	---	---	---	248	---	243	---	---	▫	0.03	---	0.01	0.01	0.0143	Energy
H-63	3412B	12/17/2004		▫	---	---	9.7	7.99	1,295	---	---	---	---	201	---	209	---	---	▫	0.0376	---	0.0109	0.008	ND	Energy
H-63	3435B	3/3/2005		▫	---	---	9.4	7.48	1,027	---	---	---	---	150	---	258	---	---	▫	0.0411	---	0.0104	0.009	ND	Energy
H-63	3451B	6/22/2005		▫	---	---	16.1	7.89	1,162	---	---	---	---	127	---	277	---	---	▫	0.05	---	0.01	0.009	ND	Energy
H-63	▫	9/28/2005		▫	---	---	12.7	7.67	705	---	---	---	---	124	---	217	230	*890*	▫	0.0241	---	0.01	0.008	0.0121	▫
H-63	3486B	11/9/2005		▫	---	---	12.5	7.97	952	---	---	---	---	115	---	275	235	*692*	▫	**0.06**	---	0.01	0.01	0.0119	Energy
H-63	3503B	3/23/2006		▫	---	---	11.6	8.3	987	---	---	---	---	88	10	257	219	*824*	▫	**0.07**	---	0.01	0.01	0.0149	Energy
H-63	3549	9/28/2006		▫	---	---	14.4	8	893	---	---	---	---	96	3	266	112	*704*	Energy	**0.0625**	---	0.0102	0.007	0.0124	Energy
H-63	3565 ABC	12/14/2006		▫	---	---	9.2	8.25	1,019	---	---	---	---	89	<1	264	205	*718*	Energy	**0.0636**	---	0.0100	0.007	0.012	Energy
H-63	H-63	3/20/2007		▫	---	---	11.6	7.64	1,171	---	---	---	---	85	---	257	213	*710*	Energy	**0.069**	---	<0.1	0.008	0.0133	Energy
H-63	H-63	6/12/2007		▫	---	---	12.3	8.05	1,102	---	---	---	---	89	---	257	211	*686*	Energy	**0.072**	---	<0.1	0.008	0.0133	Energy
H-63	H-63	8/21/2007		▫	---	---	12.7	**8.66**	1,193	---	---	---	---	81	---	264	210	*698*	Energy	**0.072**	---	<0.1	0.009	**0.0343**	Energy
H-63	WPK-H-63	10/24/2007		▫	8.2	---	11.7	8.28	1,174	---	---	---	---	78	---	271	212	*674*	Energy	**0.068**	---	<0.1	0.009	0.0165	Energy
H-63	RAM-H-63	10/24/2007	dup	▫	6.97	---	---	---	---	---	---	---	---	82	---	271	225	*699*	Energy	**0.066**	---	<0.1	0.008	**0.0627**	Energy
H-63	H-63	3/20/2008		▫	---	---	---	---	---	---	---	---	---	75	---	262	214	*652*	Energy	**0.066**	---	<0.1	0.008	0.0151	Energy
H-63	H-63	6/4/2008		▫	---	---	13.4	8.36	1,035	---	---	---	---	74	---	247	207	*667*	Energy	**0.061**	---	<0.1	0.008	0.0138	Energy
H-63	H-63	8/6/2008		▫	8.18	---	---	---	---	---	---	---	---	74	---	235	209	*635*	Energy	**0.061**	---	<0.1	0.008	0.0129	Energy

TABLE H-1. SUMMARY OF ROUTINE PARAMETERS, COMMON CONSTITUENTS, AND TRACE METALS IN GROUNDWATER
RIO ALGOM MINING LLC, LISBON FACILITY

WELL NAME	SAMPLE IDENTIFIER	SAMPLE DATE	QC SAMPLE CODE[a]	SAMPLE METHOD[b]	ROUTINE PARAMETERS[c]					DISSOLVED COMMON CONSTITUENTS (mg/L)[d]										DISSOLVED TRACE METALS (mg/L)[e]					
					LAB		FIELD																			
					pH (s.u.)	EC (µmhos/cm)	T (°C)	pH (s.u.)	EC (µS/cm)	Ca	Mg	Na	K	Cl	CO_3	HCO_3	SO_4	TDS	LAB[f]	As	Fe	Mo	Se	U	LAB
H-63	H-63	10/14/2008		▫	---	---	11.9	8.34	1,053	---	---	---	---	75	---	254	198	*662*	Energy	**0.061**	---	<0.1	0.009	0.0116	Energy
H-63	H-63	3/24/2009		▫	---	---	11.5	8.42	1,036	---	---	---	---	72	---	253	180	*614*	Energy	**0.068**	---	<0.1	0.007	0.0105	Energy
H-63	H-63	6/9/2009		▫	---	---	---	---	---	---	---	---	---	71	---	242	185	*640*	Energy	**0.064**	---	<0.1	0.007	0.0108	Energy
H-63	H-63	8/12/2009		▫	---	---	19.1	8.15	1,025	---	---	---	---	70	---	258	184	*639*	Energy	**0.062**	---	<0.1	0.007	0.0106	Energy
H-63	H-63	4/27/2010		▫	---	---	13	8.11	1,033	---	---	---	---	71	---	237	181	*627*	Energy	**0.063**	---	<0.1	0.008	0.0101	Energy
H-63	H-63	8/25/2010		▫	---	---	---	7.99	---	---	---	---	---	70	---	272	184	*647*	Energy	**0.056**	---	<0.1	0.011	0.0093	Energy
H-63	H-63	5/25/2011		▫	---	---	---	8.19	---	---	---	---	---	68	---	252	184	*669*	Energy	**0.067**	---	<0.01	0.008	0.0101	Energy
H-63	H-63	10/19/2011		▫	---	---	---	---	---	---	---	---	---	69	---	236	193	*625*	Energy	**0.068**	---	<0.01	0.007	0.0112	Energy
H-63	6249	11/3/2012		HS	8.11	1,000	9.4	8.3	1,202	26	5	212	3	67	<5	263	188	*629*	Energy	**0.065**	---	0.007	0.008	0.0099	Energy
H-63	6250	11/3/2012		LF	8.11	1,000	11.1	8.3	1,203	26	5	209	3	66	<5	259	183	*640*	Energy	**0.065**	---	0.008	0.008	0.0097	Energy
H-63	6261	11/3/2012		P	7.76	914	12.3	7.9	1,101	75	15	118	4	63	<5	230	184	*585*	Energy	0.032	---	0.005	0.008	0.0089	Energy
H-63	6377	4/3/2013		HS	8.20	1,040	13.5	8.2	1,406	33	7	176	3	68	<5	245	189	*624*	Energy	0.046	<0.03	0.01	0.005	0.0099	Energy
H-63	6378	4/3/2013		LF	8.20	1,060	12.0	**8.6**	1,042	32	7	176	3	68	<5	262	192	*635*	Energy	0.045	<0.03	0.04	0.007	**0.137**	Energy
H-63	6379	4/3/2013		P	7.78	954	12.3	8.0	986	62	12	120	3	64	<5	227	186	*594*	Energy	0.028	<0.03	<0.01	0.007	0.0100	Energy
H-63	6954	10/12/2013		HS	8.09	970	9.7	8.0	1,002	34	7	179	3	67	<5	251	184	*605*	Energy	0.046	<0.03	<0.01	0.008	0.0105	Energy
H-63	6955	10/12/2013		LF	8.09	968	12.5	8.0	1,052	36	7	175	3	65	<5	260	180	*610*	Energy	0.044	<0.03	<0.01	0.008	0.0113	Energy
H-63	6956	10/12/2013	dup	LF	8.08	966	12.5	8.0	1,052	36	7	178	3	66	<5	250	182	*606*	Energy	0.044	<0.03	<0.01	0.008	0.0113	Energy
H-63	7107	4/2/2014		HS	8.22	985	11.9	8.5	1,042	29	6	174	3	64	<5	247	176	*614*	Energy	0.049	<0.03	<0.01	0.008	0.0108	Energy
H-63	7108	4/2/2014		LF	8.19	983	14.4	8.1	1,046	28	6	158	3	63	<5	246	175	*617*	Energy	0.047	<0.03	<0.01	0.008	0.0109	Energy
LW-1	3543	9/27/2006		▫	---	---	14.7	7.16	486	---	---	---	---	11	<1	200	111	326	Energy	0.0015	---	0.0016	0.002	0.0060	Energy
LW-1	3559 ABC	12/13/2006		▫	---	---	10	8.01	477	---	---	---	---	14	<1	468	125	402	Energy	0.0017	---	0.0120	0.002	0.026	Energy
LW-1	LW-1	3/19/2007		▫	---	---	12	7.32	586	---	---	---	---	14	---	200	123	370	Energy	<0.001	---	<0.1	0.003	0.0024	Energy
LW-1	LW-1	6/12/2007		▫	---	---	12.6	7.75	562	---	---	---	---	10	---	183	120	358	Energy	<0.001	---	<0.1	0.002	0.0038	Energy
LW-1	LW-1	8/21/2007		▫	---	---	13.5	8.24	617	---	---	---	---	11	---	205	124	360	Energy	<0.001	---	<0.1	0.003	0.0161	Energy
LW-1	WPK-LW-1	10/23/2007		▫	7.67	---	11.6	7.45	592	---	---	---	---	9	---	205	118	348	Energy	<0.001	---	<0.1	0.002	0.0063	Energy
LW-1	RAM-LW-1	10/23/2007	dup	▫	6.97	---	---	---	---	---	---	---	---	10	---	205	123	349	Energy	<0.001	---	<0.1	0.003	0.0068	Energy
LW-1	LW-1	3/18/2008		▫	---	---	---	---	---	---	---	---	---	10	---	203	117	344	Energy	<0.001	---	<0.1	0.002	0.0032	Energy
LW-1	LW-1	6/3/2008		▫	---	---	17.6	7.54	558	---	---	---	---	10	---	190	116	366	Energy	<0.001	---	<0.1	0.002	0.0034	Energy
LW-1	LW-1	8/5/2008		▫	7.53	---	---	---	---	---	---	---	---	10	---	193	122	366	Energy	<0.001	---	<0.1	0.002	0.0030	Energy
LW-1	LW-1	10/14/2008		▫	---	---	12.8	7.57	554	---	---	---	---	10	---	192	111	352	Energy	0.001	---	<0.1	0.003	0.0026	Energy
LW-1	LW-1	3/24/2009		▫	---	---	11.2	7.55	560	---	---	---	---	8	---	203	100	340	Energy	<0.001	---	<0.1	0.002	0.0019	Energy
LW-1	LW-1	6/9/2009		▫	---	---	---	---	---	---	---	---	---	9	---	193	111	343	Energy	<0.001	---	<0.1	0.002	0.0019	Energy
LW-1	LW-1	8/11/2009		▫	---	---	20.2	7.35	546	---	---	---	---	9	---	196	112	401	Energy	<0.001	---	<0.1	0.002	0.0023	Energy
LW-1	LW-1	4/27/2010		▫	---	---	16.4	7.21	542	---	---	---	---	10	---	209	114	339	Energy	<0.001	---	<0.1	0.002	0.0020	Energy
LW-1	LW-1	8/25/2010		▫	---	---	---	7.19	---	---	---	---	---	9	---	213	112	364	Energy	<0.001	---	<0.1	0.002	0.0018	Energy
LW-1	LW-1	5/24/2011		▫	---	---	---	7.48	---	---	---	---	---	10	---	205	114	345	Energy	<0.001	---	<0.01	0.002	0.0021	Energy
LW-1	LW-1	10/18/2011		▫	---	---	---	---	---	---	---	---	---	10	---	188	117	352	Energy	<0.001	---	<0.01	0.005	0.0028	Energy
LW-1	6230	11/2/2012		HS	7.54	555	10.4	7.5	672	70	19	31	3	10	<5	208	113	352	Energy	<0.001	---	0.014	0.002	0.0053	Energy
LW-1	6231	11/2/2012		LF	7.6	552	12.6	7.4	648	73	17	31	3	10	<5	207	112	362	Energy	<0.001	---	0.004	0.002	0.0045	Energy
LW-1	6232	11/2/2012		P	7.54	554	12.4	7.3	639	70	18	31	3	10	<5	225	112	358	Energy	<0.001	---	<0.001	0.002	0.0020	Energy

TABLE H-1. SUMMARY OF ROUTINE PARAMETERS, COMMON CONSTITUENTS, AND TRACE METALS IN GROUNDWATER
RIO ALGOM MINING LLC, LISBON FACILITY

WELL NAME	SAMPLE IDENTIFIER	SAMPLE DATE	QC SAMPLE CODE[a]	SAMPLE METHOD[b]	ROUTINE PARAMETERS[c]					DISSOLVED COMMON CONSTITUENTS (mg/L)[d]										DISSOLVED TRACE METALS (mg/L)[e]					
					LAB		FIELD																			
					pH (s.u.)	EC (µmhos/cm)	T (°C)	pH (s.u.)	EC (µS/cm)	Ca	Mg	Na	K	Cl	CO_3	HCO_3	SO_4	TDS	LAB[f]	As	Fe	Mo	Se	U	LAB
LW-1	6352	4/4/2013		HS	7.59	593	11.7	7.1	490	66	16	32	3	10	<5	221	111	368	Energy	<0.001	<0.03	<0.01	0.002	0.0018	Energy
LW-1	6353	4/4/2013		LF	7.58	591	12.6	7.0	428	65	16	31	3	10	<5	208	112	367	Energy	<0.001	<0.03	<0.01	0.003	0.0018	Energy
LW-1	6354	4/4/2013		P	7.56	589	12.4	6.9	472	63	16	31	3	9	<5	207	110	363	Energy	<0.001	<0.03	<0.01	0.003	0.0018	Energy
LW-1	6988	10/9/2013		HS	7.55	559	11.5	7.7	602	64	16	31	3	10	<5	207	112	349	Energy	<0.001	<0.03	<0.01	0.003	0.0019	Energy
LW-1	6989	10/9/2013		LF	7.58	558	13.5	7.5	620	64	16	31	3	10	<5	208	113	352	Energy	<0.001	<0.03	<0.01	0.002	0.0018	Energy
LW-1	7121	4/3/2014		HS	7.74	592	11.1	7.9	778	60	15	27	3	10	<5	205	113	355	Energy	<0.001	<0.03	<0.01	0.002	0.0017	Energy
LW-1	7122	4/3/2014		LF	7.79	590	11.1	7.5	577	58	15	29	3	10	<5	205	113	361	Energy	<0.001	<0.03	<0.01	0.002	0.0021	Energy
ML-1	3344	3/24/2004		▫	---	---	15.5	7.19	1,382	---	---	---	---	178	---	263	---	---	▫	0.0100	---	0.0067	0.008	0.016	Energy
ML-1	3381B	6/29/2004		▫	---	---	13.6	7.3	1,419	---	---	---	---	*692*	---	252	---	---	▫	0.01 [g]	---	0.006 [g]	0.009 [g]	0.0192 [g]	Energy
ML-1	3396B	9/15/2004		▫	---	---	11.3	6.95	1,357	---	---	---	---	178	---	261	---	---	▫	0.01	---	0.006	0.008	0.0164	Energy
ML-1	3413B	12/17/2004		▫	---	---	10.7	6.89	1,307	---	---	---	---	192	---	274	---	---	▫	0.0138	---	0.0045	0.008	0.0149	Energy
ML-1	3436B	3/3/2005		▫	---	---	9.1	7.06	1,315	---	---	---	---	205	---	258	---	---	▫	0.0137	---	0.0057	0.013	0.0149	Energy
ML-1	3452B	6/22/2005		▫	---	---	17.5	7.23	1,228	---	---	---	---	180	---	277	---	---	▫	0.01	---	0.006	0.009	0.0164	Energy
ML-1	▫	9/29/2005		▫	---	---	11.8	6.96	900	---	---	---	---	186	---	216	*360*	*1,060*	▫	**0.0675**	---	0.0054	0.01	0.0148	▫
ML-1	3487B	11/9/2005		▫	---	---	12.4	7.27	1,124	---	---	---	---	164	---	262	*345*	*852*	▫	0.02	---	0.005	0.01	0.01490	Energy
ML-1	3504B	3/23/2006		▫	---	---	11.9	7.07	1,215	---	---	---	---	150	---	258	*354*	*1,044*	▫	0.01	---	0.006	0.01	0.01490	Energy
ML-1	3550	9/28/2006		▫	---	---	15	6.97	1,171	---	---	---	---	163	<1	247	*368*	*1,090*	Energy	0.0104	---	0.0059	0.007	0.0142	Energy
ML-1	3566 ABC	12/14/2006		▫	---	---	9.3	6.94	1,308	---	---	---	---	147	<1	246	*379*	*1,050*	Energy	0.0113	---	0.0059	0.010	0.014	Energy
ML-1	ML-1	3/20/2007		▫	---	---	11.3	7.58	1,484	---	---	---	---	154	---	235	*332*	*1,010*	Energy	0.013	---	<0.1	0.010	0.0274	Energy
ML-1	ML-1	6/11/2007		▫	---	---	12.8	7.74	1,415	---	---	---	---	164	---	238	*320*	*1,020*	Energy	0.014	---	<0.1	0.009	**0.0320**	Energy
ML-1	ML-1	8/20/2007		▫	---	---	13.2	7.52	1,539	---	---	---	---	156	---	252	*324*	*1,020*	Energy	0.013	---	<0.1	0.010	**0.0380**	Energy
ML-1	WPK-ML-1	10/25/2007		▫	7.57	---	11.7	8.09	1,526	---	---	---	---	147	---	253	*381*	*1,040*	Energy	0.007	---	<0.1	0.011	0.0186	Energy
ML-1	RAM-ML-1	10/25/2007	dup	▫	6.97	---	---	---	---	---	---	---	---	157	---	253	*334*	*976*	Energy	0.013	---	<0.1	0.010	**0.0769**	Energy
ML-1	ML-1	3/19/2008		▫	---	---	---	---	---	---	---	---	---	139	---	251	*388*	*1,030*	Energy	0.006	---	<0.1	0.010	0.0169	Energy
ML-1	ML-1	6/6/2008		▫	---	---	16.8	7.45	1,493	---	---	---	---	146	---	235	*378*	*1,060*	Energy	0.007	---	<0.1	0.010	0.0162	Energy
ML-1	ML-1	8/6/2008		▫	7.35	---	---	---	---	---	---	---	---	138	---	238	*482*	*1,020*	Energy	0.007	---	<0.1	0.010	0.0149	Energy
ML-1	ML-1	10/15/2008		▫	---	---	14.8	7.45	1,399	---	---	---	---	149	---	238	*365*	*1,030*	Energy	0.006	---	<0.1	0.010	0.0147	Energy
ML-1	ML-1	3/25/2009		▫	---	---	9.1	7.55	1,504	---	---	---	---	149	---	248	*349*	*990*	Energy	0.006	---	<0.1	0.010	0.0142	Energy
ML-1	ML-1	6/9/2009		▫	---	---	---	---	---	---	---	---	---	146	---	240	*352*	*984*	Energy	0.005	---	<0.1	0.011	0.0145	Energy
ML-1	ML-1	8/12/2009		▫	---	---	25	7.17	1,455	---	---	---	---	148	---	240	*353*	*962*	Energy	0.005	---	<0.1	0.009	0.0145	Energy
ML-1	ML-1	4/28/2010		▫	---	---	15.5	7.24	1,433	---	---	---	---	152	---	252	*343*	*967*	Energy	0.005	---	<0.1	0.010	0.0142	Energy
ML-1	ML-1	8/25/2010		▫	---	---	---	7.13	---	---	---	---	---	150	---	258	*337*	*1,040*	Energy	0.006	---	<0.1	0.010	0.0146	Energy
ML-1	ML-1	5/25/2011		▫	---	---	---	7.33	---	---	---	---	---	150	---	245	*321*	*974*	Energy	0.009	---	0.01	0.011	0.0211	Energy
ML-1	ML-1	10/20/2011		▫	---	---	---	---	---	---	---	---	---	150	---	224	*330*	*958*	Energy	0.008	---	0.01	0.008	0.0227	Energy
ML-1	6211	10/30/2012		HS	7.59	1,380	9.4	7.4	1,138	153	44	95	6	145	<5	250	*312*	*928*	Energy	0.007	---	0.009	0.008	0.0181	Energy
ML-1	6212	10/30/2012		LF	7.57	1,380	11.0	7.4	1,176	155	44	93	7	146	<5	239	*317*	*922*	Energy	0.006	---	0.010	0.008	0.0180	Energy
ML-1	6213	10/30/2012		P	7.49	1,480	11.8	7.4	1,250	176	47	92	6	156	<5	256	*345*	*1,010*	Energy	0.021	---	0.006	0.009	0.0145	Energy
ML-1	6326	4/2/2013		HS	7.46	1,470	11.6	7.8	1,897	144	40	92	6	149	<5	237	*318*	*941*	Energy	0.007	<0.03	0.01	0.008	0.0192	Energy
ML-1	6327	4/2/2013		LF	7.50	1,460	11.0	7.5	1,441	144	40	91	6	149	<5	238	*319*	*927*	Energy	0.007	<0.03	0.01	0.008	0.0193	Energy
ML-1	6328	4/2/2013		P	7.52	1,570	11.7	7.4	1,512	161	44	90	6	164	<5	255	*350*	*1,020*	Energy	0.022	<0.03	<0.01	0.010	0.0155	Energy
ML-1	7029	10/11/2013		HS	7.42	1,350	10.8	7.3	1,332	145	40	91	6	144	<5	242	*302*	*911*	Energy	0.007	<0.03	<0.01	0.009	0.0155	Energy
ML-1	7030	10/11/2013		LF	7.49	1,350	11.2	7.2	1,452	148	41	94	6	140	<5	241	*294*	*895*	Energy	0.007	<0.03	<0.01	0.010	0.0163	Energy
ML-1	7164	4/4/2014		HS	7.58	1,380	12.4	7.8	1,430	132	36	78	5	140	<5	236	*298*	*866*	Energy	0.005	<0.03	<0.01	0.008	0.0151	Energy
ML-1	7165	4/4/2014	dup	HS	7.58	1,380	12.4	7.8	1,430	134	36	79	5	141	<5	236	*300*	*868*	Energy	0.005	<0.03	<0.01	0.008	0.0148	Energy
ML-1	7166	4/4/2014		LF	7.60	1,380	11.0	8.3	1,391	136	36	79	6	139	<5	235	*295*	*867*	Energy	0.005	0.07	<0.01	0.008	0.0143	Energy

TABLE H-1. SUMMARY OF ROUTINE PARAMETERS, COMMON CONSTITUENTS, AND TRACE METALS IN GROUNDWATER
RIO ALGOM MINING LLC, LISBON FACILITY

WELL NAME	SAMPLE IDENTIFIER	SAMPLE DATE	QC SAMPLE CODE[a]	SAMPLE METHOD[b]	ROUTINE PARAMETERS[c]					DISSOLVED COMMON CONSTITUENTS (mg/L)[d]										DISSOLVED TRACE METALS (mg/L)[e]					
					LAB		FIELD																			
					pH (s.u.)	EC (µmhos/cm)	T (°C)	pH (s.u.)	EC (µS/cm)	Ca	Mg	Na	K	Cl	CO_3	HCO_3	SO_4	TDS	LAB[f]	As	Fe	Mo	Se	U	LAB
MW-13	3341	3/24/2004		▫	---	---	14.8	7.27	629	---	---	---	---	27	---	249	---	---	▫	0.0214	---	0.0295	0.005	**0.0350**	Energy
MW-13	3380B	6/29/2004		▫	---	---	15.9	6.99	115	---	---	---	---	31	---	260	---	---	▫	0.02 [g]	---	0.03 [g]	0.006 [g]	0.0231 [g]	Energy
MW-13	3393B	9/15/2004		▫	---	---	14.8	7.05	602	---	---	---	---	6	---	249	---	---	▫	0.02	---	0.03	0.006	0.0224	Energy
MW-13	3394B	9/15/2004	dup	▫	---	---	14.8	7.05	602	---	---	---	---	4	---	246	---	---	▫	0.02	---	0.03	0.004	0.0224	Energy
MW-13	3411B	12/16/2004		▫	---	---	10.2	7.21	620	---	---	---	---	11	---	250	---	---	▫	0.0201	---	0.0243	0.004	0.0209	Energy
MW-13	3434B	3/2/2005		▫	---	---	12.4	6.99	586	---	---	---	---	9	---	249	---	---	▫	0.0195	---	0.0248	0.008	0.0209	Energy
MW-13	3450B	6/22/2005		▫	---	---	17.1	7.44	635	---	---	---	---	31	---	240	---	---	▫	0.02	---	0.02	0.009	0.0149	Energy
MW-13	▫	9/28/2005		▫	---	---	14.3	7.1	409	---	---	---	---	32	---	200	160	480	▫	<0.0005	---	0.0188	0.008	0.0167	▫
MW-13	3485B	11/9/2005		▫	---	---	13.1	7.51	551	---	---	---	---	34	---	248	172	344	▫	0.02	---	0.02	0.01	0.0149	Energy
MW-13	3502B	3/22/2006		▫	---	---	11.9	7.49	638	---	---	---	---	33	---	250	152	*504*	▫	0.02	---	0.03	0.008	0.0149	Energy
MW-13	3548	9/28/2006		▫	---	---	15.3	7.65	541	---	---	---	---	21	<1	237	139	416	Energy	0.0223	---	0.0249	0.007	0.0207	Energy
MW-13	3564 ABC	12/13/2006		▫	---	---	9.5	7.49	664	---	---	---	---	22	<1	237	151	462	Energy	0.0234	---	0.0254	0.007	0.020	Energy
MW-13	MW-13	3/20/2007		▫	---	---	12.1	7.68	742	---	---	---	---	25	---	239	157	488	Energy	0.022	---	<0.1	0.007	0.0216	Energy
MW-13	MW-13	6/12/2007		▫	---	---	12.1	7.63	714	---	---	---	---	25	---	238	150	474	Energy	0.023	---	<0.1	0.008	0.0232	Energy
MW-13	MW-13	8/21/2007		▫	---	---	12.8	7.96	802	---	---	---	---	23	---	247	159	482	Energy	0.023	---	<0.1	0.007	**0.0362**	Energy
MW-13	WPK-MW-13	10/25/2007		▫	7.52	---	11.7	8.02	783	---	---	---	---	60	---	237	167	*541*	Energy	0.027	---	<0.1	0.010	0.0116	Energy
MW-13	RAM-MW-13	10/25/2007	dup	▫	6.97	---	---	---	---	---	---	---	---	23	---	248	162	469	Energy	0.021	---	<0.1	0.007	**0.0351**	Energy
MW-13	MW-13	3/20/2008		▫	---	---	---	---	---	---	---	---	---	62	---	236	160	*530*	Energy	0.03	---	<0.1	0.009	0.0150	Energy
MW-13	MW-13	6/6/2008		▫	---	---	19.8	7.53	790	---	---	---	---	55	---	225	165	*545*	Energy	0.026	---	<0.1	0.008	0.0142	Energy
MW-13	MW-13	8/6/2008		▫	7.44	---	---	---	---	---	---	---	---	51	---	228	167	*536*	Energy	0.026	---	<0.1	0.008	0.0136	Energy
MW-13	MW-13	10/15/2008		▫	---	---	12.7	7.62	854	---	---	---	---	55	---	230	167	*542*	Energy	0.026	---	<0.1	0.009	0.0124	Energy
MW-13	MW-13	3/24/2009		▫	---	---	10.9	7.51	853	---	---	---	---	51	---	242	158	*527*	Energy	0.028	---	<0.1	0.008	0.0154	Energy
MW-13	MW-13	6/9/2009		▫	---	---	---	---	---	---	---	---	---	52	---	225	168	*541*	Energy	0.026	---	<0.1	0.009	0.0107	Energy
MW-13	MW-13	8/12/2009		▫	---	---	22.2	7.27	839	---	---	---	---	53	---	233	165	*533*	Energy	0.027	---	<0.1	0.007	0.0116	Energy
MW-13	MW-13	4/27/2010		▫	---	---	13.9	7.31	872	---	---	---	---	61	---	254	144	*527*	Energy	0.028	---	<0.1	0.008	0.0168	Energy
MW-13	MW-13	8/25/2010		▫	---	---	---	7.13	---	---	---	---	---	56	---	255	171	*551*	Energy	0.025	---	<0.1	0.012	0.0117	Energy
MW-13	MW-13	5/26/2011		▫	---	---	---	7.49	---	---	---	---	---	68	---	237	172	*590*	Energy	0.03	---	0.01	0.012	0.0116	Energy
MW-13	MW-13	10/18/2011		▫	---	---	---	---	---	---	---	---	---	48	---	222	174	*527*	Energy	0.029	---	0.01	0.008	0.0140	Energy
MW-13	6235	11/3/2012		HS	7.48	850	9.6	7.3	1,002	86	33	59	4	50	<5	243	174	*549*	Energy	0.029	---	0.012	0.009	0.0117	Energy
MW-13	6236	11/3/2012		LF	7.46	861	11.8	7.2	1,025	89	33	63	4	51	<5	243	167	*565*	Energy	0.028	---	0.012	0.009	0.0119	Energy
MW-13	6237	11/3/2012		P	7.45	833	12.2	7.2	1,019	88	32	57	4	47	<5	240	168	*538*	Energy	0.027	---	0.011	0.009	0.0108	Energy
MW-13	6339	4/3/2013		HS	7.53	836	12.2	6.8	723	77	29	56	4	39	<5	247	164	*524*	Energy	0.030	<0.03	0.02	0.010	0.0115	Energy
MW-13	6340	4/3/2013		LF	7.46	918	12.1	6.7	720	77	29	56	4	52	<5	243	173	*580*	Energy	0.029	<0.03	0.02	0.010	0.0111	Energy
MW-13	6341	4/3/2013	dup	LF	7.47	917	12.1	6.7	720	75	28	55	4	53	<5	255	177	*574*	Energy	0.028	<0.03	0.01	0.009	0.0110	Energy
MW-13	6342	4/3/2013		P	7.50	895	12.1	6.7	703	77	29	52	4	49	<5	244	173	*563*	Energy	0.027	<0.03	0.01	0.009	0.0106	Energy
MW-13	6960	10/12/2013		HS	7.54	787	11.3	7.9	463	81	31	48	4	42	<5	257	159	*509*	Energy	0.028	<0.03	0.02	0.010	0.0153	Energy
MW-13	6961	10/12/2013		LF	7.47	864	11.9	7.2	935	84	30	62	4	60	<5	243	167	*549*	Energy	0.028	<0.03	0.01	0.011	0.0115	Energy
MW-13	7105	4/2/2014		HS	7.52	835	13.1	7.4	939	79	30	54	4	46	<5	243	168	*533*	Energy	0.026	<0.03	<0.01	0.010	0.0115	Energy
MW-13	7106	4/2/2014		LF	7.53	860	12.4	7.3	902	73	28	52	4	51	<5	242	168	*546*	Energy	0.026	<0.03	<0.01	0.010	0.0113	Energy
MW-100	6208	10/31/2012		Grab	7.57	791	---	---	---	81	63	11	3	11	<5	363	148	*503*	Energy	<0.001	---	0.001	0.006	0.0045	Energy
MW-100	6287	11/7/2012		HS	7.51	783	10.6	7.3	932	80	58	11	3	11	<5	357	150	*504*	Energy	<0.001	---	<0.001	0.006	0.0029	Energy
MW-100	6288	11/7/2012		LF	7.52	787	11.2	7.3	1,395	80	58	11	3	11	<5	356	150	*505*	Energy	<0.001	---	<0.001	0.006	0.0058	Energy
MW-100	6289	11/7/2012		P	7.54	780	12.3	7.3	1,391	78	58	11	3	11	<5	356	149	*505*	Energy	<0.001	---	<0.001	0.007	0.0038	Energy
MW-100	6393	4/4/2013		HS	7.53	839	10.9	7.1	878	76	55	10	3	10	<5	359	150	*508*	Energy	<0.001	<0.03	<0.01	0.006	0.0027	Energy
MW-100	6394	4/4/2013		LF	7.50	843	13.0	7.0	825	76	57	11	3	10	<5	359	149	*511*	Energy	<0.001	<0.03	<0.01	0.006	0.0041	Energy

TABLE H-1. SUMMARY OF ROUTINE PARAMETERS, COMMON CONSTITUENTS, AND TRACE METALS IN GROUNDWATER
RIO ALGOM MINING LLC, LISBON FACILITY

WELL NAME	SAMPLE IDENTIFIER	SAMPLE DATE	QC SAMPLE CODE[a]	SAMPLE METHOD[b]	ROUTINE PARAMETERS[c]					DISSOLVED COMMON CONSTITUENTS (mg/L)[d]										DISSOLVED TRACE METALS (mg/L)[e]					
					LAB		FIELD																			
					pH (s.u.)	EC (µmhos/cm)	T (°C)	pH (s.u.)	EC (µS/cm)	Ca	Mg	Na	K	Cl	CO_3	HCO_3	SO_4	TDS	LAB[f]	As	Fe	Mo	Se	U	LAB
MW-100	6395	4/4/2013		P	7.52	826	12.5	7.1	812	73	55	11	3	10	<5	351	146	507	Energy	<0.001	<0.03	<0.01	0.006	0.0029	Energy
MW-100	6396	4/4/2013	dup	P	7.49	827	12.5	7.1	812	75	56	12	3	10	<5	363	149	502	Energy	<0.001	<0.03	<0.01	0.006	0.0028	Energy
MW-100	7016	10/10/2013		HS	7.42	809	10.5	7.3	896	81	59	12	3	10	<5	362	158	525	Energy	<0.001	<0.03	<0.01	0.008	0.0028	Energy
MW-100	7018	10/10/2013	dup	HS	7.43	808	10.5	7.3	896	81	58	11	3	10	<5	364	153	507	Energy	<0.001	<0.03	<0.01	0.008	0.0028	Energy
MW-100	7017	10/10/2013		LF	7.42	808	11.7	7.2	871	81	59	11	3	11	<5	363	154	517	Energy	<0.001	0.03	<0.01	0.008	0.0043	Energy
MW-100	7123	4/3/2014		HS	7.72	869	10.4	7.3	863	76	55	10	3	10	<5	362	165	522	Energy	<0.001	<0.03	<0.01	0.007	0.0026	Energy
MW-100	7124	4/3/2014		LF	7.68	869	11.5	7.2	849	89	60	12	3	10	<5	374	166	526	Energy	<0.001	<0.03	<0.01	0.007	0.0037	Energy
MW-101	6205	10/30/2012		Grab	7.25	16,100	---	---	---	493	159	4,160	14	1,210	<5	2,950	7,620	13,800	Energy	0.005	---	28.6	**0.085**	***73.4***	Energy
MW-101	6259	11/6/2012		LF	7.31	16,100	18.0	7.0	21,708	445	156	4,120	12	1,060	<5	2,900	6,680	14,100	Energy	0.004	---	27.5	**0.080**	***76.3***	Energy
MW-101	6260	11/6/2012		P	7.3	16,100	14.0	7.0	19,845	441	155	4,120	12	1,050	<5	2,870	6,710	13,700	Energy	0.004	---	28.0	**0.082**	***78.0***	Energy
MW-101	6281	11/6/2012	dup	P	7.31	16,100	14.0	7.0	19,845	442	156	4,110	12	1,060	<5	2,870	6,790	13,100	Energy	0.003	---	28.1	**0.079**	***76.3***	Energy
MW-101	6271	11/6/2012		HS	7.34	16,000	12.8	7.2	20,031	463	159	4,280	13	1,130	<5	2,940	7,260	13,500	Energy	0.004	---	27.0	**0.089**	***77.0***	Energy
MW-101	6397	4/4/2013		HS	7.33	17,000	16.2	6.9	16,370	420	150	4,100	11	1,080	<5	2,960	6,720	14,000	Energy	0.007	<0.03	29.7	**0.072**	***77.2***	Energy
MW-101	6398	4/4/2013	sp	HS	8.1	16,000	16.2	6.9	16,370	406	148	4,150	12	1,140	<1.2	2,757	6,800	14,200	ACZ	0.004	<0.1	23.5	**0.0690**	***60.80***	ACZ
MW-101	6399	4/4/2013		LF	7.33	17,000	17.8	8.0	16,758	420	152	4,120	12	1,080	<5	2,930	6,700	13,700	Energy	0.009	0.11	27.7	**0.074**	***74.0***	Energy
MW-101	6400	4/4/2013	sp	LF	8.0	16,100	17.8	8.0	16,758	403	148	4,110	12	1,140	<1.2	2,721	6,900	14,200	ACZ	0.004	0.1	24.6	**0.0774**	***63.60***	ACZ
MW-101	6401	4/4/2013		P	7.25	16,900	16.1	7.9	16,745	408	149	3,980	11	1,090	<5	2,920	6,760	13,800	Energy	0.009	<0.03	28.2	**0.075**	***74.8***	Energy
MW-101	6402	4/4/2013	sp	P	8.0	16,300	16.1	7.9	16,745	400	149	4,100	12	1,140	<1.2	2,733	6,700	14,200	ACZ	0.004	<0.1	24.4	**0.0756**	***62.70***	ACZ
MW-101	6972	10/13/2013		HS	7.22	16,100	13.6	7.1	16,418	387	144	4,120	11	1,170	<5	2,960	6,940	14,000	Energy	0.007	0.15	24.8	**0.082**	***72.6***	Energy
MW-101	6973	10/13/2013		LF	7.24	16,100	14.5	7.0	17,424	383	143	4,120	11	1,180	<5	2,940	7,020	13,900	Energy	0.007	0.18	25.3	**0.082**	***74.8***	Energy
MW-101	7133	4/4/2014		HS	7.25	16,800	12.3	7.1	16,589	365	128	4,290	12	1,150	<5	2,940	6,560	13,900	Energy	0.006	<0.03	29.9	**0.080**	***68***	Energy
MW-101	7134	4/4/2014	dup	HS	7.26	16,800	12.3	7.1	16,589	360	124	4,180	12	1,160	<5	2,940	6,610	13,600	Energy	0.006	<0.03	30.6	**0.084**	***68***	Energy
MW-101	7135	4/4/2014		LF	7.22	16,800	13.1	7.0	16,762	353	124	4,240	12	1,160	<5	2,930	6,610	13,800	Energy	0.007	0.11	29.5	**0.096**	***69***	Energy
MW-102	6203	10/30/2012		Grab	8.21	13,500	---	---	---	68	48	4,070	15	1,160	31	3,320	4,290	10,900	Energy	**0.071**	---	19.2	0.020	***103***	Energy
MW-102	6267	11/6/2012		HS	**8.64**	17,800	7.5	**9.0**	20,818	40	56	5,110	9	1,260	360	4,270	6,280	14,400	Energy	**0.175**	---	28.3	**0.189**	***146***	Energy
MW-102	6268	11/6/2012	dup	HS	**8.67**	17,700	7.5	**9.0**	20,818	40	57	5,360	10	1,210	300	4,390	6,060	15,000	Energy	**0.133**	---	28.4	**0.189**	***143***	Energy
MW-102	6269	11/6/2012		LF	**8.64**	17,600	14.5	**8.9**	21,623	34	51	5,330	9	1,260	360	4,330	6,280	14,400	Energy	**0.212**	---	27.9	**0.189**	***148***	Energy
MW-102	6270	11/6/2012		P	**8.61**	17,700	13.5	**8.8**	21,875	48	56	5,340	10	1,320	240	4,630	6,620	13,700	Energy	**0.109**	---	27.3	**0.191**	***136***	Energy
MW-102	6320	4/3/2013		HS	8.37	18,800	9.0	8.0	18,033	62	66	5,110	9	1,250	180	4,510	6,100	15,100	Energy	0.021	*0.6*	21.6	**0.078**	***139***	Energy
MW-102	6371	4/3/2013		LF	8.41	18,900	15.5	8.2	18,731	59	65	5,030	9	1,260	120	4,940	6,160	14,900	Energy	0.046	*0.81*	21.5	**0.093**	***143***	Energy
MW-102	6372	4/3/2013	dup	LF	8.42	18,800	15.5	8.2	18,731	58	65	4,960	8	1,240	480	3,960	5,980	15,300	Energy	0.042	*0.77*	21.0	**0.100**	***140***	Energy
MW-102	6373	4/3/2013		P	**8.63**	19,100	13.0	8.3	18,814	33	54	5,100	10	1,250	600	3,900	6,110	15,300	Energy	**0.144**	*0.58*	24.9	**0.119**	***144***	Energy
MW-102	7019	10/9/2013		HS	**8.52**	14,900	11.3	8.5	18,293	40	61	4,700	8	1,030	151	3,760	4,910	11,900	Energy	**0.153**	*0.51*	20.7	**0.093**	***122***	Energy
MW-102	7020	10/9/2013		LF	8.41	17,600	16.2	8.4	19,250	46	66	5,000	9	1,190	150	3,960	5,750	14,600	Energy	**0.160**	*0.47*	20.8	**0.117**	***123***	Energy
MW-102	7127	4/4/2014		HS	**8.55**	18,600	10.2	**8.6**	18,333	37	63	4,810	8	1,260	240	4,270	5,980	14,700	Energy	**0.161**	0.14	21.7	**0.128**	***122***	Energy
MW-102	7128	4/4/2014	dup	HS	**8.53**	18,900	10.2	**8.6**	18,333	39	65	5,080	9	1,240	240	4,390	6,050	14,900	Energy	**0.176**	0.14	23.8	**0.158**	***136***	Energy
MW-102	7129	4/4/2014		LF	8.50	18,900	15.0	8.5	18,742	46	64	4,680	11	1,310	240	4,390	6,200	14,900	Energy	**0.177**	0.16	23.8	**0.138**	***136***	Energy
MW-102DB	6204	10/30/2012		Grab	8.48	728	---	---	---	14	5	154	4	36	<5	332	55	440	Energy	0.006	---	0.016	<0.001	**0.0917**	Energy
MW-102DB	6255	11/6/2012		HS	8.1	749	8.6	8.0	888	14	5	159	4	39	<5	344	64	459	Energy	0.005	---	0.017	<0.001	**0.0814**	Energy
MW-102DB	6291	11/6/2012	sp	HS	8.4	725	8.6	8.0	888	14.2	5.2	151	4.4	43	4	312	63	490	ACZ	0.0051	---	0.0169	0.0002	**0.0761**	ACZ
MW-102DB	6256	11/6/2012		LF	8.13	740	13.4	8.1	1,329	13	5	159	4	36	<5	355	60	460	Energy	0.004	---	0.010	<0.001	**0.0416**	Energy
MW-102DB	6257	11/6/2012	dup	LF	8.11	739	13.4	8.1	1,329	13	5	159	4	36	<5	344	60	455	Energy	0.004	---	0.011	<0.001	**0.0416**	Energy
MW-102DB	6292	11/6/2012	sp	LF	8.4	713	13.4	8.1	1,329	13.4	5	150	4.1	41	5	310	62	480	ACZ	0.0045	---	0.0108	0.0004	**0.0364**	ACZ
MW-102DB	6258	11/6/2012		P	**8.69**	4,470	12.2	8.1	990	15	9	599	4	*270*	56	1,080	*1,230*	*3,150*	Energy	0.028	---	2.25	0.015	***11.4***	Energy

TABLE H-1. SUMMARY OF ROUTINE PARAMETERS, COMMON CONSTITUENTS, AND TRACE METALS IN GROUNDWATER
RIO ALGOM MINING LLC, LISBON FACILITY

WELL NAME	SAMPLE IDENTIFIER	SAMPLE DATE	QC SAMPLE CODE[a]	SAMPLE METHOD[b]	ROUTINE PARAMETERS[c]					DISSOLVED COMMON CONSTITUENTS (mg/L)[d]										DISSOLVED TRACE METALS (mg/L)[e]					
					LAB		FIELD																			
					pH (s.u.)	EC (µmhos/cm)	T (°C)	pH (s.u.)	EC (µS/cm)	Ca	Mg	Na	K	Cl	CO_3	HCO_3	SO_4	TDS	LAB[f]	As	Fe	Mo	Se	U	LAB
MW-102DB	6293	11/6/2012	sp	P	**8.8**	3,510	12.2	8.1	990	14.9	8.3	486	4.4	190	46	878	*730*	*2,580*	ACZ	0.0286	---	1.82	0.0131	***9.02***	ACZ
MW-102DB	6314	4/2/2013		HS	8.02	924	12.9	8.4	923	26	9	172	4	43	<5	391	89	*538*	Energy	0.003	*1.01*	0.02	<0.001	0.0282	Energy
MW-102DB	6315	4/2/2013		LF	8.11	883	11.1	**8.7**	874	20	7	165	4	40	<5	375	75	*512*	Energy	0.003	*0.64*	0.02	<0.001	0.0136	Energy
MW-102DB	6316	4/2/2013		P	8.12	788	12.4	**8.6**	8	14	6	155	4	34	<5	345	54	457	Energy	0.005	0.16	0.01	<0.001	0.0052	Energy
MW-102DB	6317	4/2/2013	dup	P	8.11	791	12.4	**8.6**	8	14	6	152	3	34	<5	343	56	458	Energy	0.005	0.15	<0.01	<0.001	0.0054	Energy
MW-102DB	7021	10/9/2013		HS	8.03	906	13.3	8.1	1,165	30	11	183	4	41	<5	428	80	*563*	Energy	0.004	*0.48*	0.02	<0.001	0.0198	Energy
MW-102DB	7022	10/9/2013		LF	8.10	841	14.4	7.9	957	20	8	173	4	38	<5	402	64	*504*	Energy	0.003	*0.36*	0.01	<0.001	0.0241	Energy
MW-102DB	7130	4/4/2014		HS	8.19	1,020	11.6	8.3	1,525	31	11	176	4	43	6	456	85	*596*	Energy	0.003	*0.44*	0.02	<0.001	0.0220	Energy
MW-102DB	7131	4/4/2014		LF	8.26	912	12.7	8.1	913	21	8	166	4	41	7	402	69	*529*	Energy	0.003	*0.34*	0.01	<0.001	0.0113	Energy
MW-103	6206	10/31/2012		Grab	7.74	941	---	---	---	62	16	142	6	22	<5	263	240	*618*	Energy	<0.001	---	0.011	<0.001	**0.047**	Energy
MW-103	6272	11/7/2012		HS	7.05	5,850	9.7	7.0	6,620	655	213	529	18	*1,180*	<5	456	*1,580*	*4,380*	Energy	<0.001	---	0.036	0.023	***8.81***	Energy
MW-103	6273	11/7/2012		LF	7.13	5,930	8.0	7.0	7,300	654	214	537	18	*1,200*	<5	471	*1,540*	*4,310*	Energy	<0.001	---	0.012	0.020	***8.55***	Energy
MW-103	6276	11/7/2012		P	6.99	5,970	12.7	7.0	7,181	676	222	515	18	*1,210*	<5	467	*1,500*	*4,440*	Energy	<0.001	---	0.013	0.025	***9.66***	Energy
MW-103	6375	4/5/2013		HS	7.22	5,880	16.1	6.5	3,904	510	168	614	17	*1,100*	<5	456	*1,350*	*4,200*	Energy	<0.001	<0.03	<0.01	0.008	***7.57***	Energy
MW-103	6376	4/5/2013	dup	HS	7.22	5,280	16.1	6.5	3,904	517	170	629	17	*1,010*	<5	432	*1,200*	*3,950*	Energy	0.001	<0.03	<0.01	0.014	***7.55***	Energy
MW-103	6404	4/5/2013		LF	7.26	6,190	10.8	7.0	6,429	519	174	660	18	*1,160*	<5	491	*1,430*	*4,430*	Energy	0.002	0.11	0.03	0.010	***8.40***	Energy
MW-103	6405	4/5/2013		P	7.23	6,570	11.6	7.0	6,764	685	224	557	18	*1,270*	<5	501	*1,550*	*4,680*	Energy	0.002	0.14	0.13	0.030	***9.61***	Energy
MW-103	6968	10/13/2013		HS	7.13	6,120	13.7	7.0	6,715	567	182	641	17	*1,240*	<5	467	*1,410*	*4,190*	Energy	0.003	<0.03	0.01	0.014	***8.31***	Energy
MW-103	6969	10/13/2013		LF	7.17	6,330	13.9	7.0	6,827	549	185	704	19	*1,270*	<5	476	*1,430*	*4,540*	Energy	0.003	0.07	0.02	0.015	***8.82***	Energy
MW-103	7172	4/4/2014		HS	7.23	5,970	11.0	7.2	6,586	497	171	692	18	*1,200*	<5	449	*1,380*	*4,280*	Energy	0.002	<0.03	<0.01	0.010	***7.94***	Energy
MW-103	7173	4/4/2014		LF	7.23	6,400	10.9	7.1	6,953	510	177	741	20	*1,270*	<5	496	*1,470*	*4,550*	Energy	0.003	*0.41*	0.01	0.008	***8.28***	Energy
MW-104	6202	10/29/2012		Grab	7.69	1,760	---	---	---	59	14	369	6	117	<5	465	*378*	*1,180*	Energy	0.003	---	0.122	0.005	***0.164***	Energy
MW-104	6275	11/7/2012		P	7.72	1,490	11.1	7.3	1,521	88	21	250	5	113	<5	474	247	*968*	Energy	0.002	---	0.119	0.004	***0.210***	Energy
MW-104	6304	11/28/2012		P	7.76	1,410	10.6	7.8	836	84	23	202	4	109	<5	470	209	*925*	Energy	0.002	---	0.096	0.004	***0.215***	Energy
MW-104	6364	4/5/2013		P	7.68	1,340	12.6	7.9	1,261	103	23	173	4	95	<5	459	171	*852*	Energy	0.005	<0.03	0.11	0.004	***0.157***	Energy
MW-104	6944	10/14/2013		P	7.63	1,250	10.9	6.6	1,395	109	21	136	4	101	<5	418	181	*795*	Energy	0.005	<0.03	0.08	0.002	***0.118***	Energy
MW-104	6947	11/17/2013		P	7.68	1,160	9.3	7.4	1,227	100	25	133	4	93	<5	403	152	*716*	Energy	0.003	<0.03	0.09	0.004	***0.17***	Energy
MW-104	7191	4/6/2014		P	7.72	1,230	10.3	7.7	1,301	106	23	137	4	93	<5	439	171	*775*	Energy	0.004	<0.03	0.07	0.003	***0.136***	Energy
MW-105	6207	10/31/2012		Grab	7.49	859	---	---	---	102	29	45	4	56	<5	239	166	*555*	Energy	0.015	---	0.007	0.010	0.0122	Energy
MW-105	6283	11/7/2012		HS	7.48	1,140	9.9	7.4	1,282	122	32	74	4	98	<5	244	191	*748*	Energy	0.011	---	0.006	0.011	0.0169	Energy
MW-105	6284	11/7/2012		LF	7.43	1,330	12.1	7.2	1,600	138	36	84	4	124	<5	249	203	*862*	Energy	0.008	---	0.007	0.011	0.0231	Energy
MW-105	6285	11/7/2012	dup	LF	7.47	1,340	12.1	7.2	1,600	146	38	91	5	126	<5	260	204	*856*	Energy	0.008	---	0.006	0.012	0.0248	Energy
MW-105	6286	11/7/2012		P	7.47	1,050	12.0	7.3	1,262	114	31	67	4	83	<5	240	183	*686*	Energy	0.016	---	0.004	0.011	0.0155	Energy
MW-105	6343	4/3/2013		HS	7.43	1,180	11.4	6.7	968	115	30	72	4	101	<5	244	181	*743*	Energy	0.008	<0.03	<0.01	0.011	0.0130	Energy
MW-105	6344	4/3/2013		LF	7.46	1,660	12.3	6.6	1,322	156	42	93	4	156	<5	248	212	*1,050*	Energy	0.011	<0.03	0.01	0.011	0.0217	Energy
MW-105	6345	4/3/2013		P	7.48	1,130	11.9	6.7	916	109	29	60	3	87	<5	238	185	*718*	Energy	0.019	<0.03	<0.01	0.012	0.0138	Energy
MW-105	6957	10/12/2013		HS	7.43	1,000	11.5	7.3	1,084	114	30	72	4	88	<5	242	171	*649*	Energy	0.010	<0.03	<0.01	0.012	0.0131	Energy
MW-105	6958	10/12/2013		LF	7.38	1,590	12.5	7.1	1,714	175	44	103	5	157	<5	234	209	*1,070*	Energy	0.017	<0.03	<0.01	0.016	0.0218	Energy
MW-105	6959	10/12/2013	dup	LF	7.35	1,580	12.5	7.1	1,714	170	43	99	4	155	<5	235	205	*1,060*	Energy	0.017	<0.03	<0.01	0.015	0.0184	Energy
MW-105	7170	4/4/2014		HS	7.62	1,130	11.8	7.6	1,222	113	30	64	4	98	<5	239	186	*727*	Energy	0.013	<0.03	<0.01	0.011	0.0154	Energy
MW-105	7171	4/4/2014		LF	7.44	1,600	12.8	7.3	1,705	171	43	95	4	143	<5	236	215	*1,080*	Energy	0.019	<0.03	<0.01	0.014	0.0215	Energy
MW-106	6201	10/29/2012		Grab	7.55	2,740	---	---	---	133	56	479	22	85	<5	234	*1,170*	*2,050*	Energy	0.002	---	0.014	<0.001	0.0086	Energy
MW-106	6274	11/7/2012		P	7.85	2,840	11.7	7.0	3,067	115	55	442	16	77	<5	243	*1,290*	*2,170*	Energy	<0.001	---	0.007	<0.001	0.0043	Energy
MW-106	6303	11/28/2012		P	7.77	2,820	11.3	7.7	2,865	125	60	498	17	75	<5	241	*1,230*	*2,220*	Energy	0.001	---	0.007	<0.001	0.0034	Energy

TABLE H-1. SUMMARY OF ROUTINE PARAMETERS, COMMON CONSTITUENTS, AND TRACE METALS IN GROUNDWATER
RIO ALGOM MINING LLC, LISBON FACILITY

WELL NAME	SAMPLE IDENTIFIER	SAMPLE DATE	QC SAMPLE CODE[a]	SAMPLE METHOD[b]	ROUTINE PARAMETERS[c]					DISSOLVED COMMON CONSTITUENTS (mg/L)[d]										DISSOLVED TRACE METALS (mg/L)[e]					
					LAB		FIELD																			
					pH (s.u.)	EC (µmhos/cm)	T (°C)	pH (s.u.)	EC (µS/cm)	Ca	Mg	Na	K	Cl	CO_3	HCO_3	SO_4	TDS	LAB[f]	As	Fe	Mo	Se	U	LAB
MW-106	6365	4/5/2013		P	7.77	2,910	12.5	7.3	2,677	127	62	456	16	75	<5	248	*1,290*	*2,180*	Energy	0.001	<0.03	0.03	<0.001	0.0043	Energy
MW-106	6995	10/9/2013		HS	7.57	2,800	12.2	7.8	3,209	146	69	419	18	66	<5	260	*1,120*	*2,150*	Energy	0.003	0.11	<0.01	0.002	0.0083	Energy
MW-106	6943	10/14/2013		P	7.64	2,900	11.6	**5.9**	3,105	130	63	471	16	77	<5	254	*1,320*	*2,220*	Energy	0.002	<0.03	<0.01	<0.001	0.0024	Energy
MW-106	6946	11/17/2013		P	7.60	2,890	9.2	7.1	2,815	137	66	519	19	79	<5	275	*1,270*	*2,200*	Energy	0.002	<0.03	<0.01	<0.001	0.0062	Energy
MW-106	7180	4/6/2014		P	7.58	2,900	10.1	7.8	2,782	124	61	425	15	76	<5	257	*1,370*	*2,190*	Energy	0.001	<0.03	<0.01	<0.001	0.0054	Energy
MW-107D	6984	10/8/2013		HS	**6.45**	1,010	15.1	7.1	1,197	118	52	33	6	19	<5	125	*428*	*763*	Energy	0.002	0.08	<0.01	<0.001	0.0005	Energy
MW-107D	6985	10/8/2013	dup	HS	**6.46**	1,020	15.1	7.1	1,197	118	52	33	6	18	<5	124	*410*	*774*	Energy	0.002	0.08	<0.01	0.001	0.0005	Energy
MW-107D	6986	10/8/2013		LF	**6.48**	1,000	14.9	6.5	1,128	113	50	33	6	19	<5	126	*416*	*767*	Energy	0.002	0.05	0.01	<0.001	0.0005	Energy
MW-107D	6987	10/8/2013		P	**6.49**	989	12.1	**6.4**	1,118	109	49	34	6	19	<5	127	*401*	*739*	Energy	0.002	<0.03	<0.01	<0.001	0.0005	Energy
MW-107D	7149	4/3/2014		HS	6.83	1,080	---	---	---	114	46	29	5	20	<5	124	*450*	*783*	Energy	0.004	0.20	<0.01	<0.001	0.0007	Energy
MW-107D	7150	4/3/2014		LF	6.56	1,050	12.2	8.0	1,007	117	48	31	6	20	<5	127	*435*	*770*	Energy	0.004	0.23	<0.01	<0.001	0.0006	Energy
MW-107D	7151	4/3/2014		P	6.56	1,040	11.8	6.8	993	110	46	31	5	20	<5	127	*425*	*744*	Energy	0.004	0.07	<0.01	<0.001	0.0006	Energy
MW-107D	7152	4/3/2014	dup	P	6.57	1,030	11.8	6.8	993	108	46	30	5	20	<5	143	*426*	*752*	Energy	0.004	0.07	<0.01	<0.001	0.0006	Energy
MW-107S	7013	10/8/2013		HS	**4.62**	2,060	13.6	**4.7**	2,239	266	125	37	8	19	<5	<5	*1,330*	*1,900*	Energy	0.004	0.12	<0.01	0.005	0.0016	Energy
MW-107S	7014	10/8/2013		LF	**4.61**	2,060	15.0	**4.5**	2,232	269	126	37	8	19	<5	<5	*1,340*	*1,950*	Energy	0.003	*0.34*	<0.01	0.005	0.0017	Energy
MW-107S	7015	10/8/2013		P	**4.49**	2,040	12.0	**4.3**	2,215	265	125	37	8	19	<5	<5	*1,300*	*1,910*	Energy	0.005	0.07	<0.01	0.005	0.0015	Energy
MW-107S	7111	4/3/2014		HS	**4.48**	2,190	10.7	**4.8**	2,111	256	123	37	8	19	<5	<5	*1,290*	*1,960*	Energy	0.005	0.05	<0.01	0.003	0.0018	Energy
MW-107S	7112	4/3/2014		LF	**4.49**	2,180	13.2	**4.5**	2,162	270	129	40	9	19	<5	<5	*1,280*	*1,960*	Energy	0.005	0.24	<0.01	0.004	0.0019	Energy
MW-107S	7113	4/3/2014		P	**4.43**	2,130	11.9	**4.4**	2,184	266	129	39	9	19	<5	<5	*1,300*	*1,940*	Energy	0.006	<0.03	<0.01	0.004	0.0016	Energy
MW-108	7006	10/12/2013		HS	7.42	1,070	11.4	7.4	1,115	125	36	57	4	62	<5	253	*263*	*734*	Energy	0.012	<0.03	<0.01	0.006	0.0099	Energy
MW-108	7007	10/12/2013		LF	7.45	1,070	11.8	7.3	1,126	124	35	56	4	63	<5	254	*265*	*728*	Energy	0.013	<0.03	<0.01	0.005	0.0105	Energy
MW-108	7008	10/12/2013		P	7.43	1,060	12.4	7.3	1,136	124	35	58	4	61	<5	256	*267*	*729*	Energy	0.012	<0.03	<0.01	0.006	0.0095	Energy
MW-108	7009	10/12/2013	dup	P	7.44	1,060	12.4	7.3	1,136	125	35	58	4	61	<5	266	*267*	*738*	Energy	0.012	<0.03	<0.01	0.005	0.0096	Energy
MW-108	7153	4/3/2014		HS	7.49	1,130	10.8	7.7	1,085	130	32	50	4	68	<5	253	*283*	*750*	Energy	0.014	<0.03	<0.01	0.004	0.0094	Energy
MW-108	7154	4/3/2014		LF	7.55	1,130	10.8	7.5	1,075	129	35	55	4	66	<5	255	*270*	*749*	Energy	0.014	0.03	<0.01	0.005	0.0094	Energy
MW-108	7155	4/3/2014		P	7.55	1,150	12.3	7.5	1,093	132	34	55	4	70	<5	256	*293*	*758*	Energy	0.014	<0.03	0.01	0.005	0.0095	Energy
MW-109	6992	10/9/2013		HS	7.44	2,820	13.1	7.5	3,250	246	70	292	12	227	<5	270	*1,060*	*2,140*	Energy	0.001	<0.03	<0.01	0.026	***0.581***	Energy
MW-109	6993	10/9/2013		LF	7.46	2,880	14.5	7.4	3,249	262	76	310	12	231	<5	278	*1,090*	*2,230*	Energy	<0.001	0.05	0.01	0.026	***0.751***	Energy
MW-109	6994	10/9/2013		P	7.55	3,160	13.3	7.6	3,515	304	89	362	13	*255*	<5	297	*1,230*	*2,440*	Energy	0.001	<0.03	0.01	0.032	***1.53***	Energy
MW-109	7157	4/3/2014		HS	7.25	3,570	11.2	7.4	3,231	277	85	361	13	*285*	<5	330	*1,380*	*2,700*	Energy	0.002	<0.03	<0.01	0.026	***1.24***	Energy
MW-109	7158	4/3/2014		LF	7.32	3,970	11.4	**8.6**	3,804	323	95	422	14	*303*	<5	354	*1,530*	*3,060*	Energy	0.002	0.07	0.02	0.031	***2.85***	Energy
MW-109	7160	4/4/2014		P	7.47	2,980	10.4	**8.9**	3,040	248	70	293	12	243	<5	248	*1,070*	*2,170*	Energy	0.002	<0.03	<0.01	0.027	***0.528***	Energy
MW-111	6945	11/17/2013		Grab	**8.58**	768	9.9	6.5	865	7	2	192	5	31	13	391	21	492	Energy	0.007	<0.03	0.03	0.002	**0.0316**	Energy
MW-111	7104	4/1/2014		Grab	8.39	792	11.2	7.3	971	7	2	171	4	15	10	458	9	*518*	Energy	0.004	<0.03	0.01	0.001	0.0153	Energy
MW-112	6996	10/11/2013		HS	7.57	1,010	11.8	7.4	1,236	121	34	50	4	78	<5	221	219	*673*	Energy	0.019	<0.03	<0.01	0.010	0.0099	Energy
MW-112	6997	10/11/2013	sp	HS	8.2	1,010	13.0	7.5	1,108	110	31.3	48.4	3.6	84	<1.2	205	234	*664*	ACZ	0.0162	<0.02	0.0077	0.0081	0.0095	ACZ
MW-112	6998	10/11/2013		LF	7.58	1,020	13.0	7.5	1,108	119	33	50	4	84	<5	221	212	*668*	Energy	0.018	<0.03	0.01	0.010	0.0095	Energy
MW-112	6999	10/11/2013	sp	LF	8.2	1,030	12.2	7.4	1,150	109	30.3	48.8	3.7	88	<1.2	226	233	*670*	ACZ	0.0157	<0.02	0.0109	0.0081	0.0096	ACZ
MW-112	7000	10/11/2013		P	7.51	1,080	10.1	**8.7**	1,208	122	34	52	4	87	<5	224	246	*722*	Energy	0.021	<0.03	<0.01	0.010	0.0098	Energy
MW-112	7001	10/11/2013	sp	P	8.2	1,080	11.8	7.4	1,236	115	32.2	52.3	3.8	88	<1.2	209	*253*	*726*	ACZ	0.0184	<0.02	0.0079	0.0084	0.0099	ACZ
MW-112	7161	4/4/2014		HS	7.74	1,060	10.0	8.3	1,100	113	32	44	3	78	<5	221	229	*675*	Energy	0.018	<0.03	<0.01	0.008	0.0092	Energy
MW-112	7162	4/4/2014		LF	7.72	1,080	12.2	7.4	1,150	115	32	47	4	88	<5	220	227	*671*	Energy	0.017	<0.03	<0.01	0.008	0.0095	Energy
MW-112	7163	4/4/2014		P	7.71	1,130	11.8	8.0	1,166	124	35	54	4	91	<5	222	*253*	*716*	Energy	0.021	<0.03	<0.01	0.008	0.0095	Energy

TABLE H-1. SUMMARY OF ROUTINE PARAMETERS, COMMON CONSTITUENTS, AND TRACE METALS IN GROUNDWATER
RIO ALGOM MINING LLC, LISBON FACILITY

WELL NAME	SAMPLE IDENTIFIER	SAMPLE DATE	QC SAMPLE CODE[a]	SAMPLE METHOD[b]	ROUTINE PARAMETERS[c]					DISSOLVED COMMON CONSTITUENTS (mg/L)[d]										DISSOLVED TRACE METALS (mg/L)[e]					
					LAB		FIELD																			
					pH (s.u.)	EC (µmhos/cm)	T (°C)	pH (s.u.)	EC (µS/cm)	Ca	Mg	Na	K	Cl	CO_3	HCO_3	SO_4	TDS	LAB[f]	As	Fe	Mo	Se	U	LAB
MW-113	7002	10/11/2013		HS	7.32	3,110	12.5	7.3	2,173	214	55	439	6	*412*	<5	428	*750*	*2,100*	Energy	0.014	<0.03	<0.01	0.015	***1.53***	Energy
MW-113	7003	10/11/2013		LF	7.32	3,110	14.0	7.1	3,566	215	55	441	6	*428*	<5	431	*785*	*2,160*	Energy	0.014	<0.03	<0.01	0.016	***1.55***	Energy
MW-113	7004	10/11/2013	dup	LF	7.32	3,120	14.0	7.1	3,566	213	55	437	6	*408*	<5	442	*743*	*2,180*	Energy	0.013	<0.03	<0.01	0.015	***1.54***	Energy
MW-113	7005	10/11/2013		P	7.29	3,090	12.1	7.2	3,502	212	54	423	6	*406*	<5	405	*733*	*2,150*	Energy	0.015	<0.03	<0.01	0.015	***1.15***	Energy
MW-113	7136	4/5/2014		HS	7.34	3,130	11.1	7.9	3,203	198	50	400	5	*395*	<5	434	*745*	*2,210*	Energy	0.016	<0.03	<0.01	0.015	***1.57***	Energy
MW-113	7137	4/5/2014		LF	7.35	3,140	12.4	7.9	3,366	199	50	409	5	*397*	<5	437	*749*	*2,230*	Energy	0.014	0.05	<0.01	0.015	***1.59***	Energy
MW-113	7138	4/5/2014		P	7.42	3,100	10.0	**8.8**	3,115	203	51	396	5	*400*	<5	424	*747*	*2,170*	Energy	0.016	<0.03	<0.01	0.015	***1.25***	Energy
MW-114	7037	10/13/2013		HS	7.55	760	11.8	7.2	779	86	26	33	3	48	<5	211	144	489	Energy	0.018	<0.03	<0.01	0.009	0.0076	Energy
MW-114	7038	10/13/2013		LF	7.31	766	12.2	6.8	851	88	27	34	3	47	<5	201	155	500	Energy	0.001	*0.32*	0.01	0.009	0.0139	Energy
MW-114	7039	10/13/2013		P	7.54	736	12.1	7.5	783	82	25	34	3	45	<5	210	139	471	Energy	0.021	<0.03	0.01	0.008	0.0077	Energy
MW-114	7040	10/13/2013	dup	P	7.53	739	12.1	7.5	783	79	24	34	3	45	<5	220	141	474	Energy	0.022	<0.03	0.01	0.009	0.0075	Energy
MW-114	7167	4/4/2014		HS	7.70	769	11.7	8.3	797	85	24	31	3	46	<5	208	141	468	Energy	0.023	<0.03	<0.01	0.008	0.0071	Energy
MW-114	7168	4/4/2014		LF	7.74	778	11.7	7.6	790	85	24	32	3	47	<5	219	142	467	Energy	0.017	<0.03	0.01	0.008	0.0068	Energy
MW-114	7169	4/4/2014		P	7.70	781	12.2	7.7	787	83	24	31	3	46	<5	210	145	471	Energy	0.023	<0.03	<0.01	0.007	0.0072	Energy
MW-115M	7052	10/14/2013		HS	7.39	1,300	11.8	**9.7**	1,378	140	39	80	5	153	<5	252	248	*859*	Energy	0.003	<0.03	0.02	0.009	**0.0953**	Energy
MW-115M	7053	10/14/2013		LF	7.55	1,190	14.4	7.6	1,263	131	38	67	4	147	<5	225	208	*783*	Energy	0.006	<0.03	0.02	0.009	**0.0489**	Energy
MW-115M	7054	10/14/2013		P	7.45	1,600	12.3	7.7	1,701	173	45	128	5	182	<5	317	*332*	*1,080*	Energy	0.009	<0.03	0.02	0.011	***0.315***	Energy
MW-115M	6950	11/16/2013		LF	7.65	1,180	10.6	7.4	1,191	129	39	64	4	149	<5	231	191	*741*	Energy	0.012	<0.03	0.01	0.007	**0.0411**	Energy
MW-115M	6949	11/16/2013		HS	7.65	1,170	9.4	7.6	1,202	127	38	61	4	145	<5	226	182	*728*	Energy	0.015	<0.03	0.01	0.007	0.0183	Energy
MW-115M	7182	4/5/2014		HS	7.69	1,170	11.9	8.0	1,430	121	37	58	3	147	<5	225	187	*724*	Energy	0.019	<0.03	<0.01	0.008	0.0147	Energy
MW-115M	7183	4/5/2014	sp	HS	8.2	1,170	11.9	8.0	1,430	126	36.9	59.3	3.3	160	<2	196	192	*780*	ACZ	0.0178	<0.02	0.0077	0.0063	0.0125	ACZ
MW-115M	7184	4/5/2014		LF	7.65	1,170	13.0	**9.1**	1,251	119	36	58	3	145	<5	223	184	*723*	Energy	0.017	<0.03	0.01	0.008	0.0164	Energy
MW-115M	7185	4/5/2014	sp	LF	8.2	1,170	13.0	**9.1**	1,251	125	37	59.4	3.3	160	<2	177	192	*690*	ACZ	0.0158	<0.02	0.0116	0.0065	0.0141	ACZ
MW-115M	7186	4/5/2014		P	7.66	1,650	12.4	**9.0**	1,776	160	44	126	4	182	<5	319	*322*	*1,090*	Energy	0.027	<0.03	0.01	0.010	***0.382***	Energy
MW-115M	7187	4/5/2014	sp	P	8.2	1,680	12.4	**9.0**	1,776	168	44.5	129	4.2	210	<2	256	*348*	*1,070*	ACZ	0.0242	<0.02	0.0089	0.0087	***0.3705***	ACZ
MW-115S	7041	10/13/2013		HS	7.58	1,150	11.7	7.5	1,211	116	37	66	3	153	<5	212	180	*724*	Energy	0.022	<0.03	<0.01	0.008	0.0167	Energy
MW-115S	7042	10/13/2013		LF	7.64	1,150	13.7	7.6	1,223	116	37	66	3	151	<5	212	177	*725*	Energy	0.015	<0.03	0.02	0.009	0.0176	Energy
MW-115S	7043	10/13/2013		P	7.64	1,150	12.4	7.6	1,220	120	37	60	3	150	<5	214	178	*740*	Energy	0.026	<0.03	0.01	0.008	0.0163	Energy
MW-115S	7044	10/13/2013	dup	P	7.61	1,150	12.4	7.6	1,220	119	37	59	3	150	<5	214	177	*751*	Energy	0.026	<0.03	0.01	0.008	0.0162	Energy
MW-115S	7188	4/5/2014		HS	7.68	1,070	11.7	8.1	1,125	108	34	45	4	138	<5	203	163	*653*	Energy	0.012	<0.03	<0.01	0.010	0.0129	Energy
MW-115S	7189	4/5/2014		LF	7.65	1,100	14.6	7.9	1,136	110	35	49	4	142	<5	197	170	*674*	Energy	0.013	<0.03	<0.01	0.009	0.0160	Energy
MW-115S	7190	4/5/2014		P	7.58	1,190	12.0	7.6	1,237	118	37	61	3	153	<5	222	189	*729*	Energy	0.021	<0.03	<0.01	0.008	0.0192	Energy
MW-116	7033	10/12/2013		HS	**3.95**	11,200	21.1	**3.7**	11,458	447	738	87	15	87	<5	<5	*15,600*	*22,900*	Energy	**0.062**	*262*	0.42	**0.116**	***16.4***	Energy
MW-116	7034	10/12/2013		LF	**3.95**	11,200	15.8	**3.7**	11,352	479	755	94	17	93	<5	<5	*15,700*	*22,300*	Energy	**0.070**	*265*	0.48	**0.118**	***16.0***	Energy
MW-116	7035	10/12/2013		P	**3.76**	12,600	13.0	**3.5**	12,884	432	758	88	7	96	<5	<5	*18,900*	*26,600*	Energy	**0.134**	*232*	1.25	**0.130**	***19.1***	Energy
MW-116	7063	12/14/2013		LF	**3.97**	11,200	7.1	**4.1**	11,823	445	855	94	17	130	<5	<5	*14,700*	*22,100*	Energy	**0.053**	*272*	0.27	**0.116**	***16.8***	Energy
MW-116	7176	4/5/2014		HS	**3.74**	11,300	11.6	**5.8**	11,962	414	826	83	18	103	<5	<5	*18,000*	*22,900*	Energy	**0.065**	*239*	0.27	**0.137**	***19.2***	Energy
MW-116	7177	4/5/2014		LF	**3.73**	11,500	13.1	**5.1**	12,521	414	829	82	19	111	<5	<5	*18,300*	*23,400*	Energy	**0.065**	*241*	0.42	**0.136**	***18.9***	Energy
MW-116	7178	4/5/2014		P	**3.47**	12,300	12.5	**5.1**	12,737	418	782	91	8	102	<5	<5	*21,100*	*26,400*	Energy	**0.104**	*186*	0.94	**0.144**	***20.7***	Energy
MW-116	7179	4/5/2014	dup	P	**3.47**	12,300	12.5	**5.1**	12,737	418	782	90	8	112	<5	<5	*21,200*	*26,300*	Energy	**0.105**	*182*	0.95	**0.140**	***20.8***	Energy
MW-117M	7049	10/14/2013		HS	**11.6**	3,260	11.0	**12.5**	3,214	25	2	582	23	*344*	122	<5	*462*	*1,650*	Energy	0.013	<0.03	1.18	0.033	***3.24***	Energy
MW-117M	7050	10/14/2013		LF	**11.6**	3,210	12.2	**12.6**	3,476	17	2	586	22	*346*	129	<5	*465*	*1,630*	Energy	0.006	<0.03	0.59	0.016	***1.39***	Energy
MW-117M	7051	10/14/2013		P	**10.3**	2,650	12.8	**11.6**	2,976	63	18	563	16	*333*	144	70	*512*	*1,670*	Energy	**0.245**	<0.03	0.7	0.017	***3.08***	Energy

TABLE H-1. SUMMARY OF ROUTINE PARAMETERS, COMMON CONSTITUENTS, AND TRACE METALS IN GROUNDWATER
RIO ALGOM MINING LLC, LISBON FACILITY

WELL NAME	SAMPLE IDENTIFIER	SAMPLE DATE	QC SAMPLE CODE[a]	SAMPLE METHOD[b]	ROUTINE PARAMETERS[c]					DISSOLVED COMMON CONSTITUENTS (mg/L)[d]										DISSOLVED TRACE METALS (mg/L)[e]					
					LAB		FIELD																			
					pH (s.u.)	EC (µmhos/cm)	T (°C)	pH (s.u.)	EC (µS/cm)	Ca	Mg	Na	K	Cl	CO_3	HCO_3	SO_4	TDS	LAB[f]	As	Fe	Mo	Se	U	LAB
MW-117M	7079	4/5/2014		HS	**9.67**	2,510	11.0	**10.3**	2,671	18	19	510	11	*327*	68	167	*532*	*1,590*	Energy	0.038	<0.03	0.54	0.013	***2.73***	Energy
MW-117M	7080	4/5/2014		LF	**9.60**	2,780	11.9	**10.3**	2,976	25	23	572	10	*357*	76	211	*559*	*1,730*	Energy	**0.051**	<0.03	0.61	0.012	***3.68***	Energy
MW-117M	7081	4/5/2014		P	**8.99**	2,550	12.6	**10.3**	2,789	65	21	492	9	*294*	24	247	*371*	*1,580*	Energy	**0.228**	<0.03	0.54	0.013	***3.39***	Energy
MW-117S	7010	10/12/2013		HS	7.60	1,160	12.1	7.9	1,250	115	31	100	4	117	<5	242	218	*758*	Energy	0.017	*0.63*	0.10	0.008	***0.524***	Energy
MW-117S	7031	10/12/2013		LF	7.67	1,330	14.6	7.6	1,397	101	28	147	4	132	<5	299	236	*861*	Energy	0.012	<0.03	0.17	0.010	***0.882***	Energy
MW-117S	7032	10/12/2013		P	7.69	1,480	12.5	7.6	1,571	94	26	191	4	150	<5	347	*257*	*945*	Energy	0.035	0.27	0.23	0.012	***1.24***	Energy
MW-117S	7073	4/5/2014		HS	7.63	1,020	12.1	8.5	1,200	105	31	50	3	102	<5	211	199	*676*	Energy	0.006	<0.03	0.04	0.006	***0.222***	Energy
MW-117S	7074	4/5/2014		LF	7.71	1,450	13.7	8.5	1,545	90	24	175	3	139	<5	346	250	*942*	Energy	0.038	<0.03	0.22	0.010	***1.21***	Energy
MW-117S	7075	4/5/2014		P	7.71	1,520	12.6	8.5	1,609	87	24	187	3	150	<5	356	*269*	*986*	Energy	0.039	<0.03	0.25	0.010	***1.38***	Energy
MW-117S	7076	4/5/2014	dup	P	7.72	1,520	12.6	8.5	1,609	92	25	202	3	150	<5	355	*269*	*986*	Energy	0.040	<0.03	0.25	0.011	***1.40***	Energy
MW-118	6981	10/8/2013		HS	7.37	892	12.6	7.7	1,319	110	41	26	4	23	<5	247	*258*	*614*	Energy	0.008	*0.48*	0.04	<0.001	0.0043	Energy
MW-118	6982	10/8/2013		LF	7.30	897	14.0	7.2	998	109	41	26	3	24	<5	235	*267*	*628*	Energy	0.007	*0.34*	0.03	<0.001	0.0045	Energy
MW-118	6983	10/8/2013		P	7.24	988	11.0	7.2	1,071	120	45	33	4	26	<5	247	*306*	*703*	Energy	0.002	0.05	0.03	0.002	0.0125	Energy
MW-118	7146	4/3/2014		HS	7.43	915	10.4	**8.7**	848	111	37	28	4	27	<5	236	*260*	*614*	Energy	0.003	0.03	0.09	0.001	0.0136	Energy
MW-118	7147	4/3/2014		LF	7.48	917	9.2	8.3	879	103	36	25	3	26	<5	239	*258*	*609*	Energy	0.003	0.27	0.06	<0.001	0.0046	Energy
MW-118	7148	4/3/2014		P	7.34	979	10.4	**9.1**	934	113	39	31	4	28	<5	243	*285*	*669*	Energy	0.002	0.06	0.05	0.001	0.0104	Energy
MW-119	6975	10/13/2013		P	7.40	4,700	9.8	7.6	4,890	570	163	439	8	*443*	<5	405	*2,250*	*4,110*	Energy	0.002	<0.03	<0.01	0.050	***6.12***	Energy
MW-119	7156	4/3/2014		HS	7.29	4,900	12.8	7.2	5,199	562	153	396	8	*424*	<5	393	*2,120*	*4,100*	Energy	0.004	<0.03	<0.01	0.045	***5.91***	Energy
MW-119	7159	4/4/2014		P	7.37	4,930	11.5	7.6	4,552	566	148	414	8	*417*	<5	395	*2,110*	*4,120*	Energy	0.004	<0.03	<0.01	0.049	***6.60***	Energy
MW-120	7045	10/13/2013		HS	7.55	814	12.2	7.9	878	92	23	43	4	73	<5	224	129	*521*	Energy	0.013	<0.03	<0.01	0.011	0.0106	Energy
MW-120	7046	10/13/2013		LF	7.53	795	14.3	7.6	840	89	23	45	3	67	<5	237	127	*509*	Energy	0.012	<0.03	<0.01	0.011	0.0094	Energy
MW-120	7047	10/13/2013		P	7.52	744	12.8	7.6	786	79	22	48	3	42	<5	227	140	481	Energy	0.030	<0.03	<0.01	0.010	0.0079	Energy
MW-120	7048	10/13/2013	dup	P	7.53	743	12.8	7.6	786	78	21	47	3	43	<5	227	143	474	Energy	0.030	<0.03	<0.01	0.009	0.0076	Energy
MW-120	7141	4/2/2014		HS	7.44	1,370	10.8	7.2	1,527	180	45	29	4	236	<5	196	176	*979*	Energy	0.005	<0.03	<0.01	0.013	0.0060	Energy
MW-120	7142	4/2/2014		LF	7.40	1,460	11.0	8.5	1,446	176	45	29	4	243	<5	205	209	*1,000*	Energy	0.003	0.11	<0.01	0.013	0.0066	Energy
MW-120	7143	4/2/2014		P	7.53	1,020	12.5	7.3	990	108	30	39	4	114	<5	222	173	*654*	Energy	0.029	<0.03	<0.01	0.010	0.0075	Energy
MW-5	3346	3/24/2004		▫	---	---	14.8	6.83	1,403	---	---	---	---	11	---	317	---	---	▫	<0.0009	---	<0.0005	**0.058**	0.008	Energy
MW-5	3379B	6/29/2004		▫	---	---	15.6	6.57	261	---	---	---	---	20	---	338	---	---	▫	<0.0005 [g]	---	0.0009 [g]	**0.06** [g]	ND [g]	Energy
MW-5	3392B	9/15/2004		▫	---	---	15.6	**6.4**	1,435	---	---	---	---	11	---	310	---	---	▫	<0.0005	---	<0.0005	**0.06**	ND	Energy
MW-5	3410B	12/16/2004		▫	---	---	10.1	**6.26**	1,418	---	---	---	---	25	---	315	---	---	▫	<0.0005	---	<0.0005	**0.051**	ND	Energy
MW-5	3433B	3/2/2005		▫	---	---	12.1	6.98	1,352	---	---	---	---	11	---	308	---	---	▫	0.0018	---	<0.0005	**0.061**	ND	Energy
MW-5	3449B	6/22/2005		▫	---	---	19	7.13	1,449	---	---	---	---	10	---	317	---	---	▫	<0.0005	---	<0.0005	**0.07**	ND	Energy
MW-5	▫	9/28/2005		▫	---	---	16.3	6.78	902	---	---	---	---	12	---	256	*690*	*1,300*	▫	0.0016	---	<0.0005	**0.075**	0.0067	▫
MW-5	3484B	11/9/2005		▫	---	---	11.4	6.98	1,185	---	---	---	---	18	---	310	*705*	*1,236*	▫	<0.0005	---	<0.0005	**0.07**	0.00596	Energy
MW-5	3501B	3/22/2006		▫	---	---	11.4	7	1,381	---	---	---	---	22	---	308	*663*	*1,328*	▫	<0.0005	---	<0.0005	**0.07**	0.00745	Energy
MW-5	3547	9/28/2006		▫	---	---	13.9	**6.43**	1,379	---	---	---	---	11	<1	308	*650*	*1,290*	Energy	<0.0005	---	0.0005	**0.051**	0.0074	Energy
MW-5	3563 ABC	12/13/2006		▫	---	---	9.3	6.91	1,474	---	---	---	---	14	<1	298	*735*	*1,330*	Energy	<0.0005	---	<0.0005	**0.062**	0.008	Energy
MW-5	MW-5	3/19/2007		▫	---	---	11.7	6.55	1,638	---	---	---	---	12	---	298	*744*	*1,380*	Energy	<0.001	---	<0.1	**0.066**	0.0082	Energy
MW-5	MW-5	6/12/2007		▫	---	---	12.5	8.03	1,556	---	---	---	---	11	---	20	*722*	*1,350*	Energy	<0.001	---	<0.1	**0.071**	0.0099	Energy
MW-5	MW-5	8/21/2007		▫	---	---	13.1	8.17	1,697	---	---	---	---	23	---	315	*762*	*1,370*	Energy	<0.001	---	<0.1	**0.069**	**0.0458**	Energy
MW-5	WPK-MW-5	10/23/2007		▫	7.37	---	11.4	7.37	1,657	---	---	---	---	11	---	317	*732*	*1,360*	Energy	<0.001	---	<0.1	**0.070**	0.0106	Energy
MW-5	RAM-MW-5	10/23/2007	dup	▫	6.97	---	---	---	---	---	---	---	---	12	---	315	*717*	*1,360*	Energy	<0.001	---	<0.1	**0.068**	0.0167	Energy
MW-5	MW-5	3/18/2008		▫	---	---	---	---	---	---	---	---	---	12	---	316	*728*	*1,360*	Energy	<0.001	---	<0.1	**0.067**	0.0090	Energy

TABLE H-1. SUMMARY OF ROUTINE PARAMETERS, COMMON CONSTITUENTS, AND TRACE METALS IN GROUNDWATER
RIO ALGOM MINING LLC, LISBON FACILITY

WELL NAME	SAMPLE IDENTIFIER	SAMPLE DATE	QC SAMPLE CODE[a]	SAMPLE METHOD[b]	ROUTINE PARAMETERS[c]					DISSOLVED COMMON CONSTITUENTS (mg/L)[d]										DISSOLVED TRACE METALS (mg/L)[e]					
					LAB		FIELD																			
					pH (s.u.)	EC (µmhos/cm)	T (°C)	pH (s.u.)	EC (µS/cm)	Ca	Mg	Na	K	Cl	CO_3	HCO_3	SO_4	TDS	LAB[f]	As	Fe	Mo	Se	U	LAB
MW-5	MW-5	6/3/2008		▫	---	---	17.4	7.13	1,559	---	---	---	---	12	---	292	*751*	*1,390*	Energy	<0.001	---	<0.1	**0.066**	0.0090	Energy
MW-5	MW-5	8/5/2008		▫	7.19	---	---	---	---	---	---	---	---	12	---	300	*776*	*1,380*	Energy	<0.001	---	<0.1	**0.064**	0.0083	Energy
MW-5	MW-5	10/14/2008		▫	---	---	12.1	7.21	1,632	---	---	---	---	12	---	302	*732*	*1,390*	Energy	<0.001	---	<0.1	**0.064**	0.0075	Energy
MW-5	MW-5	3/24/2009		▫	---	---	9.1	7.2	1,610	---	---	---	---	10	---	317	*738*	*1,350*	Energy	<0.001	---	<0.1	**0.069**	0.0070	Energy
MW-5	MW-5	6/9/2009		▫	---	---	---	---	---	---	---	---	---	11	---	302	*749*	*1,370*	Energy	<0.001	---	<0.1	**0.073**	0.0074	Energy
MW-5	MW-5	8/11/2009		▫	---	---	32.1	6.97	1,616	---	---	---	---	11	---	304	*741*	*1,420*	Energy	<0.001	---	<0.1	**0.059**	0.0073	Energy
MW-5	MW-5	4/27/2010		▫	---	---	15	6.95	1,640	---	---	---	---	11	---	324	*760*	*1,380*	Energy	<0.001	---	<0.1	**0.061**	0.0071	Energy
MW-5	MW-5	8/25/2010		▫	---	---	---	6.96	---	---	---	---	---	11	---	330	*760*	*1,450*	Energy	<0.001	---	<0.1	**0.060**	0.0068	Energy
MW-5	MW-5	5/25/2011		▫	---	---	---	7.53	---	---	---	---	---	11	---	316	*765*	*1,450*	Energy	<0.001	---	<0.01	**0.068**	0.0074	Energy
MW-5	MW-5	10/18/2011		▫	---	---	---	---	---	---	---	---	---	12	---	290	*791*	*1,430*	Energy	<0.001	---	<0.01	0.043	0.0080	Energy
MW-5	6233	11/2/2012		HS	7.15	1,680	12.9	6.9	2,992	296	91	18	4	12	<5	317	*780*	*1,460*	Energy	<0.001	---	<0.001	**0.066**	0.0070	Energy
MW-5	6234	11/2/2012		LF	7.15	1,680	14.0	6.9	3,002	300	92	18	4	12	<5	318	*771*	*1,490*	Energy	<0.001	---	0.001	**0.064**	0.0084	Energy
MW-5	6251	11/3/2012		P	7.13	1,570	13.2	7.2	2,780	268	88	17	4	13	<5	321	*687*	*1,350*	Energy	<0.001	---	<0.001	**0.061**	0.0087	Energy
MW-5	6346	4/3/2013		HS	7.16	1,790	13.6	6.7	1,441	258	81	17	3	12	<5	320	*803*	*1,470*	Energy	<0.001	<0.03	<0.01	**0.061**	0.0073	Energy
MW-5	6347	4/3/2013		LF	7.18	1,820	12.4	**6.4**	1,797	272	84	17	4	11	<5	319	*808*	*1,520*	Energy	<0.001	0.04	0.01	**0.064**	0.0078	Energy
MW-5	6359	4/4/2013		P	7.19	1,780	11.6	6.9	1,295	295	88	20	5	12	<5	320	*795*	*1,470*	Energy	<0.001	*0.47*	<0.01	**0.056**	0.0074	Energy
MW-5	7023	10/10/2013		HS	7.11	1,700	11.0	6.9	986	278	86	18	4	12	<5	322	*798*	*1,470*	Energy	<0.001	<0.03	<0.01	**0.068**	0.0074	Energy
MW-5	7024	10/10/2013		LF	7.11	1,700	8.8	6.9	1,828	278	86	19	4	12	<5	332	*774*	*1,470*	Energy	<0.001	<0.03	<0.01	**0.067**	0.0132	Energy
MW-5	7125	4/4/2014		HS	7.37	1,800	8.7	7.1	1,749	285	85	18	4	12	<5	318	*813*	*1,480*	Energy	0.001	<0.03	<0.01	**0.060**	0.0071	Energy
MW-5	7126	4/4/2014		LF	7.36	1,870	10.6	6.9	1,855	271	86	18	3	12	<5	317	*856*	*1,540*	Energy	0.001	<0.03	<0.01	**0.055**	0.0066	Energy
OW-UT-9	3371	3/22/2004		▫	---	---	14.6	**9.14**	36,763	---	---	---	---	*1,346*	13,262	0	---	---	▫	**1.10**	---	53.9	0.039	***29.80***	Energy
OW-UT-9	3388B	7/1/2004		▫	---	---	17.3	**9.44**	27,550	---	---	---	---	*1,440*	12,203	9,206	---	---	▫	**2.6** [g]	---	51.4 [g]	0.04 [g]	***83.74*** [g]	Energy
OW-UT-9	3403B	9/21/2004		▫	---	---	12.4	**9.79**	23,253	---	---	---	---	*1,408*	12,389	9,245	---	---	▫	**3.1**	---	60.4	0.02	***78.97***	Energy
OW-UT-9	3419B	12/18/2004		▫	---	---	12.4	**9.03**	27,642	---	---	---	---	*1,389*	12,972	8,653	---	---	▫	**2.78**	---	55.8	0.019	***87.91***	Energy
OW-UT-9	3424B	2/17/2005		▫	---	---	10.3	**9.6**	26,320	---	---	---	---	---	---	---	---	---	▫	**2.44** [g]	---	47.0 [g]	0.027 [g]	***84.70*** [g]	Energy
OW-UT-9	3425B	2/17/2005	dup	▫	---	---	10.3	**9.6**	26,320	---	---	---	---	---	---	---	---	---	▫	**2.26** [g]	---	44.0 [g]	0.027 [g]	***81.90*** [g]	Energy
OW-UT-9	3442B	3/3/2005		▫	---	---	10.9	**9.8**	28,729	---	---	---	---	*1,410*	12,860	8,966	---	---	▫	**2.54**	---	52.0	**0.09**	***84.93***	Energy
OW-UT-9	3443B	3/3/2005	dup	▫	---	---	10.9	**9.8**	28,729	---	---	---	---	*1,416*	13,015	8,730	---	---	▫	**2.43**	---	48.5	**0.08**	***80.46***	Energy
OW-UT-9	3459B	6/20/2005		▫	---	---	17.6	**9.49**	29,987	---	---	---	---	*1,343*	11,940	9,650	---	---	▫	**3.1**	---	56.5	0.04	***90.89***	Energy
OW-UT-9	3459B	6/20/2005	lab dup	▫	---	---	---	---	---	---	---	---	---	---	---	---	---	---	▫	**2.91**	---	---	---	---	Energy
OW-UT-9	3459B	6/20/2005	lab dup	▫	---	---	---	---	---	---	---	---	---	---	---	---	---	---	▫	**2.92**	---	---	---	---	Energy
OW-UT-9	3459B	6/20/2005	lab dup	▫	---	---	---	---	---	---	---	---	---	---	---	---	---	---	▫	**2.98**	---	---	---	---	Energy
OW-UT-9	3459B	6/20/2005	lab dup	▫	---	---	---	---	---	---	---	---	---	---	---	---	---	---	▫	**2.91**	---	---	---	---	Energy
OW-UT-9	▫	9/30/2005		▫	---	---	17.6	**9.58**	30,700	---	---	---	---	*1,390*	6,980	9,810	*10,600*	*35,700*	▫	**2.67**	---	54	<1	***81.6***	▫
OW-UT-9	▫	9/30/2005	dup	▫	---	---	17.6	**9.58**	30,700	---	---	---	---	*1,420*	7,360	10,200	*11,000*	*35,100*	▫	0.007	---	53.2	0.03	***82.3***	▫
OW-UT-9	3493B	11/10/2005		▫	---	---	15.8	**9.5**	25,285	---	---	---	---	*1,340*	13,552	8,417	*11,310*	*37,500*	▫	**2.6**	---	42.0	**0.08**	***89.40***	Energy
OW-UT-9	3494B	11/10/2005	dup	▫	---	---	15.8	**9.5**	25,285	---	---	---	---	*1,335*	13,885	8,054	*11,347*	*37,940*	▫	**2.8**	---	46.6	0.05	***89.40***	Energy
OW-UT-9	3510B	3/24/2006		▫	---	---	15.4	**9.51**	28,619	---	---	---	---	*1,301*	10,890	25,294	*11,281*	*37,360*	▫	**2.3**	---	40.3	**0.08**	***74.50***	Energy
OW-UT-9	3511B	3/24/2006	dup	▫	---	---	15.4	**9.51**	28,619	---	---	---	---	*1,292*	11,436	25,879	*11,297*	*37,920*	▫	**2.5**	---	41.9	**0.06**	***74.50***	Energy
OW-UT-9	3557	9/29/2006		▫	---	---	15.7	**9.34**	32,885	---	---	---	---	*1,490*	872	2,880	*11,200*	*35,400*	Energy	**1.92**	---	34.1	0.02	***56.2***	Energy
OW-UT-9	3573 ABC	12/14/2006		▫	---	---	12.7	**9.37**	25,946	---	---	---	---	*1,390*	3,530	16,100	*10,800*	*36,200*	Energy	**2.09**	---	35.8	0.02	***59.2***	Energy
OW-UT-9	OW-UT-9	3/20/2007		▫	---	---	12.4	**9.7**	---	---	---	---	---	*1,250*	---	11,500	*9,550*	*31,600*	Energy	**2.20**	---	43.3	0.05	***63.7***	Energy
OW-UT-9	OWUT 9 Special	3/20/2007		▫	---	---	---	---	---	---	---	---	---	---	---	---	---	---	▫	**2.28**	---	45.8	0.03	***60.2***	Energy
OW-UT-9	OWUT 9 Special Y	3/21/2007	dup	▫	---	---	---	---	---	---	---	---	---	---	---	---	---	---	▫	**2.41**	---	46.5	0.05	***73.2***	Energy
OW-UT-9	OW-UT-9	6/12/2007		▫	---	---	13.5	**9.7**	---	---	---	---	---	*1,260*	---	4,550	*9,500*	*31,800*	Energy	**2.43**	---	46.8	0.04	***77.5***	Energy

TABLE H-1. SUMMARY OF ROUTINE PARAMETERS, COMMON CONSTITUENTS, AND TRACE METALS IN GROUNDWATER
RIO ALGOM MINING LLC, LISBON FACILITY

WELL NAME	SAMPLE IDENTIFIER	SAMPLE DATE	QC SAMPLE CODE[a]	SAMPLE METHOD[b]	ROUTINE PARAMETERS[c]					DISSOLVED COMMON CONSTITUENTS (mg/L)[d]										DISSOLVED TRACE METALS (mg/L)[e]					
					LAB		FIELD																			
					pH (s.u.)	EC (µmhos/cm)	T (°C)	pH (s.u.)	EC (µS/cm)	Ca	Mg	Na	K	Cl	CO_3	HCO_3	SO_4	TDS	LAB[f]	As	Fe	Mo	Se	U	LAB
OW-UT-9	OW-UT-9	8/21/2007		▫	---	---	13.9	**9.71**	---	---	---	---	---	*1,190*	---	11,900	*9,990*	*31,100*	Energy	**2.22**	---	41.4	0.04	***70.9***	Energy
OW-UT-9	WPK-OW-UT-9	10/25/2007		▫	**9.69**	---	11.7	**9.99**	---	---	---	---	---	*1,420*	---	12,200	*11,400*	*37,000*	Energy	**2.98**	---	51.3	0.04	***80.3***	Energy
OW-UT-9	RAM-OW-UT-9	10/25/2007	dup	▫	6.97	---	---	---	---	---	---	---	---	*1,220*	---	10,100	*9,070*	*30,300*	Energy	**2.48**	---	47.4	0.02	***79.5***	Energy
OW-UT-9	OW-UT-9	3/20/2008		▫	---	---	---	---	---	---	---	---	---	*1,390*	---	20,200	*11,200*	*36,500*	Energy	**2.68**	---	48.0	**0.06**	***69.0***	Energy
OW-UT-9	OW-UT-9A	3/20/2008	dup	▫	---	---	---	---	---	---	---	---	---	---	---	---	---	---	▫	**2.66**	---	48.6	0.05	***68.8***	Energy
OW-UT-9	OW-UT-9	6/7/2008		▫	---	---	16.8	**9.77**	36,000	---	---	---	---	*1,460*	---	14,000	*11,400*	*36,500*	Energy	**2.18**	---	50.5	0.024	***92.4***	Energy
OW-UT-9	OW-UT-9A	6/7/2008	dup	▫	---	---	---	---	---	---	---	---	---	---	---	---	---	---	▫	**2.14**	---	---	---	---	Energy
OW-UT-9	OW-UT-9	8/8/2008		▫	**9.81**	---	---	---	---	---	---	---	---	*1,460*	---	9,020	*11,400*	*35,100*	Energy	**2.71**	---	51.0	0.013	***88.0***	Energy
OW-UT-9	OW-UT-9A	8/8/2008	dup	▫	---	---	---	---	---	---	---	---	---	---	---	---	---	---	▫	**2.67**	---	---	---	---	Energy
OW-UT-9	OW-UT-9	10/16/2008		▫	---	---	16.2	**9.76**	29,600	---	---	---	---	*1,560*	---	7,800	*11,100*	*36,800*	Energy	**2.31**	---	47.8	<0.01	***83.6***	Energy
OW-UT-9	OW-UT-9A	10/16/2008	dup	▫	---	---	---	---	---	---	---	---	---	---	---	---	---	---	▫	**2.28**	---	---	---	---	Energy
OW-UT-9	OW-UT-9	3/25/2009		▫	---	---	10.7	**9.83**	39,000	---	---	---	---	*1,220*	---	8,410	*9,520*	*34,900*	Energy	**2.75**	---	47.9	0.032	***82.5***	Energy
OW-UT-9	OW-UT-9A	3/25/2009	dup	▫	---	---	---	---	---	---	---	---	---	---	---	---	---	---	▫	**2.71**	---	---	---	---	Energy
OW-UT-9	OW-UT-9A	3/25/2009	sp	▫	---	---	---	---	---	---	---	---	---	---	---	---	---	---	▫	**1.940**	---	---	---	---	ACZ
OW-UT-9	OW-UT-9B	3/25/2009	sp dup	▫	---	---	---	---	---	---	---	---	---	---	---	---	---	---	▫	**1.950**	---	---	---	---	ACZ
OW-UT-9	OW-UT-9	6/11/2009		▫	---	---	---	---	---	---	---	---	---	*1,340*	---	8,410	*10,500*	*35,600*	Energy	**2.76**	---	49.4	**0.06**	***81.8***	Energy
OW-UT-9	OW-UT-9A	6/11/2009	dup	▫	---	---	---	---	---	---	---	---	---	---	---	---	---	---	▫	**2.56**	---	---	---	---	Energy
OW-UT-9	OW-UT-9A	6/11/2009	sp	▫	---	---	---	---	---	---	---	---	---	---	---	---	---	---	▫	**2.48**	---	---	---	---	ACZ
OW-UT-9	OW-UT-9B	6/11/2009	sp dup	▫	---	---	---	---	---	---	---	---	---	---	---	---	---	---	▫	**2.46**	---	---	---	---	ACZ
OW-UT-9	OW-UT-9	8/13/2009		▫	---	---	20.9	**9.75**	38,100	---	---	---	---	*1,410*	---	8,530	*9,970*	*34,600*	Energy	**2.20**	---	49.1	0.024	***85.4***	Energy
OW-UT-9	OW-UT-9A	8/13/2009	dup	▫	---	---	---	---	---	---	---	---	---	---	---	---	---	---	▫	**2.21**	---	---	---	---	Energy
OW-UT-9	DW-UT-9A	8/13/2009	sp	▫	---	---	---	---	---	---	---	---	---	---	---	---	---	---	▫	**2.13**	---	---	---	---	ACZ
OW-UT-9	DW-UT-9B	8/13/2009	sp dup	▫	---	---	---	---	---	---	---	---	---	---	---	---	---	---	▫	**2.14**	---	---	---	---	ACZ
OW-UT-9	OW-UT-9	4/29/2010		▫	---	---	10	**9.71**	36,900	---	---	---	---	*1,330*	---	8,960	*9,990*	*34,900*	Energy	**2.27**	---	50.0	0.043	***84.0***	Energy
OW-UT-9	OW-UT-9A	4/29/2010	dup	▫	---	---	---	---	---	---	---	---	---	---	---	---	---	---	▫	**2.36**	---	---	---	---	Energy
OW-UT-9	OW-UT-9A	4/29/2010	sp	▫	---	---	---	---	---	---	---	---	---	---	---	---	---	---	▫	**2.10**	---	---	---	---	ACZ
OW-UT-9	OW-UT-9B	4/29/2010	sp dup	▫	---	---	---	---	---	---	---	---	---	---	---	---	---	---	▫	**2.09**	---	---	---	---	ACZ
OW-UT-9	OW-UT-9	8/24/2010		▫	---	---	---	**9.58**	---	---	---	---	---	*1,330*	---	8,410	*9,890*	*35,500*	Energy	**2.97**	---	56.8	**0.056**	***87.6***	Energy
OW-UT-9	OW-UT-9A	8/24/2010	dup	▫	---	---	---	---	---	---	---	---	---	---	---	---	---	---	▫	**3.01**	---	---	---	---	Energy
OW-UT-9	DW-UT-9A	8/24/2010	sp	▫	---	---	---	---	---	---	---	---	---	---	---	---	---	---	▫	**2.24** [g]	---	---	---	---	ACZ
OW-UT-9	DW-UT-9B	8/24/2010	sp dup	▫	---	---	---	---	---	---	---	---	---	---	---	---	---	---	▫	**2.26** [g]	---	---	---	---	ACZ
OW-UT-9	DW-4T-9	5/23/2011		▫	---	---	---	**9.67**	---	---	---	---	---	*1,400*	---	8,720	*10,600*	*34,100*	Energy	**2.58**	---	52.4	0.047	***90.0***	Energy
OW-UT-9	DW-4T-9A	5/23/2011	dup	▫	---	---	---	---	---	---	---	---	---	---	---	---	---	---	▫	**2.55**	---	---	---	---	Energy
OW-UT-9	DW-UT-9A	5/23/2011	sp	▫	---	---	---	---	---	---	---	---	---	---	---	---	---	---	▫	**2.08**	---	---	---	---	ACZ
OW-UT-9	DW-UT-9B	5/23/2011	sp dup	▫	---	---	---	---	---	---	---	---	---	---	---	---	---	---	▫	**2.01**	---	---	---	---	ACZ
OW-UT-9	OW-UT-9	10/19/2011		▫	---	---	---	---	---	---	---	---	---	*1,400*	---	7,500	*10,800*	*30,800*	Energy	**2.63**	---	46.8	0.031	***74.1***	Energy
OW-UT-9	OW-UT-9A	10/19/2011	dup	▫	---	---	---	---	---	---	---	---	---	---	---	---	---	---	▫	**2.62**	---	---	---	---	Energy
OW-UT-9	6262	11/3/2012		HS	**9.49**	36,400	14.6	**9.9**	40,145	4	22	15,100	18	*1,390*	6,240	8,170	*10,600*	*36,200*	Energy	**3.28**	---	51.6	**0.055**	***93.4***	Energy
OW-UT-9	6263	11/3/2012	dup	HS	**9.49**	36,900	14.6	**9.9**	40,145	3	22	15,000	18	*1,390*	6,420	8,050	*10,700*	*37,000*	Energy	**3.66**	---	51.7	0.044	***93.6***	Energy
OW-UT-9	6264	11/3/2012		LF	**9.48**	37,200	14.2	**9.9**	46,724	5	21	14,900	18	*1,420*	6,600	8,530	*10,700*	*35,400*	Energy	**2.90**	---	39.4	0.022	***92.1***	Energy
OW-UT-9	6265	11/3/2012		P	**9.49**	36,600	13.3	**9.9**	45,007	4	21	14,700	18	*1,380*	6,720	7,370	*10,600*	*35,900*	Energy	**3.58**	---	51.4	0.046	***88.6***	Energy
OW-UT-9	6313	3/31/2013		LF	**9.50**	39,700	14.5	**10.2**	26,750	7	23	13,200	18	*1,440*	6,120	9,020	*10,900*	*37,400*	Energy	**2.68**	0.07	45.8	0.030	***86.8***	Energy
OW-UT-9	6321	4/1/2013		HS	**9.55**	31,800	13.2	**9.1**	18,950	4	24	12,000	18	*1,160*	4,320	6,700	*8,260*	*28,300*	Energy	**1.54**	<0.06	45.2	0.025	***24***	Energy
OW-UT-9	6322	4/1/2013		P	**9.53**	39,500	13.0	**10.1**	26,937	4	23	13,300	19	*1,410*	6,120	8,650	*10,800*	*36,800*	Energy	**2.65**	<0.06	46.5	0.023	***79***	Energy
OW-UT-9	6453	6/9/2013		LF	**9.59**	36,900	14.0	**10.4**	28,127	3	23	13,600	16	*1,420*	6,000	8,900	*10,900*	*36,000*	Energy	**2.68**	0.04	47.6	0.021	***83.3***	Energy

TABLE H-1. SUMMARY OF ROUTINE PARAMETERS, COMMON CONSTITUENTS, AND TRACE METALS IN GROUNDWATER
RIO ALGOM MINING LLC, LISBON FACILITY

WELL NAME	SAMPLE IDENTIFIER	SAMPLE DATE	QC SAMPLE CODE[a]	SAMPLE METHOD[b]	ROUTINE PARAMETERS[c]					DISSOLVED COMMON CONSTITUENTS (mg/L)[d]										DISSOLVED TRACE METALS (mg/L)[e]					
					LAB		FIELD																			
					pH (s.u.)	EC (µmhos/cm)	T (°C)	pH (s.u.)	EC (µS/cm)	Ca	Mg	Na	K	Cl	CO_3	HCO_3	SO_4	TDS	LAB[f]	As	Fe	Mo	Se	U	LAB
OW-UT-9	6970	10/13/2013		HS	**9.48**	37,600	15.4	**9.7**	40,747	4	24	13,000	15	*1,390*	6,000	8,530	*9,970*	*35,300*	Energy	**0.809**	0.05	44.4	0.033	***6.10***	Energy
OW-UT-9	6971	10/13/2013		LF	**9.49**	38,400	15.1	**9.7**	41,492	4	23	13,200	15	*1,440*	6,000	9,140	*10,500*	*37,100*	Energy	**2.74**	0.13	47.3	0.037	***87.4***	Energy
OW-UT-9	7066	12/14/2013		LF	**9.52**	37,800	6.9	**9.8**	40,861	4	21	14,400	19	*1,410*	6,120	8,530	*10,700*	*37,300*	Energy	**2.82**	0.05	51.8	**0.072**	***98.8***	Energy
OW-UT-9	7103	3/31/2014		LF	**9.49**	39,500	12.2	**10.7**	39,686	3	20	14,700	14	*1,590*	6,360	8,470	*11,200*	*37,200*	Energy	**2.3**	0.13	46.5	0.036	***84***	Energy
OW-UT-9	7174	4/4/2014		HS	**9.48**	28,800	11.5	**9.8**	33,537	4	22	11,600	14	*1,090*	4,320	5,970	*7,570*	*25,600*	Energy	**2.24**	0.07	39.0	0.036	***79.7***	Energy
RL-1	3356	3/25/2004		▫	---	---	17	6.83	7,695	---	---	---	---	*331*	---	1,018	---	---	▫	0.0034	---	10.3	**0.064**	***40.5***	Energy
RL-1	3387B	7/1/2004		▫	---	---	17.9	7.01	6,473	---	---	---	---	*684*	---	1,032	---	---	▫	0.006 [g]	---	8.9 [g]	0.05 [g]	***24.59*** [g]	Energy
RL-1	3402B	9/21/2004		▫	---	---	11.5	8.44	6,460	---	---	---	---	*578*	---	801	---	---	▫	0.003	---	6.8	**0.06**	***29.80***	Energy
RL-1	3418B	12/15/2004		▫	---	---	13.2	7.27	7,509	---	---	---	---	*613*	---	851	---	---	▫	0.0023	---	8.17	0.045	***32.78***	Energy
RL-1	3441B	3/2/2005		▫	---	---	10.9	7.16	7,484	---	---	---	---	*607*	---	865	---	---	▫	0.0020	---	6.07	0.044	***29.80***	Energy
RL-1	3458B	6/20/2005		▫	---	---	19.4	7.61	4,708	---	---	---	---	*560*	---	812	---	---	▫	0.003	---	7.4	**0.06**	***34.27***	Energy
RL-1	▫	9/30/2005		▫	---	---	19.4	6.88	9,650	---	---	---	---	*640*	---	821	*3,890*	*7,530*	▫	0.005	---	8.7	**0.057**	***36.80***	▫
RL-1	3492B	11/10/2005		▫	---	---	16.7	7.01	6,707	---	---	---	---	*646*	---	1,158	*4,269*	*8,080*	▫	0.004	---	9.5	**0.07**	***44.70***	Energy
RL-1	3509B	3/24/2006		▫	---	---	13.1	7.14	6,213	---	---	---	---	*646*	---	912	*4,249*	*8,110*	▫	0.004	---	10.4	**0.07**	***41.27***	Energy
RL-1	3556	9/29/2006		▫	---	---	15.6	6.5	8,069	---	---	---	---	*664*	<1	1,030	*4,380*	*7,940*	Energy	0.002	---	6.87	0.047	***29.1***	Energy
RL-1	3572 ABC	12/14/2006		▫	---	---	11.9	**6.47**	6,599	---	---	---	---	*639*	<1	1,010	*4,280*	*8,100*	Energy	0.003	---	6.99	**0.051**	***29.8***	Energy
RL-1	RL-1	3/19/2007		▫	---	---	12.7	6.92	8,370	---	---	---	---	*591*	---	805	*3,460*	*6,860*	Energy	0.002	---	7.4	**0.057**	***30.3***	Energy
RL-1	RL-1	6/11/2007		▫	---	---	13.4	7.08	8,600	---	---	---	---	*641*	---	376	*3,960*	*7,740*	Energy	0.003	---	8.7	**0.067**	***39.1***	Energy
RL-1	RL-1	8/20/2007		▫	---	---	13.6	7.64	8,550	---	---	---	---	*590*	---	883	*4,080*	*7,250*	Energy	0.002	---	7.0	**0.056**	***34.3***	Energy
RL-1	WPK-RL-1	10/24/2007		▫	7.54	---	13.3	7.26	8,400	---	---	---	---	*667*	---	1,130	*4,300*	*8,300*	Energy	0.003	---	9.8	**0.070**	***33.8***	Energy
RL-1	RAM-RL-1	10/24/2007	dup	▫	6.97	---	---	---	---	---	---	---	---	*606*	---	889	*3,750*	*7,200*	Energy	0.002	---	7.5	**0.058**	***26.1***	Energy
RL-1	RL-1	3/19/2008		▫	---	---	---	---	---	---	---	---	---	*660*	---	1,080	*4,470*	*7,770*	Energy	0.003	---	9.6	**0.077**	***34.3***	Energy
RL-1	RL-1	6/4/2008		▫	---	---	14.5	7.25	9,640	---	---	---	---	*660*	---	1,030	*4,510*	*8,580*	Energy	0.003	---	10.2	**0.062**	***46.7***	Energy
RL-1	RL-1	6/4/2008	lab dup	▫	---	---	---	---	---	---	---	---	---	---	---	---	---	---	▫	---	---	---	---	***47.8***	Energy
RL-1	RL-1A	6/4/2008	dup	▫	---	---	---	---	---	---	---	---	---	---	---	---	---	---	▫	---	---	---	---	***46.9***	Energy
RL-1	RL-1A	6/4/2008	lab dup	▫	---	---	---	---	---	---	---	---	---	---	---	---	---	---	▫	---	---	---	---	***43.1***	Energy
RL-1	RL-1	8/7/2008		▫	7.22	---	---	---	---	---	---	---	---	*647*	---	1,050	*4,470*	*8,100*	Energy	0.003	---	10.0	**0.066**	***46.0***	Energy
RL-1	RL-1A	8/7/2008	dup	▫	---	---	---	---	---	---	---	---	---	---	---	---	---	---	▫	---	---	---	---	***44.6***	Energy
RL-1	RL-1	10/16/2008		▫	---	---	---	---	---	---	---	---	---	---	---	---	---	---	▫	0.008	---	10.5	**0.078**	***47.1***	Energy
RL-1	RL-1A	10/16/2008	dup	▫	---	---	---	---	---	---	---	---	---	---	---	---	---	---	▫	---	---	---	---	***47.7***	Energy
RL-1	RL-1	10/28/2008		▫	---	---	23.8	7.24	9,710	---	---	---	---	*655*	---	1,050	*4,240*	*8,240*	Energy	<0.001	---	10.8	**0.065**	***45.2***	Energy
RL-1	RL-1A	10/28/2008	dup	▫	---	---	---	---	---	---	---	---	---	---	---	---	---	---	▫	---	---	---	---	***42.2***	Energy
RL-1	RL-1	3/25/2009		▫	---	---	12.7	7.38	9,380	---	---	---	---	*671*	---	1,120	*4,390*	*8,460*	Energy	0.001	---	10.7	**0.076**	***44.8***	Energy
RL-1	RL-1A	3/25/2009	dup	▫	---	---	---	---	---	---	---	---	---	---	---	---	---	---	▫	---	---	---	---	***44.1***	Energy
RL-1	RL-1A	3/25/2009	sp	▫	---	---	---	---	---	---	---	---	---	---	---	---	---	---	▫	---	---	---	---	***37.60***	ACZ
RL-1	RL-1B	3/25/2009	sp dup	▫	---	---	---	---	---	---	---	---	---	---	---	---	---	---	▫	---	---	---	---	***39.10***	ACZ
RL-1	RL-1	6/11/2009		▫	---	---	---	---	---	---	---	---	---	*657*	---	961	*4,380*	*8,250*	Energy	0.006	---	10.9	**0.079**	***44.6***	Energy
RL-1	RL-1A	6/11/2009	dup	▫	---	---	---	---	---	---	---	---	---	---	---	---	---	---	▫	---	---	---	---	***45.1***	Energy
RL-1	RL-1A	6/11/2009	sp	▫	---	---	---	---	---	---	---	---	---	---	---	---	---	---	▫	---	---	---	---	***37.50***	ACZ
RL-1	RL-1B	6/11/2009	sp dup	▫	---	---	---	---	---	---	---	---	---	---	---	---	---	---	▫	---	---	---	---	***43.70***	ACZ
RL-1	RL-1	8/13/2009		▫	---	---	24.6	7.22	9,775	---	---	---	---	*644*	---	1,090	*4,250*	*8,580*	Energy	0.003	---	11.1	**0.072**	***42.1***	Energy
RL-1	RL-1A	8/13/2009	dup	▫	---	---	---	---	---	---	---	---	---	---	---	---	---	---	▫	---	---	---	---	***44.4***	Energy
RL-1	RL-1A	8/13/2009	sp	▫	---	---	---	---	---	---	---	---	---	---	---	---	---	---	▫	---	---	---	---	***36.6***	ACZ
RL-1	RL-1B	8/13/2009	sp dup	▫	---	---	---	---	---	---	---	---	---	---	---	---	---	---	▫	---	---	---	---	***35.8***	ACZ
RL-1	RL-1	4/29/2010		▫	---	---	6.9	7.24	9,780	---	---	---	---	*675*	---	1,160	*4,410*	*8,540*	Energy	0.003	---	10.4	**0.067**	***44.1***	Energy

TABLE H-1. SUMMARY OF ROUTINE PARAMETERS, COMMON CONSTITUENTS, AND TRACE METALS IN GROUNDWATER
RIO ALGOM MINING LLC, LISBON FACILITY

WELL NAME	SAMPLE IDENTIFIER	SAMPLE DATE	QC SAMPLE CODE[a]	SAMPLE METHOD[b]	ROUTINE PARAMETERS[c]					DISSOLVED COMMON CONSTITUENTS (mg/L)[d]										DISSOLVED TRACE METALS (mg/L)[e]					
					LAB		FIELD																			
					pH (s.u.)	EC (µmhos/cm)	T (°C)	pH (s.u.)	EC (µS/cm)	Ca	Mg	Na	K	Cl	CO_3	HCO_3	SO_4	TDS	LAB[f]	As	Fe	Mo	Se	U	LAB
RL-1	RL-1A	4/29/2010	dup	▫	---	---	---	---	---	---	---	---	---	---	---	---	---	---	▫	---	---	---	---	***43.8***	Energy
RL-1	RL-1A	4/29/2010	sp	▫	---	---	---	---	---	---	---	---	---	---	---	---	---	---	▫	---	---	---	---	***43.3***	ACZ
RL-1	RL-1B	4/29/2010	sp dup	▫	---	---	---	---	---	---	---	---	---	---	---	---	---	---	▫	---	---	---	---	***43.8***	ACZ
RL-1	RL-1	8/24/2010		▫	---	---	---	7.08	---	---	---	---	---	*666*	---	1,170	*4,410*	*8,670*	Energy	0.004	---	9.8	**0.083**	***44.4***	Energy
RL-1	RL-1A	8/24/2010	dup	▫	---	---	---	---	---	---	---	---	---	---	---	---	---	---	▫	---	---	---	---	***41.6***	Energy
RL-1	RL-1A	8/24/2010	sp	▫	---	---	---	---	---	---	---	---	---	---	---	---	---	---	▫	---	---	---	---	***42.9***	ACZ
RL-1	RL-1B	8/24/2010	sp dup	▫	---	---	---	---	---	---	---	---	---	---	---	---	---	---	▫	---	---	---	---	***46.1***	ACZ
RL-1	RL-1-A	10/28/2010		▫	---	---	---	7.08	---	---	---	---	---	---	---	---	---	---	▫	---	---	---	---	***40.1***	Energy
RL-1	RL-1-B	10/28/2010	dup	▫	---	---	---	---	---	---	---	---	---	---	---	---	---	---	▫	---	---	---	---	***40.1***	Energy
RL-1	RL-1A	10/28/2010	sp	▫	---	---	---	---	---	---	---	---	---	---	---	---	---	---	▫	---	---	---	---	***41.4***	ACZ
RL-1	RL-1B	10/28/2010	sp dup	▫	---	---	---	---	---	---	---	---	---	---	---	---	---	---	▫	---	---	---	---	***41.1***	ACZ
RL-1	RL-1-A	3/1/2011		▫	---	---	---	7.48	---	---	---	---	---	---	---	---	---	---	▫	---	---	---	---	***46.3***	Energy
RL-1	RL-1-B	3/1/2011	dup	▫	---	---	---	---	---	---	---	---	---	---	---	---	---	---	▫	---	---	---	---	***47.3***	Energy
RL-1	RL-1	5/23/2011		▫	---	---	---	7.69	---	---	---	---	---	*668*	---	1,150	*4,440*	*8,440*	Energy	0.003	---	10.7	**0.073**	***43.5***	Energy
RL-1	RL-1	5/23/2011	dup	▫	---	---	---	---	---	---	---	---	---	---	---	---	---	---	▫	---	---	---	---	***44.5***	Energy
RL-1	RL-1A	5/23/2011	sp	▫	---	---	---	---	---	---	---	---	---	---	---	---	---	---	▫	---	---	---	---	***40.40***	ACZ
RL-1	RL-1B	5/23/2011	sp dup	▫	---	---	---	---	---	---	---	---	---	---	---	---	---	---	▫	---	---	---	---	***40.80***	ACZ
RL-1	RL-1	8/31/2011		▫	---	---	---	---	---	---	---	---	---	---	---	---	---	---	▫	---	---	---	---	***46.9***	Energy
RL-1	RL-1A	8/31/2011	dup	▫	---	---	---	---	---	---	---	---	---	---	---	---	---	---	▫	---	---	---	---	***46.3***	Energy
RL-1	RL-1	10/19/2011		▫	---	---	---	---	---	---	---	---	---	*650*	---	1,060	*4,410*	*8,800*	Energy	0.003	---	11.0	**0.063**	***41.6***	Energy
RL-1	RL-1A	10/19/2011	dup	▫	---	---	---	---	---	---	---	---	---	---	---	---	---	---	▫	---	---	---	---	***48.6***	Energy
RL-1	RL-1	12/8/2011		▫	---	---	---	---	---	---	---	---	---	---	---	---	---	---	▫	---	---	---	---	***42.1***	Energy
RL-1	RL-1A	12/8/2011	dup	▫	---	---	---	---	---	---	---	---	---	---	---	---	---	---	▫	---	---	---	---	***42.2***	Energy
RL-1	RL-1	1/5/2012		LF	---	---	---	---	---	---	---	---	---	---	---	---	---	---	▫	---	---	---	---	***47.8***	Energy
RL-1	RL-1-A	1/5/2012	dup	LF	---	---	---	---	---	---	---	---	---	---	---	---	---	---	▫	---	---	---	---	***49.2***	Energy
RL-1	RL-1-A	2/9/2012		LF	---	---	---	---	---	---	---	---	---	---	---	---	---	---	▫	---	---	---	---	***45.2***	Energy
RL-1	RL-1-B	2/9/2012	dup	LF	---	---	---	---	---	---	---	---	---	---	---	---	---	---	▫	---	---	---	---	***44.0***	Energy
RL-1	RL-1-A	3/13/2012		LF	---	---	---	---	---	---	---	---	---	---	---	---	---	---	▫	---	---	---	---	***49.5***	Energy
RL-1	RL-1B	3/13/2012	dup	LF	---	---	---	---	---	---	---	---	---	---	---	---	---	---	▫	---	---	---	---	***49.3***	Energy
RL-1	RL-1-A	4/25/2012		LF	---	---	---	---	---	---	---	---	---	---	---	---	---	---	▫	---	---	---	---	***44.7***	Energy
RL-1	RL-1-B	4/25/2012	dup	LF	---	---	---	---	---	---	---	---	---	---	---	---	---	---	▫	---	---	---	---	***42.6***	Energy
RL-1	RL-1-A	5/8/2012		LF	---	---	---	---	---	---	---	---	---	---	---	---	---	---	▫	---	---	---	---	***47.6***	Energy
RL-1	RL-1-B	5/8/2012	dup	LF	---	---	---	---	---	---	---	---	---	---	---	---	---	---	▫	---	---	---	---	***47.0***	Energy
RL-1	RL-1-A	6/13/2012		LF	---	---	---	---	---	---	---	---	---	---	---	---	---	---	▫	---	---	---	---	***46.3***	Energy
RL-1	RL-1-B	6/13/2012	dup	LF	---	---	---	---	---	---	---	---	---	---	---	---	---	---	▫	---	---	---	---	***47.1***	Energy
RL-1	RL-1-A	7/18/2012		LF	---	---	---	---	---	---	---	---	---	---	---	---	---	---	▫	---	---	---	---	***42.8***	Energy
RL-1	RL-1-B	7/18/2012	dup	LF	---	---	---	---	---	---	---	---	---	---	---	---	---	---	▫	---	---	---	---	***43.3***	Energy
RL-1	RL-1-A	8/22/2012		LF	---	---	---	---	---	---	---	---	---	---	---	---	---	---	▫	---	---	---	---	***48.1***	Energy
RL-1	RL-1-B	8/22/2012	dup	LF	---	---	---	---	---	---	---	---	---	---	---	---	---	---	▫	---	---	---	---	***47.6***	Energy
RL-1	RL-1-A	9/13/2012		LF	---	---	---	---	---	---	---	---	---	---	---	---	---	---	▫	---	---	---	---	***48.4***	Energy
RL-1	RL-1-B	9/13/2012	dup	LF	---	---	---	---	---	---	---	---	---	---	---	---	---	---	▫	---	---	---	---	***49.1***	Energy
RL-1	6217	10/31/2012		HS	7.19	9,710	10.1	7.0	14,597	579	197	1,990	21	*662*	<5	1,090	*4,410*	*8,300*	Energy	0.002	---	10.4	**0.069**	***43***	Energy
RL-1	6218	10/31/2012		LF	7.23	10,100	12.4	6.9	11,585	589	209	2,060	22	*685*	<5	1,170	*4,640*	*8,680*	Energy	0.002	---	11.2	**0.074**	***43***	Energy
RL-1	6219	10/31/2012	dup	LF	7.24	10,000	12.4	6.9	11,585	596	209	2,050	22	*685*	<5	1,180	*4,640*	*8,820*	Energy	0.003	---	11.2	**0.073**	***43***	Energy
RL-1	6220	10/31/2012		P	7.35	10,100	14.9	7.1	12,117	584	182	2,080	21	*679*	<5	1,270	*4,570*	*8,620*	Energy	0.004	---	11.6	**0.077**	***42***	Energy
RL-1	6301	11/28/2012		LF	7.38	9,960	10.0	7.4	10,127	565	182	2,280	20	*673*	<5	1,240	*4,550*	*9,100*	Energy	0.003	---	10.2	**0.074**	***41.2***	Energy

TABLE H-1. SUMMARY OF ROUTINE PARAMETERS, COMMON CONSTITUENTS, AND TRACE METALS IN GROUNDWATER
RIO ALGOM MINING LLC, LISBON FACILITY

WELL NAME	SAMPLE IDENTIFIER	SAMPLE DATE	QC SAMPLE CODE[a]	SAMPLE METHOD[b]	ROUTINE PARAMETERS[c]					DISSOLVED COMMON CONSTITUENTS (mg/L)[d]										DISSOLVED TRACE METALS (mg/L)[e]					
					LAB		FIELD																			
					pH (s.u.)	EC (µmhos/cm)	T (°C)	pH (s.u.)	EC (µS/cm)	Ca	Mg	Na	K	Cl	CO_3	HCO_3	SO_4	TDS	LAB[f]	As	Fe	Mo	Se	U	LAB
RL-1	6305	12/20/2012		LF	7.29	10,100	8.9	6.8	10,449	622	210	2,280	21	*704*	<5	1,250	*4,820*	*9,150*	Energy	<0.001	---	11.4	**0.075**	***47.0***	Energy
RL-1	6308	1/28/2013		LF	7.16	10,400	10.6	7.0	10,536	587	215	2,280	21	*679*	<5	1,210	*4,720*	*8,520*	Energy	0.003	---	11.6	**0.08**	***49.8***	Energy
RL-1	6310	2/26/2013		LF	7.23	10,200	9.0	7.1	12,229	606	204	2,150	21	*679*	<5	1,220	*4,660*	*9,110*	Energy	0.005	---	11.8	**0.094**	***47.5***	Energy
RL-1	6312	3/31/2013		LF	7.20	11,000	12.6	7.1	7,996	565	198	2,000	19	*730*	<5	1,250	*4,730*	*8,940*	Energy	0.003	<0.03	10.9	**0.074**	***48.8***	Energy
RL-1	6318	4/2/2013		HS	7.26	10,600	10.0	6.9	2,082	528	182	1,930	19	*690*	<5	1,140	*4,620*	*8,580*	Energy	0.003	<0.03	10.3	**0.068**	***40***	Energy
RL-1	6319	4/2/2013		P	7.31	11,500	14.6	7.2	10,817	575	192	2,210	19	*722*	<5	1,390	*4,960*	*9,360*	Energy	0.006	<0.03	12.4	**0.092**	***44***	Energy
RL-1	6367	4/5/2013		LF	7.38	10,400	13.6	6.7	8,142	551	179	2,040	17	*705*	<5	1,280	*4,790*	*8,620*	Energy	0.003	0.03	11.0	**0.075**	***45.5***	Energy
RL-1	6407	5/13/2013		LF	7.35	10,500	15.3	6.9	10,354	590	190	2,160	20	*678*	<5	1,290	*4,490*	*9,120*	Energy	0.002	<0.03	12.1	**0.080**	***49.1***	Energy
RL-1	6451	6/9/2013		LF	7.25	10,400	14.2	7.5	9,283	584	197	2,170	20	*689*	<5	1,280	*4,740*	*8,620*	Energy	0.005	0.04	11.4	**0.070**	***44.0***	Energy
RL-1	6456	7/20/2013		LF	7.26	10,700	14.9	7.1	10,470	578	196	2,070	19	*699*	<5	1,260	*4,790*	*9,350*	Energy	0.004	<0.03	10.9	**0.071**	***44.0***	Energy
RL-1	6458	8/15/2013		LF	7.27	10,300	15.3	7.0	9,380	575	198	2,100	19	*700*	<5	1,280	*4,780*	*9,300*	Energy	0.003	<0.03	11.4	**0.072**	***47.1***	Energy
RL-1	6459	9/30/2013		LF	7.21	10,500	11.7	7.1	11,703	575	197	2,120	20	*691*	<5	1,260	*4,750*	*9,050*	Energy	0.005	<0.03	11.2	**0.074**	***48.4***	Energy
RL-1	6941	10/14/2013		HS	7.21	9,950	10.6	7.2	10,413	512	178	1,940	18	*660*	<5	1,100	*4,400*	*8,250*	Energy	0.004	<0.03	11.2	**0.079**	***44.8***	Energy
RL-1	6942	10/14/2013		LF	7.15	10,400	11.7	7.0	11,094	547	189	2,050	19	*668*	<5	1,210	*4,550*	*8,720*	Energy	0.004	<0.03	11.6	**0.079**	***46.4***	Energy
RL-1	7061	11/16/2013		LF	7.22	10,500	11.0	6.9	10,547	558	201	2,400	22	*725*	<5	1,270	*4,860*	*9,160*	Energy	0.005	<0.03	11	**0.077**	***45***	Energy
RL-1	7067	12/14/2013		LF	7.2	10,600	8.7	7.1	11,440	586	201	2,400	21	*674*	<5	1,270	*4,640*	*9,430*	Energy	0.005	<0.03	12.1	**0.072**	***48.5***	Energy
RL-1	7069	1/25/2014		LF	7.22	10,600	10.8	7.1	10,901	540	196	2,090	20	*672*	<5	1,260	*4,640*	*9,060*	Energy	0.005	0.05	11.5	**0.073**	***48.3***	Energy
RL-1	7071	2/22/2014		LF	7.27	10,700	11.6	7.0	12,625	570	202	2,430	21	*681*	<5	1,270	*4,680*	*9,320*	Energy	0.004	<0.03	12.3	**0.076**	***46.9***	Energy
RL-1	7101	3/31/2014		LF	7.18	10,800	12.5	7.7	11,039	513	187	1,980	18	*684*	<5	1,280	*4,680*	*9,230*	Energy	0.003	<0.03	10.9	**0.081**	***48.0***	Energy
RL-1	7192	4/6/2014		LF	7.17	10,600	11.9	7.1	11,063	542	191	2,060	19	*708*	<5	1,290	*4,890*	*9,460*	Energy	0.006	<0.03	11.7	**0.078**	***50.6***	Energy
RL-3	3355	3/25/2004		▫	---	---	17.6	6.84	7,797	---	---	---	---	*549*	---	1,171	---	---	▫	0.0019	---	3.84	**0.070**	***27.60***	Energy
RL-3	3386B	7/1/2004		▫	---	---	15.7	6.6	5,747	---	---	---	---	*666*	---	1,147	---	---	▫	0.004 [g]	---	3.5 [g]	**0.06** [g]	***35.46*** [g]	Energy
RL-3	3401B	9/21/2004		▫	---	---	10.2	8.1	7,568	---	---	---	---	*634*	---	1,336	---	---	▫	0.003	---	3.8	**0.07**	***25.33***	Energy
RL-3	3417B	12/18/2004		▫	---	---	11.6	6.55	6,194	---	---	---	---	*640*	---	1,100	---	---	▫	0.0032	---	3.63	**0.055**	***23.84***	Energy
RL-3	3440B	3/3/2005		▫	---	---	12.8	6.76	6,166	---	---	---	---	*703*	---	1,903	---	---	▫	0.0044	---	3.48	**0.065**	***25.33***	Energy
RL-3	3457B	6/23/2005		▫	---	---	15.3	7	6,605	---	---	---	---	*612*	---	1,132	---	---	▫	0.004	---	3.8	**0.08**	***26.82***	Energy
RL-3	▫	9/30/2005		▫	---	---	17.3	7.17	5,810	---	---	---	---	*460*	---	545	*2,350*	*5,070*	▫	**0.118**	---	1.5	0.046	***12.60***	▫
RL-3	3491B	11/10/2005		▫	---	---	15.1	7.04	5,657	---	---	---	---	*783*	---	1,209	*3,749*	*7,250*	▫	0.004	---	3.7	**0.08**	***29.80***	Energy
RL-3	3508B	3/24/2006		▫	---	---	11.2	7.36	5,357	---	---	---	---	*626*	---	995	*3,772*	*6,300*	▫	0.002	---	2.3	**0.07**	***14.90***	Energy
RL-3	3555	9/28/2006		▫	---	---	13.5	**6.48**	7,006	---	---	---	---	*629*	<1	1,010	*3,550*	*7,040*	Energy	0.002	---	3.61	**0.066**	***23.8***	Energy
RL-3	3571 ABC	12/14/2006		▫	---	---	12.2	**6.25**	6,279	---	---	---	---	*611*	<1	1,050	*3,790*	*7,480*	Energy	0.002	---	3.60	**0.070**	***24.6***	Energy
RL-3	RL-3	3/19/2007		▫	---	---	13.4	**5.86**	5,120	---	---	---	---	*408*	---	554	*2,130*	*4,350*	Energy	0.002	---	0.9	0.042	***8.96***	Energy
RL-3	RL-3	6/11/2007		▫	---	---	12.9	7.15	5,070	---	---	---	---	*423*	---	224	*2,040*	*4,280*	Energy	<0.001	---	0.8	0.044	***9.27***	Energy
RL-3	RL-3	8/20/2007		▫	---	---	14	7.45	5,860	---	---	---	---	*448*	---	654	*2,350*	*4,770*	Energy	<0.001	---	1.0	0.045	***11.0***	Energy
RL-3	WPK-RL-3	10/24/2007		▫	7.25	---	12.5	7.2	5,840	---	---	---	---	*659*	---	1,100	*3,900*	*7,710*	Energy	<0.002	---	3.9	**0.065**	***21.9***	Energy
RL-3	RAM-RL-3	10/24/2007	dup	▫	6.97	---	---	---	---	---	---	---	---	*447*	---	660	*2,320*	*4,710*	Energy	0.002	---	1.1	0.047	***11.2***	Energy
RL-3	RL-3	3/18/2008		▫	---	---	---	---	---	---	---	---	---	*626*	---	1,040	*3,770*	*6,740*	Energy	0.002	---	3.4	**0.073**	***25.9***	Energy
RL-3	RL-3	6/4/2008		▫	---	---	13.5	7.3	7,330	---	---	---	---	*570*	---	875	*3,240*	*6,530*	Energy	0.003	---	2.1	**0.058**	***20.9***	Energy
RL-3	RL-3	8/7/2008		▫	7.28	---	---	---	---	---	---	---	---	*558*	---	914	*3,190*	*6,310*	Energy	0.002	---	2.3	**0.063**	***21.9***	Energy
RL-3	RL-3	10/15/2008		▫	---	---	18.8	7.3	8,290	---	---	---	---	*642*	---	1,050	*3,720*	*7,480*	Energy	<0.001	---	3.6	**0.059**	***27***	Energy
RL-3	RL-3	3/25/2009		▫	---	---	10.4	7.31	6,700	---	---	---	---	*536*	---	873	*2,880*	*5,740*	Energy	0.002	---	1.7	**0.059**	***17.4***	Energy
RL-3	RL-3	6/10/2009		▫	---	---	---	---	---	---	---	---	---	*581*	---	825	*3,290*	*6,830*	Energy	0.002	---	2.8	**0.068**	***22.0***	Energy
RL-3	RL-3	8/11/2009		▫	---	---	28.9	7.16	7,480	---	---	---	---	*589*	---	1,020	*3,330*	*7,180*	Energy	0.002	---	3.1	**0.062**	***22.5***	Energy
RL-3	RL-3	4/28/2010		▫	---	---	18.8	7.17	5,770	---	---	---	---	*491*	---	750	*2,430*	*4,880*	Energy	0.002	---	0.5	0.048	***11.1***	Energy
RL-3	RL-3	8/26/2010		▫	---	---	---	7.1	---	---	---	---	---	*601*	---	1,080	*3,350*	*7,000*	Energy	0.003	---	2.6	**0.076**	***22.7***	Energy

TABLE H-1. SUMMARY OF ROUTINE PARAMETERS, COMMON CONSTITUENTS, AND TRACE METALS IN GROUNDWATER
RIO ALGOM MINING LLC, LISBON FACILITY

WELL NAME	SAMPLE IDENTIFIER	SAMPLE DATE	QC SAMPLE CODE[a]	SAMPLE METHOD[b]	ROUTINE PARAMETERS[c]					DISSOLVED COMMON CONSTITUENTS (mg/L)[d]										DISSOLVED TRACE METALS (mg/L)[e]					
					LAB		FIELD																			
					pH (s.u.)	EC (µmhos/cm)	T (°C)	pH (s.u.)	EC (µS/cm)	Ca	Mg	Na	K	Cl	CO_3	HCO_3	SO_4	TDS	LAB[f]	As	Fe	Mo	Se	U	LAB
RL-3	RL-3	5/26/2011		▫	---	---	---	7.1	---	---	---	---	---	*640*	---	1,150	*3,650*	*5,320*	Energy	0.003	---	3.76	**0.086**	***27.2***	Energy
RL-3	RL-3	10/18/2011		▫	---	---	---	---	---	---	---	---	---	*642*	---	1,030	*3,730*	*7,340*	Energy	0.002	---	3.81	**0.068**	***25.6***	Energy
RL-3	6252	11/5/2012		HS	7.21	7,100	12.4	7.1	8,087	540	219	1,450	20	*533*	<5	902	*2,920*	*5,900*	Energy	0.002	---	3.62	**0.073**	***25***	Energy
RL-3	6253	11/5/2012		LF	7.17	9,600	15.0	6.9	11,987	581	249	2,000	19	*695*	<5	1,300	*4,140*	*8,280*	Energy	0.005	---	6.21	**0.080**	***34.8***	Energy
RL-3	6254	11/5/2012		P	7.31	8,490	13.9	7.0	10,671	501	216	1,750	18	*616*	<5	1,150	*3,530*	*7,090*	Energy	0.003	---	4.52	**0.069**	***27.2***	Energy
RL-3	6333	4/2/2013		HS	7.27	7,820	13.9	7.2	8,493	446	188	1,260	16	*575*	<5	927	*3,080*	*6,020*	Energy	0.002	<0.03	2.29	**0.058**	***19***	Energy
RL-3	6334	4/2/2013		LF	7.28	9,550	14.5	7.0	9,346	492	209	1,630	17	*672*	<5	1,190	*3,820*	*7,620*	Energy	0.002	0.03	4.56	**0.066**	***26***	Energy
RL-3	6335	4/2/2013		P	7.29	9,320	13.5	7.1	10,941	474	202	1,660	16	*664*	<5	1,200	*3,740*	*7,310*	Energy	0.002	<0.03	4.64	**0.063**	***26***	Energy
RL-3	6976	10/14/2013		HS	7.25	8,560	10.8	7.1	6,938	487	209	1,560	17	*620*	<5	1,150	*3,480*	*7,320*	Energy	0.005	0.03	3.92	**0.066**	***26.1***	Energy
RL-3	6977	10/14/2013		LF	7.22	9,680	17.8	7.0	10,535	504	221	1,910	17	*683*	<5	1,340	*4,000*	*8,310*	Energy	0.004	0.03	5.56	**0.065**	***28.9***	Energy
RL-3	7118	4/3/2014		HS	7.42	9,740	11.6	7.0	9,671	455	200	1,550	18	*674*	<5	1,250	*3,880*	*7,960*	Energy	0.004	<0.03	3.72	**0.057**	***25.1***	Energy
RL-3	7119	4/3/2014		LF	7.46	10,400	13.6	7.0	10,287	552	237	1,810	18	*692*	<5	1,360	*4,130*	*8,420*	Energy	0.005	0.04	7.46	**0.068**	***35.4***	Energy
RL-3	7120	4/3/2014	dup	LF	7.45	10,400	13.6	7.0	10,287	520	244	1,820	18	*699*	<5	1,360	*4,200*	*8,530*	Energy	0.004	0.06	6.62	**0.069**	***31.1***	Energy
RL-4	3349	3/25/2004		▫	---	---	14.8	7.3	737	---	---	---	---	42	---	208	---	---	▫	<0.0009	---	0.0013	<0.003	0.004	Energy
RL-4	3376B	6/29/2004		▫	---	---	14.5	6.84	159	---	---	---	---	54	---	220	---	---	▫	0.0006 [g]	---	0.002 [g]	0.005 [g]	ND [g]	Energy
RL-4	3390B	9/15/2004		▫	---	---	15	7.18	743	---	---	---	---	43	---	216	---	---	▫	<0.0005	---	0.002	0.003	ND	Energy
RL-4	3409B	12/16/2004		▫	---	---	10.6	6.93	701	---	---	---	---	28	---	217	---	---	▫	0.0008	---	<0.0005	0.005	ND	Energy
RL-4	3432B	3/2/2005		▫	---	---	12.5	7.21	694	---	---	---	---	32	---	217	---	---	▫	0.0005	---	0.0011	0.006	ND	Energy
RL-4	3447B	6/22/2005		▫	---	---	15.9	7.61	720	---	---	---	---	23	---	219	---	---	▫	0.0006	---	0.001	0.006	ND	Energy
RL-4	3448B	6/22/2005	dup	▫	---	---	15.9	7.61	720	---	---	---	---	35	---	223	---	---	▫	0.0006	---	0.001	0.006	ND	Energy
RL-4	▫	9/28/2005		▫	---	---	13	6.99	306	---	---	---	---	46	---	177	160	*510*	▫	<0.0005	---	0.0013	0.005	0.0029	▫
RL-4	3482B	11/8/2005		▫	---	---	12	7.53	554	---	---	---	---	51	---	216	149	296	▫	0.0008	---	0.001	0.006	0.00298	Energy
RL-4	3483B	11/9/2005		▫	---	---	12	7.53	554	---	---	---	---	51	---	220	162	424	▫	0.0009	---	0.001	0.006	0.00298	Energy
RL-4	3500B	3/22/2006		▫	---	---	12	7.47	698	---	---	---	---	39	---	208	124	*540*	▫	<0.0005	---	0.001	0.006	0.00447	Energy
RL-4	3546	9/28/2006		▫	---	---	13.5	7.04	672	---	---	---	---	44	<1	213	155	460	Energy	<0.0005	---	0.0014	0.005	0.0036	Energy
RL-4	3561 ABC	12/13/2006		▫	---	---	11.5	7.24	612	---	---	---	---	43	<1	454	167	*510*	Energy	<0.0005	---	0.0014	0.005	0.004	Energy
RL-4	3562 ABC	12/13/2006	dup	▫	---	---	---	---	---	---	---	---	---	44	<1	455	149	474	Energy	<0.0005	---	0.0013	0.005	0.004	Energy
RL-4	RL-4	3/19/2007		▫	---	---	11.6	7.41	821	---	---	---	---	43	---	210	165	*520*	Energy	<0.001	---	<0.1	0.005	0.0108	Energy
RL-4	RL-4	6/11/2007		▫	---	---	12.9	7.61	780	---	---	---	---	45	---	85	161	*508*	Energy	<0.001	---	<0.1	0.006	0.0106	Energy
RL-4	RL-4	8/20/2007		▫	---	---	13.8	7.92	840	---	---	---	---	45	---	220	173	*506*	Energy	<0.001	---	<0.1	0.006	**0.0670**	Energy
RL-4	WPK-RL-4	10/24/2007		▫	7.67	---	12.3	7	834	---	---	---	---	44	---	219	159	487	Energy	<0.001	---	<0.1	0.005	0.0079	Energy
RL-4	RAM-RL-4	10/24/2007	dup	▫	6.97	---	---	---	---	---	---	---	---	46	---	220	169	*501*	Energy	<0.001	---	<0.1	0.005	0.0106	Energy
RL-4	RL-4	3/18/2008		▫	---	---	---	---	---	---	---	---	---	45	---	219	155	430	Energy	<0.001	---	<0.1	0.005	0.0046	Energy
RL-4	RL-4	6/3/2008		▫	---	---	23.6	7.54	717	---	---	---	---	45	---	203	163	*512*	Energy	<0.001	---	<0.1	0.005	0.0045	Energy
RL-4	RL-4	8/5/2008		▫	7.64	---	---	---	---	---	---	---	---	43	---	209	239	*514*	Energy	<0.001	---	<0.1	0.005	0.0043	Energy
RL-4	RL-4	10/14/2008		▫	---	---	15.9	7.58	746	---	---	---	---	44	---	209	156	498	Energy	0.002	---	<0.1	0.007	0.0034	Energy
RL-4	RL-4	3/24/2009		▫	---	---	13.4	7.58	766	---	---	---	---	42	---	219	146	*506*	Energy	<0.001	---	<0.1	0.005	0.0044	Energy
RL-4	RL-4	6/9/2009		▫	---	---	---	---	---	---	---	---	---	44	---	207	159	485	Energy	<0.001	---	<0.1	0.005	0.0036	Energy
RL-4	RL-4	8/12/2009		▫	---	---	23.5	7.37	774	---	---	---	---	43	---	212	151	*528*	Energy	<0.001	---	<0.1	0.005	0.0119	Energy
RL-4	RL-4	4/27/2010		▫	---	---	22.3	7.22	778	---	---	---	---	43	---	226	150	449	Energy	<0.001	---	<0.1	0.005	0.0033	Energy
RL-4	RL-4	8/24/2010		▫	---	---	---	7.42	---	---	---	---	---	47	---	232	163	*516*	Energy	<0.001	---	<0.1	0.005	0.0036	Energy
RL-4	RL-4	5/24/2011		▫	---	---	---	7.33	---	---	---	---	---	47	---	222	169	500	Energy	<0.001	---	<0.01	0.006	0.0032	Energy
RL-4	RL-4	10/18/2011		▫	---	---	---	---	---	---	---	---	---	46	---	203	169	*513*	Energy	<0.001	---	<0.01	0.005	0.0060	Energy
RL-4	6242	11/1/2012		HS	7.66	808	13.6	7.7	957	89	31	49	4	47	<5	224	172	*528*	Energy	<0.001	---	<0.001	0.005	0.0031	Energy
RL-4	6243	11/1/2012		LF	7.75	810	16.1	7.6	940	89	32	49	4	46	<5	225	170	*532*	Energy	<0.001	---	0.003	0.005	0.0029	Energy

TABLE H-1. SUMMARY OF ROUTINE PARAMETERS, COMMON CONSTITUENTS, AND TRACE METALS IN GROUNDWATER
RIO ALGOM MINING LLC, LISBON FACILITY

WELL NAME	SAMPLE IDENTIFIER	SAMPLE DATE	QC SAMPLE CODE[a]	SAMPLE METHOD[b]	ROUTINE PARAMETERS[c]					DISSOLVED COMMON CONSTITUENTS (mg/L)[d]										DISSOLVED TRACE METALS (mg/L)[e]					
					LAB		FIELD																			
					pH (s.u.)	EC (µmhos/cm)	T (°C)	pH (s.u.)	EC (µS/cm)	Ca	Mg	Na	K	Cl	CO_3	HCO_3	SO_4	TDS	LAB[f]	As	Fe	Mo	Se	U	LAB
RL-4	6244	11/1/2012		P	7.7	818	13.0	7.6	932	91	32	50	4	48	<5	224	174	*546*	Energy	<0.001	---	0.001	0.005	0.0030	Energy
RL-4	6245	11/1/2012	dup	P	7.72	819	13.0	7.6	932	90	32	49	4	48	<5	225	175	*547*	Energy	<0.001	---	0.001	0.005	0.0030	Energy
RL-4	6348	4/4/2013		HS	7.64	867	10.2	6.7	626	82	28	47	3	47	<5	228	175	*548*	Energy	<0.001	<0.03	<0.01	0.005	0.0029	Energy
RL-4	6349	4/4/2013	dup	HS	7.65	873	10.2	6.7	626	86	29	49	3	47	<5	227	175	*550*	Energy	<0.001	<0.03	<0.01	0.005	0.0029	Energy
RL-4	6350	4/4/2013		LF	7.66	868	11.0	6.9	641	84	29	48	3	46	<5	227	171	*550*	Energy	<0.001	<0.03	<0.01	0.005	0.0031	Energy
RL-4	6351	4/4/2013		P	7.73	884	12.8	7.0	655	84	29	48	3	48	<5	226	176	*562*	Energy	<0.001	<0.03	<0.01	0.006	0.0030	Energy
RL-4	7025	10/10/2013		HS	7.6	831	9.9	7.6	894	86	29	48	3	47	<5	229	176	*540*	Energy	<0.001	<0.03	<0.01	0.006	0.0028	Energy
RL-4	7026	10/10/2013	sp	HS	8.2	822	9.9	7.6	894	79.1	27	48	3.2	52	<1.2	210	185	*534*	ACZ	<0.0002	<0.02	0.0009	0.0052	0.0029	ACZ
RL-4	7027	10/10/2013		LF	7.62	829	10.8	7.5	896	84	29	48	3	47	<5	228	176	*552*	Energy	<0.001	<0.03	<0.01	0.006	0.0062	Energy
RL-4	7028	10/10/2013	sp	LF	8.1	828	10.8	7.5	896	76.3	26.2	47.4	3.2	52	<1.2	209	179	*528*	ACZ	<0.0002	<0.02	0.0043	0.0052	0.007	ACZ
RL-4	7114	4/3/2014		HS	7.79	873	11.2	7.0	951	84	28	46	3	48	<5	224	182	*548*	Energy	<0.001	<0.03	<0.01	0.005	0.0029	Energy
RL-4	7115	4/3/2014		LF	7.81	881	12.2	7.4	867	83	27	45	3	49	<5	226	184	*546*	Energy	<0.001	<0.03	<0.01	0.005	0.0028	Energy
RL-5	3348	3/25/2004		▫	---	---	13.5	7.3	640	---	---	---	---	15	---	243	---	---	▫	<0.0009	---	0.0022	<0.003	0.004	Energy
RL-5	3407B	12/16/2004		▫	---	---	10.6	6.96	637	---	---	---	---	15	---	238	---	---	▫	0.0008	---	0.0007	0.002	ND	Energy
RL-5	3408B	12/16/2004	dup	▫	---	---	10.6	6.96	637	---	---	---	---	19	---	238	---	---	▫	0.0007	---	0.0010	0.001	ND	Energy
RL-5	3430B	3/2/2005		▫	---	---	12.1	7.23	598	---	---	---	---	21	---	236	---	---	▫	0.0011	---	0.0011	0.006	ND	Energy
RL-5	3431B	3/2/2005	dup	▫	---	---	12.1	7.23	598	---	---	---	---	23	---	227	---	---	▫	0.0005	---	0.0012	0.005	ND	Energy
RL-5	3446B	6/22/2005		▫	---	---	14	7.53	630	---	---	---	---	21	---	236	---	---	▫	0.0007	---	0.002	0.003	ND	Energy
RL-5	▫	9/27/2005		▫	---	---	15.6	7.95	139	---	---	---	---	18	---	187	110	360	▫	<0.0005	---	0.0006	0.004	0.0021	▫
RL-5	▫	9/27/2005	dup	▫	---	---	15.6	7.95	139	---	---	---	---	17	---	188	110	350	▫	<0.0005	---	0.0007	0.004	0.0021	▫
RL-5	3481B	11/8/2005		▫	---	---	12.2	7.5	473	---	---	---	---	24	---	241	136	356	▫	0.0009	---	0.0007	0.005	0.00298	Energy
RL-5	3498B	3/22/2006		▫	---	---	11.7	7.32	563	---	---	---	---	29	---	233	131	384	▫	<0.0005	---	0.001	0.005	0.00596	Energy
RL-5	3499B	3/22/2006	dup	▫	---	---	11.7	7.32	563	---	---	---	---	29	---	233	134	444	▫	<0.0005	---	0.002	0.005	0.00596	Energy
RL-5	3544	9/28/2006		▫	---	---	12	7.25	546	---	---	---	---	22	<1	222	114	354	Energy	<0.0005	---	0.0021	0.003	0.0042	Energy
RL-5	3560 ABC	12/13/2006		▫	---	---	11.4	7.49	466	---	---	---	---	17	<1	481	114	394	Energy	0.0018	---	0.0208	0.003	**0.036**	Energy
RL-5	RL-5	3/19/2007		▫	---	---	11	7.46	602	---	---	---	---	19	---	205	108	370	Energy	<0.001	---	<0.1	0.004	0.0069	Energy
RL-5	RL-5	6/11/2007		▫	---	---	12.5	7.68	562	---	---	---	---	17	---	81	104	384	Energy	ND	---	ND	0.003	0.0223	Energy
RL-5	RL-5	8/20/2007		▫	---	---	13.3	8.12	633	---	---	---	---	19	---	218	112	372	Energy	<0.001	---	<0.1	0.004	***0.184***	Energy
RL-5	RL-5	8/20/2007	lab dup	▫	---	---	---	---	---	---	---	---	---	---	---	---	---	---	▫	---	---	---	---	***0.168***	Energy
RL-5	WPK-RL-5	10/24/2007		▫	7.68	---	12	7.7	614	---	---	---	---	17	---	238	117	386	Energy	<0.001	---	<0.1	0.005	0.0076	Energy
RL-5	RAM-RL-5	10/24/2007	dup	▫	6.97	---	---	---	---	---	---	---	---	17	---	215	106	364	Energy	<0.001	---	<0.1	0.004	0.0096	Energy
RL-5	RL-5	3/18/2008		▫	---	---	---	---	---	---	---	---	---	18	---	238	114	358	Energy	<0.001	---	<0.1	0.003	0.0038	Energy
RL-5	RL-5	6/3/2008		▫	---	---	18	7.71	611	---	---	---	---	17	---	223	113	408	Energy	<0.001	---	<0.1	0.003	0.0037	Energy
RL-5	RL-5	8/5/2008		▫	7.52	---	---	---	---	---	---	---	---	15	---	226	113	373	Energy	<0.001	---	<0.1	0.003	0.0034	Energy
RL-5	RL-5	10/15/2008		▫	---	---	16.6	7.58	577	---	---	---	---	16	---	227	109	380	Energy	<0.001	---	<0.1	0.003	0.0027	Energy
RL-5	RL-5	3/24/2009		▫	---	---	11	7.67	604	---	---	---	---	14	---	236	98	382	Energy	<0.001	---	<0.1	0.003	0.0025	Energy
RL-5	RL-5	6/9/2009		▫	---	---	---	---	---	---	---	---	---	15	---	224	102	375	Energy	<0.001	---	<0.1	0.003	0.0026	Energy
RL-5	RL-5	8/11/2009		▫	---	---	29.4	7.05	555	---	---	---	---	16	---	230	107	404	Energy	<0.001	---	<0.1	0.003	0.0044	Energy
RL-5	RL-5	4/27/2010		▫	---	---	18.9	7.34	551	---	---	---	---	16	---	228	100	354	Energy	<0.001	---	<0.1	0.003	0.0022	Energy
RL-5	RL-5	8/24/2010		▫	---	---	---	7.41	---	---	---	---	---	16	---	242	103	386	Energy	<0.001	---	<0.1	0.003	0.0022	Energy
RL-5	RL-5	5/24/2011		▫	---	---	---	7.56	---	---	---	---	---	16	---	236	107	367	Energy	<0.001	---	<0.01	0.003	0.0038	Energy
RL-5	RL-5	10/20/2011		▫	---	---	---	---	---	---	---	---	---	15	---	214	103	342	Energy	<0.001	---	<0.01	0.004	0.0022	Energy
RL-5	6246	11/2/2012		HS	7.66	572	16.4	7.7	688	73	18	37	2	15	<5	226	100	360	Energy	<0.001	---	<0.001	0.003	0.002	Energy
RL-5	6247	11/2/2012		LF	7.66	599	12.5	7.6	719	73	18	43	3	15	<5	251	104	379	Energy	<0.001	---	0.002	0.003	0.0021	Energy
RL-5	6248	11/2/2012		P	7.69	598	12.6	7.6	713	73	18	42	3	15	<5	237	102	369	Energy	<0.001	---	<0.001	0.003	0.0021	Energy

TABLE H-1. SUMMARY OF ROUTINE PARAMETERS, COMMON CONSTITUENTS, AND TRACE METALS IN GROUNDWATER
RIO ALGOM MINING LLC, LISBON FACILITY

WELL NAME	SAMPLE IDENTIFIER	SAMPLE DATE	QC SAMPLE CODE[a]	SAMPLE METHOD[b]	ROUTINE PARAMETERS[c]					DISSOLVED COMMON CONSTITUENTS (mg/L)[d]										DISSOLVED TRACE METALS (mg/L)[e]					
					LAB		FIELD																			
					pH (s.u.)	EC (µmhos/cm)	T (°C)	pH (s.u.)	EC (µS/cm)	Ca	Mg	Na	K	Cl	CO_3	HCO_3	SO_4	TDS	LAB[f]	As	Fe	Mo	Se	U	LAB
RL-5	6355	4/4/2013		HS	7.70	620	12.2	7.2	511	64	16	36	3	15	<5	231	99	380	Energy	<0.001	<0.03	<0.01	0.003	0.0021	Energy
RL-5	6356	4/4/2013		LF	7.68	647	12.7	7.1	481	63	16	42	3	15	<5	240	106	386	Energy	<0.001	<0.03	<0.01	0.003	0.0022	Energy
RL-5	6357	4/4/2013	dup	LF	7.71	644	12.7	7.1	481	63	17	43	3	15	<5	240	105	387	Energy	<0.001	<0.03	<0.01	0.003	0.0022	Energy
RL-5	6358	4/4/2013		P	7.69	636	12.5	7.0	474	68	17	44	3	15	<5	239	102	387	Energy	<0.001	<0.03	<0.01	0.003	0.0022	Energy
RL-5	6990	10/9/2013		HS	7.70	574	12.0	7.8	621	61	15	36	2	15	<5	224	99	361	Energy	<0.001	<0.03	<0.01	0.003	0.0019	Energy
RL-5	6991	10/9/2013		LF	7.65	608	12.5	7.6	675	65	16	42	3	15	<5	254	105	372	Energy	<0.001	<0.03	<0.01	0.003	0.0022	Energy
RL-5	7116	4/3/2014		HS	7.85	607	9.6	7.7	602	67	16	35	2	15	<5	224	99	358	Energy	<0.001	<0.03	<0.01	0.003	0.0022	Energy
RL-5	7117	4/3/2014		LF	7.84	626	13.4	7.5	628	64	16	40	3	15	<5	238	105	379	Energy	<0.001	<0.03	<0.01	0.003	0.0022	Energy
RL-6	3374	3/22/2004		▫	---	---	15.5	7.09	1,817	---	---	---	---	20	---	342	---	---	▫	0.0030	---	0.0172	0.013	0.027	Energy
RL-6	3375B	6/29/2004		▫	---	---	17.5	**8.82**	115	---	---	---	---	0	---	5	---	---	▫	<0.0005 [g]	---	0.004 [g]	<0.001 [g]	ND [g]	Energy
RL-6	3389B	9/21/2004		▫	---	---	9.3	**8.52**	1,873	---	---	---	---	43	---	349	---	---	▫	0.002	---	0.05	0.008	**0.0358**	Energy
RL-6	3404B	12/15/2004		▫	---	---	13.7	7.59	1,627	---	---	---	---	17	---	340	---	---	▫	0.0020	---	0.0238	0.008	0.0283	Energy
RL-6	3428B	3/2/2005		▫	---	---	9.2	7.36	1,974	---	---	---	---	23	---	330	---	---	▫	0.0016	---	0.0239	0.009	0.0253	Energy
RL-6	3444B	6/20/2005		▫	---	---	18.2	7.52	1,405	---	---	---	---	35	---	318	---	---	▫	0.002	---	0.03	0.009	0.0253	Energy
RL-6	▫	9/27/2005		▫	---	---	11.9	7.69	727	---	---	---	---	234	---	243	*490*	*990*	▫	0.0017	---	0.247	0.0005	0.0174	▫
RL-6	3479B	11/7/2005		▫	---	---	13.7	7.03	1,753	---	---	---	---	49	---	351	*936*	*1,744*	▫	0.002	---	0.05	0.01	0.0298	Energy
RL-6	3496B	3/22/2006		▫	---	---	9.5	7.65	1,841	---	---	---	---	47	---	317	*941*	*1,736*	▫	0.002	---	0.02	0.01	0.0298	Energy
RL-6	3542	9/25/2006		▫	---	---	13.8	8.02	1,363	---	---	---	---	43	<1	326	*812*	*1,600*	Energy	0.0022	---	0.0201	0.007	**0.0391**	Energy
RL-6	3558 ABC	12/13/2006		▫	---	---	10.7	8.46	1,411	---	---	---	---	42	<1	312	*750*	*1,590*	Energy	0.0017	---	0.0152	0.006	0.022	Energy
RL-6	RL-6	3/19/2007		▫	---	---	10.8	7.32	1,931	---	---	---	---	39	---	307	*910*	*1,660*	Energy	0.002	---	<0.1	0.009	**0.0393**	Energy
RL-6	RL-6	6/11/2007		▫	---	---	9.8	7.7	1,873	---	---	---	---	37	---	122	*913*	*1,670*	Energy	0.002	---	<0.1	0.010	0.0264	Energy
RL-6	RL-6	8/20/2007		▫	---	---	14.8	7.91	2,140	---	---	---	---	42	---	328	*996*	*1,750*	Energy	0.002	---	<0.1	0.010	**0.0905**	Energy
RL-6	WPK-RL-6	10/24/2007		▫	6.97	---	12.6	7.06	2,080	---	---	---	---	36	---	335	*933*	*1,690*	Energy	0.002	---	<0.1	0.010	0.0237	Energy
RL-6	RAM-RL-6	10/24/2007	dup	▫	6.97	---	---	---	---	---	---	---	---	36	---	337	*946*	*1,700*	Energy	0.002	---	<0.1	0.009	0.0262	Energy
RL-6	RL-6	3/18/2008		▫	---	---	---	---	---	---	---	---	---	37	---	327	*915*	*1,590*	Energy	0.002	---	<0.1	0.009	0.0225	Energy
RL-6	RL-6	6/3/2008		▫	---	---	26.1	6.97	2,030	---	---	---	---	37	---	299	*969*	*1,750*	Energy	0.002	---	<0.1	0.008	0.0222	Energy
RL-6	RL-6	8/5/2008		▫	7.35	---	---	---	---	---	---	---	---	36	---	310	*1,040*	*1,750*	Energy	0.002	---	<0.1	0.007	0.0206	Energy
RL-6	RL-6	10/15/2008		▫	---	---	11.9	7.35	2,000	---	---	---	---	33	---	316	*916*	*1,720*	Energy	0.002	---	<0.1	0.009	0.0204	Energy
RL-6	RL-6	3/24/2009		▫	---	---	11.5	7.31	1,966	---	---	---	---	31	---	319	*919*	*1,690*	Energy	0.001	---	<0.1	0.008	0.0189	Energy
RL-6	RL-6	6/10/2009		▫	---	---	---	---	---	---	---	---	---	33	---	281	*942*	*1,690*	Energy	0.002	---	<0.1	0.009	0.0190	Energy
RL-6	RL-6	8/11/2009		▫	---	---	13	7.22	1,990	---	---	---	---	33	---	311	*943*	*1,680*	Energy	0.001	---	<0.1	0.008	0.0196	Energy
RL-6	RL-6	4/28/2010		▫	---	---	10.2	7.43	2,040	---	---	---	---	30	---	324	*968*	*1,710*	Energy	0.002	---	<0.1	0.008	0.0177	Energy
RL-6	RL-6	8/25/2010		▫	---	---	---	7.25	---	---	---	---	---	32	---	337	*988*	*1,810*	Energy	0.002	---	<0.1	0.009	0.0178	Energy
RL-6	RL-6	5/25/2011		▫	---	---	---	7.58	---	---	---	---	---	33	---	317	*946*	*1,760*	Energy	0.002	---	0.01	0.010	0.0188	Energy
RL-6	RL-6	10/20/2011		▫	---	---	---	---	---	---	---	---	---	34	---	301	*961*	*1,730*	Energy	0.002	---	0.02	0.008	0.0186	Energy
RL-6	6209	11/1/2012		HS	7.78	1,850	12.9	7.0	7,081	278	96	48	2	39	<5	338	*769*	*1,540*	Energy	0.002	---	0.018	0.003	0.0166	Energy
RL-6	6210	11/1/2012		LF	7.41	1,810	13.0	7.1	2,077	280	96	49	2	38	<5	341	*751*	*1,570*	Energy	0.002	---	0.017	0.003	0.0172	Energy
RL-6	6241	11/1/2012		P	7.27	1,800	12.0	7.1	2,074	282	101	49	2	40	<5	338	*788*	*1,540*	Energy	0.002	---	0.016	0.003	0.0169	Energy
RL-6	6380	4/4/2013		HS	7.34	1,950	7.2	7.1	1,832	270	90	48	2	40	<5	329	*832*	*1,590*	Energy	0.002	<0.03	0.02	0.004	0.0163	Energy
RL-6	6391	4/4/2013		LF	7.36	1,850	10.0	6.8	1,905	265	89	48	2	38	<5	330	*796*	*1,580*	Energy	0.002	<0.03	0.02	0.004	0.0173	Energy
RL-6	6392	4/4/2013		P	7.31	1,940	8.6	6.9	1,892	266	89	47	2	40	<5	342	*825*	*1,580*	Energy	0.002	<0.03	0.01	0.004	0.0160	Energy
RL-6	7011	10/8/2013		HS	7.24	1,970	13.8	7.2	2,363	301	102	45	2	36	<5	344	*925*	*1,700*	Energy	0.002	<0.03	<0.01	0.007	0.0170	Energy
RL-6	7012	10/8/2013		LF	7.23	1,970	14.0	7.2	2,130	300	101	44	2	36	<5	335	*922*	*1,670*	Energy	0.002	<0.03	0.02	0.007	0.0170	Energy
RL-6	7109	4/3/2014		HS	7.54	1,990	8.2	7.0	1,921	306	100	45	2	36	<5	306	*908*	*1,630*	Energy	0.003	<0.03	0.01	0.008	0.0176	Energy
RL-6	7110	4/3/2014		LF	7.44	2,100	10.3	7.0	2,097	301	96	43	2	37	<5	324	*915*	*1,750*	Energy	0.003	0.06	0.01	0.009	0.0170	Energy

TABLE H-1. SUMMARY OF ROUTINE PARAMETERS, COMMON CONSTITUENTS, AND TRACE METALS IN GROUNDWATER
RIO ALGOM MINING LLC, LISBON FACILITY

WELL NAME	SAMPLE IDENTIFIER	SAMPLE DATE	QC SAMPLE CODE[a]	SAMPLE METHOD[b]	ROUTINE PARAMETERS[c]					DISSOLVED COMMON CONSTITUENTS (mg/L)[d]										DISSOLVED TRACE METALS (mg/L)[e]					
					LAB		FIELD																			
					pH (s.u.)	EC (µmhos/cm)	T (°C)	pH (s.u.)	EC (µS/cm)	Ca	Mg	Na	K	Cl	CO_3	HCO_3	SO_4	TDS	LAB[f]	As	Fe	Mo	Se	U	LAB
UW-1	6238	11/3/2012		HS	7.33	1,000	13.1	7.1	1,835	111	71	30	4	20	<5	401	228	*672*	Energy	0.003	---	0.005	0.012	0.0244	Energy
UW-1	6239	11/3/2012		LF	7.31	1,010	15.1	7.1	1,217	120	66	30	4	19	<5	401	223	*707*	Energy	0.002	---	0.006	0.013	0.0261	Energy
UW-1	6240	11/3/2012		P	7.38	985	12.8	7.2	1,747	114	61	30	4	20	<5	394	221	*690*	Energy	0.003	---	0.005	0.011	**0.0364**	Energy
UW-1	6336	4/3/2013		HS	7.36	1,070	10.0	7.2	938	96	62	29	4	20	<5	395	230	*691*	Energy	0.004	<0.03	<0.01	0.011	0.0247	Energy
UW-1	6337	4/3/2013		LF	7.41	1,070	11.5	6.7	842	105	58	29	4	20	<5	394	240	*711*	Energy	0.002	0.03	0.02	0.010	0.0256	Energy
UW-1	6338	4/3/2013		P	7.42	1,060	12.1	6.5	806	105	53	28	4	20	<5	384	234	*698*	Energy	0.003	*0.31*	0.01	0.008	0.0238	Energy
UW-1	6962	10/12/2013		HS	7.33	1,010	12.2	7.1	1,095	109	62	31	4	20	<5	386	240	*699*	Energy	0.002	<0.03	<0.01	0.010	0.0220	Energy
UW-1	6963	10/12/2013		LF	7.35	1,010	14.5	7.1	1,089	112	60	31	4	20	<5	387	238	*700*	Energy	0.002	<0.03	<0.01	0.011	0.0228	Energy
UW-1	7144	4/2/2014		HS	7.40	1,020	10.0	7.2	1,013	97	57	27	4	20	<5	379	239	*708*	Energy	0.002	<0.03	<0.01	0.010	0.0253	Energy
UW-1	7145	4/2/2014		LF	7.37	1,020	11.3	7.4	997	105	61	30	4	20	<5	391	243	*704*	Energy	0.002	0.04	<0.01	0.010	0.0257	Energy
NA	QC-1	3/24/2009	eb	▫	---	---	---	---	---	---	---	---	---	<1	---	6	<1	11	Energy	<0.001	---	<0.1	<0.001	0.0008	Energy
NA	QC-2	3/25/2009	eb	▫	---	---	---	---	---	---	---	---	---	<1	---	<5	<1	<10	Energy	<0.001	---	<0.1	<0.001	<0.0003	Energy
NA	QC-DWB	8/24/2010	eb	▫	---	---	---	---	---	---	---	---	---	<1	---	9	<1	12	Energy	<0.001	---	<0.1	0.004	0.0068	Energy
NA	QC-DWB	5/25/2011	eb	▫	---	---	---	---	---	---	---	---	---	<1	---	7	<1	30	Energy	<0.001	---	<0.01	<0.001	<0.0003	Energy
NA	QC-EB	3/19/2008	eb	▫	---	---	---	---	---	---	---	---	---	<1	---	4	<1	<10	Energy	<0.001	---	<0.1	<0.001	0.0035	Energy
NA	QC-EB	6/6/2008	eb	▫	---	---	---	---	---	---	---	---	---	<1	---	4	<1	<10	Energy	<0.001	---	<0.1	<0.001	0.0016	Energy
NA	QC-EB	8/6/2008	eb	▫	7.16	---	---	---	---	---	---	---	---	<1	---	10	<1	10	Energy	<0.001	---	<0.1	<0.001	0.0012	Energy
NA	QC-EB	10/15/2008	eb	▫	---	---	---	---	---	---	---	---	---	<1	---	2	<1	<10	Energy	<0.001	---	<0.1	<0.001	0.0029	Energy
NA	QC-EB	6/9/2009	eb	▫	---	---	---	---	---	---	---	---	---	<1	---	<5	<1	<10	Energy	<0.001	---	<0.1	<0.001	<0.0003	Energy
NA	QC-EB	8/11/2009	eb	▫	---	---	---	---	---	---	---	---	---	<1	---	22	<1	33	Energy	<0.001	---	<0.1	<0.001	0.0007	Energy
NA	QC-EB	4/27/2010	eb	▫	---	---	---	---	---	---	---	---	---	6	---	12	3	<10	Energy	<0.001	---	<0.1	<0.001	<0.0003	Energy
NA	QC-EB1	8/25/2010	eb	▫	---	---	---	---	---	---	---	---	---	<1	---	6	<1	<10	Energy	<0.001	---	<0.1	<0.001	0.0039	Energy
NA	QC-EB-1	5/25/2011	eb	▫	---	---	---	---	---	---	---	---	---	<1	---	7	<1	26	Energy	<0.001	---	<0.01	<0.001	0.0004	Energy
NA	QC-EB-1	8/31/2011	eb	▫	---	---	---	---	---	---	---	---	---	<1	---	14	<1	18	Energy	<0.001	---	<0.1	<0.001	0.0003	Energy
NA	QC-EB	10/19/2011	eb	▫	---	---	---	---	---	---	---	---	---	<1	---	6	<1	<10	Energy	<0.001	---	<0.01	<0.001	0.0193	Energy
NA	6221	10/31/2012	eb	Grab	**5.74**	2	---	---	---	<1	<1	2	<1	<1	<5	<5	<1	74	Energy	<0.001	---	0.001	<0.001	0.0004	Energy
NA	6266	11/3/2012	eb	Grab	6.8	12	---	---	---	<1	<1	<1	<1	1	<5	8	<1	72	Energy	<0.001	---	<0.001	<0.001	<0.0003	Energy
NA	6282	11/6/2012	eb	Grab	**5.85**	13	---	---	---	<1	<1	<1	<1	<1	<5	<5	<1	67	Energy	<0.001	---	0.002	<0.001	0.0022	Energy
NA	6323	4/1/2013	eb	Grab	8.01	122	---	---	---	9	3	3	<1	4	<5	40	11	46	Energy	<0.001	<0.03	<0.01	<0.001	0.0005	Energy
NA	6374	4/3/2013	eb	Grab	7.11	119	---	---	---	11	4	4	2	2	<5	69	<1	99	Energy	<0.001	<0.03	0.02	<0.001	0.003	Energy
NA	6403	4/4/2013	eb	Grab	7.38	99	---	---	---	9	3	3	<1	4	<5	32	11	57	Energy	<0.001	<0.03	<0.01	<0.001	0.0012	Energy
NA	7036	10/13/2013	eb	Grab	7.14	90	---	---	---	<1	<1	18	<1	10	<5	31	<1	68	Energy	<0.001	<0.03	<0.01	<0.001	<0.0003	Energy
NA	6974	10/13/2013	eb	Grab	7.75	87	---	---	---	<1	<1	18	<1	10	<5	36	<1	57	Energy	<0.001	<0.03	<0.01	<0.001	0.0008	Energy
NA	6980	10/14/2013	eb	Grab	7.74	87	---	---	---	<1	<1	18	<1	10	<5	35	<1	65	Energy	<0.001	<0.03	<0.01	<0.001	<0.0003	Energy
NA	7132	4/4/2014	eb	Grab	7.18	89	---	---	---	9	2	3	<1	4	<5	27	11	45	Energy	<0.001	<0.03	<0.01	<0.001	<0.0003	Energy
NA	7175	4/5/2014	eb	Grab	7.12	85	---	---	---	8	3	3	<1	4	<5	27	11	39	Energy	<0.001	<0.03	<0.01	<0.001	<0.0003	Energy

TABLE H-1. SUMMARY OF ROUTINE PARAMETERS, COMMON CONSTITUENTS, AND TRACE METALS IN GROUNDWATER
RIO ALGOM MINING LLC, LISBON FACILITY

WELL NAME	SAMPLE IDENTIFIER	SAMPLE DATE	QC SAMPLE CODE[a]	SAMPLE METHOD[b]	ROUTINE PARAMETERS[c]					DISSOLVED COMMON CONSTITUENTS (mg/L)[d]										DISSOLVED TRACE METALS (mg/L)[e]					
					LAB		FIELD																			
					pH (s.u.)	EC (µmhos/cm)	T (°C)	pH (s.u.)	EC (µS/cm)	Ca	Mg	Na	K	Cl	CO_3	HCO_3	SO_4	TDS	LAB[f]	As	Fe	Mo	Se	U	LAB
REGULATORY CONCENTRATION LIMITS (mg/L)																									
Alternate Concentration Limit (ACL) for POC Well EF-3A																				3.06		23.34	0.93	96.87	
Alternate Concentration Limit (ACL) for POC Well OW-UT-9																				2.63		58.43	0.10	101.58	
Compliance Limit for POE Wells RL-4, RL-5, and RL-6																								0.32	
Target Action Level for Trend Well EF-6																								3.9	
Target Action Level for Trend Well EF-8																								0.30	
Target Action Level for Trend Well ML-1																								0.26	
Target Action Level for Trend Well RL-1																								42.1	
Target Action Level for Trend Well RL-3																								37.3	
Target Action Level for Trend Well H-63																								0.06	
Target Action Level for Trend Well LW-1																								0.028	
Utah Ground Water Quality Standards					6.5-8.6			6.5-8.6												0.05			0.05	0.03	
U.S. EPA National Primary Drinking Water Regulations																				0.010			0.05	0.03	
U.S. EPA National Secondary Drinking Water Regulations					6.5-8.5			6.5-8.5						250			250	500			0.3			0.1	

Notes:
Values shaded gray exceed current compliance concentrations as stipulated in the License.
Values in red bold font exceed Utah Ground Water Quality Standard (GWQS) or applicable EPA primary water quality standards. Utah GWQS supercedes EPA water quality standard.
Values in red italics font exceed applicable EPA secondary water quality standards.

mg/L = Milligrams per liter
< = Not detected at or above the laboratory reporting limit
ND = Not detected at or above the laboratory reporting limit
NA = Not applicable
--- = Not analyzed or not reported
▫ = Unknown or not documented

[a] Quality control (QC) sample code:
- dup = duplicate
- sp = split
- lab dup = laboratory duplicate
- eb = equipment rinsate blank

[b] Sample Methods:
- HS = HydraSleeve (no purge)
- LF = Low-flow (minimal purge)
- P = Purge (volume-based purge)
- Grab = Grab sample (no purge)

[c] Routine Parameters:
- pH (s.u.) = pH in standard units
- EC (umhos/cm) = Electrical conductivity in micromhos per centimeter
- T (°C) = Temperature in degrees Celsius
- EC (µS/cm) = Electrical conductivity in microsiemens per centimeter

[d] Dissolved Common Constituents (mg/L):
- Ca = Calcium
- Mg = Magnesium
- Na = Sodium
- K = Potassium
- Cl = Chloride
- CO_3 = Carbonate
- HCO_3 = Bicarbonate
- SO_4 = Sulfate
- TDS = Total Dissolved Solids

[e] Dissolved Trace Metals (mg/L):
- As = Arsenic
- Fe = Iron
- Mo = Molybdenum
- Se = Selenium
- U = Uranium

[f] Analytical Laboratory:
- Energy = Energy Laboratories; Casper, WY
- ACZ = ACZ Laboratories; Steamboat Springs, CO

[g] Analyzed for total metals

APPENDIX I

PIPER DIAGRAMS

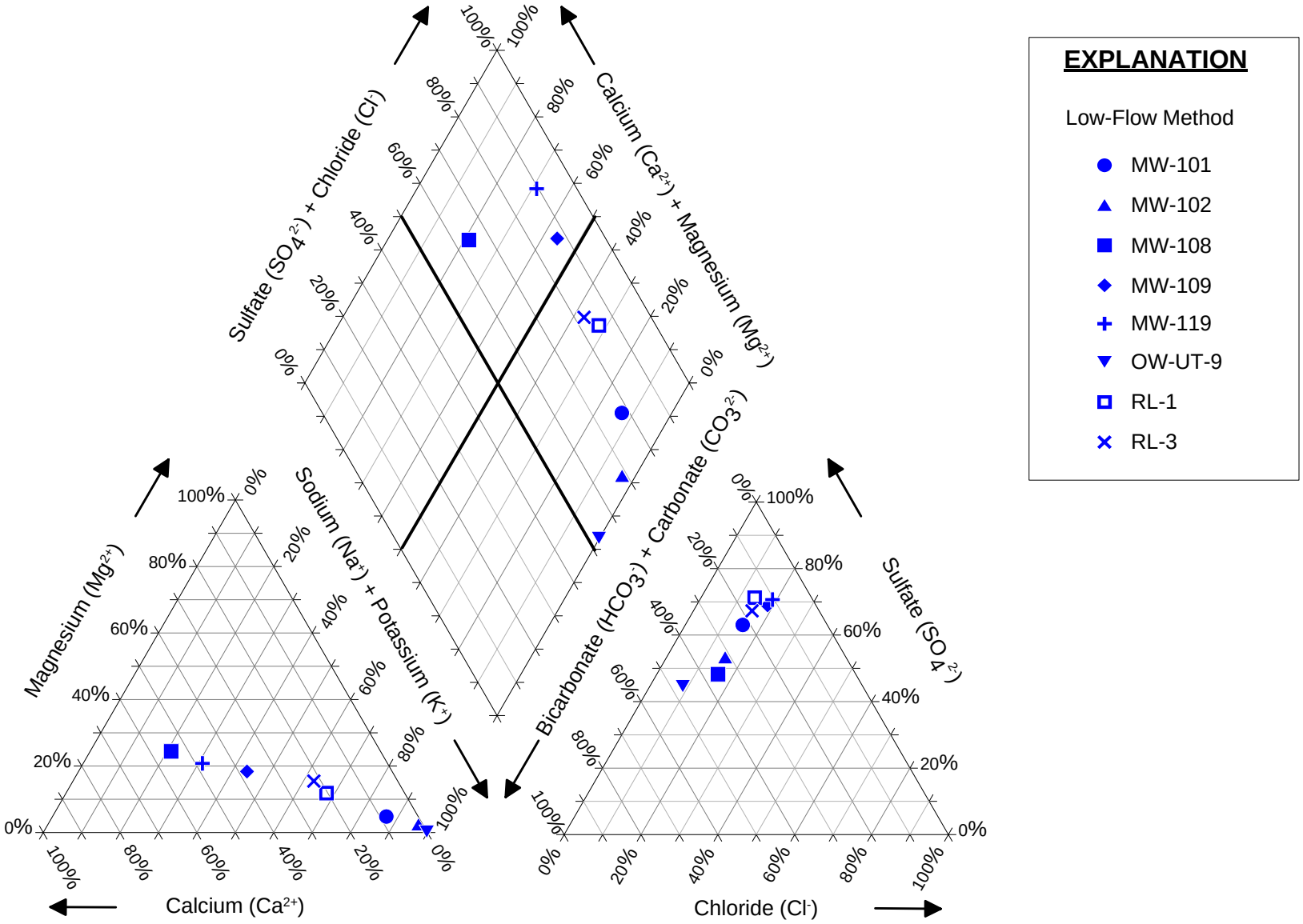
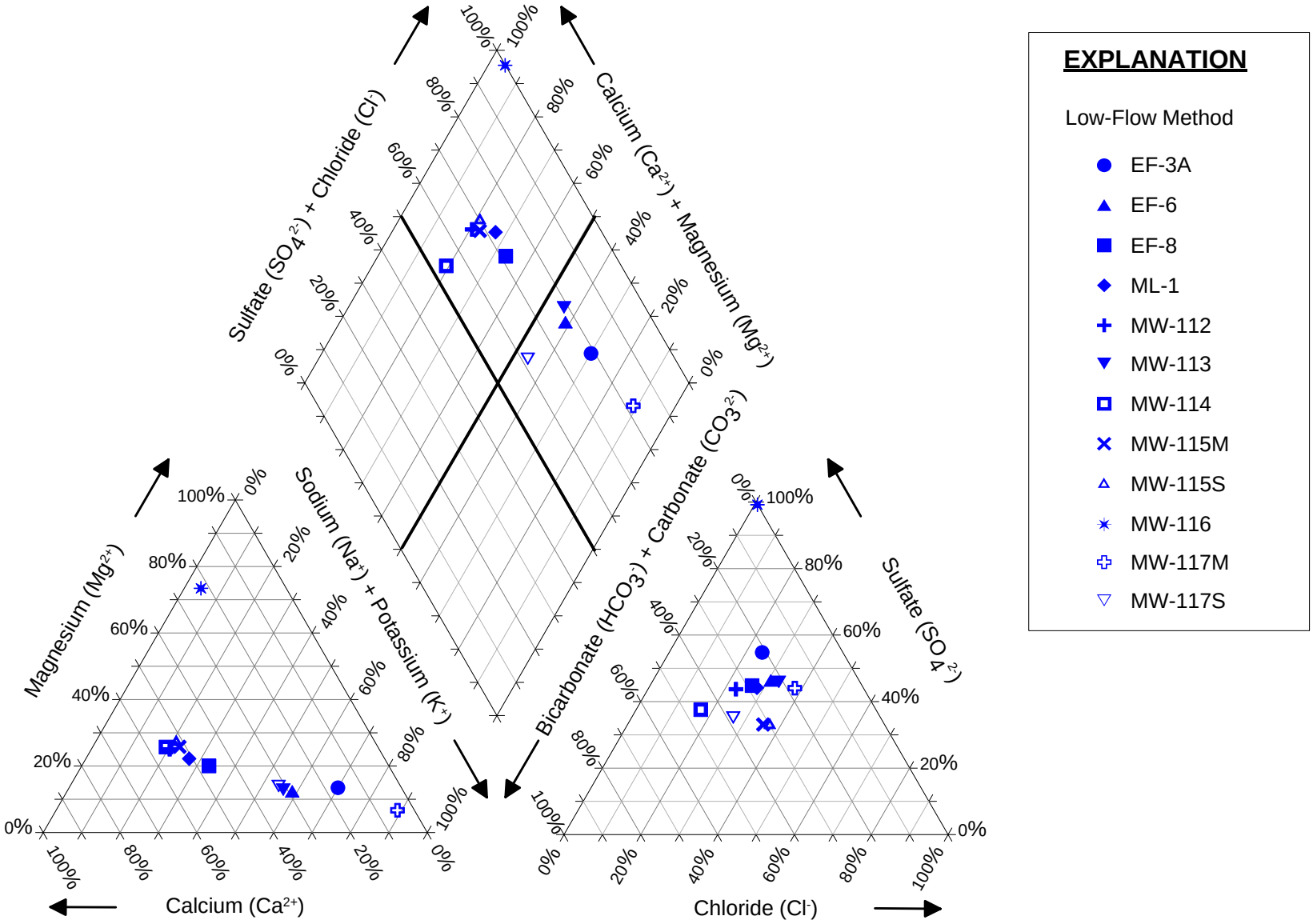


FIGURE I-1. PIPER DIAGRAM SHOWING COMMON ION COMPOSITION OF GROUNDWATER IN NORTH PLUME BURRO CANYON AQUIFER WELLSWELLS RIO ALGOM MINING, LISBON FACILITY

MONTGOMERY & ASSOCIATES



EXPLANATION

Low-Flow Method

- EF-3A
- EF-6
- EF-8
- ML-1
- MW-112
- MW-113
- MW-114
- MW-115M
- MW-115S
- MW-116
- MW-117M
- MW-117S

FIGURE I-2. PIPER DIAGRAM SHOWING COMMON ION COMPOSITION OF GROUNDWATER IN SOUTH PLUME BURRO CANYON AQUIFER WELLS RIO ALGOM MINING, LISBON FACILITY

MONTGOMERY & ASSOCIATES

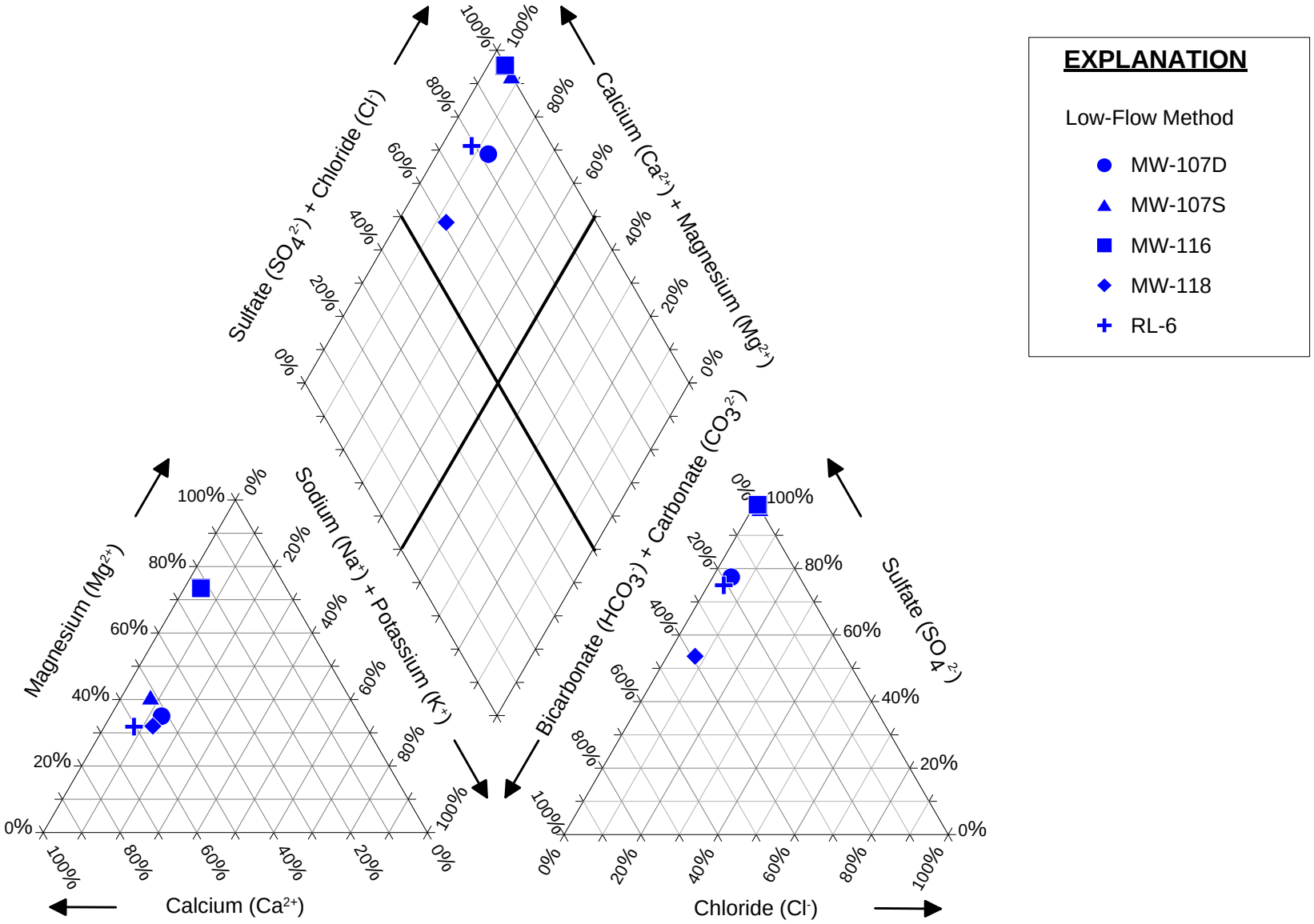


FIGURE I-3. PIPER DIAGRAM SHOWING COMMON ION COMPOSITION OF GROUNDWATER IN BURRO CANYON AQUIFER WELLS ALONG LISBON FAULT RIO ALGOM MINING, LISBON FACILITY

MONTGOMERY & ASSOCIATES

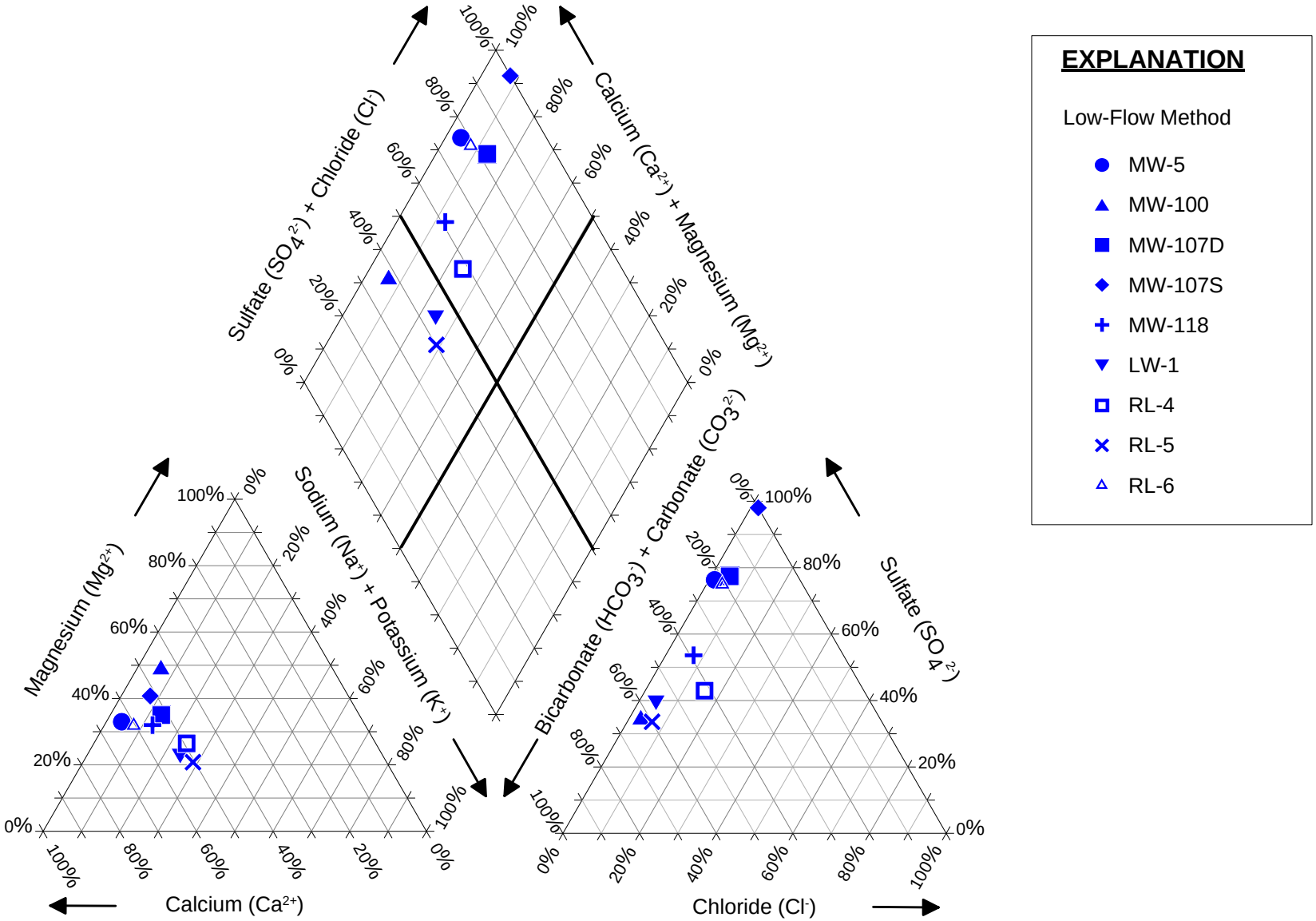


FIGURE I-4. PIPER DIAGRAM SHOWING COMMON ION COMPOSITION OF GROUNDWATER IN BURRO CANYON AQUIFER WELLS ALONG THE LONG TERM SURVEILLANCE AND MAINTENANCE BOUNDARY RIO ALGOM MINING, LISBON FACILITY

MONTGOMERY & ASSOCIATES

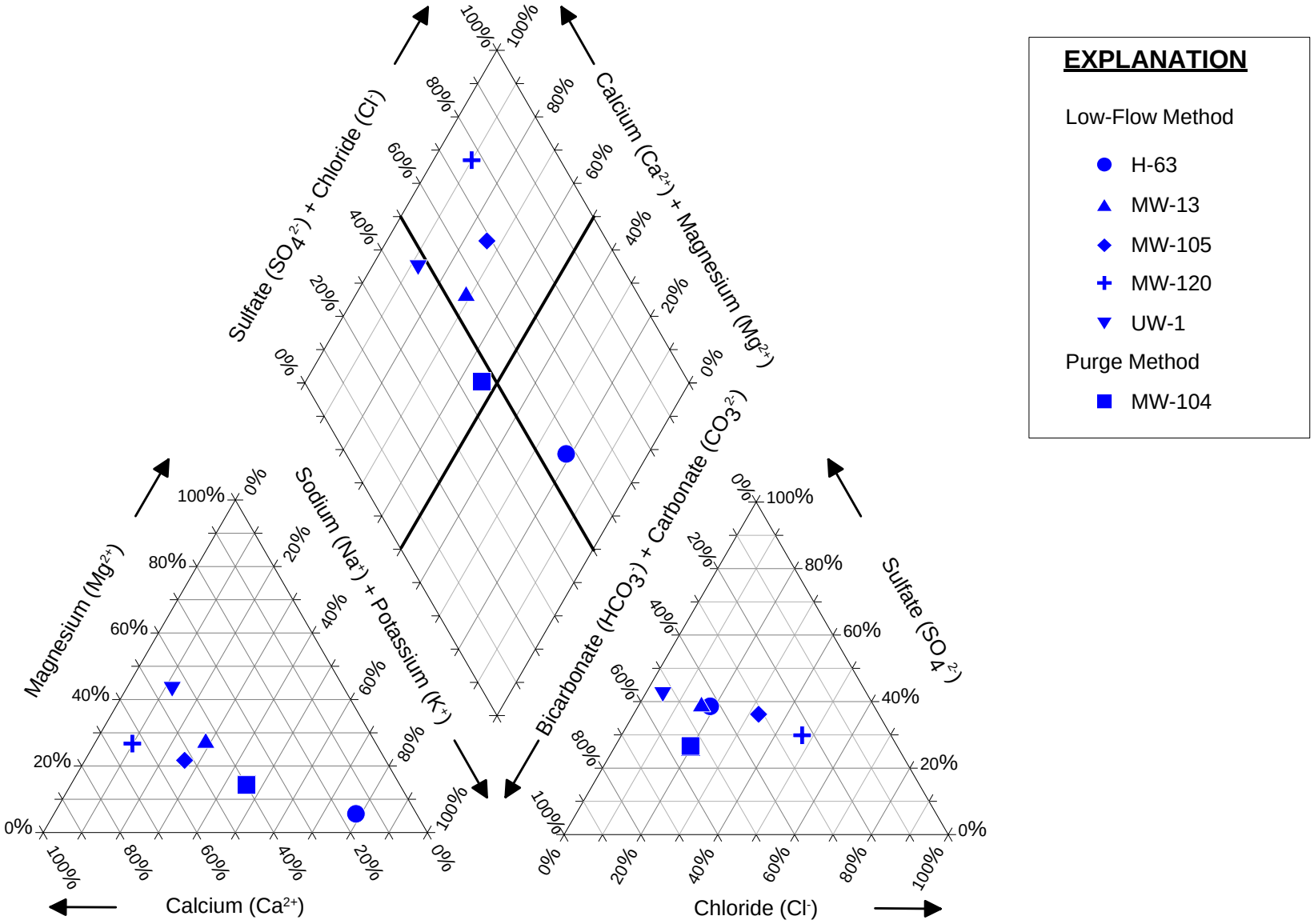


FIGURE I-5. PIPER DIAGRAM SHOWING COMMON ION COMPOSITION OF GROUNDWATER IN SOUTHEAST BURRO CANYON AQUIFER WELLS RIO ALGOM MINING, LISBON FACILITY

MONTGOMERY & ASSOCIATES

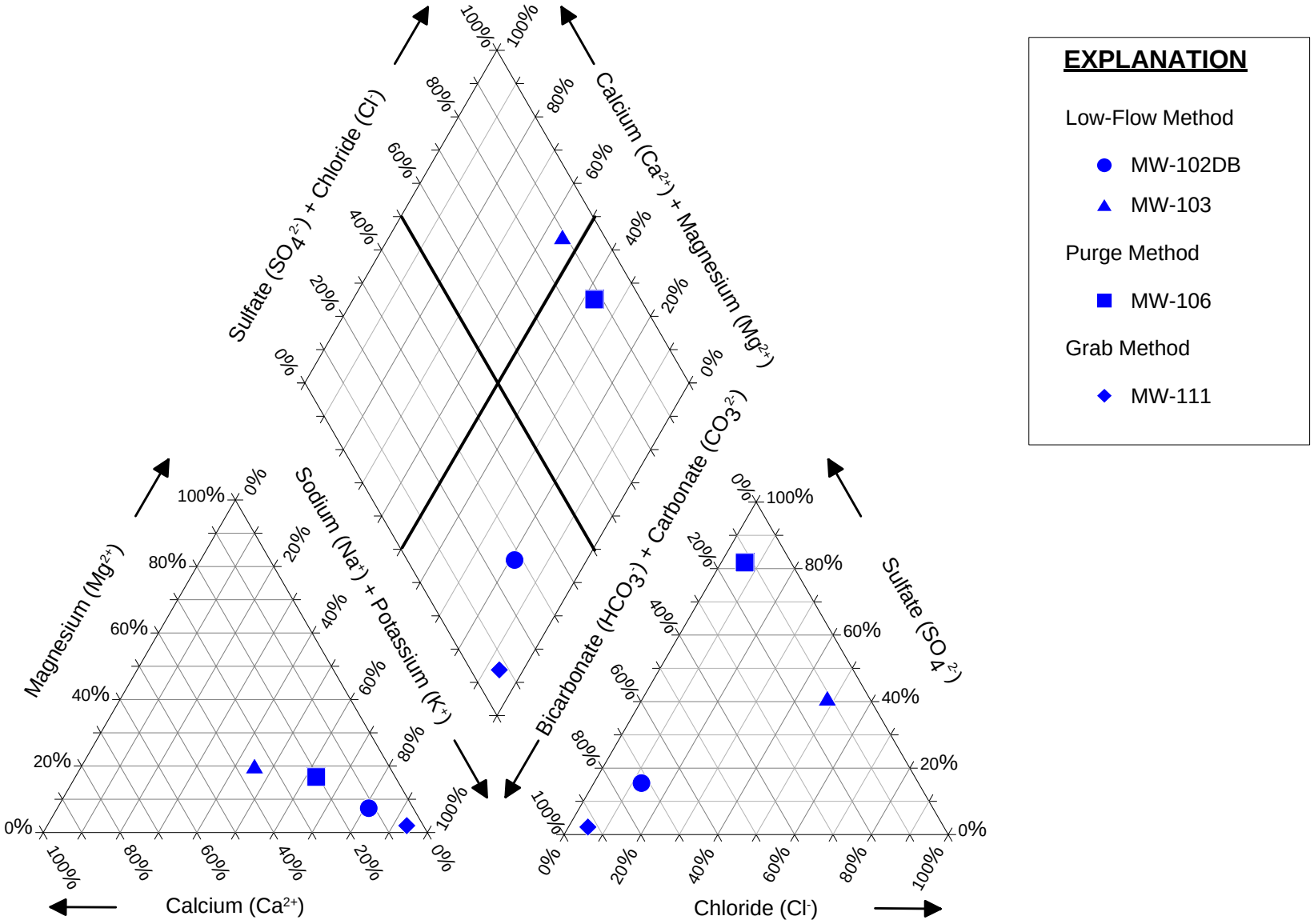


FIGURE I-6. PIPER DIAGRAM SHOWING COMMON ION COMPOSITION OF GROUNDWATER IN BRUSHY BASIN MEMBER WELLS RIO ALGOM MINING, LISBON FACILITY

MONTGOMERY & ASSOCIATES

APPENDIX J

CONCEPTUAL SITE MODEL

MONTGOMERY & ASSOCIATES

APPENDIX J

CONCEPTUAL SITE MODEL
RIO ALGOM MINING LLC, LISBON FACILITY

Appendix J summarizes the refined hydrogeologic conceptual site model (CSM) for the former Rio Algom Mining LLC (RAML) Lisbon Uranium Mine located south of La Sal, Utah (Site). The CSM was refined based on a review of historic information and data for the Site, review of relevant information from scientific literature, and the results of the Supplemental Site Assessment (SSA). The refined CSM conceptualizes the relationship between contaminant sources and potential exposure pathways through consideration of potential or actual contaminant migration pathways. The refined CSM serves as the basis for the numerical groundwater flow model.

BASIS OF REFINED CONCEPTUAL SITE MODEL

The refined CSM is based on the following information:

- **Results of SSA** – results of the SSA are the primary source of information used to refine the CSM. **Sections 2.0 and 3.0** of the main report summarize the methods used and data collected during the SSA. The SSA extended understanding of hydrogeologic, groundwater, and water quality conditions at the Site. Where needed, figures included in the main report are referred to in **Appendix J**.
- **Historical documents and data** – investigations of hydrogeologic and water quality conditions at the Site began in the late 1960s before mining began (Rio Algom Corporation, undated). Many of the documents pertaining to the early investigations were reviewed during preparation of the 2001 application for Alternate Concentration Limits (ACLs) (Lewis Water Consultants, Inc., 2001). The 2001 ACL application presents a CSM based on information available at that

time. The 2001 CSM served as the basis for groundwater modeling and development of the original ACLs.

Montgomery & Associates, (M&A) conducted an independent review of the early investigation reports to develop a more thorough understanding of Site conditions and result of historical investigations, and to identify relevant supplementary information for refining the CSM[1]. **Table J-1** summarizes this supplementary information. In addition, M&A reviewed the results of groundwater monitoring conducted from 2004 through 2011.

- **Relevant Scientific Literature and Other Information** – M&A reviewed relevant studies on the regional geology and information about the Site and other mines near the Site (**Table J-1**).

The refined CSM synthesizes a substantial amount of historic and new information and data into a plausible model of groundwater flow and contaminant transport at the Site. The refined CSM serves as the basis for a new groundwater flow and transport model of the Site and surrounding area. The model was used to simulate the future migration of uranium in the groundwater. Model results were used to develop revised compliance concentrations for the Site. The modeling is summarized in **Section 5.0** of the main report and **Appendix K**. The proposed revised compliance concentrations are summarized in **Section 6.0** of the main report.

COMPONENTS OF REFINED CONCEPTUAL SITE MODEL

The refined CSM includes the following components:

[1] Many of the source area and hydrogeologic components of original CSM developed by Lewis Water Consultants, Inc. are generally accepted. The supplementary information obtained from the document review was used in combination with new information obtained during the SSA to refine the CSM.

- Source Areas
- Hydrogeologic Conditions
- Groundwater Flow
- Contaminant Occurrence and Transport in Groundwater
- Contaminant Exposure Assessment

The components of the refined CSM are summarized in the following sections. **Table J-1** provides references for much of the information presented below. Only important references are provided in the section below to improve readability.

Source Areas

The only known source of compounds of concern (COCs)[2] to groundwater at the Site is seepage from the lower and upper tailings impoundments. The mine also operated a large settling pond called Bisco Lake. Bisco Lake was located immediately east of the tailings impoundments. While not a source of COCs to groundwater, Bisco Lake is discussed in this section because it created a groundwater mound in the Burro Canyon Formation (Kbc) during operation that affected migration of COCs in groundwater.

Tailings Impoundments

Average uranium concentrations in tailings water were reported to be 140 milligrams per liter (mg/L) for the lower impoundment and 120 mg/L for the upper impoundment (Dames & Moore, 1980). Concentrations of other COCs were elevated in the tailings water. The tailings impoundments contain residual ground ore from an alkaline leach milling process. The lower tailings impoundment operated from mine startup in 1972 until 1980. The upper tailings impoundment operated from 1980 until 1989 (when mine operations ceased). The tailings are deposited in a shallow west trending drainage basin. The shallow

[2] Site COCs include the trace metals uranium, selenium, arsenic, and molybdenum. Uranium is the primary COC with respect to exposure risk and ACL development. Other constituents monitored at the Site include total dissolved solids and sulfate.

drainage basin is underlain by varying thicknesses of recent alluvium and Kbc, which are deposited on top of the Brushy Basin Member (Jmb) of the Morrison Formation, a regional aquitard. A low rate of residual drainage from the tailings is probably still occurring and will diminish with time.

Seepage of tailings water from the lower impoundment into the underlying alluvium and Kbc began shortly after mine operations began in 1972. Seepage of tailings water from the upper impoundment into the underlying alluvium and Kbc began shortly after operation of the impoundment began in 1980. The maximum total seepage rate from both impoundments was estimated to be about 100 gallons per minute (gpm) during mine operation (Lewis Water Consultants, Inc., 2001). During tailings deposition, attempts were made to seal the bottom of the impoundments with the fine-grained tailings. Despite attempts to seal the impoundments, seepage occurred from both impoundments during and after operation.

Bisco Lake

Bisco Lake was a nominal 7 acre settling pond used in the treatment process to remove radium from the groundwater pumped from the mine shafts. Bisco Lake presumably operated from the time of mine startup in 1972 until about 1990, when it was drained. A groundwater mound in the Kbc developed beneath Bisco Lake during operation. Groundwater elevation data indicate the mound was largely dissipated in the Kbc by 1996. Water quality in Bisco Lake generally exhibited average total dissolved solids (TDS) concentrations of approximately 2,000 to 3,000 mg/L with low to non-detectable concentrations of trace metals, including uranium (Dames & Moore, 1980). Bisco Lake was not a significant source of trace metals to groundwater at the Site.

Hydrogeologic Conditions

This section summarizes information on the hydrogeologic conditions at the Site.

Hydrostratigraphic Units

The primary hydrostratigraphic unit (HSU) of interest at the Site is the Burro Canyon Aquifer (BCA), which occurs within the Kbc. The saturated portion of the underlying Jmb is designated as the Brushy Basin Member hydrostratigraphic unit (BBM). Most of the meaningful groundwater flow and contaminant transport occurs in the BCA at the Site. The shallow portion of the Kbc is composed of interbedded siltstone, shale, and thin beds of limestone, as depicted on hydrogeologic cross-sections in the main report (**Figures 6 through 8** of main report). The deep portion of the Kbc is a well-sorted, basal sandstone with minor conglomerate lenses. The Kbc is underlain by mudstone and shale units in the Jmb. The Morrison Formation, a regional aquitard over 300 to 400 feet thick, hydraulically separates the BCA from deeper regional HSUs in the Navajo (Jn) and Wingate (Jw) Sandstones.

The contact elevation between the Kbc and Jmb varies across the site (**Figure 5** of main report). The Kbc/Jmb contact is high along the crest of the Lisbon Valley Anticline (LVA) and low in areas away from the crest. The lowest contact elevations occur west-southwest of the mine along the axis of a syncline that exists between the LVA and Lisbon Fault (LF) (**Figure 5** of main report). Contact elevations along the LVA crest decrease to the northwest indicating that the LVA plunges to the northwest. Variations in contact elevation affect groundwater flow directions locally. High areas in the contact surface may impede groundwater flow and/or cause groundwater to locally pond. One important example of this occurs south of the tailings impoundments, where a subsurface high in the contact exists. This high area in the contact, as shown on **Figure 7** of main report, appears to restrict groundwater flow, as shown on **Figure 10** of the main report by the abrupt increase in

hydraulic gradient from southeast to northwest. This area is upgradient of the area of impacted groundwater that exists west-southwest of the lower tailings impoundment.

Hydraulic Conductivity

Horizontal hydraulic conductivity (K) in the BCA varies across the Site. In general, horizontal K is higher in the area south and southwest of the tailings impoundments[3] than in the area north and northwest of the Site (**Figure 9** of main report). The geometric mean of all estimated horizontal K values of the BCA across the entire Site was estimated to be 1.9 feet per day (ft/d)[4]. A geometric mean of estimated horizontal K values of the BCA for the entire Site was previously reported to be 2.35 ft/d (Lewis Water Consultants, Inc., 2001). On the north-northwest side of the Site and within the approximate area of the uranium plume (**Figure 9** of main report), the geometric mean of estimated K values is 1.4 ft/d. On the south-southwest side of the Site and within the approximate area of the uranium plume, the geometric mean of estimated K values is 7.2 ft/d.

The BBM has a lower horizontal hydraulic conductivity than the BCA. The geometric mean of estimated horizontal K values in the BBM is 0.03 ft/d.

Based on laboratory estimates, vertical K is estimated to be at least an order of magnitude lower than horizontal K for the BCA and BBM.

Geologic Structures

Geologic conditions at the Site are complex. Geologic structures near the Site affect regional and local groundwater flow and contaminant transport. Important regional structures include the LVA and LF. Smaller structures, including an unnamed syncline, fractures and fracture zones, and small faults exist near the Site and affect local groundwater flow and contaminant transport.

[3] The higher K values in this area are due to fracturing in the BCA
[4] Based on estimated values reported in historic documents and estimated values obtained by M&A during the SSA.

Lisbon Valley Anticline

The LVA trends southeast to northwest through the Site. Uplift along the axis of the LVA folds the Kbc and Jmb at the Site, as depicted on cross-section E-E' (**Figure 8** of main report). Along portions of the LVA crest, the Kbc/Jmb contact is above the water table and the Kbc is currently dry. In areas northeast and southwest of the LVA crest, the Kbc/Jmb contact is deeper and the saturated thickness in the BCA is larger. The limb of the LVA dips more steeply on the southwest side of the axis than the limb on the northeast side of the axis. The tailings impoundments are located along and adjacent to the crest of the LVA. During tailings operation, the Kbc was believed to be saturated beneath the impoundments.

Lisbon Fault

The LF is an important regional geologic structure at the Site. The LF is a high-angle reverse fault with over 2,000 feet of displacement near the Site. Along the LF, older rocks, including Jn, Kayenta Formation (Jk), Jw, and Chinle Formation (TRc), are adjacent to the younger rocks of the Kbc and Jmb. The LF zone was visually inspected by other investigators within the underground workings of the North Alice Mine[5] (Jacobs and Kerr, 1965). Inspection of the fault zone indicates a complex zone of broken and highly fractured rock, with zones of mineralized clay-rich gouge. Smaller faults and fractures were also observed on the hanging wall side of the LF in the Kbc. Copper sulfides, oxidized copper minerals, and uranium ore occur in the LF zone. Rocks along the LF zone are bleached and the Kbc is silicified more than 50 feet away from the fault. The conditions along the fault are indicative of solution activity with heated fluids during tectonic activity. These geologic conditions along the LF are consistent with the acidic, highly mineralized groundwater detected in the new monitor wells MW-116 and MW-107S, as well as the abandoned well, DM80-4. The acidic, mineralized groundwater detected near the LF is naturally occurring and not the result of mining activity at the Lisbon Facility.

[5] The North Alice Mine is located about 3,000 feet south of the Lisbon Mine. Underground workings of the North Alice Mine cut through the LF.

Fractures

The effect of fractures on groundwater flow and contaminant transport in the BCA was investigated[6] during early site investigations (EarthFax Engineering, Inc., 1984c and 1989). Results of these investigations indicated that fractures may be preferential flow paths for groundwater flow and contaminant transport in some areas of the Site. For example, on the northwest and south sides of the mine, discrete, northwest trending fractures or fracture zones were characterized as a preferential transport pathway[7]. On the south side of the tailings impoundments, between the mine and the LF, the Kbc is characterized as highly fractured based on previous geophysical surveys, observations made during historic and recent drilling, and results of pumping tests (EarthFax Engineering, Inc., 1989). The highly fractured zone in the area south of the tailings impoundments acts hydraulically like an isotropic porous medium.

Syncline

A syncline exists between the LF and the LVA in the area south and southwest of the Site (**Figure 1** of main report). The syncline is depicted in sections A-A' (**Figure 6** of main report), C-C' (**Figure 7** of main report), and E-E' (**Figure 8** of main report). The syncline was delineated during recent drilling and is consistent with hydrogeologic conditions inferred in earlier investigations (Dames & Moore, 1973 and EarthFax Engineering, Inc., 1984a and b). The syncline may be associated with discrete fractures delineated by EarthFax Engineering, Inc. in the geophysical surveys. The saturated thickness of the BCA is generally greater than 150 feet along the axis of the syncline (**Figure 12** of main report).

[6] Investigations included very low frequency electromagnetic surveys and pumping tests to delineate fractures.

[7] Shown as "Fracture A" and "Fracture B" on Figure 2-3 and Figure 2-7 of EarthFax Engineering, Inc., 1989. The hydraulic conductivity of Fracture A was estimated to be approximately 10 ft/d along the fracture and approximately 3 ft/d transverse to the fracture (in unfractured sandstone) based on a pumping test at well OW-UT-9. Fracture B may be related to the syncline delineated based on recent drilling activities.

Groundwater Flow

Characterization of regional and local groundwater flow at the Site was extended during the SSA in order to refine the CSM.

Regional Groundwater Flow

Available information about groundwater wells near the Site was evaluated to assess regional groundwater flow. Groundwater wells identified in the vicinity of the Site are shown on **Figure 11** of the main report. Records indicate that these wells are screened in the BCA and generally were or are used for domestic purposes; some of the wells are associated with nearby mines. Nearby wells are generally located to the north of the Site, with a few wells located to the southeast of the Site. Wells owned by entities other than RAML were not identified in the area west, or downgradient, of the Site or within the Long Term Surveillance and Maintenance (LTSM) boundary.

The source of regional groundwater flow in the BCA is primarily from recharge areas in the La Sal Mountains. Regional groundwater flow in the BBM is not believed to be significant. A regional topographic divide exists immediately east of the Site (**Figure 11** of main report). A groundwater divide may be associated with the topographic divide. On the west side of the topographic divide, surface and groundwater flow are predominantly to the west toward the Colorado River. On the east side of the topographic divide, surface and groundwater flow is predominantly to the southeast toward the Dolores River. Regionally, groundwater flow directions suggest that the LF limits the southwesterly flow of groundwater and that some groundwater may drain down the fault zone from the BCA to deeper hydrogeologic units.

The dry zone in the Kbc along the crest of the LVA is presumed to extend to the topographic divide (**Figure 10** of main report). North of the dry zone, groundwater flux in

the BCA from the east and into the Site area is presumed to be small due to the inferred relatively small hydraulic gradients between the Site and the inferred groundwater divide. Between the dry zone and the LF in the area southeast of the Site, groundwater flux to the northwest is also expected to be low.

Historic Groundwater Flow within LTSM

Groundwater elevations, flow directions, and rates varied at the Site over the operational period of the Lisbon Facility. **Figure J-1** depicts groundwater contours for the BCA at four points in time: (1) pre-mining, (2) during mining in 1984, (3) post-mining in 2003 at the end of the corrective action program (CAP), and (4) 2014 conditions. The following concepts can be inferred from **Figure J-1**:

- Current groundwater conditions in the BCA are probably similar to pre-mining conditions.
- Groundwater flows from northeast to southwest in the BBM through the LVA.
- Groundwater mounds in the BCA existed beneath the tailings and Bisco Lake during mining. The extent of dry Kbc along the LVA crest was smaller during mining due to mounding. Hydraulic gradients beneath and near the tailings impoundments were significantly steeper than today. Groundwater flow directions near the tailings and Bisco Lake were more to the north than today.
- Cones of depression existed in the BCA in the areas north and southwest of the tailings impoundments at the end of the CAP. The BCA was partially dewatered near the cones of depression.
- Current groundwater conditions indicate that groundwater elevations have largely recovered from the dewatered conditions existing at the end of the CAP.
- Current groundwater elevations in the BBM indicate a residual groundwater mound beneath the tailings impoundments and south of Bisco Lake. This mound in the BBM is believed to be slowly draining into the BCA.

Groundwater mounds developed beneath the tailings and Bisco Lake during operation. The mounds were important hydrologic features that affected historic groundwater flow directions and rates, and to some degree, still affect source conditions near the tailings. **Figure J-2** shows a series of conceptual cross-sections depicting groundwater conditions beneath the tailings during pre-mining, mining, and post-mining periods. Previous analyses of mounding beneath the upper impoundment indicated that the mound extended from the saturated zone in the BCA upward into the tailings, and likely developed in less than 2 years after operation of the impoundment began (EarthFax Engineering, Inc., 1984b). As a result of the groundwater mounding, the saturated thickness of and hydraulic gradients in the BCA in the vicinity of the mine increased, and tailings water infiltrated into the upper BBM. The April 2014 groundwater elevations indicate a residual groundwater mound in the BBM (**Figure 10** of main report). Mounded groundwater within the BBM is conceptualized to be slowly draining into the BCA.

Corrective Action Program

Corrective actions to mitigate the effect of seepage losses from the tailings were conducted at the Site. Initial corrective actions in the early 1980s included installation of a grout curtain and operation of a groundwater extraction system in the area north of the upper tailings impoundment. Operation of this system ceased shortly after startup due to limited effectiveness. In 1983, well OW-UT-9, located immediately north of the upper tailings impoundment began pumping to control seepage losses. Over time, the pumping capacity of OW-UT-9 diminished due to dewatering and decreases in saturated thickness as the groundwater mounds near the mine dissipated.

A formal CAP was initiated in 1990. The CAP system comprised up to 6 extraction wells and operated at a maximum total rate of about 100 gpm. During operation, the CAP system removed about 483 million gallons of groundwater and almost 100,000 pounds of uranium (Lewis Water Consultants, Inc., 2001). Groundwater from the CAP was conveyed to evaporation ponds located on top of tailings. Over time, pumping capacities of the CAP

wells diminished, limiting the effectiveness of the CAP (Medlock Consulting, 1998 and Lewis Water Consultants, Inc., 2001). The CAP was discontinued in 2003 after it was demonstrated to be ineffective. Subsequently, the ACLs were established and a long term monitoring program was initiated to ensure compliance with the ACLs.

Current Groundwater Flow Conditions within LTSM

As a result of the SSA, current groundwater flow conditions within the LTSM are well understood. The primary HSU of interest for groundwater flow is the BCA.

Saturated Thickness of BCA

The saturated thickness of the BCA varies within the LTSM. In general, saturated thickness is smaller in areas near the LVA and larger in areas away from the LVA (**Figure 12** of main report). The following aspects about saturated thickness in the BCA are relevant for contaminant transport:

- The saturated thickness within the area of groundwater contamination along the northeast side of the LVA attains a maximum thickness of approximately 80 feet, with the highest concentrations occurring in the zone of thinner saturation along the margin of the dry zone.
- The saturated thickness near the leading edge of the uranium plume northwest of the tailings impoundments is generally less than 5 feet. The leading edge of the uranium plume occurs in an area where the plunge of the LVA results in thinly saturated BCA. Saturation in this area is probably variable with possible areas of dry BCA. Southeast of this area along the LVA crest the BCA is dry.
- The saturated thickness in the area west-southwest of the tailings impoundments increases steeply away from the impoundments to a thickness greater than 170 feet at the bottom of the syncline.

- Saturated thickness in the area west-northwest of the tailings impoundments varies along the axis of the syncline, with a relatively steep increase toward the axis of the syncline. Saturated thickness varies along the LF and is less than along the axis of the syncline.

Groundwater Flow Directions, Fluxes, and Rates in BCA and BBM

The directions and rates of groundwater flow in the BCA largely control the directions and rates of contaminant migration at the Site. The extent of contamination in the groundwater reflects the average directions and rates of groundwater flow since contamination began in the early 1970s. Geologic structures, including the LVA, LF, and smaller fractures and faults affect local groundwater flow directions and rates. Also, as discussed above, groundwater flow directions and rates have varied over time near the Site due to groundwater mounding beneath the tailings and Bisco Lake, and operation of the CAP. The following observations can be made about current groundwater flow directions and rates in the BCA (**Figure J-3**):

- Groundwater flow directions along the northern LTSM boundary are generally to the west indicating minimal groundwater flux moving across the northern LTSM boundary.
- In Area 1, groundwater flow directions are generally to the northwest. The average groundwater velocity within the uranium plume in this area is 30 ft/y[8].
- In Area 2, groundwater flow directions are to the west. This area is near the leading edge of the uranium plume. As discussed above, saturated thickness in the BCA in this area is small. Average groundwater velocity within the uranium plume in this area is estimated to about 60 ft/y. Groundwater flux in this area is low due to small saturated thickness and could vary due to variations in saturated thickness.
- In Area 3, groundwater flow directions in the BCA are to the west-southwest. The west-southwesterly flow direction in this area indicates that groundwater discharges

[8] An effective porosity of 0.14 was assumed for estimation of groundwater velocity (Morris and Johnson, 1967).

into the LF zone[9]. A component of groundwater flow may also occur along the LF zone to the northwest in this area. Some groundwater flux in Area 3 appears to come from the BBM, as are result of the hydraulic gradient across the LVA caused by the higher groundwater elevations northeast of the LVA compared to southwest of the LVA.

- In Area 3, near MW-108, groundwater occurs under confined conditions (**Figure 6** of main report). MW-108 is located in Area 3 near the axis of the syncline. The relatively small groundwater flux from Area 2 flows toward the syncline near MW-108, where it will encounter a thicker zone of groundwater in the syncline. It is possible that groundwater in the deeper portion of the syncline is relatively immobile, compared to an active groundwater flow zone in the shallower portion of the confined groundwater zone near MW-108.
- In Area 4, groundwater flow directions are to the west-southwest. Groundwater conditions in this area are complex due to extensive fracturing, variations in the Kbc/Jmb contact elevation, the existence of the syncline, and proximity to the LF. Sources of groundwater inflow to this area include discharge from the BBM and probably flux from the southeast. Similar to Area 3, it is possible that deep groundwater in the syncline in this area is relatively immobile. Groundwater quality data suggest that active groundwater flow may be limited to shallow portions of the saturated zone in Area 4, as discussed later in **Appendix J**.
- In Area 4, the westerly flow direction indicates that groundwater discharges into the LF zone. A groundwater flow component along the LF zone to the northwest may also exist. The amount of groundwater discharge into the fault zone compared to along the fault zone is uncertain and will be evaluated further in the numerical groundwater model.

[9] The observation that groundwater is discharging to the LF zone is consistent with groundwater flow conditions inferred at the Lisbon Valley Mine, located southeast of the Site along the LF (Lisbon Valley Mining Company, undated).

Current Groundwater Conditions in BBM

Groundwater is encountered in the BBM at the Site based on reported historical data and data obtained from 5 new BBM monitor wells installed during the SSA. The BBM wells are screened in the upper 30 to 50 feet of the BBM. A residual groundwater mound appears to exist in the BBM beneath the tailings impoundments and in the area south of former Bisco Lake (**Figure 10** of main report; **Figure J-1**)[10]. This mound developed during mining as a result of infiltration of tailings and Bisco Lake water into the BBM as a result of the large hydraulic gradient that existed beneath these facilities during mining. The residual mounding in the BBM is believed to be slowly dissipating and groundwater is draining into the BCA, as conceptualized on **Figure J-2**.

In the area near the tailings impoundments and south of former Bisco Lake, groundwater elevations in the BBM decrease from southeast to northwest, indicating the existence of the residual groundwater mound, and indicating a component of groundwater flow to the northwest in the upper portion of the BBM. The residual groundwater mound is conceptualized to be superimposed on top of the ambient groundwater flow system in the BBM. Under ambient conditions, groundwater flows from northeast to southwest in the BBM and across the LVA as a result of the hydraulic gradient caused by the higher groundwater elevations northeast of the LVA compared to the elevation southwest of the LVA.

Water levels in monitor wells MW-110 and MW-111 are still recovering after drilling and well installation activities. The slow recovery indicates that the BBM has relatively low hydraulic conductivity in the area of these wells.

[10] The upward hydraulic gradient at the MW-102/MW-102DB well pair supports the concept of a groundwater mound in the BBM. Hydraulic heads are greater in MW-102DB, a BBM well, than in MW-102, a BCA well. The higher hydraulic head in MW-102DB reflects the higher head in the mound in the BBM.

Groundwater Conditions Southwest of Lisbon Fault

Contradictory evidence exists about groundwater conditions in the area southwest of the LF. In this area, older rocks (comprised of sandstone and shale units) are in contact with the BCA and BBM along the LF. The geology, hydrologic and geochemical conditions along LF are complex. Observations from SSA borehole B-2, located southwest of the LF, indicated that the strata encountered during drilling were dry (**Appendix B** and **Figure 6** of main report). However, in MW-121, located across the LF southwest of MW-116, groundwater is slowly entering the well. Additional monitoring of MW-121 is needed to confirm that the water entering the well is groundwater and not residual water introduced to the borehole during drilling. Historical evidence of dry conditions and the occurrence of groundwater southwest of the LF are reported in historic documents (Dames & Moore, 1980). The preponderance of evidence on groundwater conditions in the area southwest of the LF indicate that groundwater may occur in localized areas, but that an areally extensive groundwater system that represents a pathway for COC transport does not exist. This concept of a limited and variable groundwater system in the area southwest of the LF is consistent with the concept that regional groundwater flow is discharging into the LF zone.

Contaminant Occurrence and Transport in Groundwater

Transport of COCs has occurred in groundwater in the BCA at the Site. Transport of COCs to a degree that poses a risk to public health and the environment does not occur in the BBM at the Site. Plume maps of COCs in BCA groundwater are shown on **Figures 13 to 18** of the main report. The plume maps indicate that the source area of COCs is the tailings impoundments. In general, plume maps of uranium, selenium, TDS, and sulfate show that the area of impact of these constituents in the BCA is similar. Plume maps of arsenic and molybdenum indicate smaller areas of impact, indicating that transport of these trace metals in the BCA is attenuated compared to the other constituents. Two distinct COC plumes have been delineated: a north plume and a south plume. Uranium is the primary COC in

groundwater at the Site. The following observations can be made about uranium occurrence and transport in BCA groundwater at the Site (**Figure 15** of main report):

- The primary mechanism of uranium transport is advection in the direction of groundwater flow. Dispersion and dilution also occur at the leading edge of plume migration. Lateral spreading of the plume due to transverse dispersion is believed to be minimal. Dilution and longitudinal dispersion are believed to be the primary mechanisms attenuating plume expansion. Geochemical attenuation processes that slow uranium transport or transform the uranium could be occurring, but are not believed to be significant at the Site.
- In Areas 1 and 2, the north plume extends from the tailings impoundments to the area immediately west of MW-119. Assuming a plume length of 8,000 feet and a transport time of 40 years[11], the effective uranium transport velocity over the plume area has been about 200 ft/y. Uranium transport is not believed to be attenuated significantly in groundwater at the Site; therefore, it migrates at rates similar to groundwater. The estimated effective uranium transport rate is higher than estimates of current groundwater velocities within the uranium plume. The higher estimated effective uranium transport rate is believed to be the result of more rapid uranium transport during the period when groundwater mounding at the mine caused higher hydraulic gradients, or possibly the effect of preferential pathways of flow along fracture zones.
- Near the leading edge of the north plume, groundwater flux is small. The uranium plume in this area is discharging into the area where the syncline exists between the LVA and LF. Hydrologic conditions near the syncline are complex and the vertical extent of active groundwater flow in the syncline is uncertain. Conceptually, however, data indicate that saturated thickness in the syncline is relatively large, and, therefore, the plume may dilute as it flows into the syncline. Uranium concentrations

[11] Assumes tailings seepage began to impact groundwater north of mine in about 1974, which may be earlier than actually occurred because the upper tailings did not begin operation until around 1980. Also, the concept of effective uranium transport does not account for the effects of CAP pumping on plume migration. In the north plume, the leading edge of the plume was downgradient of the CAP extraction wells; therefore, the effect of CAP pumping on plume expansion may have been minimal.

in groundwater in the syncline are low compared to concentrations upgradient of the syncline (**Figure 15** in main report). Dilution in the area of the syncline may attenuate movement of the uranium plume in the future and prevent westward expansion of the plume.

- In Area 4, the south plume is smaller than the north plume. The source of the south plume appears to be primarily the lower tailings impoundment. An effective uranium transport velocity in the south plume cannot be readily estimated due to the effects of the CAP. The south plume may dilute as it migrates from the tailings area into the relatively large zone of saturation associated with the syncline.
- The south plume appears to be migrating toward the LF. Groundwater near the LF in the area southwest of the mine is acidic and highly mineralized, as demonstrated by water groundwater quality in MW-116. Historic evidence of acidic mineralized groundwater near the LF also exists (Lewis Water Consultants, Inc., 2001). Groundwater near the LF in the area northwest of the tailings impoundments is acidic and has elevated TDS, as demonstrated by groundwater quality in MW-107S. The acidic mineralized groundwater near the LF is naturally occurring and related to fault geochemical conditions. In the area southwest of the lower tailings impoundment, groundwater impacted by Site COCs may have or will mix with the naturally occurring acidic mineralized groundwater in the LF zone. The poor quality groundwater along the LF zone is unusable for domestic purposes apart from any impacts associated with the RAML Site.
- In the south plume, concentrations of the trace metal COCs, TDS, and sulfate are higher in deep BCA groundwater (near the Kbc/Jmb contact) than shallow BCA groundwater (**Figures 7 and 8** of main report). In addition to the observed downward hydraulic gradient observed today, other causes of the higher concentrations with depth could be groundwater density gradients and/or the historic CAP groundwater pumping from wells EF-3 and MW-11A. These wells were screened near the Kbc/Jmb contact in the area of the syncline and pumping from these wells created a cone of depression that partially dewatered the BCA in this area

(**Figure J-1**). Groundwater recovery within the cone of depression was slow; water level monitoring at well EF-3A indicates that the final stages of recovery may still be occurring (**Appendix G**, **Figure G-3**). Slow groundwater recovery indicates that limited groundwater flow occurs in the area of these wells. Further, the abrupt increase in TDS and trace metal concentrations with depth and the relatively limited extent of this notably poor quality groundwater may indicate that it is relatively immobile compared to shallower groundwater. In this area, active groundwater flow in response to hydraulic gradients may be limited to a relatively shallow zone. Migration of higher density groundwater (that contains high concentrations of trace metal COCs) into deeper portions of the syncline, where it becomes relatively immobile, may attenuate expansion of the south plume.

- Concentrations of COCs in groundwater in the BBM are generally low compared to the plume areas within the BCA. The only notable area of impacted groundwater in the BBM is immediately south of the lower tailings impoundment, as demonstrated by the elevated COC concentrations in BBM well MW-103. Groundwater in the BBM in the area northwest of the tailings impoundments has relatively low concentrations of COCs, indicating that groundwater flux from the BBM to the BCA would have low COC concentrations.

Background Groundwater Quality

The quality of groundwater that is considered "background" at the Site has been evaluated in previous investigations and was reassessed during the SSA. The License specifies background concentrations of COCs in groundwater at selected Site monitor wells[12]. The following observations can be made about background concentrations of COCs in groundwater at the Site:

[12] Background concentrations were specified for wells MW-5 (north of tailings) and MW-13 (south of tailings). For MW-5, specified background concentrations in mg/L were: arsenic = 0.05; selenium = 0.01, molybdenum = 0.07, and uranium = 0.01. For MW-13, specified background concentrations in mg/L were: arsenic = 0.066; selenium = 0.01, molybdenum = 0.05, and uranium = 0.02.

- A comprehensive data set sufficient to establish statistically valid background concentrations of COCs in groundwater does not exist. Background groundwater concentrations would need to be area specific at the Site due to naturally occurring variations in water quality.
- The best representation of background groundwater quality appears to be concentration data from wells RL-4 and RL-5. Water quality data from these wells indicate average TDS concentration of approximately 400 to 500 mg/L with low to nondetectable concentrations of trace metals. Groundwater quality in these wells has been relatively steady since they were first sampled in 2004.
- Some groundwater quality data exists for the Maple Leaf wells, which were located about 3 miles east of the mine and supplied water for the mining operation (Dames & Moore, 1981). The limited data from these wells indicate groundwater had TDS concentrations of around 500 mg/L and low to nondetectable concentrations of trace metals. Groundwater quality from the Maple Leaf Wells appears to be similar to that of wells RL-4 and RL-5.
- Some groundwater quality data was found for monitor wells installed near the time of mine startup (Dames & Moore, 1980)[13]. However, limited water quality data for these wells are available for the time period before mine operation began. The limited data from these wells are not useful in estimating background concentrations.
- As discussed above, groundwater quality along the LF is acidic and highly mineralized due to naturally occurring geochemical conditions along the fault. The extent of natural impact to groundwater quality from the poor quality water along the LF is difficult to determine. It is likely that ambient groundwater quality in the area between the mine and LF was poor before mining began and unusable for domestic purposes.

[13] Monitor wells MW-1 through 5. Information about these wells is limited in the historic documents.

In lieu of statistically derived background COC concentrations, current regulatory standards, where established, were used to delineate the plumes in the groundwater[14]. For compounds without regulatory standards, plumes were delineated by the lowest reasonable concentration where impacts from mining could be discerned.

Contaminant Exposure Assessment

The refined CSM indicates the following about the potential for public exposure to COCs in groundwater near the Site:

- Groundwater impacted by COCs has not migrated beyond the boundary of the LTSM. Further, the inferred directions of groundwater flow in areas of impacted groundwater indicate that future plume migration will remain inside the LTSM boundary.
- A complete exposure pathway between groundwater impacted by COCs and the public does not exist. Domestic groundwater use is restricted in the LTSM and private domestic groundwater wells were not identified in close proximity to the LTSM boundary.
- The potential for migration of the north plume to areas outside the LTSM is very low because the primary direction of plume migration is to the west toward the syncline. As the relatively small amount uranium mass migrates to the syncline it may dilute and concentrations will decrease. Given the relatively low groundwater velocities, the likelihood of lateral dispersion of the north plume beyond the LTSM boundary is low.
- The south plume occurs in an area of complex geology and naturally degraded groundwater associated with the LF. Groundwater near the LF zone is naturally acidic, highly mineralized, and unusable for domestic purposes. The apparent migration of the south plume to the LF does not increase public health or

[14] The Utah Ground Water Quality Standards for uranium, arsenic, and selenium are 0.03 mg/L, 0.05 mg/L, and 0.05 mg/L, respectively.

environmental risk because groundwater in the plume area and ultimate discharge area is unusable for domestic purposes due to naturally occurring poor quality groundwater.

The refined CSM is based on a review of relevant historic information and data, as well as the critical new information and data obtained from the SSA. The refined CSM is believed to sufficiently characterize groundwater flow and contaminant transport conditions to support groundwater modeling and development of revised compliance concentrations. The refined CSM, including assessment of potential exposure pathways, indicates that the threat of public exposure to COCs in groundwater from the Site in the future is very low. As a result, maintaining the long term monitoring remedy with new compliance concentrations is believed to be protective of public health and the environment.

REFEFERENCE CITED

Dames & Moore, 1973, **Report of Consulting Services, Tailings Pond Embankment Stability and Ground Water Geohydrology and Seepage Evaluation, Lisbon Valley Mine Tailings Disposal System Near La Sal, Utah**, October 1973.

_____, 1980, **Report of Preliminary Tailings Management Study, Lisbon Valley Mine Tailings Disposal System Near La Sal, Utah**, January 1980.

_____, 1981, **Report on Ground Water Investigations, Lisbon Mine Near La Sal, Utah**, February 1981.

EarthFax Engineering, Inc., 1984a, **Analysis of Pumping Test Conducted in the Vicinity of the Lisbon Uranium Mill**, January 1984.

_____, 1984b, **Remedial-Action Plan for Groundwater Contamination Control at the Lisbon Uranium Mill**, April 1984.

_____, 1984c, **Results of Additional Groundwater Investigations Conducted at the Lisbon Uranium Mill**, July 1984.

_____, 1989, **Recommended Corrective-Action Plan for Control of Groundwater Contamination at the Lisbon Uranium Mill**, March 1989.

Jacobs, M. and Kerr, P., 1965, **Hydrothermal Alteration Along the Lisbon Valley Fault Zone, San Juan County, Utah**, Geologic Society of America Bulletin, vol. 76, no. 4, 423 p., April 1965.

Lewis Water Consultants, Inc., 2001, **Application for Alternative Concentration Limits Source Materials License SUA-1119, RAMC Lisbon Facility, La Sal, Utah:** March 1, 2001.

Medlock Consulting, 1998, **Evaluation of the Groundwater Corrective Action Program at the RAMC Lisbon Facility**, November 1998.

Morris, D.A., and Johnson, A.I., 1967, Summary of hydrologic and Physical Properties of Rock and Soil Materials, as Analyzed by the Hydrologic Laboratory of the U.S. Geological Survey 1948-60: U.S. Geological Survey Water-Supply Paper 1839-D, 1967

Rio Algom Corporation, undated (likely early 1970s), **Applicant's Supplemental Environmental Report, Operating License Stage for Uranium Concentrator**.

TABLE J-1. SUPPLEMENTARY INFORMATION FOR REFINED CONCEPTUAL SITE MODEL

CONCEPTUAL MODEL ELEMENT	SUPPORTING INFORMATION	REFERENCES
HISTORICAL OPERATIONS		
Pre-mine characterization and water supply	• 2 shafts - No. 1 [access/haulage (2,665 ft bgs)] and No. 2 [vent (2,686 ft bgs)] • Sinking of No. 2 shaft delayed 4 months due to large water inflow from fault intersected by shaft; flooded shaft and haulage drift; flow rate was reported to be 400 gpm; water most likely from Entrada and Navajo sandstone • Mine water supply came from Maple Leaf Wells (80 gpm) and shafts • 5 monitor wells were drilled prior to mill startup (MW-1 through 5) • Carbonate (alkaline) leach process	• 3 • 3, 25 • 4, 25 • 4 • 12, 25
Tailings (primary source area)	• Tailings disposal locations, methods, and water content • Tailing seepage evaluation • Concerned about tailings seepage reaching preferential flow paths along LF • Maximum tailings seepage during operation estimated at 100 gpm; 2001 seepage rate estimated at 1.7 inches per year or about 47 gpm (modeling estimates); by comparison, calibrated areal natural recharge rate was 0.93 inches per year, so tailings drainage about 2 times areal recharge • Tailings thickness in source model was 55 feet • Tailings source: assumed lower tailings source contributes to BBM; upper tailings is source to BCA; for upper tailings where BCA dry, source applied to BBM; this approach is inconsistent with EarthFax work that indicated mound developed in BCA beneath tailings during operation, thereby representing a BCA source • Tailings located in small west-trending drainage basin • Tailings fines were placed beneath impoundments to minimize seepage • Seepage along north side of pond more rapid due to contact with fractured Kbc • Upper impoundment had average uranium concentration of upper tailings was 120 mg/L (Table 7-2); operated from 1972 to 1980 • Average uranium concentration in lower tailings was 140 mg/L (Tables 7-1); operated from about 1980 to 1989	• 4 • 6 • 6 • 12 • 12 • 14 • 24 • 24 • 24 • 14, 25 • 14, 25
Bisco Lake	• Bisco Lake was about 7 acres in area • Bisco Lake drained in 1990; mound dissipated by 1996 based on water level data in monitor wells • Bisco Lake was a large settling pond between the Alum Pond and barium chloride treatment pond; water from the barium pond was pumped to Redd Reservoir, a water storage pond northeast of the site; Redd Reservoir received a small amount of flow from East Coyote Creek	• 10 • 12 • 25

TABLE J-1. SUPPLEMENTARY INFORMATION FOR REFINED CONCEPTUAL SITE MODEL

CONCEPTUAL MODEL ELEMENT	SUPPORTING INFORMATION	REFERENCES
Corrective Action Program (CAP)	• Effectiveness of OW-UT-9 pumping on plume (pre-CAP) • CAP required by NRC in 1998 letter to RAML • Early mitigation efforts summer 1982 included grout curtain and 5 extraction wells (low yielding); both discontinued due to low performance • OW-UT-9 pumping began in November 1983; rate was 20 gpm in March 1989 due to dewatering • Several recommendations were made for more assessment, monitoring, and corrective actions • CAP approved by NRC in April 1990 • OW-UT-9 pumping rate decreased from 36 gpm in late 1983 to 2 gpm in 2000-2001 • CAP removed 483 million gallons of groundwater and almost 100,000 lbs of uranium through April 2000 (Table 1-2) • Evaluated changes in pre- and late-CAP water quality • DM80 wells and ML-2 did not appear to respond to CAP pumping in southern aquifer; combined with evidence of different water quality; water quality stratification also a factor in the variations observed in the south aquifer	• 9 • 10 • 10 • 10 • 10 • 12 • 12 • 12 • 12 • 14
GEOLOGY		
Regional conditions	• General information on geology and structures of Lisbon Valley; area near mine is complex with anticlines, synclines, and faults • Lisbon Valley in Paradox Basin • Uranium ore bodies southwest of the Lisbon Fault are above the water table • Information on prevalence of uranium ore • Entrada, Navajo, and Wingate sandstones are 1,000 to 2,000 feet below site; outcrop in W. Coyote Creek 5 miles northwest of site (not confirmed by M&A)	• 1, 5 • 1 • 22 • 5 • 12

TABLE J-1. SUPPLEMENTARY INFORMATION FOR REFINED CONCEPTUAL SITE MODEL

CONCEPTUAL MODEL ELEMENT	SUPPORTING INFORMATION	REFERENCES
Structures (Lisbon Fault and Lisbon Valley Anticline)	• Mineralogical evidence of alteration in fault zone; veinlets of pyrite; both copper sulfides and oxides copper minerals occur	• 2
	• Shafts and stopes of North Alice Mine cut through fault; smaller faults were observed 150 feet into hanging wall (in BCF); fault exposed in Blackbird Copper Pit	• 2
	• Uranium bearing Chinle formation exists on west side of fault	
	• Uranium mined in the Rattlesnake Pit from Salt Wash Formation of Morrison Formation	• 2
	• Uranium ore found in contact with fault in North Alice Mine	• 2
	• Silica-cemented BCF along fault altered to quartzite	• 2
	• Fractures identified parallel to LF	• 2
	• Description of fault zone indicates broken, highly fractured, mineralized gouge zones (*may be pathway for water movement*)	• 2
	• Solutions of acidic nature bleached the rocks in fault zone (*consistent with acidic water detected in MW-116*); thermal uranium mineralization may have occurred in fault zone	• 2
	• A series of smaller "En Echelon" faults parallel the larger Lisbon Fault on down thrown side	• 3
	• Uranium ore exists in LF gouge	• 21
HYDROGEOLOGY		
Burro Canyon Aquifer	• Prepared structure contour map (Kbc/Jmb contact) and fracture map based on 185 drill holes and 33 resistivity stations	• 8
	• BCF comprised of 2 zones: upper zone has more fine-grained material than lower zone; upper zone removed over LVA (*consistent with observed conditions at new wells and confined conditions observed at MW-108*)	• 12
	• Horizontal groundwater flow in the Kbc is limited by geologic structures; groundwater occurs as disconnected zones of water ponded on top of the Jmb; groundwater infiltrates downward along faults	• 20
	• BCF is 35 to 40 feet thick beneath tailings impoundments; outcrops of BCF are highly weathered and fractured	• 24
Brushy Basin Member	• Some K data for BBM wells	• 12

TABLE J-1. SUPPLEMENTARY INFORMATION FOR REFINED CONCEPTUAL SITE MODEL

CONCEPTUAL MODEL ELEMENT	SUPPORTING INFORMATION	REFERENCES
Hydraulic Conductivity	• MW-1 pumping test; sustained 45 gpm for 2.75 hours with no drawdown; water from well not indicative of tailings seepage	• 6
	• Methods and results of 1983 OW-UT-9 pumping test	• 7
	• OW-UT-9 pump test shows anisotropy oriented along fracture zone	• 8
	• Fracture K estimated at 10 ft/d; massive sandstone K estimated at 3 ft/d; storativity estimated at 0.016	• 8
	• Short term pumping test at LT-30 (southeast of lower tailings)	• 9
	• K of 3.6 ft/d (maximum value; affected by test limits)	• 9
	• K of unfractured sandstone approximately 3.2 ft/d (laboratory estimates ~ 1.5 ft/d)	• 10
GROUNDWATER FLOW		
Effect of Regional Structures	• Groundwater was not encountered during mining on the southwest side (upthrown block) of LF to depths of at least 300 feet	• 25
	• Wells screened in Wingate sandstone existed southwest and northwest of mine (across LF) produced water	• 25
	• A dry zone in the BCA exists due to the folding associated with the LVA; size of dry zone varies with time	• 12
Fractures	• Fractures near MW-1; drilling foam blown out of MW-1 during air-lifting in observation wells; lost circulation between 75 and 85 ft bgs (*consistent with conditions encountered at MW-115 drilling location*)	• 6
	• MW-1 is near transverse fracture inferred by EarthFax based on VLF survey	• 6
	• Fracture pattern and effects on groundwater flow	• 7
	• Site geology/stratigraphy and fracture patterns characterized based on very-low-frequency electromagnetic survey (VLF) and drill hole data	• 8, 9
	• Fractures are tight southeast of lower tailings; acts like equivalent porous medium	• 9
	• Fracture map prepared (major fracture consistent with M&A syncline/trough concept)	• 9
	• Conceptualized two primary fractures: Fracture A and Fracture B	• 9
Recharge/Discharge	• Regional discharge (*of groundwater?*) assumed to be along W. Coyote Creek NW of site?	• 12
	• LF assumed to be a barrier to groundwater flow; although some flow down fault zone could occur	• 24, 25
	• Primary recharge area is La Sal Mountains	• 24, 25

TABLE J-1. SUPPLEMENTARY INFORMATION FOR REFINED CONCEPTUAL SITE MODEL

CONCEPTUAL MODEL ELEMENT	SUPPORTING INFORMATION	REFERENCES
Flow directions	• Regional water level map shows groundwater flow interpreted towards LF (in early 1980s) • Trough on south side of LVA axis controls water level pattern, not fractures • Water Levels southeast of lower tailings (south of upper tailings) were similar in 1984 as today (*consistent with the stable water levels observed in this area since 2004*) • Shallow groundwater in BCA postulated to flow to synclinal trough southwest of mine; groundwater that reached the LF drained into Wingate sandstone across the fault or flowed along fault to northwest	• 6 • 9 • 9 • 24
Hydraulic gradients	• Hydraulic gradients during operation as high as 0.2 were measured west of lower tailings	• 25
Velocities	• Estimates of groundwater velocity northeast of LVA axis • Groundwater velocity estimated at 580 ft/y (under larger gradient than today due to tailings and Bisco Lake operation)	• 8 • 9
CONTAMINANT DISTRIBUTION AND TRANSPORT		
Early Water Quality Information	• Groundwater quality data indicated elevated sulfate, nitrate, and alkalinity at northwestern boundary of RAML property in late 1970s and early 1980s • Groundwater contamination was evident in late 1970s/early 1980s • Selenium was <0.001 mg/L in MW-5 in 1980 • Plume maps of uranium, sulfate, chloride, and other constituents (1983-84 conditions) • Map of natural uranium activity show effects of fractures A & B? (data not shown on map) • Water quality data for LT-12, near tailings	• 6 • 6 • 6 • 8 • 10 • 12
Contaminants of Concern	• Uranium primary COC; other COCs include selenium, molybdenum, and arsenic	• 12

TABLE J-1. SUPPLEMENTARY INFORMATION FOR REFINED CONCEPTUAL SITE MODEL

CONCEPTUAL MODEL ELEMENT	SUPPORTING INFORMATION	REFERENCES
Background Concentrations	• Surface water quality (pre-mining) • Background water quality based on Maple Leaf wells (Table 2 has data); Maple Leaf wells in different drainage basin • Background water quality southeast of tailing worse than north of tailings due to faulting (*consistent with data from DM-80-4 and MW-116*) • Background water quality (prior to and immediately after start up) indicated slightly elevated uranium concentration along fracture A; postulated to be due to naturally occurring conditions and copper mining (*consistent with observation at MW-116*) • Reevaluated background concentrations, resulted in higher background than NRC had established • DM80-4 well water quality used in revised background water quality data set • La Sal background well located 2 miles north of mine (information on well not found by M&A) • Utah comments on background concentrations (which appeared to be reasonable) were rejected by KOMEX • Water quality data are reported for some constituents starting in about 1968 to early 1970s; early data provide some indication of pre-mine water quality, but are insufficient to determine pre-mine background water quality • Water quality from the Maple Leaf Wells was proposed as “baseline” water quality to compare to post-startup groundwater quality to determine if contamination existed; total uranium = 0.003 mg/L; selenium = <0.001 mg/L; TDS = 720 mg/L; sulfate = 330 mg/L)	• 4 • 6 • 9 • 10 • 12 • 14 • 14 • 14 • 25 • 25
Transport processes	• Water quality correlation plots; high uranium correlated to high sulfate; sulfate important for uranium mobility was postulated • Assumed longitudinal dispersivity of 300 feet and transverse dispersivity of 30 feet in model; cites Gelhar paper • Comprehensive summary of uranium fate and transport provided by Colton and others, 2001	• 12 • 12 • 23
Lisbon Fault	• Attributed well DM80-4 (near LF) water quality to mineralization in Chinle, not Lisbon mine (*similar to conditions observed at MW-116, near LF*) • Harrison Well (location unknown) had similar WQ as DM80-4	• 6 • 14
Density Effects	• Water quality data, including field electrical conductivity data, indicate higher TDS water occurs in deeper groundwater, usually near Kbc/Jmb contact	• 12
Migration rates	• Transport velocities of nitrates/sulfates estimated at 670 and 390 ft/y	• 6

TABLE J-1. SUPPLEMENTARY INFORMATION FOR REFINED CONCEPTUAL SITE MODEL

CONCEPTUAL MODEL ELEMENT	SUPPORTING INFORMATION	REFERENCES
ORIGINAL COMPLIANCE CONCENTRATIONS AND QUALITATIVE EXPOSURE ASSESSMENT		
	• Classified groundwater at site as Class III based on estimated background arsenic concentration above standards	• 12
	• Point of Exposure locations based on 0.53 mg/L background uranium concentration for evaluation	• 12
	• ACLs were demonstrated to ALARA	• 12
	• ACLs may be one of 4 options; Lewis used 95% UCL from mean	• 12
	• Groundwater in BCA was designated as Class III at Lisbon Valley Copper Project by Utah DEQ	• 14
	• Transport simulations for POE locations used 0.94 mg/L as background uranium concentration (*too high and resulted in POEs too close to source?)*	• 14
	• Essentially discounted sensitivity analysis results and defaulted back to original POE/ACL results	• 14
	• Recomputed ACLs - only at POC wells OW-UT-9 and EF-3A	• 14
	• Provides guidance on ACL development; defines POC and POE	• 18
MISCELLANEOUS		
	• Information about North Alice Mine underground workings, which is located south of Lisbon Mine	• 13
	• Fig 1-2 shows approximate footprint of N. Alice Mine	• 14
	• Historical operations data at Alice Mine indicate Chinle Formation did not produce water	• 14
	• Energy Queen Mine o Energy Queen (EQ) mine is an underground uranium/vanadium mine located about 3.5 miles northwest of Lisbon mine o Perched groundwater and regional groundwater in the Dakota/BCF Formation at 120 to 220 ft bgs o Groundwater flow to the west-northwest at EQ mine o Several private wells near EQ mine o BCF/BBM contact about 6,300 ft msl at EQ mine o Slightly elevated uranium concentrations in groundwater; from former pond that operated in 1980s? o Document includes borehole logs o Document includes table of wells near EQ mine	• 16
	• Alice Mine was reported to be essentially dry; information about the incline angle, ore body (in sandstone)	• 19
	• Uranium plumes tend to reach steady state; uranium plume at Lisbon Mine one of the largest at Title II sites	• 23

TABLE J-1. SUPPLEMENTARY INFORMATION FOR REFINED CONCEPTUAL SITE MODEL

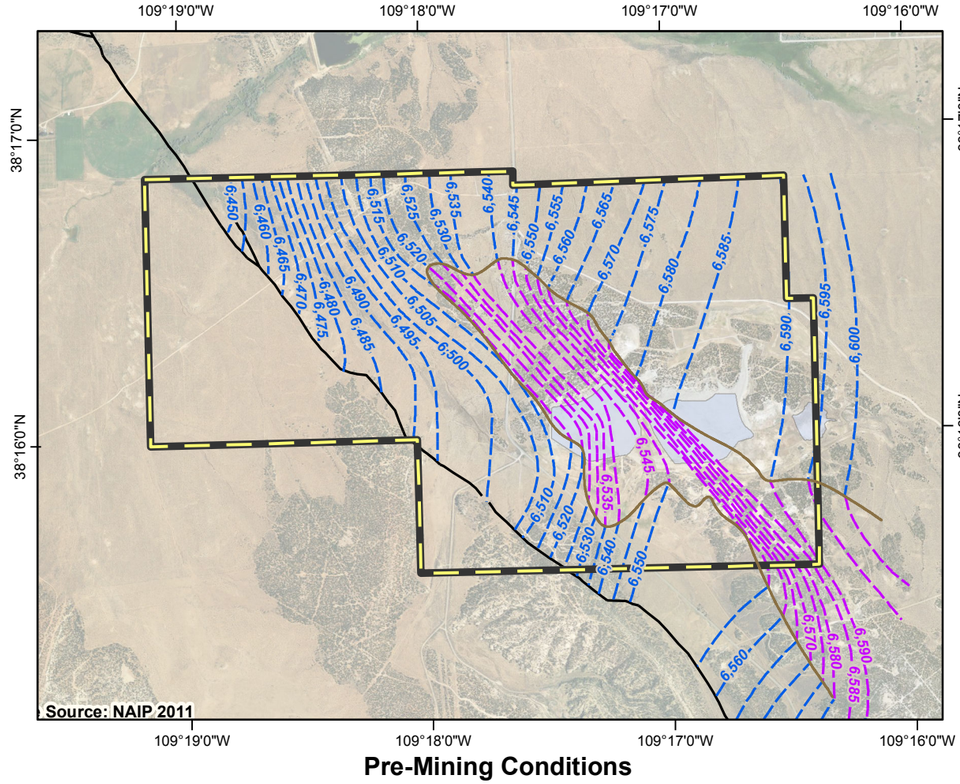
FOOTNOTES:

gpm – gallons per minute
ft bgs – feet below ground surface
LF – Lisbon Fault
RAML – Rio Algom Mining LLC
BBM – Brushy Basin Member of Morrison Formation
BCA – Burro Canyon Aquifer
Kbc – Burro Canyon Formation (also referred to as BCF)
mg/L – milligrams per liter
CAP – Corrective Action Program
lbs – pounds
M&A – Montgomery & Associates
LVA – Lisbon Valley Anticline
EQ – Energy Queen
NRC – U.S. Nuclear Regulatory Commission
ft/d – feet per day
K – hydraulic conductivity
ft/y – feet per year
Jmb - Brushy Basin Member of Morrison Formation
ALARA – As Low As Reasonably Achievable
UCL – upper confidence limit
DEQ – Department of Environmental Quality
ACL – alternate concentration limit
POE – point of exposure
POC – point of compliance
ft msl – feet above mean sea level
TDS – total dissolved solid
WQ – water quality
VLF – very low frequency

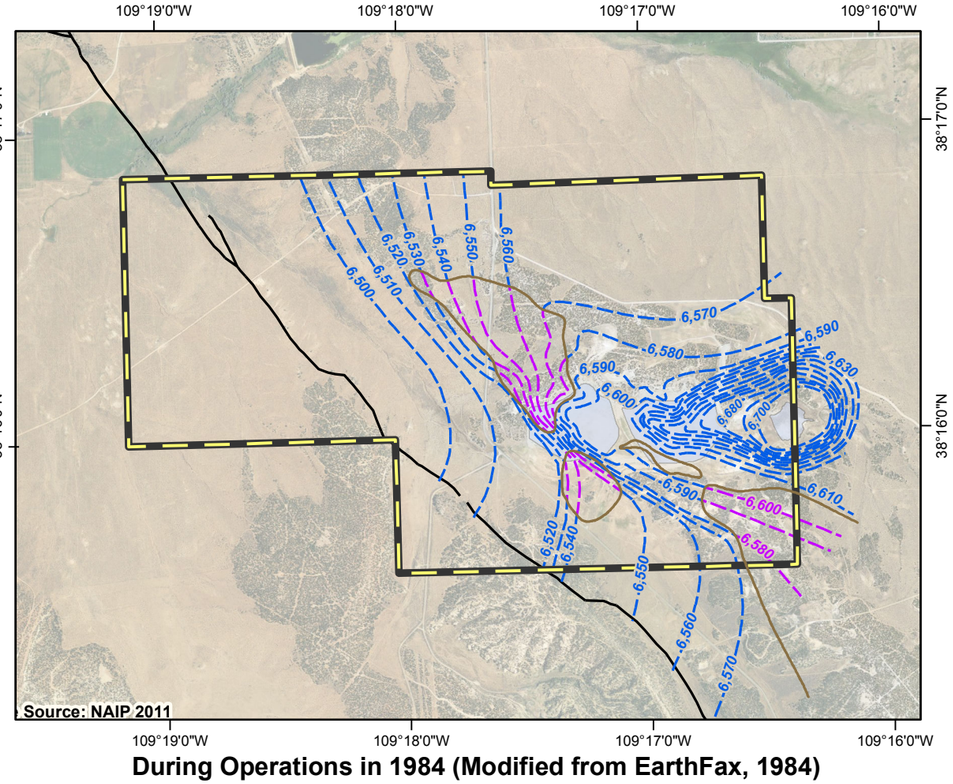
REFERENCES:

1. P. Byerly and H. Joesting, 1959, **Regional Geophysical Investigations of the Lisbon Valley Area, Utah and Colorado**, Geological Survey Professional Paper 316-C, 1959.
2. M. Jacobs and P. Kerr, 1965, **Hydrothermal Alteration Along the Lisbon Valley Fault Zone, San Juan County, Utah**, Geologic Society of America Bulletin, v. 76, p. 423, April 1965.
3. Mining Magazine, 1977, **Uranium Mining at Lisbon, Utah**, August 1977.
4. Rio Algom Corporation, undated (likely early 1970s), **Applicant's Supplemental Environmental Report, Operating License Stage for Uranium Concentrator**.
5. Huber, 1981, **Geology of the Lisbon Valley Uranium District, Southeastern Utah**, New Mexico Geological Society Guidebook, 1981.
6. Dames & Moore, 1981, **Report on Ground Water Investigations, Lisbon Mine Near La Sal, Utah**, February 1981.
7. EarthFax Engineering, Inc., 1984, **Analysis of Pumping Test Conducted in the Vicinity of the Lisbon Uranium Mill**, January 1984.
8. EarthFax Engineering, Inc., 1984, **Remedial-Action Plan for Groundwater Contamination Control at the Lisbon Uranium Mill**, April 1984.
9. EarthFax Engineering, Inc., 1984, **Results of Additional Groundwater Investigations Conducted at the Lisbon Uranium Mill**, July 1984.
10. EarthFax Engineering, Inc., 1989, **Recommended Corrective-Action Plan for Control of Groundwater Contamination at the Lisbon Uranium Mill**, March 1989.
11. Medlock Consulting, 1998, **Evaluation of the Groundwater Corrective Action Program at the RAMC Lisbon Facility**, November 1998.
12. Lewis Water Consultants, Inc., 2001, **Draft Final Application for Alternate Concentration Limits, Source Materials License SUA-1119, RAMC Lisbon Facility, La Sal, Utah**, February 2001.

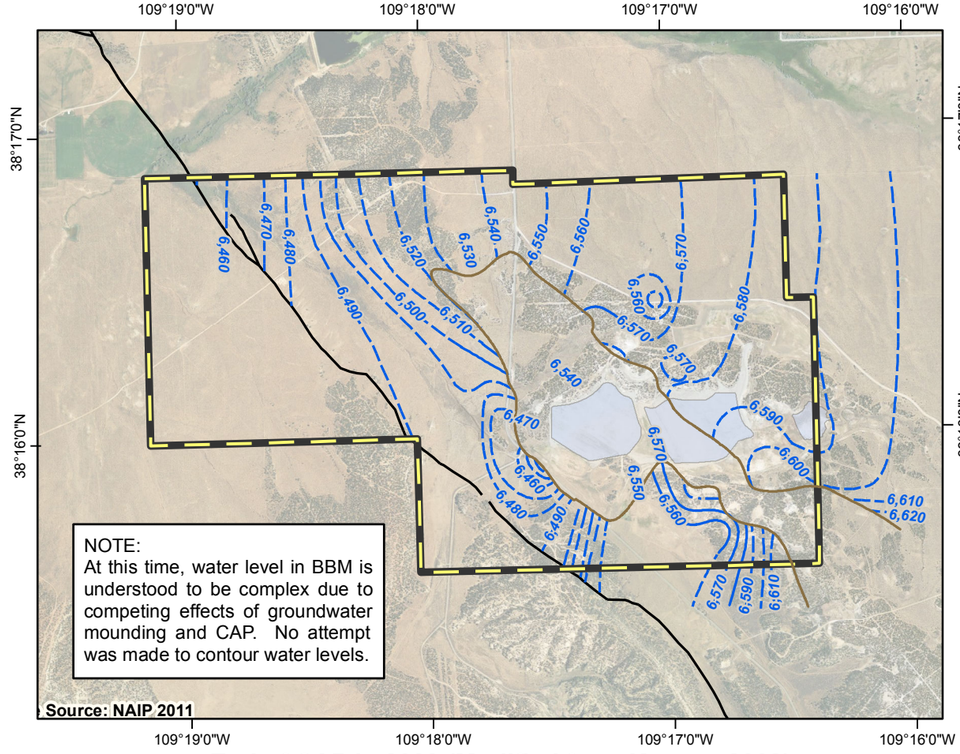
13. Bierschied (Rec-Tech), 2003, **Letter to Komex about North Alice Mine**, August 2003.
14. KOMEX, 2003, **Response to Request for Additional Information (RAI), Application for Alternate Concentration Limits, Source Materials License SUA-1119**, October 2003.
15. REFERENCE OMITTED
16. Tetra Tech, 2008, **Energy Queen Mine Ground Water Discharge Permit Application and Supporting Documents**, October 2008.
17. C. H. Guernsey & Company, 2013, **Final Construction Completion Report, Lisbon Mine, Utah**, November 2013.
18. Konwinski, G., et.al., undated, **Proposed NRC Staff Final Technical Position on Alternate Concentration Limit, Title II Uranium Mill Sites**.
19. Sharp Bits, undated (likely 1968), The Alice Uranium Mine.
20. Lisbon Valley Mining Company, LLC, undated, **Ground Water Discharge Permit Modification, No. UGW370005, Statement of Basis**.
21. Chenoweth, 2006, **Lisbon Valley, Utah's Largest Uranium District**, Utah Geological Association Publication 32, p. 534-550.
22. Chenoweth, 1990, Lisbon Valley, Utah's Premier Uranium Area, A Summary of Exploration and Ore Production, Utah Geological and Mineral Survey, Open-File Report 188, July 1990.
23. Colton and others, 2001, **Historical Case Analysis of Uranium Plume Attenuation**, NUREG/CR-6705, SAND2000-2554, January 2001.
24. Dames & Moore, 1973, **Report of Consulting Services, Tailings Pond Embankment Stability and Ground Water Geohydrology and Seepage Evaluation, Lisbon Valley Mine Tailings Disposal System Near La Sal, Utah**, October 1973.
25. Dames & Moore, 1980, **Report of Preliminary Tailings Management Study, Lisbon Valley Mine Tailings Disposal System Near La Sal, Utah**, January 1980.



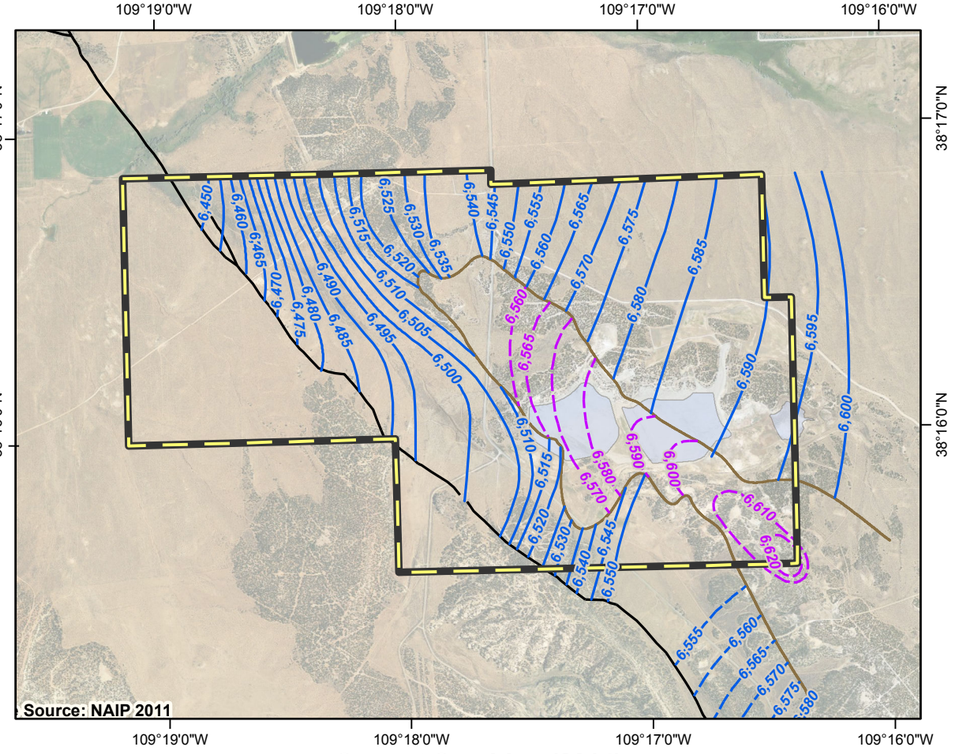
Pre-Mining Conditions



During Operations in 1984 (Modified from EarthFax, 1984)



End of CAP in 2003 (Modified from Komex, 2003)



Current Condtion (2014)

EXPLANATION

- 6,650 — Groundwater elevation in Burro Canyon Aquifer, in feet above mean sea level (ft, msl); dashed where inferred. (See note for details.)
- 6,600 — Groundwater elevation in Brushy Basin Member (ft, msl); dashed where inferred.
- Burro Canyon dry zone
- Long Term Surveillance and Maintenance Boundary
- Lisbon Fault

NOTE:

CAP = Corrective Action Program

Dashed contours are inferred based on previously published work and/or current understanding of Site dynamics.

N

0 1,000 2,000 3,000 4,000
Feet

RIO ALGOM MINING LLC
LISBON FACILITY

CONCEPTUALIZED GROUNDWATER ELEVATIONS

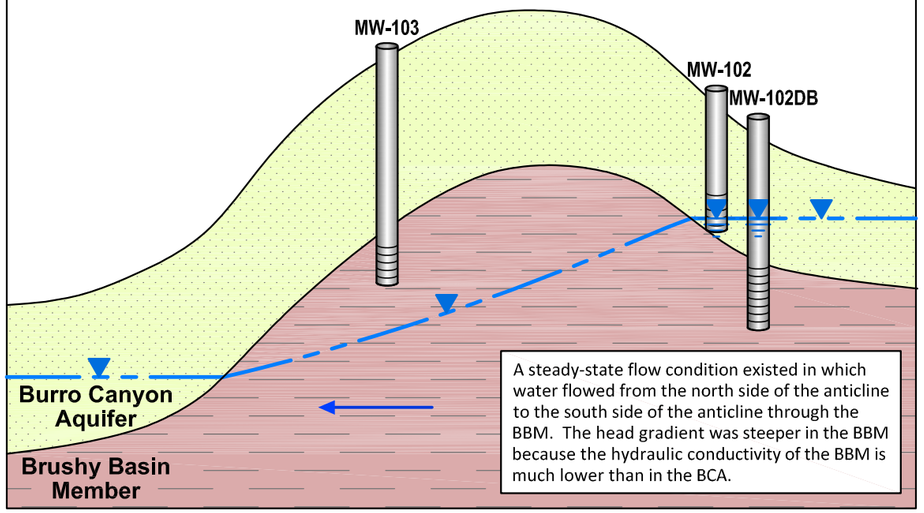
MONTGOMERY & ASSOCIATES
Water Resource Consultants

2014

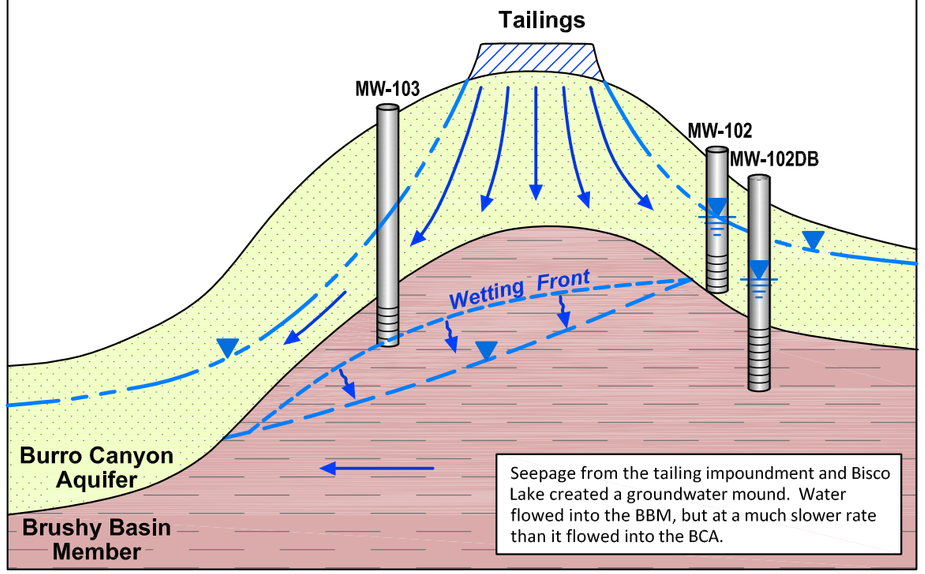
FIGURE J-1

GIS\1350.22\Phase2_Report\WaterLevel_Composite.mxd\16July2014 NAD27_SP_Utah_So.

Pre-Mine Condition
Steady State



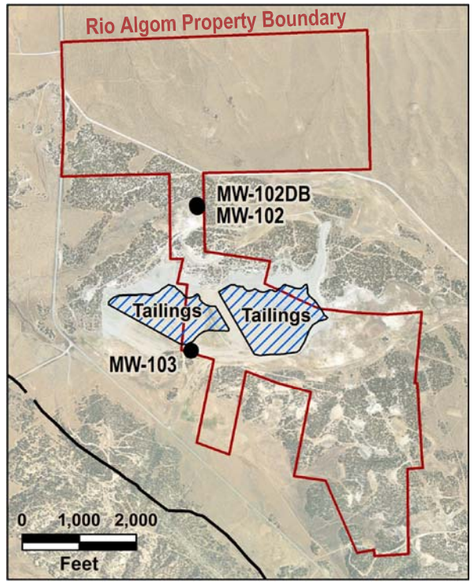
Active Mine Condition
Mound Development



EXPLANATION

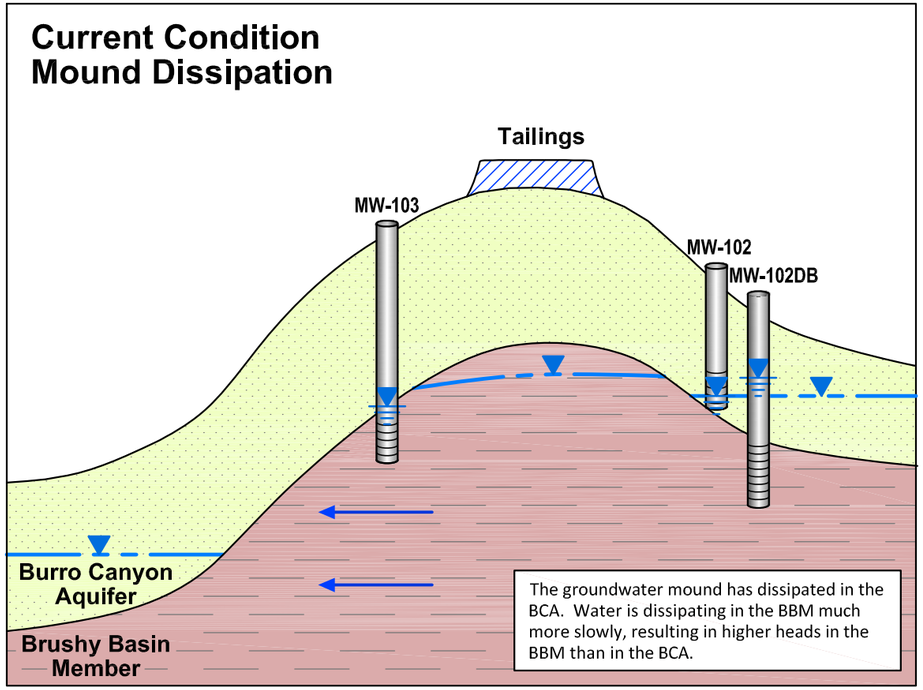
- Burro Canyon Formation
- Brushy Basin Member of the Morrison Formation
- Mill tailings
- Groundwater level
- Generalized flow direction

NOTE: This schematic is for illustrative purposes only, and is not to scale. The three wells shown were not present during pre-mine or active mine periods and are displayed only to illustrate the conceptual model.

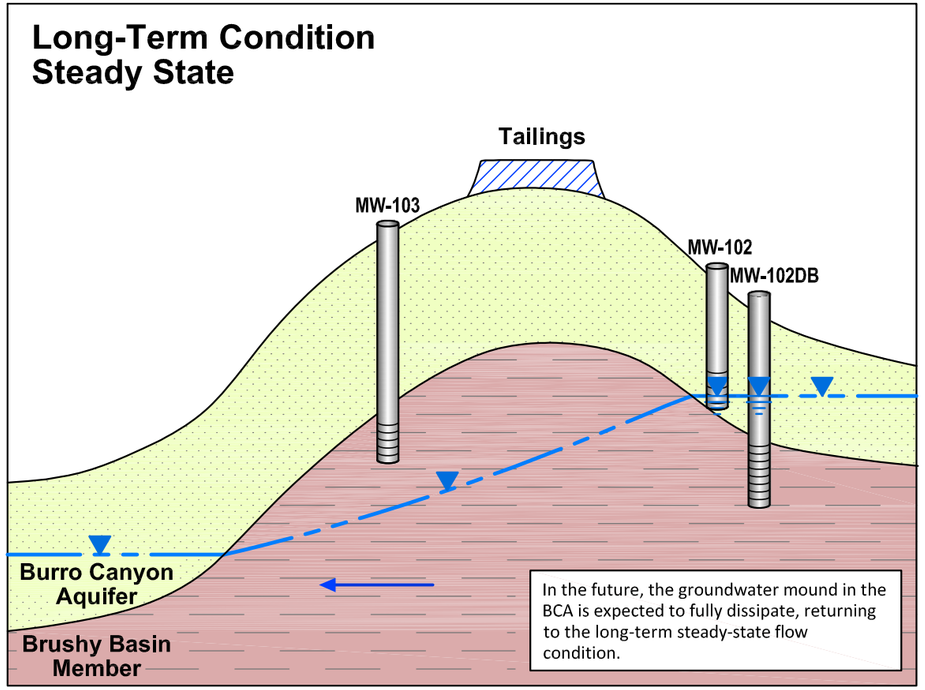


LOCATION MAP

Current Condition
Mound Dissipation



Long-Term Condition
Steady State



RIO ALGOM MINING LLC
LISBON FACILITY

CONCEPTUAL MODEL OF GROUNDWATER FLOW IN ANTICLINE

2014

MONTGOMERY & ASSOCIATES
Water Resource Consultants

FIGURE J-2

Drafting\1350.24\4_StageMineProgression\16July2014

109°19'0"W 109°18'0"W R. 24 E. 109°17'0"W 109°16'0"W

38°17'0"N

T. 29 S.

38°16'0"N

LISBON VALLEY ANTICLINE

LISBON FAULT

D U

Area 1

Area 2

Area 3

Area 4

Lower Tailings

Upper Tailings

Former Bisco Lake

Image Source: NAIP 2011

EXPLANATION

- Burro Canyon dry zone
- Long Term Surveillance and Maintenance Boundary
- Anticline fold axis; arrow shows direction of plunge
- Syncline fold axis; arrow shows direction of plunge
- Direction of groundwater flow in BCA

N

0 500 1,000 1,500 2,000

Feet

RIO ALGOM MINING LLC

LISBON FACILITY

CONCEPTUAL GROUNDWATER FLOW AREAS

MONTGOMERY & ASSOCIATES

Water Resource Consultants

2014

FIGURE J-3

GIS\1350.22\Phase2_Report\GW_FlowZones\16July2014 NAD27_SP_Utah_So.

MONTGOMERY & ASSOCIATES

APPENDIX K

GROUNDWATER MODELING

MONTGOMERY & ASSOCIATES

APPENDIX K

GROUNDWATER MODELING
RIO ALGOM MINING LLC, LISBON FACILITY

This appendix describes groundwater flow and uranium transport modeling conducted for the Rio Algom Mining LLC (RAML) Lisbon Facility (Site) located near La Sal, Utah. The modeling was conducted as part of the Supplemental Site Assessment (SSA). The SSA was conducted in response to an out-of-compliance condition at the Site[1]. The objectives of the SSA were to enhance hydrogeologic characterization of the Site and refine the conceptual Site model (CSM).

MODELING OBJECTIVE AND CONCEPTUAL APPROACH

Groundwater flow and transport modeling was conducted to select the most appropriate well locations for compliance monitoring and support development of revised compliance concentrations at selected compliance wells. The model was based on the refined CSM (**Appendix J**).

Modeling Objectives

The model objectives were to:

1. Develop a calibrated model of the Site to simulate groundwater flow and uranium transport.
2. Evaluate the likelihood of uranium migration beyond the Long Term Surveillance and Maintenance (LTSM) boundary.
3. Project future uranium concentrations at monitor wells selected for compliance monitoring in support of the development of new compliance concentrations.

[1] The out-of-compliance condition resulted from exceedance of the Target Action Level for uranium at Trend Well RL-1. Uranium is the primary compound of concern in groundwater at the Site.

Modeling Approach

A first phase of modeling (Phase 1) was conducted to help identify data gaps and critical conceptual uncertainties (M&A, 2012). Results of the Phase 1 modeling indicated that several critical conceptual uncertainties existed at the Site. These uncertainties included the structure of the Lisbon Valley Anticline (LVA) northwest of the tailings and the hydraulic properties of the Lisbon Fault (LF). The SSA field program was developed to address these conceptual uncertainties and fill data gaps related to hydraulic properties, groundwater conditions, and extent of constituents of concern (COC) in groundwater. The goal of the field program was to acquire useful new data to constrain uncertainty to a manageable level and improve confidence in the model projections.

Data collected during the SSA field program were used to reduce conceptual uncertainty. In particular, data indicate that the LVA plunges to the northwest allowing groundwater to flow from east to west across the anticline rather than to the northwest outside the Long Term Surveillance and Maintenance (LTSM) boundary. In addition, data indicate that groundwater is discharging into the LF at the Site. The refined CSM, which includes information about the LVA and LF, is summarized in **Appendix J**. As a result of the Phase 1 modeling and SSA field program, the LVA and LF conceptual uncertainties were not included in Phase 2 modeling.

Phase 2 modeling used the Null-Space Monte-Carlo method (NSMC) (Tonkin and Doherty, 2008) to develop a set of uniquely calibrated groundwater flow models. Fundamental to NSMC is the realization that even in highly characterized hydrogeologic systems, meaningful uncertainty still exists. In this case, many calibrated models can be developed that are equally representative of Site conditions. Each of these calibrated models can be used to make unique predictions. In lieu of choosing one of these models to make decisions, NSMC allows the collective findings of all models to be considered in the decision making process. NSMC is an advanced probability-based modeling method that improves

upon the traditional Monte Carlo method, which often makes predictions based on a set of calibrated and uncalibrated models.

MODEL DEVELOPMENT

The United States Geological Survey groundwater modeling software, MODFLOW-USG, (Panday and others, 2013) was used to simulate transient groundwater flow and uranium transport at the Site. Uranium transport in groundwater was modeled as a conservative process and therefore attenuation processes[2] were not simulated.

Model Domain and Grid

The model domain is illustrated in **Figure K-1**. The model domain is divided into 100 foot by 100 foot grid cells and oriented north-south. The model domain extends approximately 1,000 feet north of the northern LTSM boundary and 1,000 feet east of eastern LTSM boundary. To the southwest the active model boundary is the LF. The western boundary is configured to simulate flow north and south of the LVA and associated dry zone in the BCA. The dry zone of the BCA is inactive in the model. The model is divided into 2 layers. **Figures K-2 and K-3** illustrate the active model domain in layers 1 and 2, respectively.

Hydrostratigraphic Units and Model Layers

The primary hydrostratigraphic unit at the Site is the Burro Canyon Aquifer (BCA). The BCA is underlain by the Brushy Basin Member of the Morrison Formation (BBM), a regional aquitard over 300 feet thick. Site data indicate that the BBM generally has a low

[2] Including geochemical degradation/transformation and sorption/desorption.

hydraulic conductivity and extensive contaminant transport does not occur in the BBM. Therefore, groundwater flow and contaminant transport in the BBM were not modeled.

The model simulates groundwater flow and contaminant transport in the BCA. The BCA was divided into two model layers to account for the varied stratigraphy observed during the SSA field program and to properly simulate the confined zone near well MW-108. Layer 1, the upper layer, represents the shallow fine grained sedimentary units identified in the BCA. Layer 1 is only saturated in a small portion of the model domain along the axis of the syncline and near the northeastern boundary of the model domain where BCA saturation thickens. Layer 2, the lower layer, represents the coarser sandstone unit in the BCA and is the primary unit where flow and transport occurs. Contours of the bottom of layer 1 are presented in **Figure K-4**. Structure contours of the bottom of layer 2 are presented in **Figure 5** in the main report.

While the BBM is not explicitly modeled, Site data indicate that groundwater flows from northeast to southwest through the LVA and into the BCA south of the LVA. This component of flow is simulated in the model as discussed later in this appendix.

Time Discretization

Groundwater flow and uranium transport was simulated from the cessation of the corrective action program (CAP) in 2004 till the year 2215, approximately 200 years from now. The period from 2004 to 2014 is the calibration period. The period from 2015 to 2215 is the projection period. A 200-year projection period was used to be consistent with the current radioactive materials license. Uncertainty in the model projections increases with time during the 200-year projection period.

The calibration and projection periods are divided into 3-month stress periods during which model stresses are assumed to be constant. An adaptive time stepping scheme was used

to automatically maximize time step length, while ensuring that the model converges in each time step.

Boundary Conditions

Four types of boundary conditions were used in the model: (1) no-flow, (2) constant head, (3) constant concentration, and (4) drains. **Figures K-2 and K-3** illustrate the boundary conditions in layers 1 and 2, respectively.

Model layer 1 was included so that the confined zone near MW-108 could be properly simulated and so that the shallow interbedded portion of the BCA could have lower hydraulic conductivities than the deep coarser zone. However, most of model layer 1 is not saturated, particularly along the boundaries. For this reason, model layer 1 only has no-flow boundaries. From this point forward, the description of boundary conditions is only referring to model layer 2, where the majority of the groundwater flow and transport take place.

No-Flow Boundaries

The northern boundary of the model is represented with a no-flow boundary condition. A no-flow boundary was used because the boundary is oriented parallel to an east-west groundwater flow line that is inferred to coincide with northern model boundary based on the 2014 groundwater elevation contours (**Figure 10** of main report). Additionally, no-flow cells were used for the dry zone of the BCA along the crest of the LVA.

Constant Head Boundaries

Groundwater conditions in the vicinity of the Site are relatively steady; therefore, constant head boundaries along portions of the outer model boundary were used. Constant head cells are used along the southern and eastern boundaries north of the anticline and along the eastern boundary south of the LVA. The heads assigned to the constant head cells

represent interpolated heads at boundary locations from the 2014 water level contours presented in the main report.

Constant Concentration Boundaries

Constant concentration boundary conditions are assigned to the upper and lower tailings impoundments, which are the sources of contamination. The upper tailings were assigned a constant continuous concentration of 160 milligrams per liter (mg/L) and the lower tailings were assigned a constant continuous concentration of 60 mg/L. The concentrations assigned to these boundaries are conservative and higher than concentrations detected in BCA groundwater near the upper and lower tailings in the past decade. However, comparable concentrations existed in BCA groundwater near the upper and lower tailings historically. Modeling the source as continuous is conservative because it is expected that the source concentration will diminish over the 200-year model projection period as tailings drainage diminishes and eventually ceases. The tailings are covered with impervious material to minimize infiltration.

Drain Boundaries

Drain cells were used to simulate flow into the fault. In MODFLOW-USG, a drain is a head dependent boundary condition. Drain elevation and conductance terms are assigned to each drain cell. If the head in the drain cell is beneath the drain elevation, the drain will act as a no-flow boundary. However, if the head rises above the drain elevation, the groundwater moves out of the model at the drain cell. The drain elevations were set to the elevation of interpolated water levels at the drain boundary based on the 2014 water level contours presented in the main report. Drain conductance is considered a calibration variable.

Hydrogeologic Properties

Hydrogeologic properties assigned in the model include hydraulic conductivity, specific yield, and recharge.

Hydraulic Conductivity

A uniform fixed hydraulic conductivity value of 0.5 feet per day was used in layer 1. Limited flow and transport occur in model layer 1. In model layer 2, hydraulic conductivity is a calibration variable, hence the distribution of hydraulic conductivities was derived during calibration and is unique for each model. However, for all models, the distribution of hydraulic conductivities is based on measured hydraulic conductivity values from the Site. Vertical hydraulic conductivity was fixed to one-tenth of horizontal hydraulic conductivity, based on the results of laboratory estimates of vertical hydraulic conductivity.

Specific Yield

Specific yield is considered a calibration variable, hence the specific yield distribution was derived during calibration and is unique for each model. Specific yield was constrained to a range of 0.1 to 0.35 during calibration. Where the BCA is confined in the model, a uniform fixed value of 1×10^{-6} was used for specific storage.

Recharge

Distributed recharge from precipitation is considered negligible in the model domain and was not simulated. However, recharge cells were used to simulate flow entering the BCA along the south side of the LVA (**Figures K-2 and K-3**). This recharge boundary simulates flow through the LVA as described in the CSM (**Appendix J**). Recharge is considered a calibration variable because the amount of flux through the LVA is uncertain. Darcy's Law, using low and high measured values for each component, was used to limit the amount of flux through the LVA during calibration. Results of the analysis indicated that recharge in a single model cell could range from less than 1 cubic feet per day (ft^3/day) to approximately 1,100 ft^3/day. The range in total flux through the LVA along the recharge boundary is approximately 0.4 gallons per minute (gpm) to 468 gpm. Recharge is applied to the highest active model layer in each time step.

Transport Properties

Uranium transport properties assigned in the model include effective porosity and dispersivity.

Effective Porosity

Measured total porosities in the BCA from core analysis averaged 19 percent. Complete records of porosity estimates are provided in lab reports found in **Appendix C**. Based on lab estimates, uniform fixed effective porosity values of 0.08 and 0.14 were used in layers 1 and 2, respectively.

Dispersivity

Uniform fixed values of 150 and 15 feet were used for longitudinal and transverse dispersivity, respectively. This estimate is consistent with estimates provided in published literature on the topic (Gelhar and others, 1992).

Initial Conditions

Initial heads and uranium concentrations were assigned in the model.

Initial Heads

Initial heads were assigned in layers 1 and 2 based on the 2004 groundwater elevation contours as shown in **Figure K-5**.

Initial Concentrations

Initial uranium concentrations were assigned in layers 1 and 2 based on the 2004 uranium concentration contours shown on **Figure K-6.** The contours were based on maximum measured uranium concentrations from 2003 and 2004. While stratification of uranium concentration is now known to exist in the BCA, the vertical distribution of initial

concentrations was uniform throughout model layers 1 and 2. Using a uniform vertical concentration is conservative because the model initially has more uranium mass than was actually present at the Site in areas where uranium concentrations are vertically stratified.

MODEL CALIBRATION

Model calibration included two steps: (1) a manual calibration phase and (2) an automated calibration phase using the NSMC method. During the manual calibration phase, numerous model simulations were conducted with a range of parameters to understand the behavior of the flow and transport model. This calibration phase ensured that overall model behavior mimicked the behavior expected based on the CSM. A baseline model was developed during the manual calibration phase. The baseline model reasonably simulated groundwater elevations and uranium concentrations during the calibration period and was used to begin the automated NSMC calibration. NSMC was used to calibrate groundwater flow models only. The groundwater flow field from each calibrated groundwater flow model was used to run the uranium transport model.

The model was calibrated to available groundwater elevation data for the period 2004 to 2014. NSMC was used to calibrate a set of uniquely parameterized models so that each model met a minimum acceptable level of calibration. Hydraulic conductivity, specific yield, drain conductance, and recharge were calibration variables in the NSMC calibration.

The calibration process included 170 attempted model calibrations. Of the 170 calibration attempts, 65 groundwater flow models were deemed acceptably calibrated for use simulating future transport of uranium. Models were considered acceptably calibrated if the sum of squared errors (SSEs) between measured and simulated groundwater elevation was of less than 10,000. This SSEs threshold resulted in a scaled root mean square error (RMSE) of less than 3 percent for all calibrated models, which is less than the industry convention of

10 percent. **Table K-1** defines calibration terms and presents calibration statistics for all acceptably calibrated groundwater flow models. Each of these calibrated models was uniquely parameterized and produces unique predictions. Each calibrated flow model was run to project contaminant transport using the same transport parameters (as discussed above).

TABLE K-1. CALIBRATION STATISTICS FOR ACCEPTABLY CALIBRATED MODELS

CALIBRATION STATISTIC	AVERAGE	MINIMUM	MAXIMUM
Mean Residual [1]	-0.04	-0.64	0.67
Maximum Residual	9.32	7.80	10.91
Minimum Residual	-8.64	-10.87	-7.69
Standard Deviation	3.36	3.14	4.07
Sum of Squared Errors	6,478	5,646	9,472
Scaled Root Mean Squared Error [2]	2.3%	2.1%	2.7%

Table Notes
1 – Residual is the difference, or error, between measured and simulated head value.
2 – The scaled RMSE is calculated by first calculating the residual between each model projected head and each observed head. Each of these residuals is then squared. The squared residuals are then summed and divided by the number of observations to calculate the mean squared error (MSE). The square root of the MSE is then calculated. Finally, this number is scaled, by dividing the RMSE by the observed range in head during the calibration period. Values are then multiplied by 100 to calculate a percentage.

Calibrated model parameters are summarized in **Table K-2**.

TABLE K-2. SUMMARY OF CALIBRATED MODEL PARAMETERS

PROPERTY	RECHARGE ALONG LVA [gallons/day]	DRAIN CONDUCTANCE [feet^2/day]	SPECIFIC YIELD [UNITLESS]	HORIZONTAL HYDRAULIC CONDUCTIVITY [feet/day]
Mean	60	3,130	0.21	15.7
Median	60	285	0.15	0.46
Min	47	10	0.10	0.001
Max	89	27,600	0.35	799

Since the calibrated model parameters are representative of 65 calibrated groundwater flow models, it is difficult to present model parameters on a map as is commonly done in a

model report. In lieu of presenting results on a map, **Figure K-7** presents histograms of the measured hydraulic conductivity values and the model calibrated hydraulic conductivity values. The plot shows the normalized frequency of hydraulic conductivity in measured and modeled data. The distribution of modeled hydraulic conductivities is representative of values used in all 65 calibrated models. Notable observations on the figure include:

- Overall, the range and distribution of hydraulic conductivities used in the model reasonably match the measured range and distribution.
- The range of hydraulic conductivity values used in the model extends beyond the range of measured hydraulic conductivity values. This is to be expected because only 74 estimates of hydraulic conductivity are available; however, the actual minimum and maximum hydraulic conductivities in the BCA are expected to be somewhat higher and lower than the measured maximum and minimum values, respectively.
- The model hydraulic conductivity values are skewed somewhat lower than the measured values. This is likely due to the spatial bias present in the measured hydraulic conductivity dataset. It is apparent on **Figure 9** of the main report, that significantly more hydraulic conductivity data is present in the areas around the upper and lower tailings where many historical wells existed. These areas have somewhat higher hydraulic conductivities than the areas where data are sparser in the western portion of the model domain. In contrast, the hydraulic conductivity values used by the model are evenly distributed throughout the model domain. Thus, the distribution of measured values likely over represents high values and under represents low values.

MODEL PROJECTIONS

Each of the individual calibrated groundwater flow models is representative of Site conditions. Using a traditional deterministic modeling approach, any one of these models

would be considered acceptable for projecting uranium transport at the Site. Using the NSMC approach all calibrated models are considered equally likely and acceptable for projecting uranium transport at the Site. Therefore results from all models are used to simulate uranium transport and support development of new compliance concentrations.

Figures K-8 through K-14 illustrate the maximum projected plume (from all models) for the years 2020, 2025, 2035, 2065, 2115, 2165, and 2215. The plume maps presented were developed using the following process:

1. Assemble the distribution of concentration projected by each calibrated model for the year specified.
2. For each model cell, identify and retain the maximum concentration predicted by any of the models. Map these "maximum" concentrations using a color flood.
3. Contour the 0.03 mg/L concentration for the mapped "maximum" plume.
4. Repeat for each year presented.

Figure K-15 illustrates the maximum projected uranium plumes at the above times. The plume outlines represent the 0.03 mg/L concentration contour. The concentration of 0.03 mg/L of uranium is equivalent to the current Utah Ground Water Quality Standard for uranium. For each time, the contours were developed using the maximum concentration predicted by any of the 65 calibrated models using the process described above. This figure shows the projected advance of the "maximum" plume over the next 200 years.

Figure K-16 shows locations in the model grid where projected uranium concentration was monitored during the 200-year simulation period. **Figures K-17 through K-36** show time-series plots of concentration at monitoring locations where plume impacts are projected. The time-series plots show the range in projected concentration for all calibrated models. Each plot shows the minimum, maximum, median, 25th, and 75th percentile projections at the specified location. The minimum and maximum lines indicate how the projected range of uranium concentration develops through time. The median (50th percentile), 25th percentile,

and 75th percentile indicate how model projections are distributed within the range and indicate if the distribution of model projections is asymmetric.

Sensitivity Analysis

A focused sensitivity analysis was conducted. The objective of the sensitivity analysis was to evaluate the effect of higher source area concentrations on projected uranium plume movement. A model simulation was conducted with source concentrations at the upper and lower impoundments of 1,600 and 600 mg/L (a factor of 10 higher than base simulations), respectively.

Summary of Model Projections

The following conclusions can be made based on the model projections. Two distinct uranium plumes have been delineated in the BCA at the Site, the north plume and south plume (**Appendix J**). The extent of both plumes is delineated by the 0.03 mg/L uranium concentration contour. The projected behavior of the north and south plumes in the BCA over the next 200 years is summarized below.

North Plume

- All calibrated models project that the leading edge of the north plume will advance minimally from its current position (**Figure K-15)**.
- No calibrated models project that the north plume will reach the LTSM boundary.
- No calibrated models project that the north plume will reach the LF.
- Results of the source concentration sensitivity run indicate that the north plume will not reach the LTSM boundary.

South Plume

- All calibrated models project that the leading edge of the south plume will advance from its current position to the LF and migrate along the fault (**Figure K-15)**.
- No calibrated models project that the south plume will reach the LTSM boundary.
- Results of the source concentration sensitivity run indicate the south plume will not reach the LTSM boundary, but significantly higher concentrations would reach the LF.

Interpretation of Model Projections

Interpretation of the model projected behavior of the north and south plumes is discussed below.

North plume

Projections from all 65 calibrated models indicate that the north plume will not migrate across the LTSM boundary during the next 200 years. The model projects minimal migration of the north plume to the west. The projected behavior of the north plume is consistent with the CSM, which conceptualizes that the small flux of contaminated groundwater at the leading edge of the north plume will flow to the west toward the syncline, where it will encounter greater saturated thickness in the BCA and dilute.

South Plume

Projections from all 65 calibrated models indicate that the south plume will not migrate across the LTSM boundary during the next 200 years. The south plume is projected to advance further than the north plume in the next 200 years. The south plume is projected to migrate to the LF, where it will mix with acidic and highly mineralized groundwater in the fault zone. The south plume is projected to migrate along the LF to the northwest within the LTSM. The projected behavior of the south plume is consistent with the CSM.

Compliance Concentration Development

The probabilistic modeling approach using NSMC results in robust model projections based on 65 calibrated models. The model projections indicate that the uranium plumes will not migrate beyond the LTSM boundary over the next 200 years. As a result, the long term monitoring remedy, with associated compliance concentrations, is expected to be protective of public health and the environment at the Site. The model projected time-series plots were used to help select compliance monitoring locations and develop new compliance concentrations. Development of new compliance concentrations is discussed in **Section 6.0** of the main report.

REFERENCES

Gelhar, L.W., Welty, C., and Rehfeldt, K.R., 1992, **A critical review of data on field-scale dispersion in aquifers**: Water Resources Research, 28(7), 1955–1974,

Montgomery & Associates, 2012, **Revised Final Work Plan, Supplemental Site Assessment to Address Out-Of-Compliance Status at Trend Wells RL-1 and EF-8**: August 2, 2012.

Panday, S., Langevin, C.D., Niswonger, R.G., Ibaraki, M., and Hughes, J.D., 2013, **MODFLOW-USG version 1: An unstructured grid version of MODFLOW for simulating groundwater flow and tightly coupled processes using a control volume finite-difference formulation**: U.S. Geological Survey Techniques and Methods, book 6, chap. A45, 66 p.

Tonkin, M., and Doherty, J., 2008, **Calibration-constrained Monte Carlo analysis of highly-parameterized models using subspace techniques.** *Water Resources Research*. 45, W00B10, doi:10.1029/2007WR006678.

109°19'0"W
109°18'0"W
R. 24 E.
109°17'0"W
109°16'0"W
38°17'0"N
38°16'0"N
T. 29 S.
38°15'0"N

RL-4
RL-5
RL-6
MW-118
MW-119
RL-3
MW-100
LW-1
MW-108
RL-1
MW-109
MW-101
MW-107D
MW-107S
MW-5
MW-102DB
MW-102
ML-1
MW-112
OW-UT-9
MW-114
MW-113
EF-6
Lower Tailings
Upper Tailings
EF-8
MW-115S
MW-115M
EF-3A
MW-117S
MW-116
MW-117M

Image Source: NAIP 2011

EXPLANATION

- MW-5 — Well and identifier
- Long Term Surveillance and Maintenance Boundary
- Burro Canyon dry zone
- Tailings
- Model grid boundary
- Model cells
- Inactive model cells

N

0 500 1,000 1,500 2,000
Feet

RIO ALGOM MINING LLC
LISBON FACILITY

MODEL DOMAIN

MONTGOMERY & ASSOCIATES
Water Resource Consultants

2014

FIGURE K-1

GIS\1350.23\ModelMaps\Model_domain.mxd\15July2014 NAD27_SP_Utah_So.

109°19'0"W
109°18'0"W
R. 24 E.
109°17'0"W
109°16'0"W
38°17'0"N
38°16'0"N
38°15'0"N
T. 29 S.

RL-6
MW-118
RL-4
RL-5
MW-119
RL-3
MW-100
LW-1
MW-108
RL-1
MW-109
MW-101
MW-107D
MW-107S
MW-5
MW-102DB
MW-102
ML-1
MW-112
OW-UT-9
MW-114
MW-113
EF-6
Lower Tailings
Upper Tailings
EF-8
MW-115S
MW-115M
EF-3A
MW-117S
MW-116
MW-117M

Image Source: NAIP 2011

EXPLANATION

- MW-5 — Well and identifier
- Long Term Surveillance and Maintenance Boundary
- Burro Canyon dry zone
- Tailings
- Model grid boundary
- Model cells

BOUNDARY CONDITIONS

- No flow

PROPERTIES

- Recharge

N

0 500 1,000 1,500 2,000
Feet

RIO ALGOM MINING LLC
LISBON FACILITY

LAYER 1 MODEL SETUP

MONTGOMERY & ASSOCIATES
Water Resource Consultants

2014

FIGURE K-2

GIS\1350.23\Model_maps\L1_Model_Overview.mxd\16July2014 NAD27_SP_Utah_So.

109°19'0"W 109°18'0"W R. 24 E. 109°17'0"W 109°16'0"W

38°17'0"N

T. 29 S.

38°16'0"N

38°15'0"N

RL-4 RL-5 RL-6 MW-118 MW-119 RL-3 MW-100 LW-1 MW-108 RL-1 MW-109 MW-101 MW-107D MW-107S MW-5 MW-102DB MW-102 ML-1 MW-112 OW-UT-9 MW-114 MW-113 EF-6 Lower Tailings Upper Tailings EF-8 MW-115M MW-115S EF-3A MW-117S MW-116 MW-117M

Image Source: NAIP 2011

EXPLANATION

- MW-5 — Well and identifier
- Long Term Surveillance and Maintenance Boundary
- Burro Canyon dry zone
- Tailings
- Model grid boundary
- Model cells

BOUNDARY CONDITIONS

- Constant concentration
- Constant head
- Drain
- No flow

PROPERTIES

- Recharge

N

0 500 1,000 1,500 2,000

Feet

RIO ALGOM MINING LLC
LISBON FACILITY

LAYER 2 MODEL SETUP

MONTGOMERY & ASSOCIATES
Water Resource Consultants

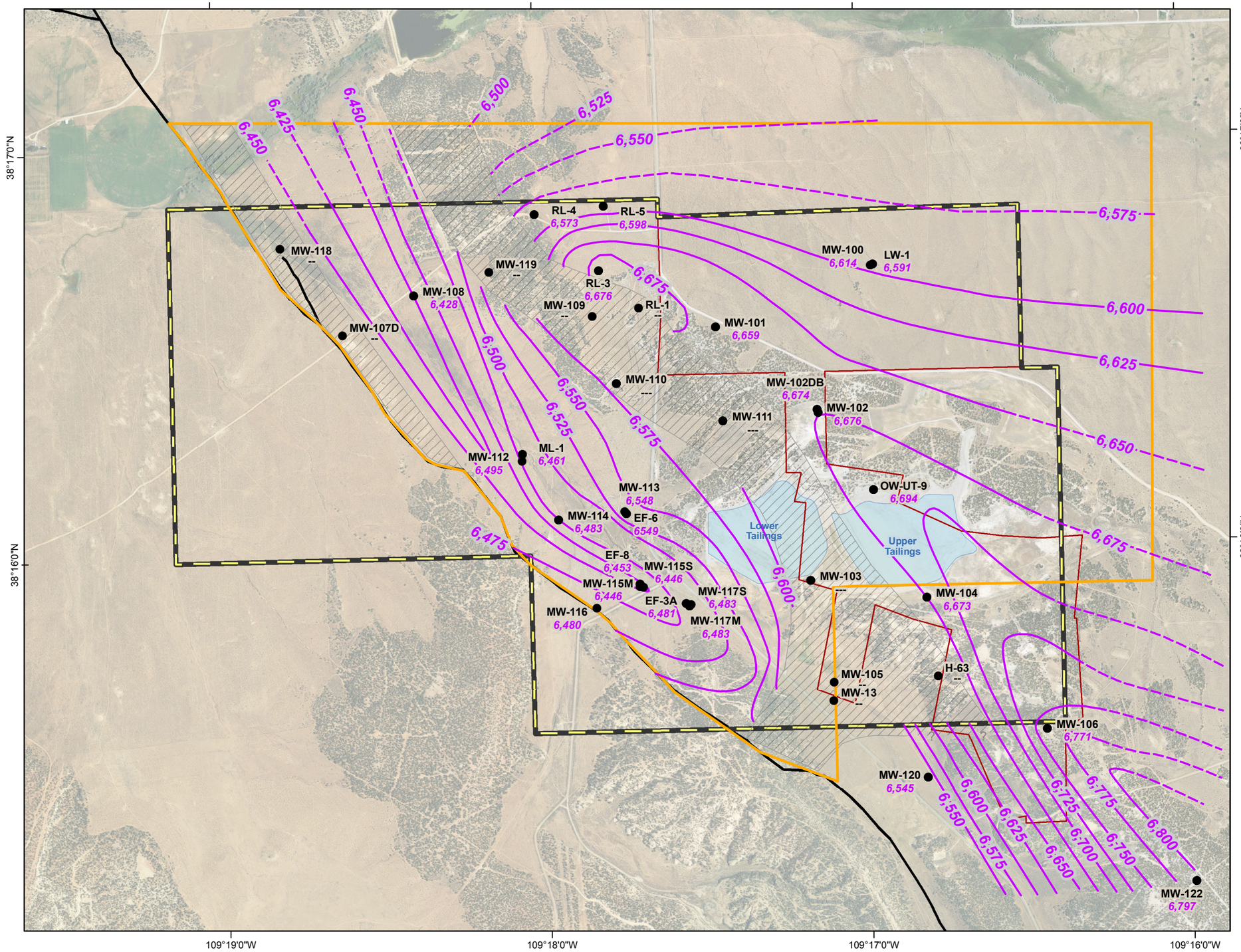
2014

FIGURE K-3

GIS\1350.23\ModelMaps\Model_Overview.mxd\16July2014 NAD27_SP_Utah_So.

109°19'0"W 109°18'0"W 109°17'0"W 109°16'0"W

38°17'0"N 38°16'0"N



EXPLANATION

- MW-101 6,659 — Existing monitor well where contact between the Burro Canyon Formation (BCF) fines and BCF coarse unit was encountered during drilling; Approximate BCF/BCF-fines contact elevation, in feet above mean sea level (feet msl)
- -- Wells at which the BCF/BCF-fines contact was not encountered are not included on the map.
- 6,500 — Approximate BCF fines/BCF coarse contact elevation (feet msl); dashed were inferred
- BCF fines not encountered during drilling
- Long Term Surveillance and Maintenance Boundary
- Rio Algom Mining LLC property boundary
- Active model boundary
- Lisbon Fault

N

0 500 1,000 1,500 2,000
Feet

RIO ALGOM MINING LLC
LISBON FACILITY

ESTIMATED ELEVATION OF GEOLOGIC CONTACT BETWEEN BURRO CANYON FOMATION FINE ZONE AND BURRO CANYON FOMATION COARSE ZONE

MONTGOMERY & ASSOCIATES
Water Resource Consultants

2014

FIGURE K-4

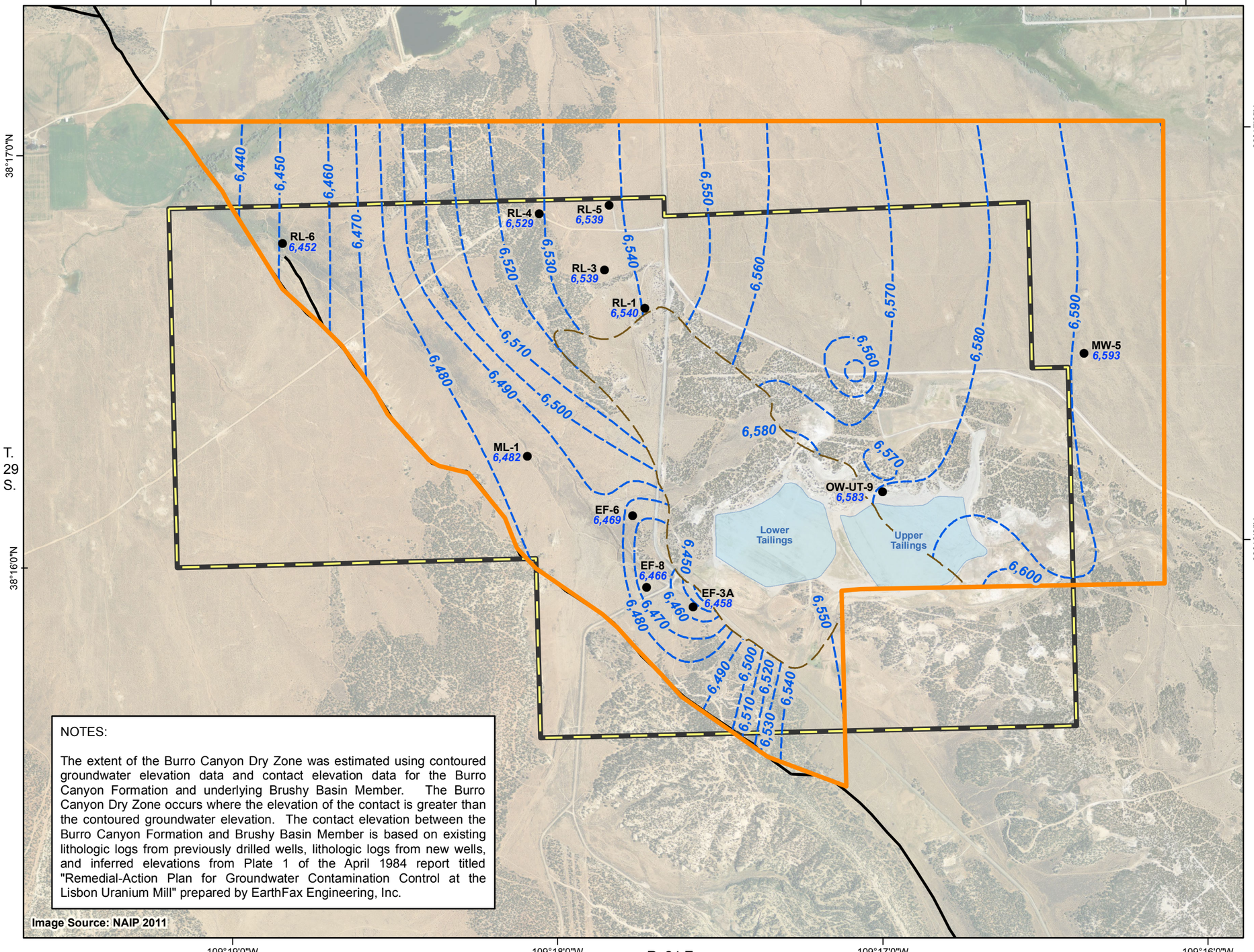
GIS\1350.23\ModelMaps\BCA_FINESStructureContour.mxd\16July2014 NAD27_SP_Utah_So.

109°19'0"W 109°18'0"W R. 24 E. 109°17'0"W 109°16'0"W

38°17'0"N

T. 29 S.

38°16'0"N



NOTES:

The extent of the Burro Canyon Dry Zone was estimated using contoured groundwater elevation data and contact elevation data for the Burro Canyon Formation and underlying Brushy Basin Member. The Burro Canyon Dry Zone occurs where the elevation of the contact is greater than the contoured groundwater elevation. The contact elevation between the Burro Canyon Formation and Brushy Basin Member is based on existing lithologic logs from previously drilled wells, lithologic logs from new wells, and inferred elevations from Plate 1 of the April 1984 report titled "Remedial-Action Plan for Groundwater Contamination Control at the Lisbon Uranium Mill" prepared by EarthFax Engineering, Inc.

Image Source: NAIP 2011

109°19'0"W 109°18'0"W R. 24 E. 109°17'0"W 109°16'0"W

38°16'0"N

38°17'0"N

EXPLANATION

- MW-5 6,593 — Well screened in Burro Canyon Aquifer (BCA); Quarter 1 2004 groundwater elevation, in feet above mean sea level (feet msl)
- 6,500 — Water level elevation in the BCA (feet msl); dashed where inferred
- Burro Canyon dry zone
- Long Term Surveillance and Maintenance Boundary
- Lisbon Fault
- Active model boundary

N

0 500 1,000 1,500 2,000

Feet

RIO ALGOM MINING LLC

LISBON FACILITY

INITIAL WATER LEVELS BURRO CANYON AQUIFER 2004

2014

MONTGOMERY & ASSOCIATES

Water Resource Consultants

FIGURE K-5

GIS\1350.23\ModelMaps\Initial_water_levels.mxd\15July2014 NAD27_SP_Utah_So.

109°19'0"W 109°18'0"W R. 24 E. 109°17'0"W 109°16'0"W

38°17'0"N

T. 29 S.

38°16'0"N

EF-20 0.003
RL-4 0.004
RL-5 0.004
RL-6 0.036
RL-3 35.462
EF-19 2.05
LW-1 0.026
EF-22 0.19
RL-1 40.5
EF-26 9.75
EF-23 0.03
MW-5 0.008
MW-8 82.7
EF-13 26.59
RW-1 162.48
GW-20 96.01
RW-2 28.06
OW-UT-9 87.91
H-10 0.011
ML-1 0.019
H-71 0.053
EF-6 1.08
EF-5 7.09
Lower Tailings
Upper Tailings
EF-17 0.007
DM80-4 0.494
DM80-5 0.03
MW-6A 0.017
MW-11 19.29
ML-2 1.12
EF-8 0.03
MW-11A 21.2
EF-2 0.325
MW-12 0.037
EF-3A 16.39
EF-4 0.02

0.01 1 0.1 10 100 50 150

NOTES:

Mapped uranium concentrations are representative of the maximum measured uranium concentration that was collected in the years 2003 - 2004.

The extent of the Burro Canyon Dry Zone was estimated using contoured groundwater elevation data and contact elevation data for the Burro Canyon Formation and underlying Brushy Basin Member. The Burro Canyon Dry Zone occurs where the elevation of the contact is greater than the contoured groundwater elevation. The contact elevation between the Burro Canyon Formation and Brushy Basin Member is based on existing lithologic logs from previously drilled wells, lithologic logs from new wells, and inferred elevations from Plate 1 of the April 1984 report titled "Remedial-Action Plan for Groundwater Contamination Control at the Lisbon Uranium Mill" prepared by EarthFax Engineering, Inc.

Image Source: NAIP 2011

109°19'0"W 109°18'0"W R. 24 E. 109°17'0"W 109°16'0"W

38°17'0"N 38°16'0"N

EXPLANATION

- MW-5 0.008 — Well screened in Burro Canyon Aquifer (BCA); Measured uranium concentration (mg/L)
- 0.1 — 2004 uranium concentration in the BCA (mg/L), dashed where inferred
- Burro Canyon dry zone
- Long Term Surveillance and Maintenance Boundary
- Rio Algom Mining LLC property boundary
- Lisbon Fault
- Active model boundary

N

0 500 1,000 1,500 2,000
Feet

RIO ALGOM MINING LLC
LISBON FACILITY

INITIAL URANIUM CONCENTRATION BURRO CANYON AQUIFER 2004

MONTGOMERY & ASSOCIATES
Water Resource Consultants

2014

FIGURE K-6

GIS\1350.23\ModelMaps\Initial_concentration.mxd\18July2014 NAD27_SP_Utah_So.

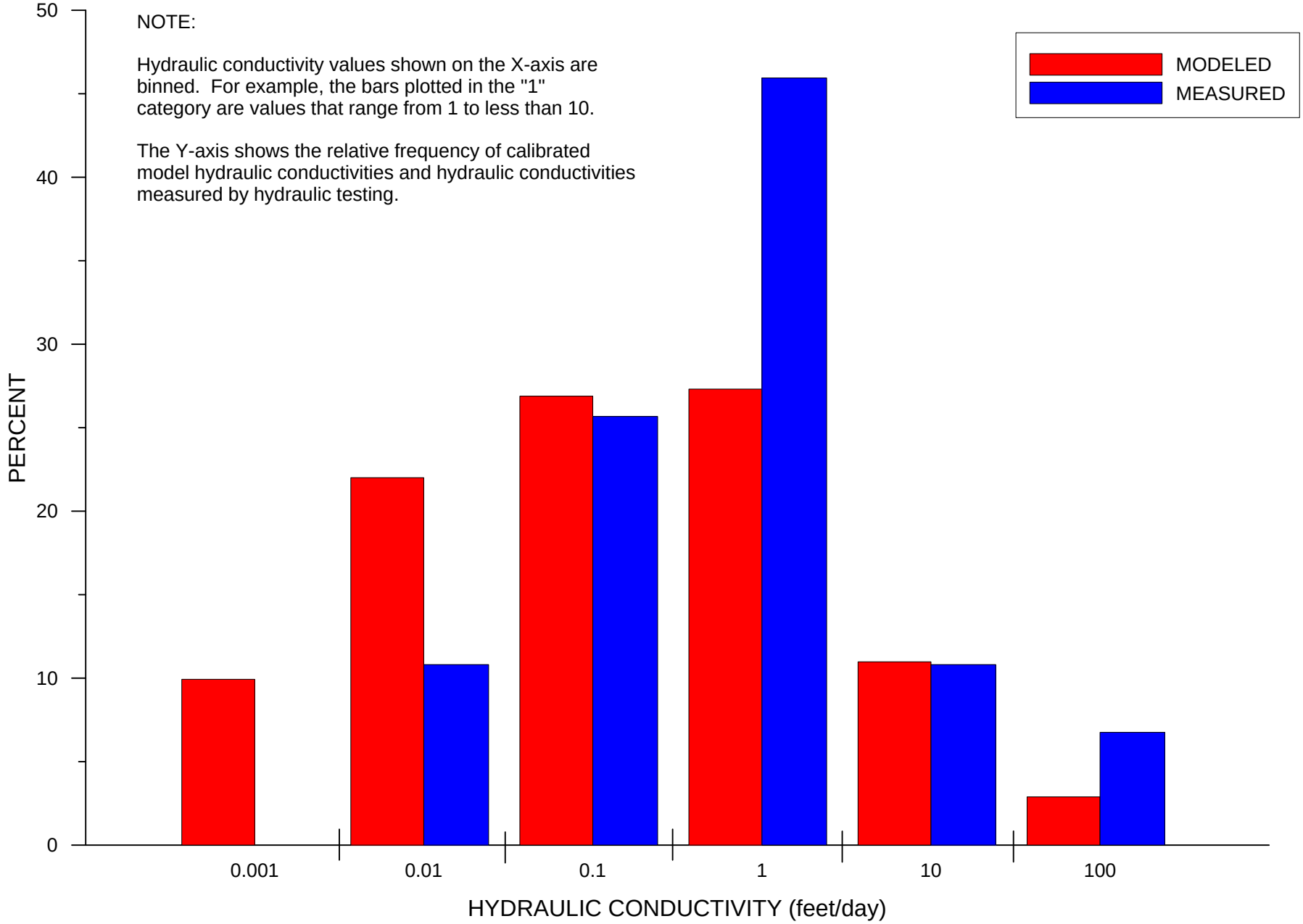


FIGURE K-7. DISTRIBUTION OF MEASURED AND CALIBRATED MODEL HYDRAULIC CONDUCTIVITIES RIO ALGOM MINING LLC, LISBON FACILITY

1350 - Rio Algom\Modeling\Phase2Modeling\Graphs\K_distribution.grf

MONTGOMERY & ASSOCIATES

109°19'0"W 109°18'0"W R. 24 E. 109°17'0"W 109°16'0"W

38°17'0"N

38°16'0"N

T. 29 S.

RL-4 RL-5 RL-6 MW-118 RL-3 MW-119 MW-108 MW-109 RL-1 MW-100 LW-1 MW-107D MW-107S MW-101 MW-5 MW-102 ML-1 MW-112 OW-UT-9 MW-113 EF-6 MW-114 Lower Tailings Upper Tailings EF-8 MW-115M MW-115S EF-3A MW-117S MW-117M MW-116

Image Source: NAIP 2011

109°19'0"W 109°18'0"W R. 24 E. 109°17'0"W 109°16'0"W

38°17'0"N

38°16'0"N

EXPLANATION

- MW-5 — Well screened in Burro Canyon Aquifer (BCA)
- Extent of 0.03 milligrams per liter (mg/l) uranium plume

Concentration of maximum projected uranium plume, in mg/l

160

0

- Model cells
- No flow boundary
- Burro Canyon dry zone
- Long Term Surveillance and Maintenance Boundary
- Lisbon Fault

N

0 500 1,000 1,500 2,000

Feet

RIO ALGOM MINING LLC

LISBON FACILITY

PROJECTED DISTRIBUTION OF URANIUM 2020

MONTGOMERY & ASSOCIATES

Water Resource Consultants

2014

FIGURE K-8

GIS\1350.23\ModelMaps\2020_plume.mxd\17July2014 NAD27_SP_Utah_So.

109°19'0"W 109°18'0"W R. 24 E. 109°17'0"W 109°16'0"W

38°17'0"N

38°16'0"N

T. 29 S.

RL-4 RL-5 RL-6 MW-118 RL-3 MW-119 MW-108 MW-109 RL-1 MW-100 LW-1 MW-107D MW-107S MW-101 MW-5 MW-102 ML-1 MW-112 OW-UT-9 MW-113 EF-6 MW-114 Lower Tailings Upper Tailings EF-8 MW-115M MW-115S EF-3A MW-117S MW-117M MW-116

Image Source: NAIP 2011

109°19'0"W 109°18'0"W R. 24 E. 109°17'0"W 109°16'0"W

EXPLANATION

- MW-5 — Well screened in Burro Canyon Aquifer (BCA)
- Extent of 0.03 milligrams per liter (mg/l) uranium plume

Concentration of maximum projected uranium plume, in mg/l

160

0

- Model cells
- No flow boundary
- Burro Canyon dry zone
- Long Term Surveillance and Maintenance Boundary
- Lisbon Fault

N

0 500 1,000 1,500 2,000

Feet

RIO ALGOM MINING LLC
LISBON FACILITY

PROJECTED DISTRIBUTION OF URANIUM 2025

MONTGOMERY & ASSOCIATES
Water Resource Consultants

2014

FIGURE K-9

GIS\1350.23\ModelMaps\2025_plume.mxd\17July2014 NAD27_SP_Utah_So.

109°19'0"W 109°18'0"W R. 24 E. 109°17'0"W 109°16'0"W

38°17'0"N

38°16'0"N

T. 29 S.

RL-4 RL-5 RL-6 MW-118 RL-3 MW-119 MW-108 RL-1 MW-109 MW-107D MW-107S MW-101 MW-100 LW-1 MW-5 MW-102 ML-1 MW-112 OW-UT-9 MW-113 EF-6 MW-114 Lower Tailings Upper Tailings EF-8 MW-115M MW-115S EF-3A MW-117S MW-117M MW-116

Image Source: NAIP 2011

109°19'0"W 109°18'0"W R. 24 E. 109°17'0"W 109°16'0"W

38°17'0"N

38°16'0"N

EXPLANATION

- MW-5 — Well screened in Burro Canyon Aquifer (BCA)
- Extent of 0.03 milligrams per liter (mg/l) uranium plume

Concentration of maximum projected uranium plume, in mg/l

160

0

- Model cells
- No flow boundary
- Burro Canyon dry zone
- Long Term Surveillance and Maintenance Boundary
- Lisbon Fault

N

0 500 1,000 1,500 2,000

Feet

RIO ALGOM MINING LLC
LISBON FACILITY

PROJECTED DISTRIBUTION OF URANIUM 2035

MONTGOMERY & ASSOCIATES
Water Resource Consultants

2014

FIGURE K-10

GIS\1350.23\ModelMaps\2035_plume.mxd\17July2014 NAD27_SP_Utah_So.

109°19'0"W 109°18'0"W R. 24 E. 109°17'0"W 109°16'0"W

38°17'0"N

38°16'0"N

T. 29 S.

RL-4 RL-5 RL-6 MW-118 RL-3 MW-119 MW-108 MW-109 RL-1 MW-100 LW-1 MW-107D MW-107S MW-101 MW-5 MW-102 ML-1 MW-112 OW-UT-9 MW-113 EF-6 MW-114 Lower Tailings Upper Tailings EF-8 MW-115M MW-115S EF-3A MW-117S MW-117M MW-116

Image Source: NAIP 2011

109°19'0"W R. 24 E. 109°18'0"W 109°17'0"W 109°16'0"W

GIS\1350.23\ModelMaps\2065_plume.mxd\17July2014 NAD27_SP_Utah_So.

EXPLANATION

- MW-5 — Well screened in Burro Canyon Aquifer (BCA)
- Extent of 0.03 milligrams per liter (mg/l) uranium plume

Concentration of maximum projected uranium plume, in mg/l

160

0

- Model cells
- No flow boundary
- Burro Canyon dry zone
- Long Term Surveillance and Maintenance Boundary
- Lisbon Fault

N

0 500 1,000 1,500 2,000

Feet

RIO ALGOM MINING LLC
LISBON FACILITY

PROJECTED DISTRIBUTION OF URANIUM 2065

MONTGOMERY & ASSOCIATES
Water Resource Consultants

2014

FIGURE K-11

109°19'0"W 109°18'0"W R. 24 E. 109°17'0"W 109°16'0"W

38°17'0"N

T. 29 S.

38°16'0"N

RL-4 RL-5 RL-6 MW-118 RL-3 MW-119 MW-108 MW-109 RL-1 MW-100 LW-1 MW-107D MW-107S MW-101 MW-5 MW-102 ML-1 MW-112 OW-UT-9 MW-113 EF-6 MW-114 Lower Tailings Upper Tailings EF-8 MW-115M MW-115S EF-3A MW-117S MW-116 MW-117M

Image Source: NAIP 2011

109°19'0"W 109°18'0"W R. 24 E. 109°17'0"W 109°16'0"W

38°17'0"N 38°16'0"N

EXPLANATION

- MW-5 — Well screened in Burro Canyon Aquifer (BCA)
- Extent of 0.03 milligrams per liter (mg/l) uranium plume

Concentration of maximum projected uranium plume, in mg/l

160

0

- Model cells
- No flow boundary
- Burro Canyon dry zone
- Long Term Surveillance and Maintenance Boundary
- Lisbon Fault

N

0 500 1,000 1,500 2,000

Feet

RIO ALGOM MINING LLC
LISBON FACILITY

PROJECTED DISTRIBUTION OF URANIUM 2115

MONTGOMERY & ASSOCIATES
Water Resource Consultants

2014

FIGURE K-12

GIS\1350.23\ModelMaps\2115_plume.mxd\17July2014 NAD27_SP_Utah_So.

109°19'0"W 109°18'0"W R. 24 E. 109°17'0"W 109°16'0"W

38°17'0"N

T. 29 S.

38°16'0"N

RL-4 RL-5 RL-6 MW-118 RL-3 MW-119 MW-100 LW-1 MW-108 RL-1 MW-109 MW-107D MW-107S MW-101 MW-5 MW-102 ML-1 MW-112 OW-UT-9 MW-113 EF-6 MW-114 Lower Tailings Upper Tailings EF-8 MW-115M MW-115S EF-3A MW-117S MW-116 MW-117M

Image Source: NAIP 2011

EXPLANATION

- MW-5 — Well screened in Burro Canyon Aquifer (BCA)
- Extent of 0.03 milligrams per liter (mg/l) uranium plume

Concentration of maximum projected uranium plume, in mg/l

160

0

- Model cells
- No flow boundary
- Burro Canyon dry zone
- Long Term Surveillance and Maintenance Boundary
- Lisbon Fault

N

0 500 1,000 1,500 2,000

Feet

RIO ALGOM MINING LLC
LISBON FACILITY

PROJECTED DISTRIBUTION OF URANIUM 2165

MONTGOMERY & ASSOCIATES
Water Resource Consultants

2014

FIGURE K-13

GIS\1350.23\ModelMaps\2165_plume.mxd\17July2014 NAD27_SP_Utah_So.

109°19'0"W 109°18'0"W R. 24 E. 109°17'0"W 109°16'0"W

38°17'0"N

38°16'0"N

T. 29 S.

RL-4 RL-5 RL-6 MW-118 MW-119 RL-3 MW-100 LW-1 MW-108 MW-109 RL-1 MW-107D MW-107S MW-101 MW-5 MW-102 ML-1 MW-112 OW-UT-9 MW-113 EF-6 MW-114 Lower Tailings Upper Tailings EF-8 MW-115M MW-115S EF-3A MW-117S MW-117M MW-116

Image Source: NAIP 2011

109°19'0"W 109°18'0"W R. 24 E. 109°17'0"W 109°16'0"W

38°17'0"N

38°16'0"N

EXPLANATION

- MW-5 — Well screened in Burro Canyon Aquifer (BCA)
- Extent of 0.03 milligrams per liter (mg/l) uranium plume

Concentration of maximum projected uranium plume, in mg/l

160

0

- Model cells
- No flow boundary
- Burro Canyon dry zone
- Long Term Surveillance and Maintenance Boundary
- Lisbon Fault

N

0 500 1,000 1,500 2,000

Feet

RIO ALGOM MINING LLC
LISBON FACILITY

PROJECTED DISTRIBUTION OF URANIUM 2215

MONTGOMERY & ASSOCIATES
Water Resource Consultants

2014

FIGURE K-14

GIS\1350.23\ModelMaps\2215_plume.mxd\17July2014 NAD27_SP_Utah_So.

109°19'0"W 109°18'0"W R. 24 E. 109°17'0"W 109°16'0"W

38°17'0"N

38°16'0"N

T. 29 S.

RL-4 RL-5 RL-6 MW-118 MW-119 RL-3 MW-108 RL-1 MW-109 MW-107D MW-107S MW-100 LW-1 MW-101 MW-5 MW-102 ML-1 MW-112 OW-UT-9 MW-113 EF-6 MW-114 Lower Tailings Upper Tailings MW-115S MW-115M EF-8 EF-3A MW-117S MW-117M MW-116

NOTES:

The current Utah groundwater quality standard for uranium is 0.03 mg/L.

Image Source: NAIP 2011

109°19'0"W 109°18'0"W R. 24 E. 109°17'0"W 109°16'0"W

EXPLANATION

- MW-5 Well location and identifier

Maximum extent of 0.03 milligrams per liter (mg/L) uranium plume

Year

- 2020
- 2025
- 2035
- 2065
- 2115
- 2165
- 2215

- Model extent
- Burro Canyon dry zone
- Long Term Surveillance and Maintenance Boundary
- Lisbon Fault

N

0 500 1,000 1,500 2,000

Feet

RIO ALGOM MINING LLC
LISBON FACILITY

PROJECTED URANIUM PLUME GROWTH 2020 - 2215

MONTGOMERY & ASSOCIATES
Water Resource Consultants

2014

FIGURE K-15

GIS\1350.23\ModelMaps\PlumeGrowth.mxd\21July2014 NAD27_SP_Utah_So.

109°19'0"W
109°18'0"W
R. 24 E.
109°17'0"W
109°16'0"W
38°17'0"N
38°16'0"N
38°15'0"N
T. 29 S.

SB1
SB2
SB3
SB4
SB5
SB6
RL-4
RL-5
F1
RL-6
MW-118
MW-119
RL-3
MW-100
MW-108
F2
MW-109
RL-1
MW-101
MW-107D
F3
MW-5
F4
MW-102
F5
ML-1
MW-112
F6
OW-UT-9
MW-114
EF-6
F7
Lower Tailings
Upper Tailings
F8
EF-8
EF-3A
F9
F10
F11

Image Source: NAIP 2011

EXPLANATION

- MW-5 — Well and identifier
- Fault monitoring location
- Site Boundary monitoring location
- Time series plot presented
- Time series plot not presented

Note: Time series plots are only presented for locations where models project plume impacts above 0.03 mg/L.

- Long Term Surveillance and Maintenance Boundary
- Burro Canyon dry zone
- Model grid boundary
- Model cells

N

0 500 1,000 1,500 2,000
Feet

RIO ALGOM MINING LLC
LISBON FACILITY

MODEL CONCENTRATION MONITORING LOCATIONS

MONTGOMERY & ASSOCIATES
Water Resource Consultants

2014

FIGURE K-16

GIS\1350.23\ModelMaps\ConcentrationLocs.mxd\16July2014 NAD27_SP_Utah_So.

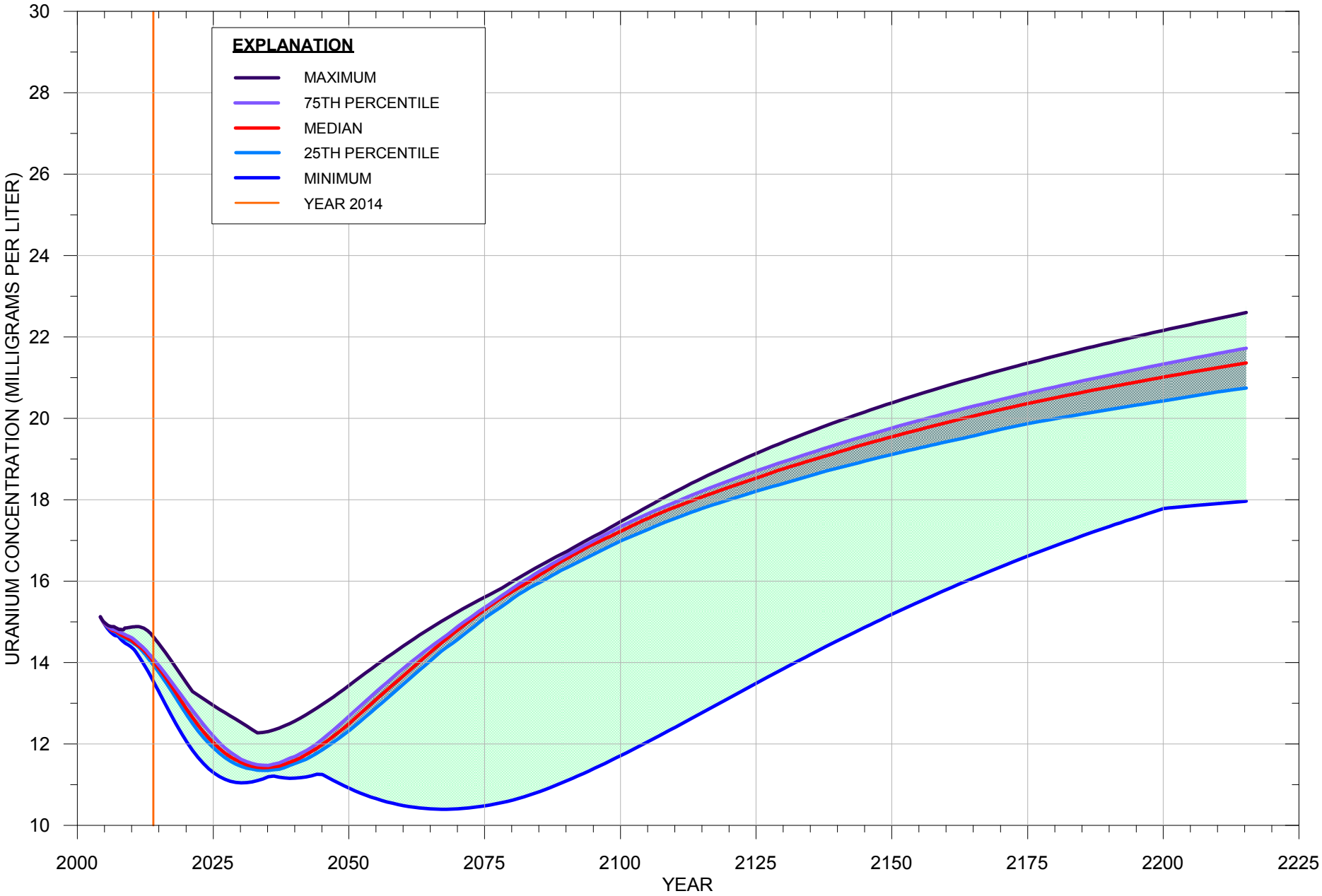


FIGURE K-17. DISTRIBUTION OF PROJECTED URANIUM CONCENTRATIONS FROM ALL MODELS AT WELL EF-3A RIO ALGOM MINING LLC, LISBON FACILITY

1350 - Rio Algom\Modeling\Phase2Modeling\Graphs\EF-3A.grf

MONTGOMERY & ASSOCIATES

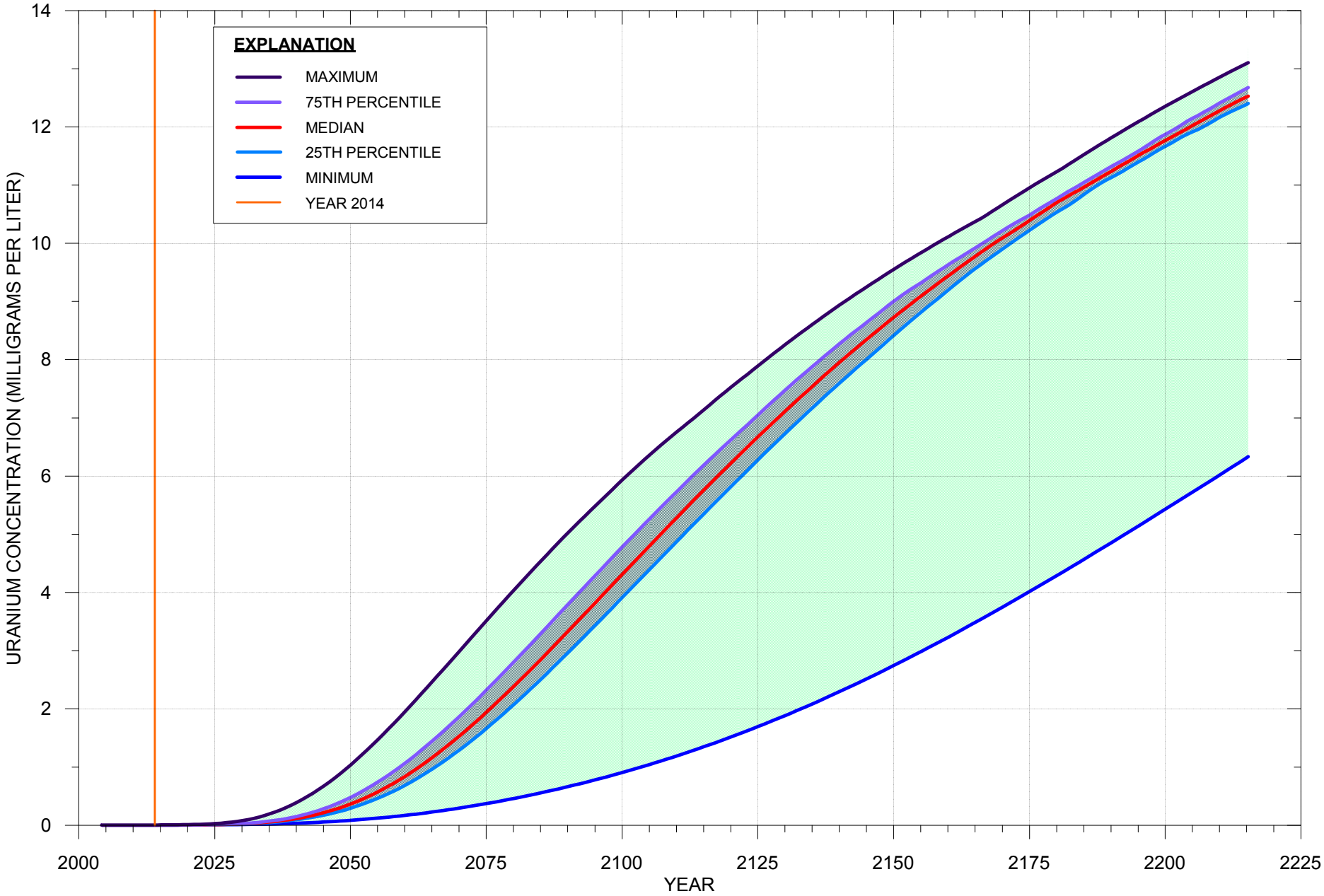


FIGURE K-18. DISTRIBUTION OF PROJECTED URANIUM CONCENTRATIONS FROM ALL MODELS AT WELL EF-8 RIO ALGOM MINING LLC, LISBON FACILITY

1350 - Rio Algom\Modeling\Phase2Modeling\Graphs\EF-8.grf

MONTGOMERY & ASSOCIATES

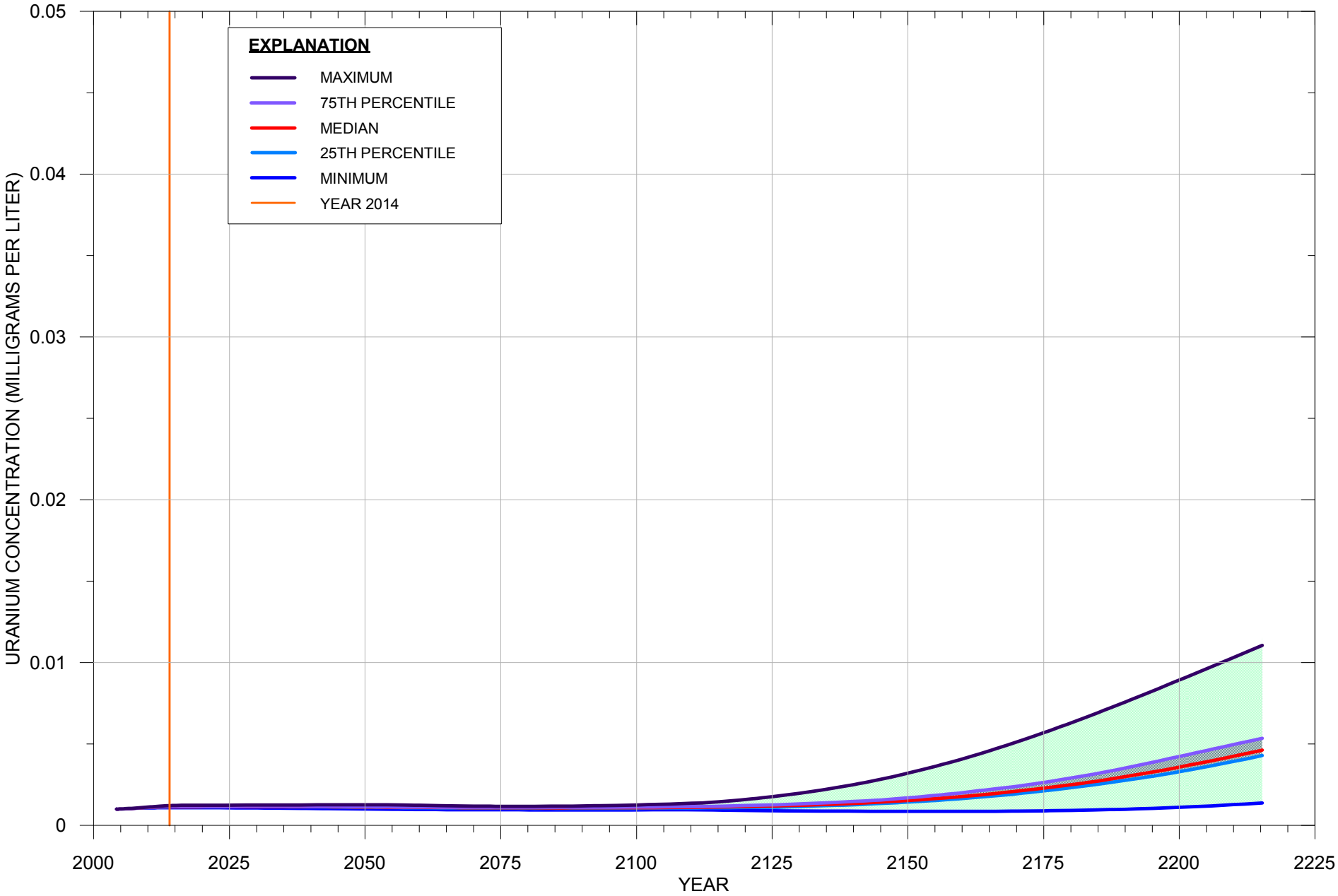


FIGURE K-19. DISTRIBUTION OF PROJECTED URANIUM CONCENTRATIONS FROM ALL MODELS AT WELL ML-1 RIO ALGOM MINING LLC, LISBON FACILITY

1350 - Rio Algom\Modeling\Phase2Modeling\Graphs\ML-1.grf

MONTGOMERY & ASSOCIATES

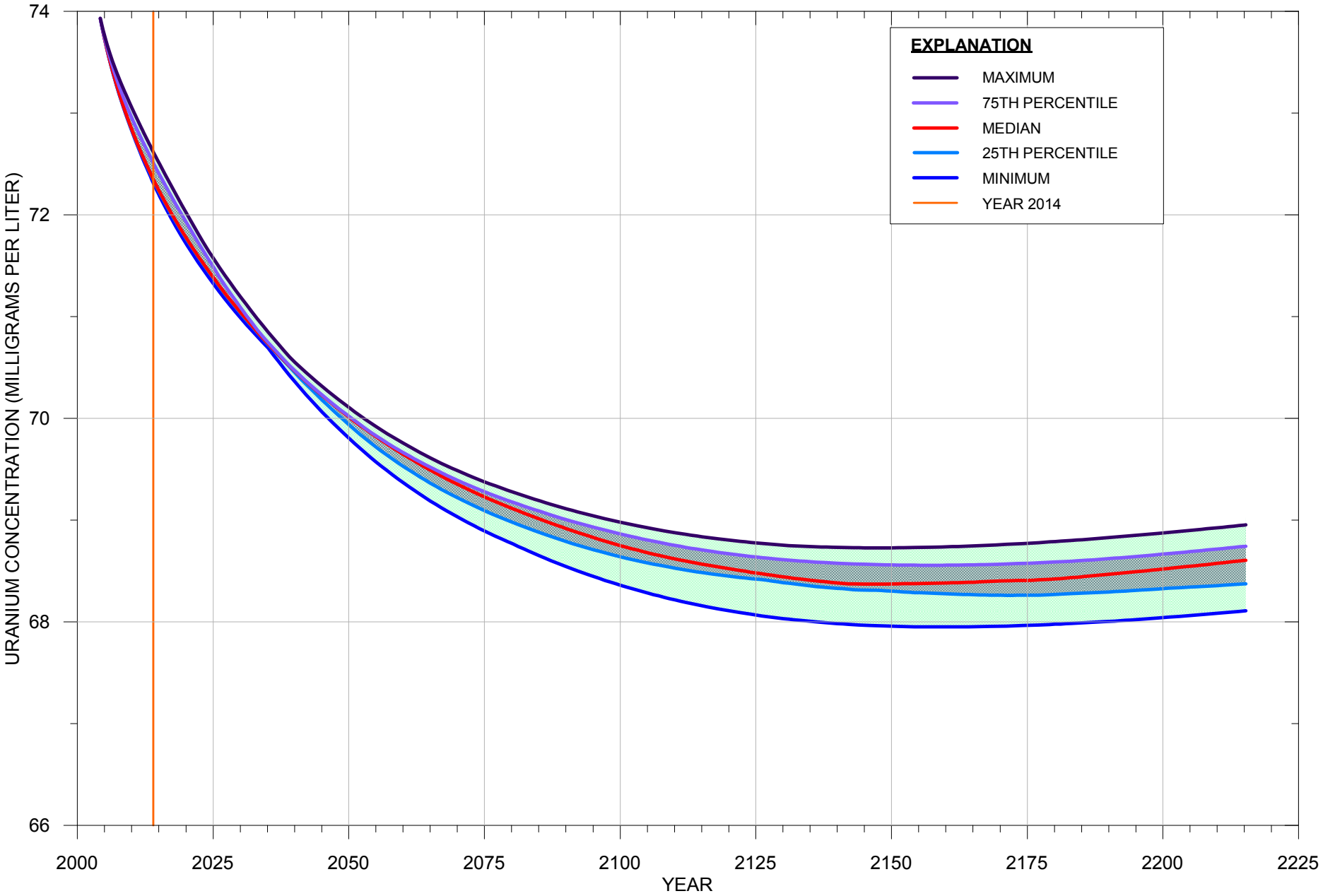


FIGURE K-20. DISTRIBUTION OF PROJECTED URANIUM CONCENTRATIONS FROM ALL MODELS AT WELL MW-101 RIO ALGOM MINING LLC, LISBON FACILITY

1350 - Rio Algom\Modeling\Phase2Modeling\Graphs\MW-101.grf

MONTGOMERY & ASSOCIATES

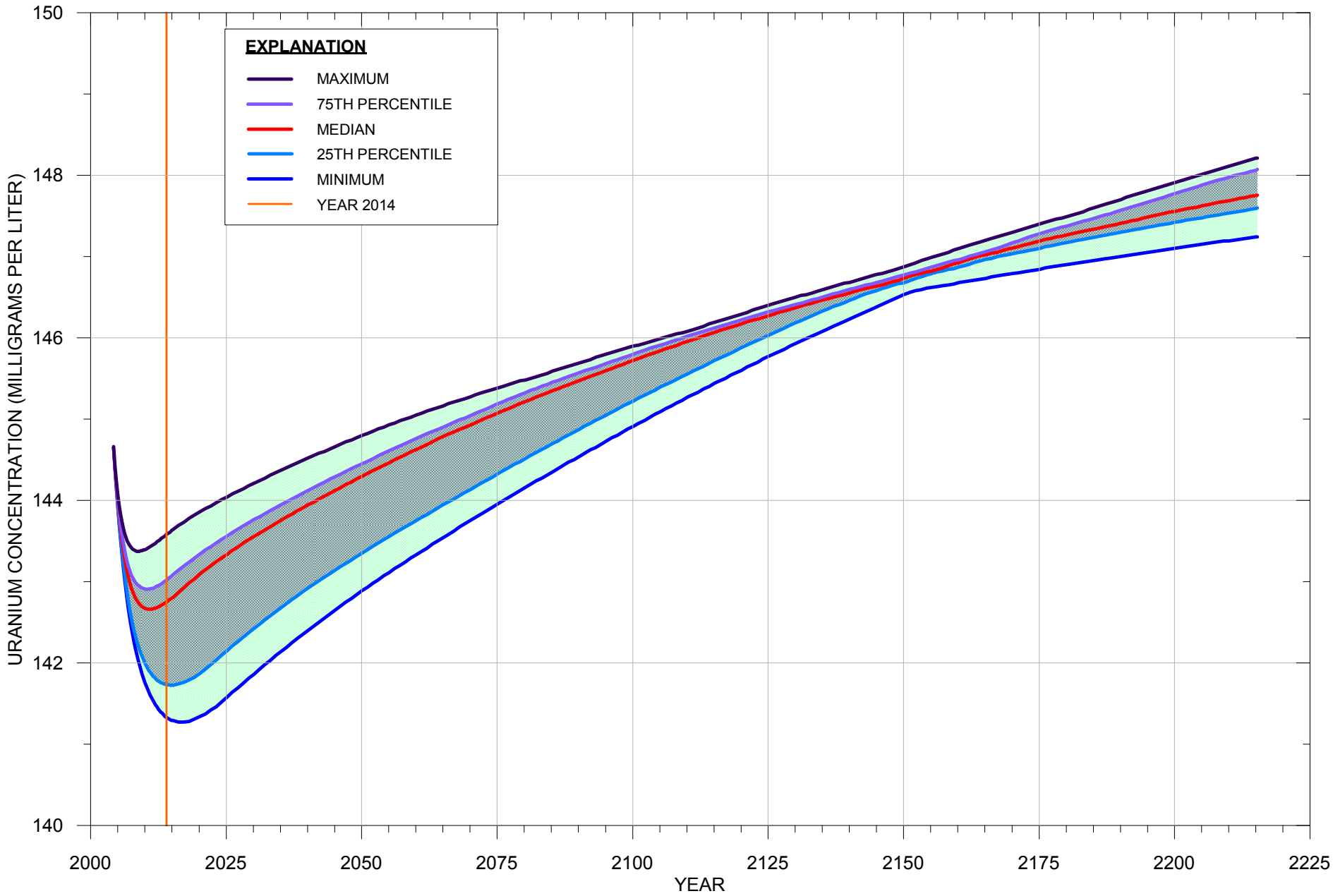


FIGURE K-21. DISTRIBUTION OF PROJECTED URANIUM CONCENTRATIONS FROM ALL MODELS AT WELL MW-102 RIO ALGOM MINING LLC, LISBON FACILITY

1350 - Rio Algom\Modeling\Phase2Modeling\Graphs\MW-102.grf

MONTGOMERY & ASSOCIATES

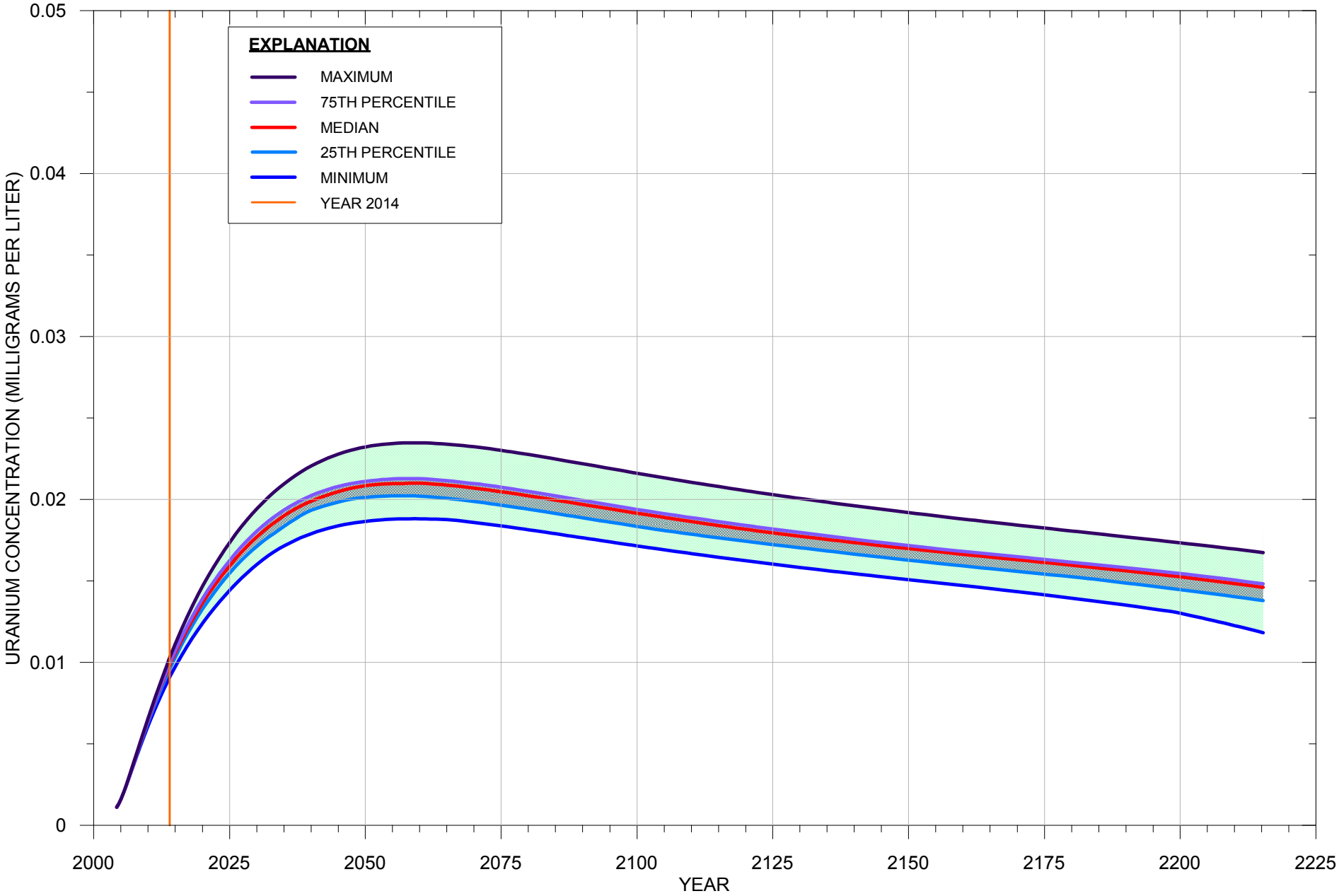


FIGURE K-22. DISTRIBUTION OF PROJECTED URANIUM CONCENTRATIONS FROM ALL MODELS AT WELL MW-108 RIO ALGOM MINING LLC, LISBON FACILITY

1350 - Rio Algom\Modeling\Phase2Modeling\Graphs\MW-108.grf

MONTGOMERY & ASSOCIATES

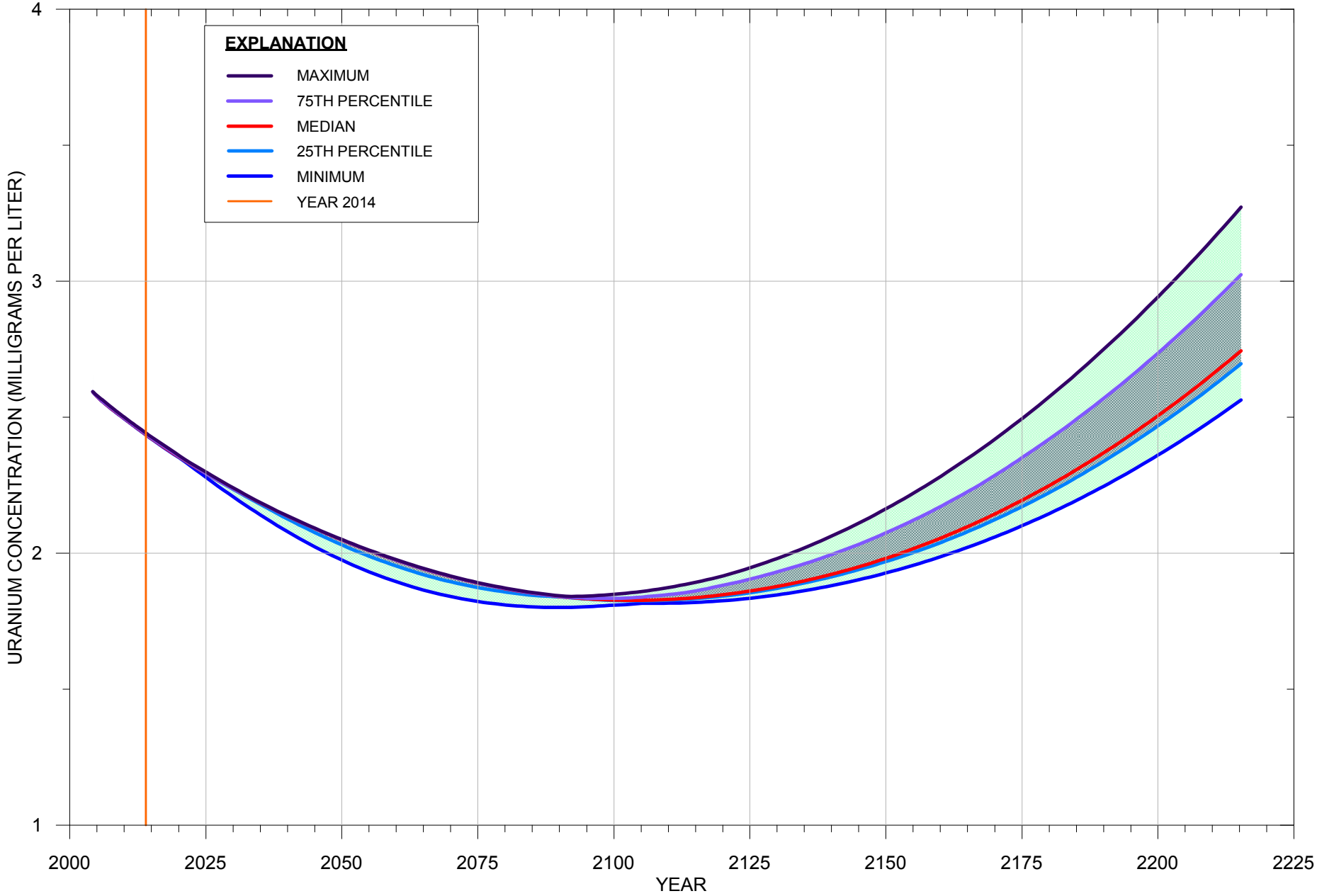


FIGURE K-23. DISTRIBUTION OF PROJECTED URANIUM CONCENTRATIONS FROM ALL MODELS AT WELL MW-109 RIO ALGOM MINING LLC, LISBON FACILITY

1350 - Rio Algom\Modeling\Phase2Modeling\Graphs\MW-109.grf

MONTGOMERY & ASSOCIATES

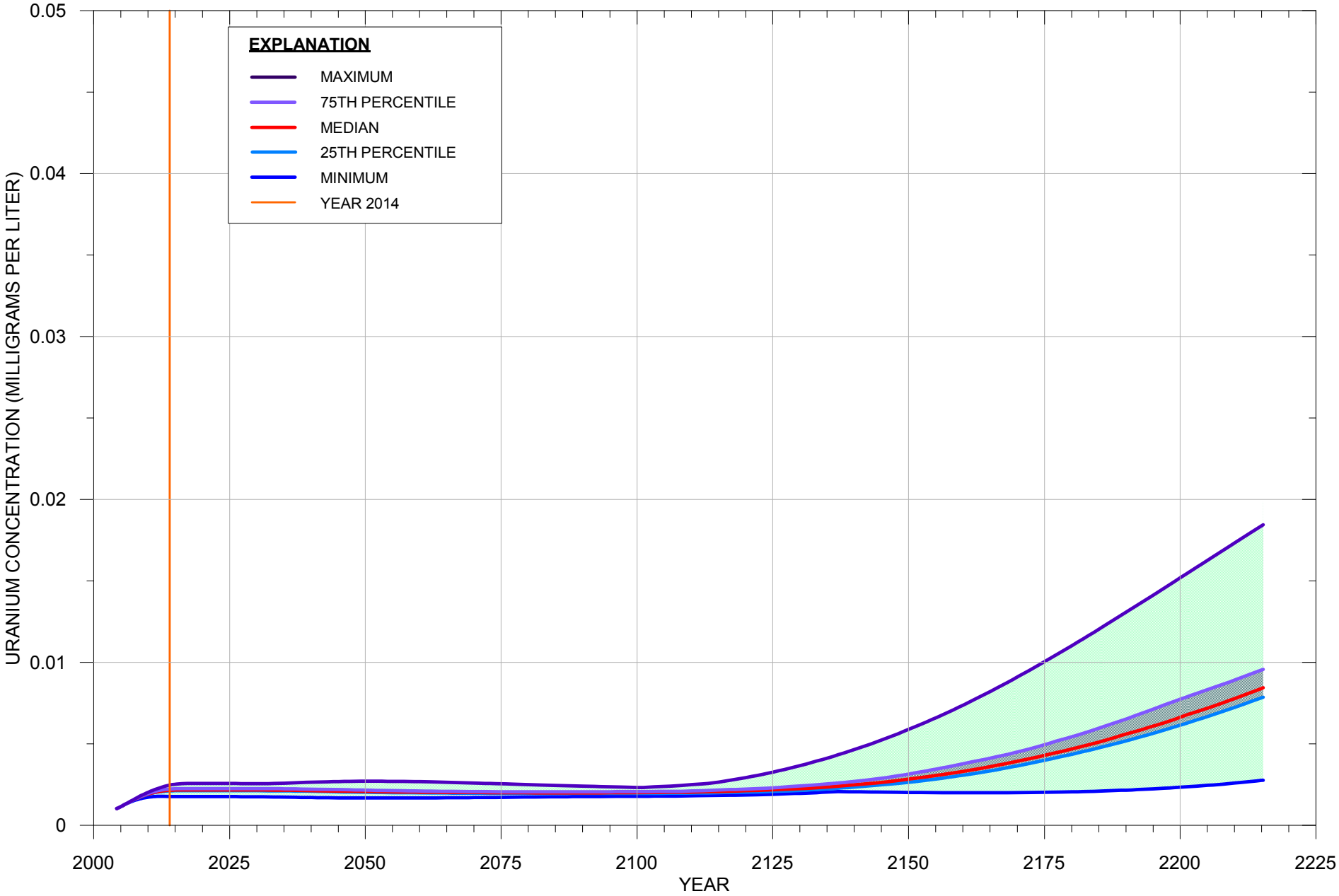


FIGURE K-24. DISTRIBUTION OF PROJECTED URANIUM CONCENTRATIONS FROM ALL MODELS AT WELL MW-112 RIO ALGOM MINING LLC, LISBON FACILITY

1350 - Rio Algom\Modeling\Phase2Modeling\Graphs\MW-112.grf

MONTGOMERY & ASSOCIATES

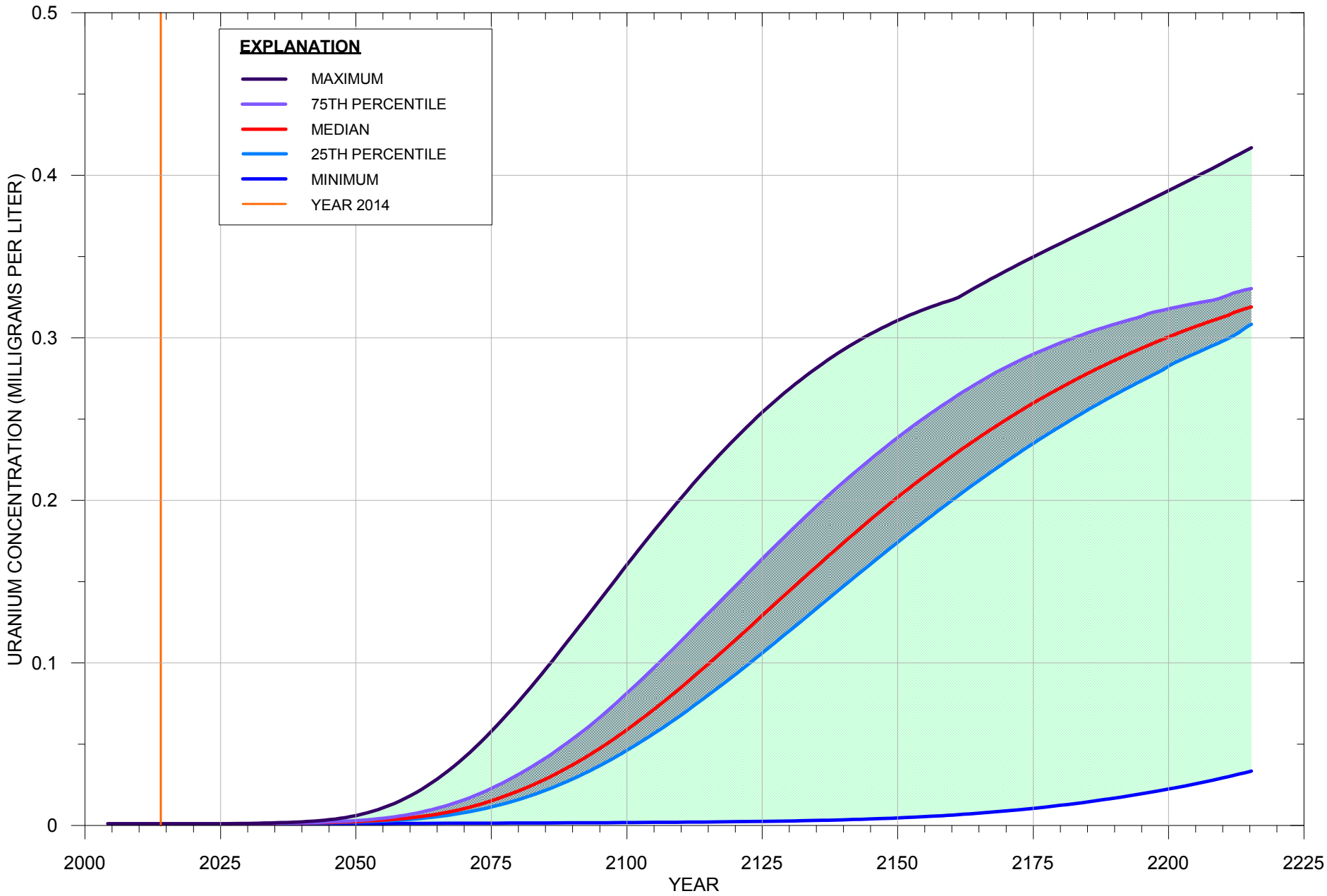


FIGURE K-25. DISTRIBUTION OF PROJECTED URANIUM CONCENTRATIONS FROM ALL MODELS AT WELL MW-114 RIO ALGOM MINING LLC, LISBON FACILITY

1350 - Rio Algom\Modeling\Phase2Modeling\Graphs\MW-114.grf

MONTGOMERY & ASSOCIATES

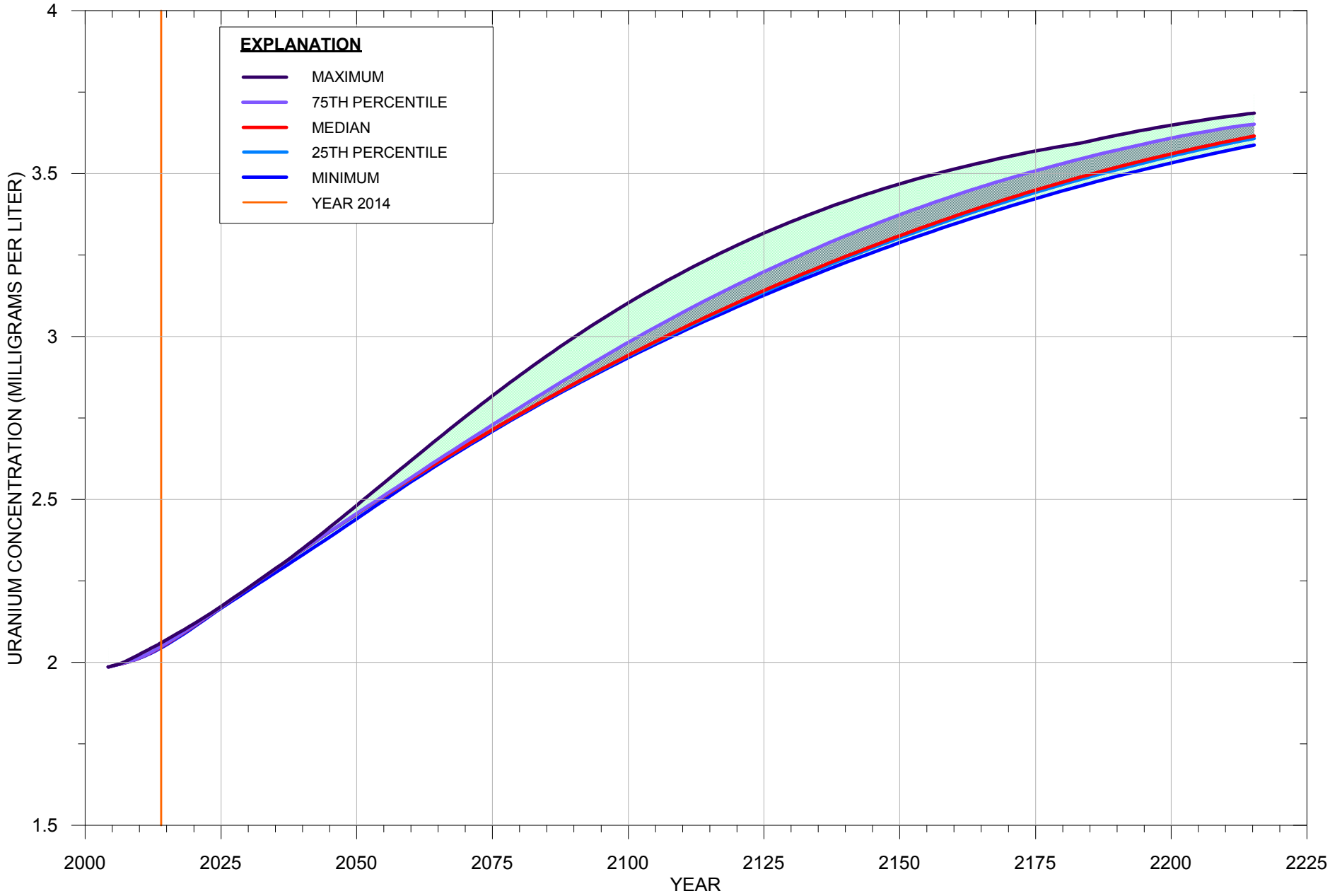


FIGURE K-26. DISTRIBUTION OF PROJECTED URANIUM CONCENTRATIONS FROM ALL MODELS AT WELL MW-119 RIO ALGOM MINING LLC, LISBON FACILITY

1350 - Rio Algom\Modeling\Phase2Modeling\Graphs\MW-119.grf

MONTGOMERY & ASSOCIATES

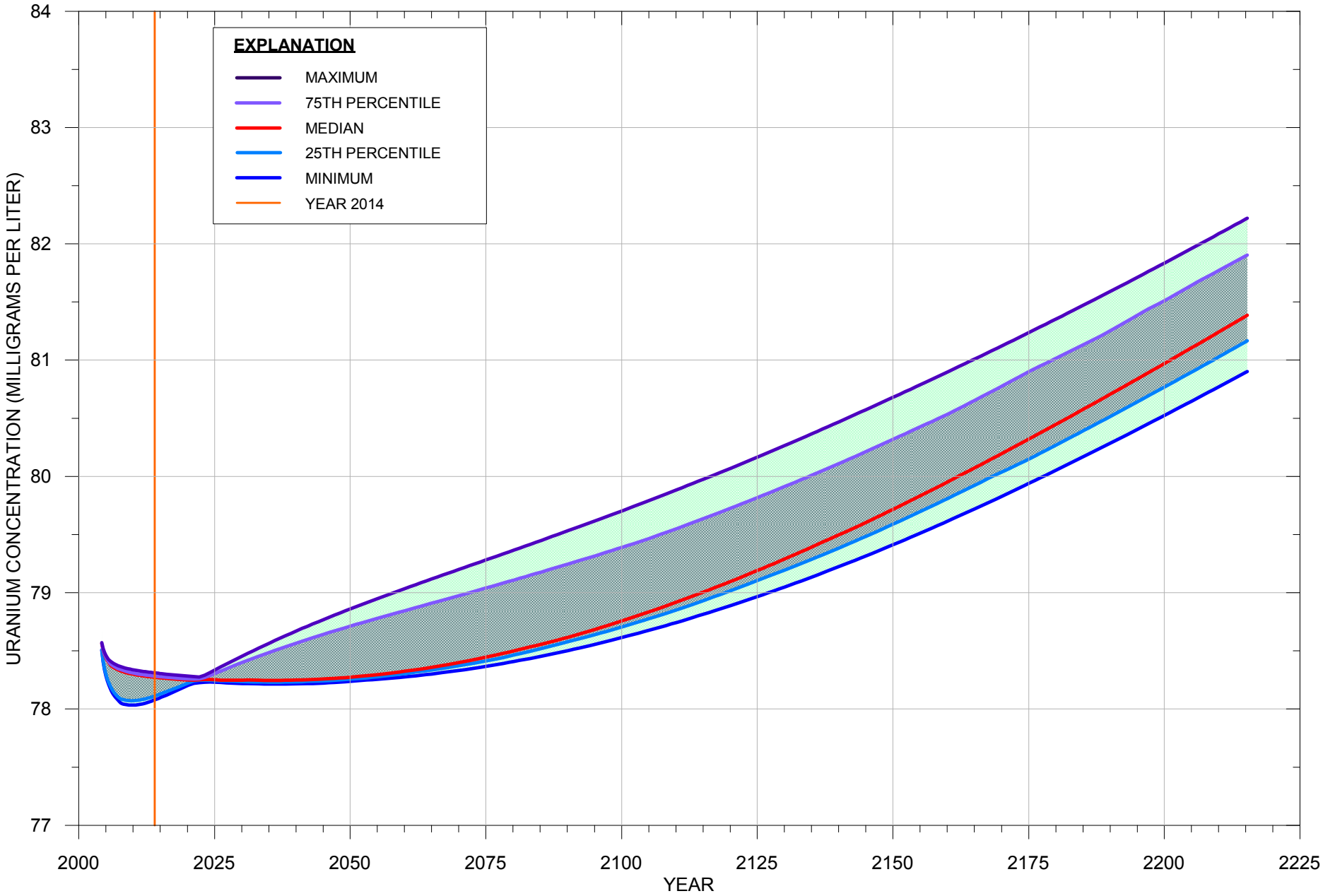


FIGURE K-27. DISTRIBUTION OF PROJECTED URANIUM CONCENTRATIONS FROM ALL MODELS AT WELL OW-UT-9 RIO ALGOM MINING LLC, LISBON FACILITY

1350 - Rio Algom\Modeling\Phase2Modeling\Graphs\OW-UT-9.grf

MONTGOMERY & ASSOCIATES

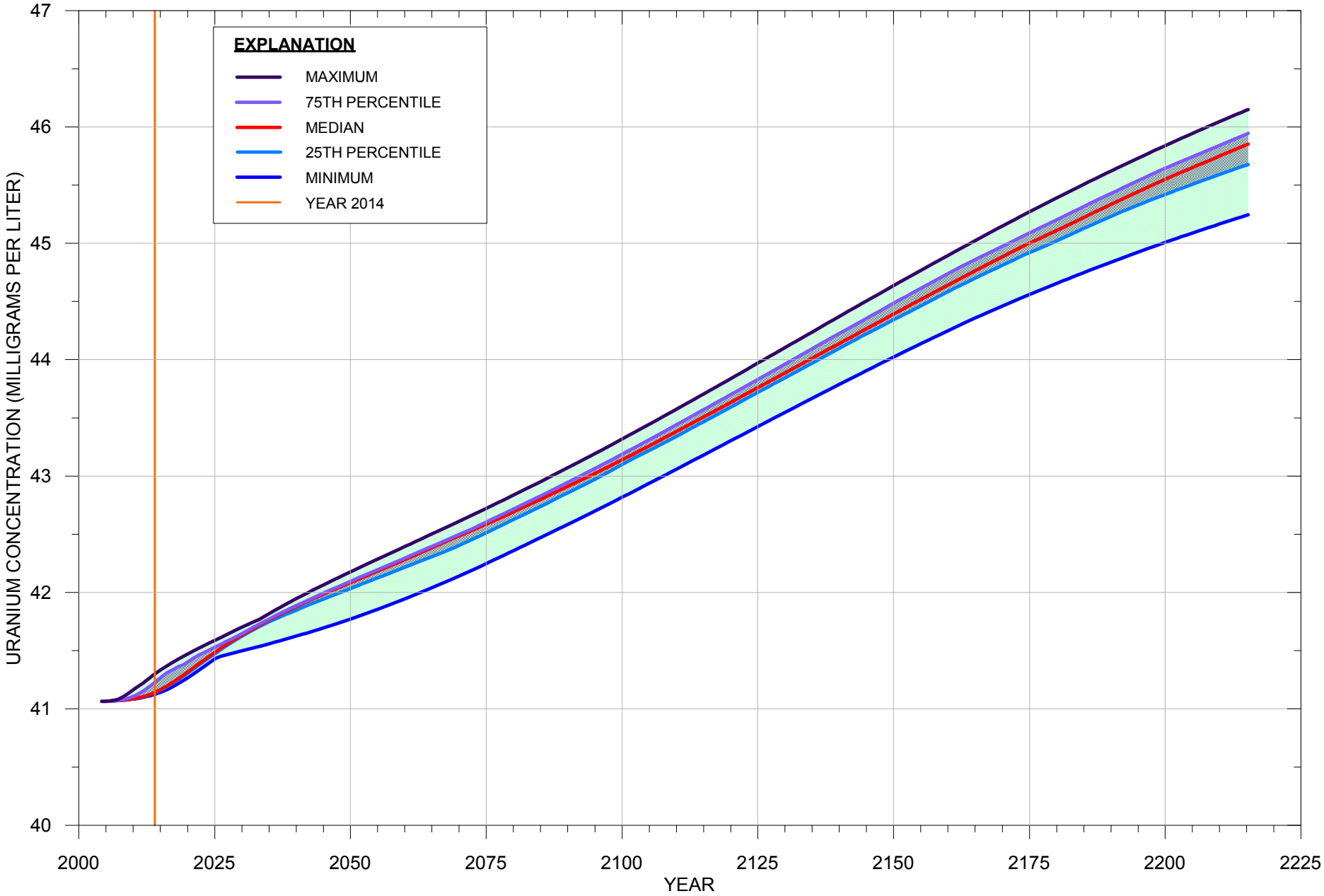


FIGURE K-28. DISTRIBUTION OF PROJECTED URANIUM CONCENTRATIONS FROM ALL MODELS AT WELL RL-1 RIO ALGOM MINING LLC, LISBON FACILITY

1350 - Rio Algom\Modeling\Phase2Modeling\Graphs\RL-1.grf

MONTGOMERY & ASSOCIATES

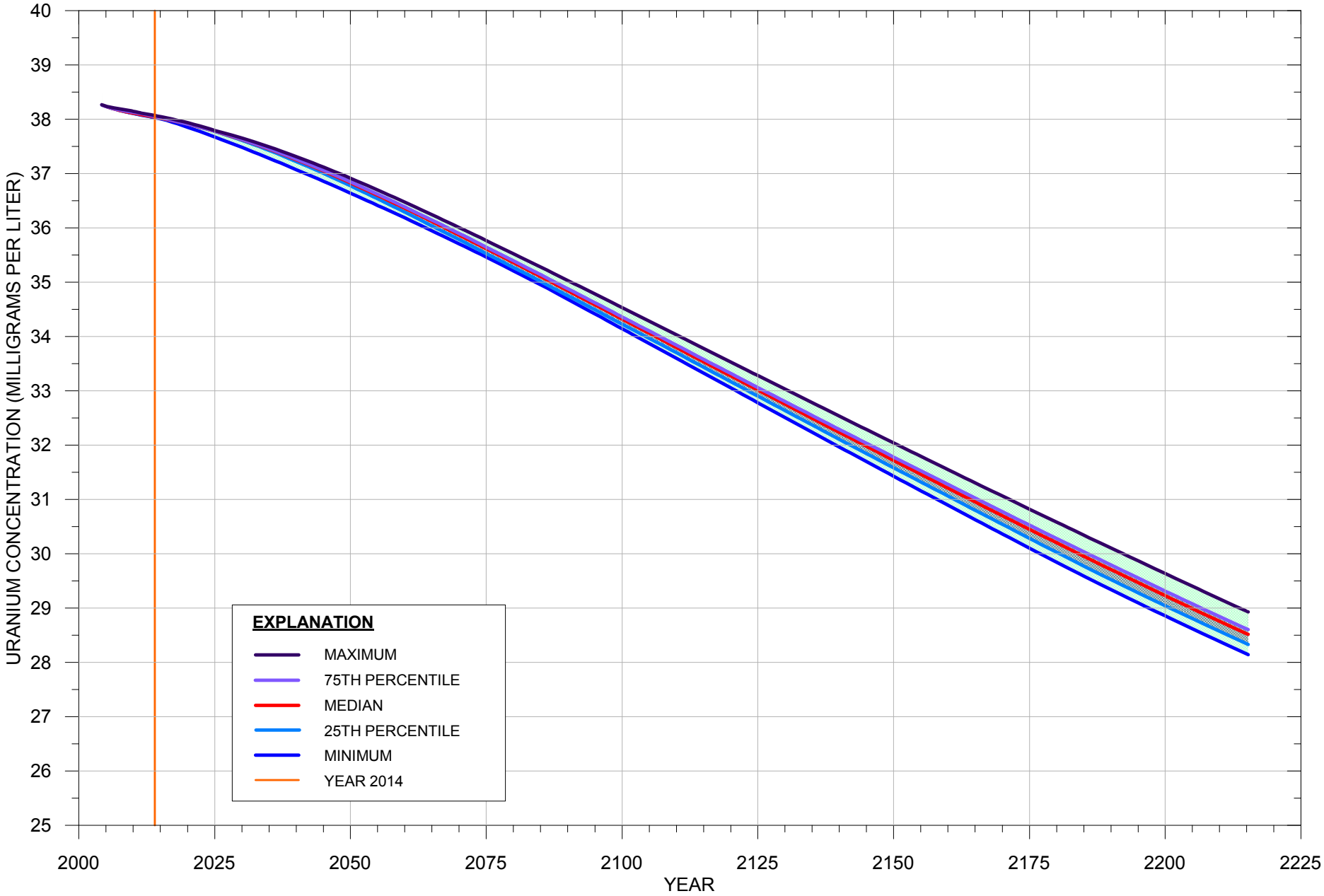


FIGURE K-29. DISTRIBUTION OF PROJECTED URANIUM CONCENTRATIONS FROM ALL MODELS AT WELL RL-3 RIO ALGOM MINING LLC, LISBON FACILITY

1350 - Rio Algom\Modeling\Phase2Modeling\Graphs\RL-3.grf

MONTGOMERY & ASSOCIATES

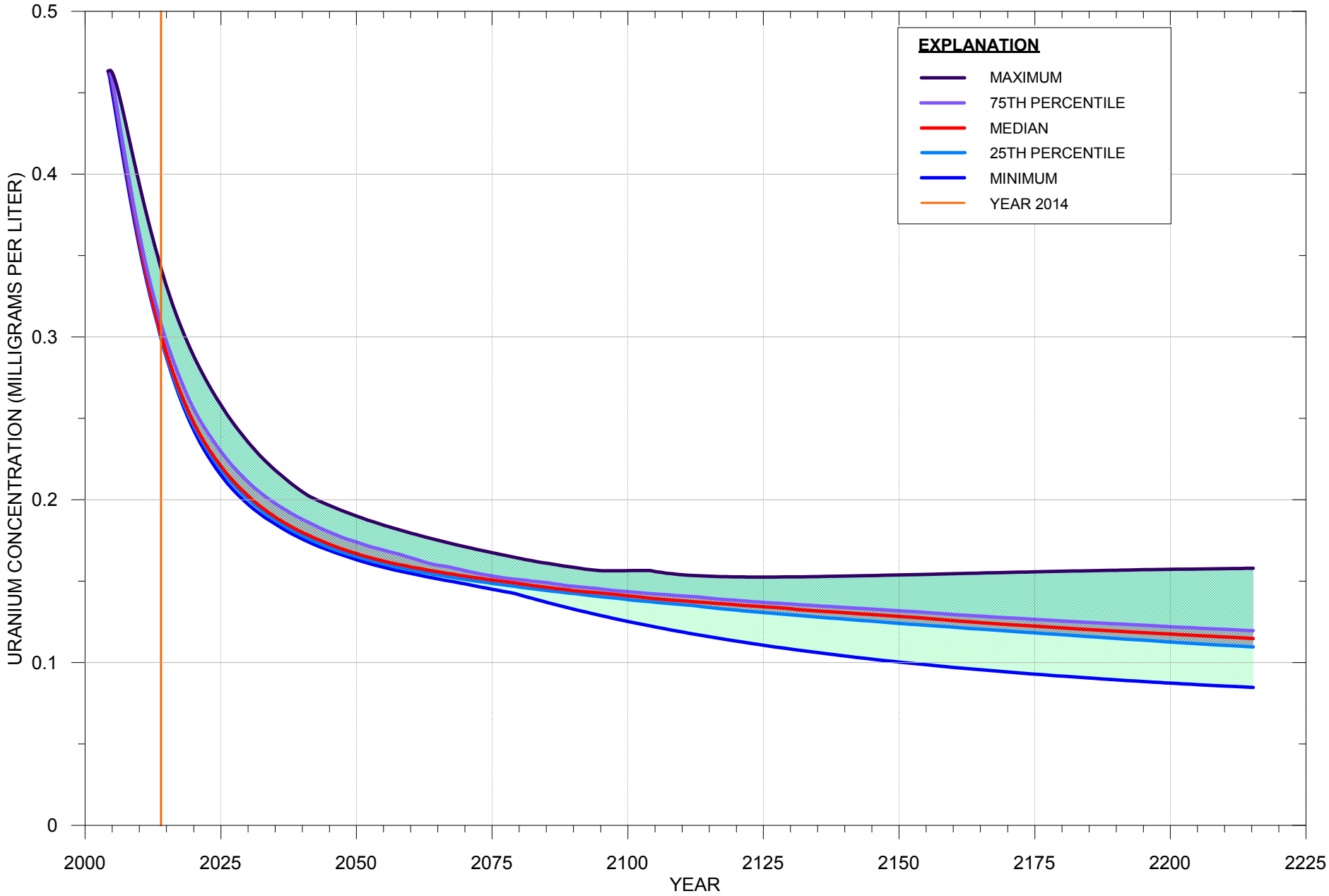


FIGURE K-30. DISTRIBUTION OF PROJECTED URANIUM CONCENTRATIONS FROM ALL MODELS AT FAULT LOCATION 4 RIO ALGOM MINING LLC, LISBON FACILITY

1350 - Rio Algom\Modeling\Phase2Modeling\Graphs\F4.grf

MONTGOMERY & ASSOCIATES

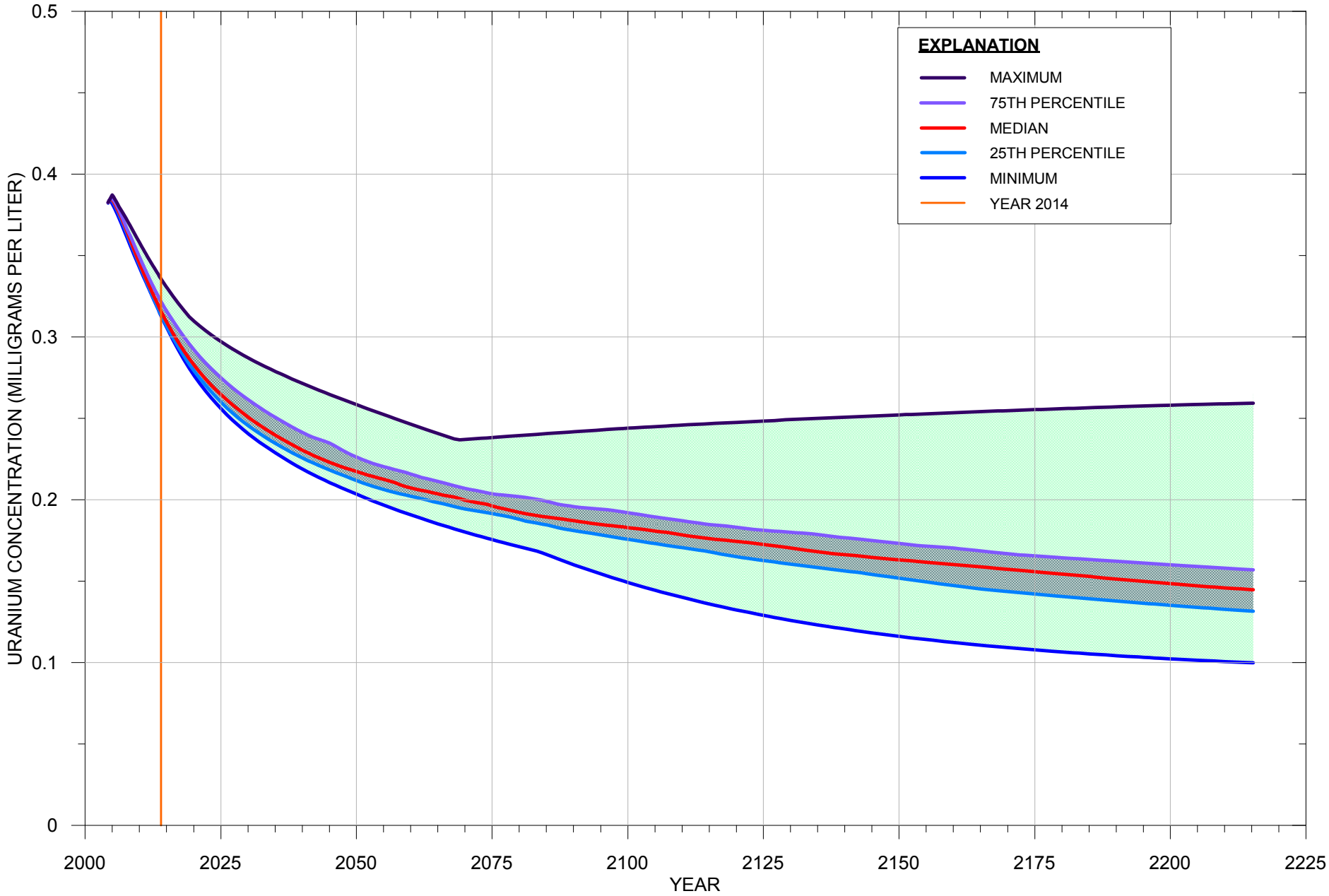


FIGURE K-31. DISTRIBUTION OF PROJECTED URANIUM CONCENTRATIONS FROM ALL MODELS AT FAULT LOCATION 5 RIO ALGOM MINING LLC, LISBON FACILITY

1350 - Rio Algom\Modeling\Phase2Modeling\Graphs\F5.grf

MONTGOMERY & ASSOCIATES

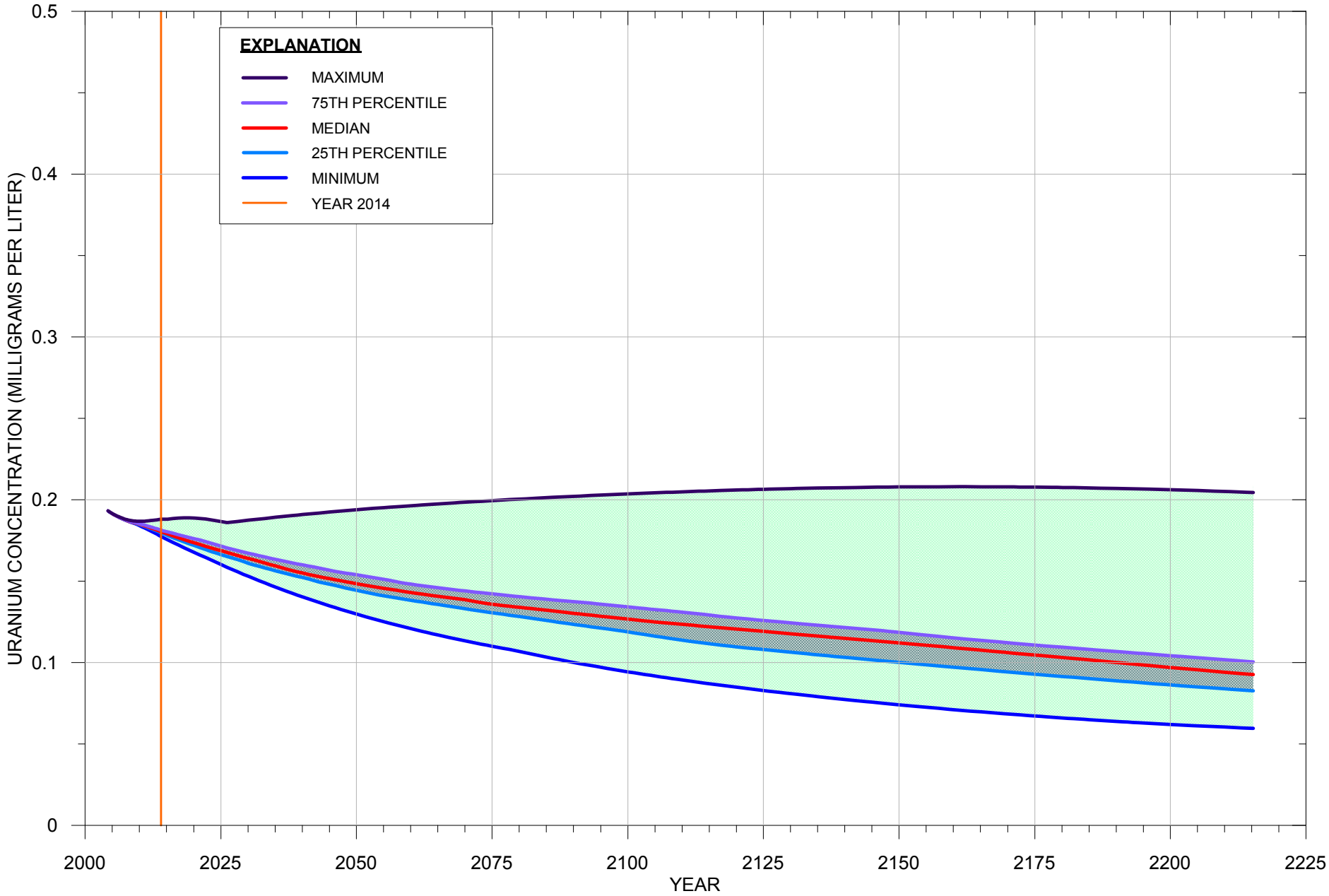


FIGURE K-32. DISTRIBUTION OF PROJECTED URANIUM CONCENTRATIONS FROM ALL MODELS AT FAULT LOCATION 6 RIO ALGOM MINING LLC, LISBON FACILITY

1350 - Rio Algom\Modeling\Phase2Modeling\Graphs\F6.grf

MONTGOMERY & ASSOCIATES

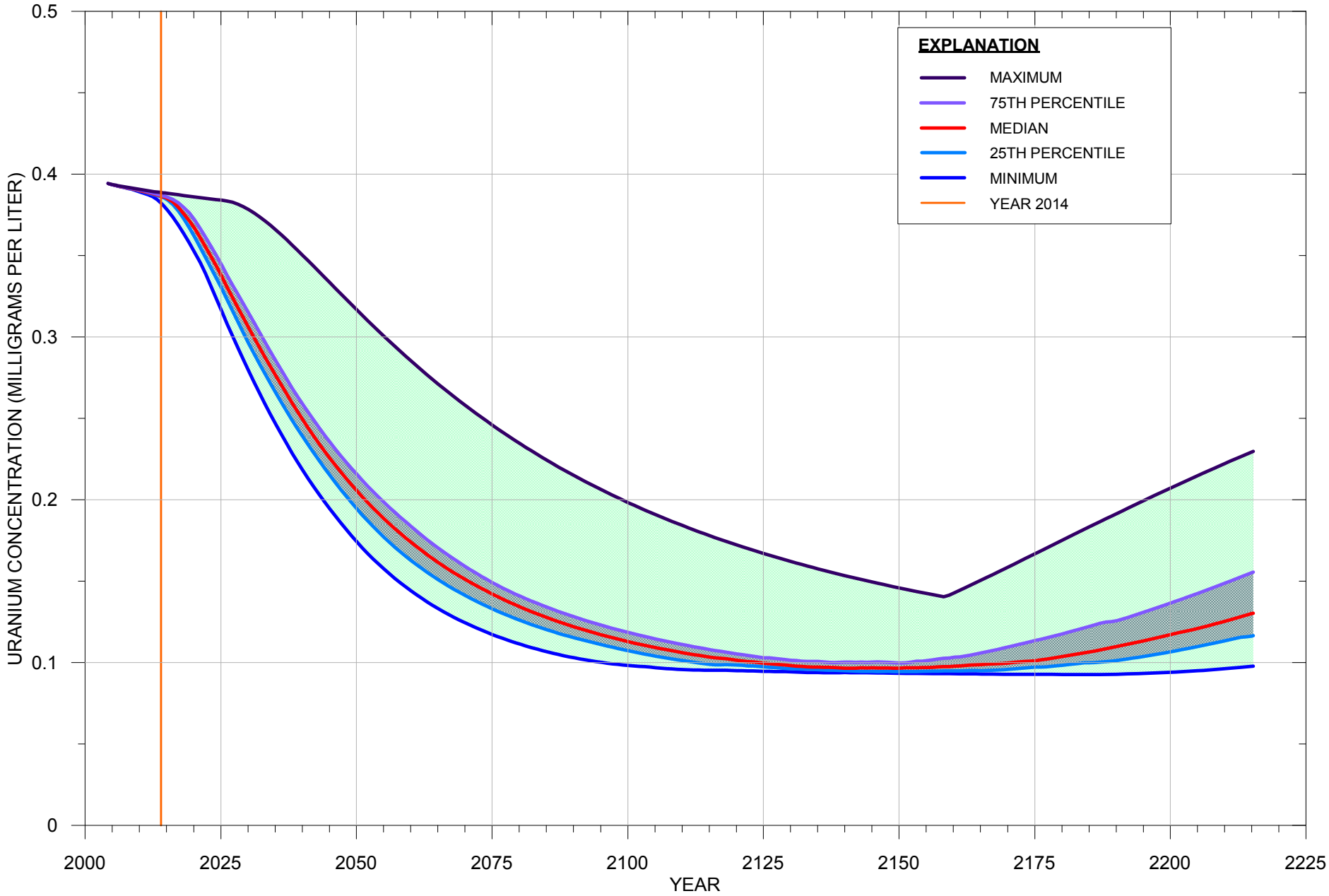


FIGURE K-33. DISTRIBUTION OF PROJECTED URANIUM CONCENTRATIONS FROM ALL MODELS AT FAULT LOCATION 7 RIO ALGOM MINING LLC, LISBON FACILITY

1350 - Rio Algom\Modeling\Phase2Modeling\Graphs\F7.grf

MONTGOMERY & ASSOCIATES

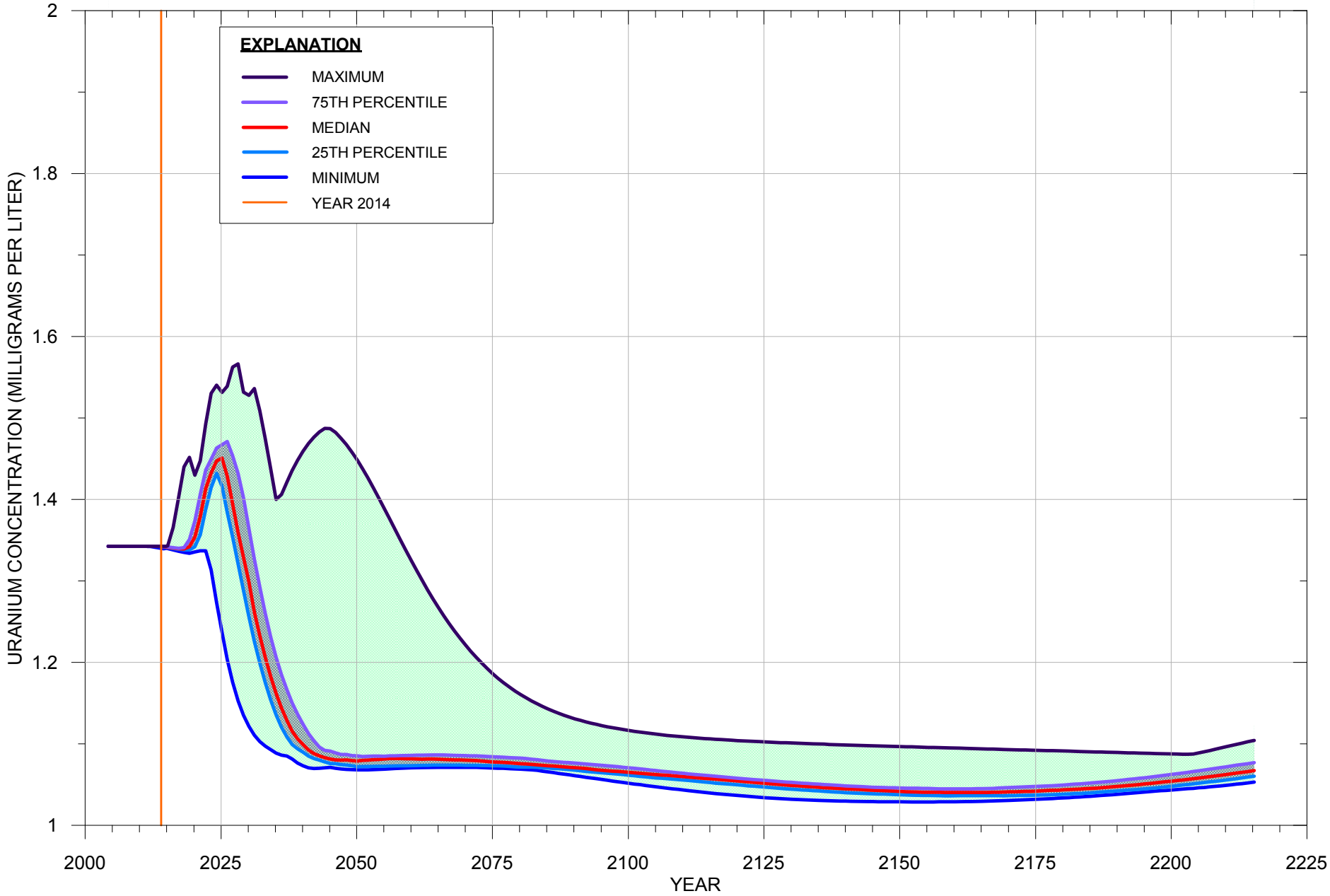


FIGURE K-34. DISTRIBUTION OF PROJECTED URANIUM CONCENTRATIONS FROM ALL MODELS AT FAULT LOCATION 8 RIO ALGOM MINING LLC, LISBON FACILITY

MONTGOMERY & ASSOCIATES

1350 - Rio Algom\Modeling\Phase2Modeling\Graphs\F8.grf

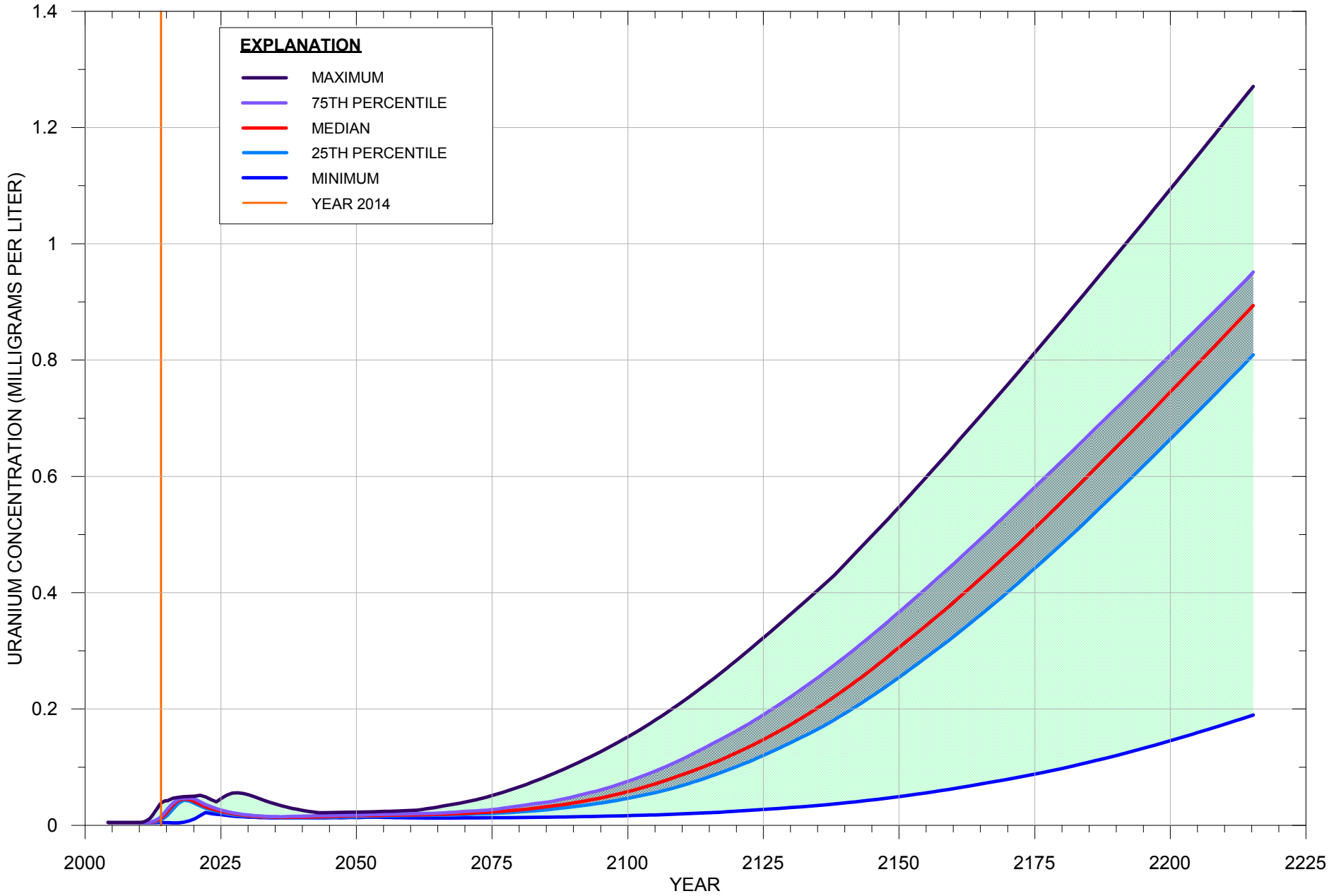


FIGURE K-35. DISTRIBUTION OF PROJECTED URANIUM CONCENTRATIONS FROM ALL MODELS AT FAULT LOCATION 9 RIO ALGOM MINING LLC, LISBON FACILITY

MONTGOMERY & ASSOCIATES

1350 - Rio Algom\Modeling\Phase2Modeling\Graphs\F9.grf

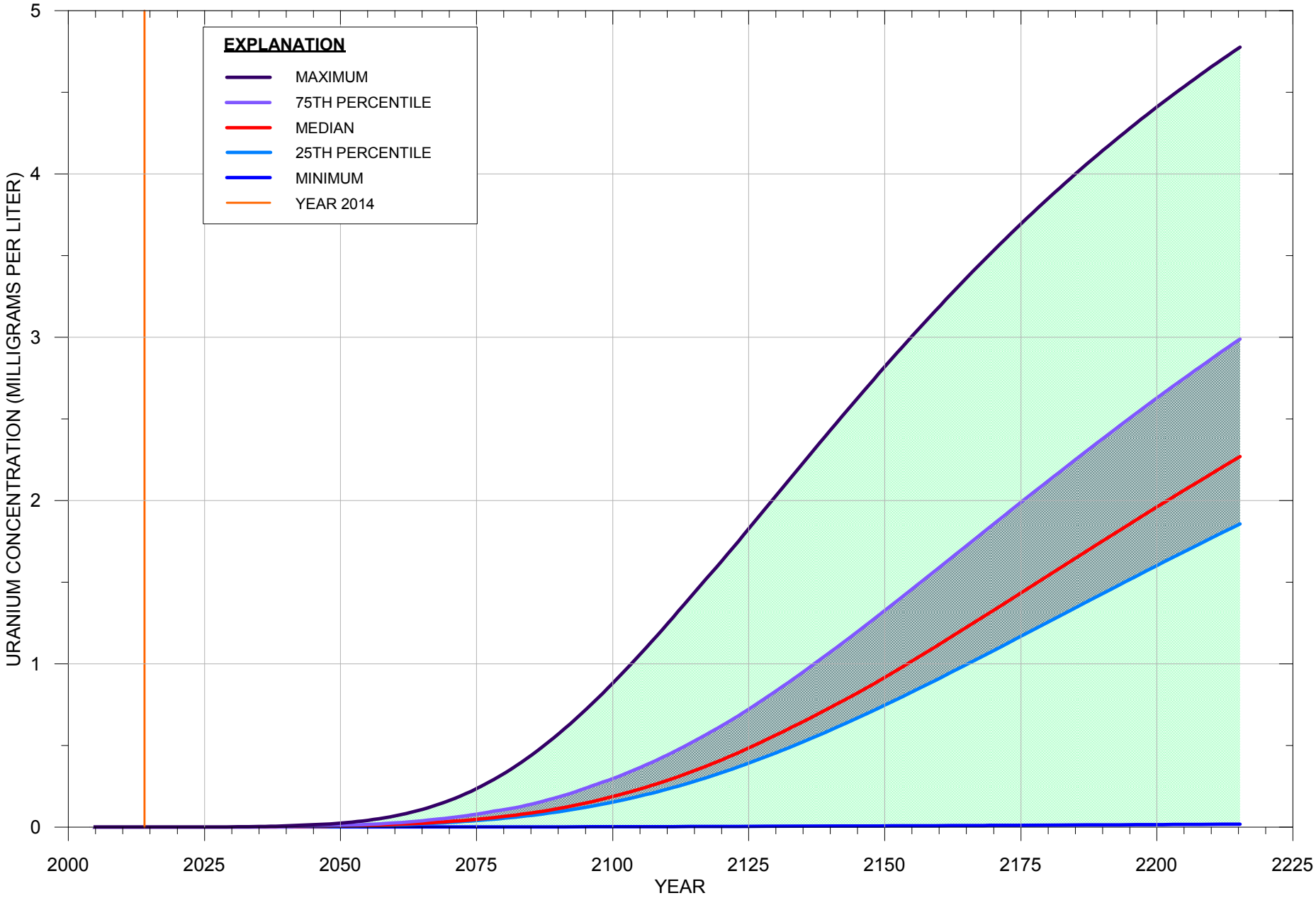


FIGURE K-36. DISTRIBUTION OF PROJECTED URANIUM CONCENTRATIONS FROM ALL MODELS AT FAULT LOCATION 10 RIO ALGOM MINING LLC, LISBON FACILITY

MONTGOMERY & ASSOCIATES

1350 - Rio Algom\Modeling\Phase2Modeling\Graphs\F10.grf