Alton Coal Development, LLC.

Summary of PM_{10} Data Collected at Coal Hollow Mine, Utah During the First Quarter, 2013

Submitted to:
Utah Division of Environmental Quality
Division of Air Quality
195 North 1950 West
Salt Lake City, Utah
Contact: Jon Black

Prepared by:
Alton Coal Development, LLC.
463 N 100W, Suite1
Cedar City, Utah 84721
Contact: Kirk Nicholes
435.867.5331

ALTON COAL DEVELOPMENT
COAL HOLLOW
PROJECT

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1.0 INTRODUCTION

This report summarizes measurements of Particulate Matter less than 10 microns nominal aerodynamic diameter (PM_{10}) collected and processed by Alton Coal Development, LLC, (ACD) from the three monitoring stations located at the Coal Hollow Mine Facility in Alton, Utah. Monitoring for PM_{10} is a condition of the mines operating permit.

PM_{10} monitoring at the site consists of three BGI PQ200 PM_{10} monitors run by solar power. Figure 2 of this report shows the approximate locations of the monitoring locations. The BGI PQ200 monitors are EPA Reference Method monitors and are operated on the National Particulate 1-in-6 Monitoring Schedule. The data summarized herein covers the data collected during the fourth quarter of 2012.

2.0 SITE LOCATION

The Coal Hollow Mine is located in Kane County, Utah, approximately three miles southeast of the town of Alton, Utah. Figure I on the following page gives an overview of the site location. Specifically the Coal Hollow Mine is located in Sections 19, 20, 29, and 30 of Township 39S, Range 5W; with an approximate facility location of:

Northing: 41401699 meters

Easting: 371534 meters

Universal Transverse Mercator (UTM) Datum NAD27, Zone 12

The two monitoring locations as depicted in Figure 2, are located in positions to collect both background and maximum PM10 concentrations. The background monitor has a manufactures serial #962, therefore this monitor will be referred as monitor 962A. The compliance monitor has a manufactures serial #963, therefore this monitor will be referred as monitor 963B. The co-located monitor has a manufactures serial #964, therefore this monitor will be referred as monitor 964C. The compliance monitor and the co-located monitor coordinates are 37° 24' 5.04" North Latitude, 112° 27' 20.91" West Longitude, WGS84 Datum. The background monitor coordinates are 37° 24' 21.96" North Latitude, 112° 25' 59.97" West Longitude, WGS84 Datum.

Figure 1 - Site Location Map

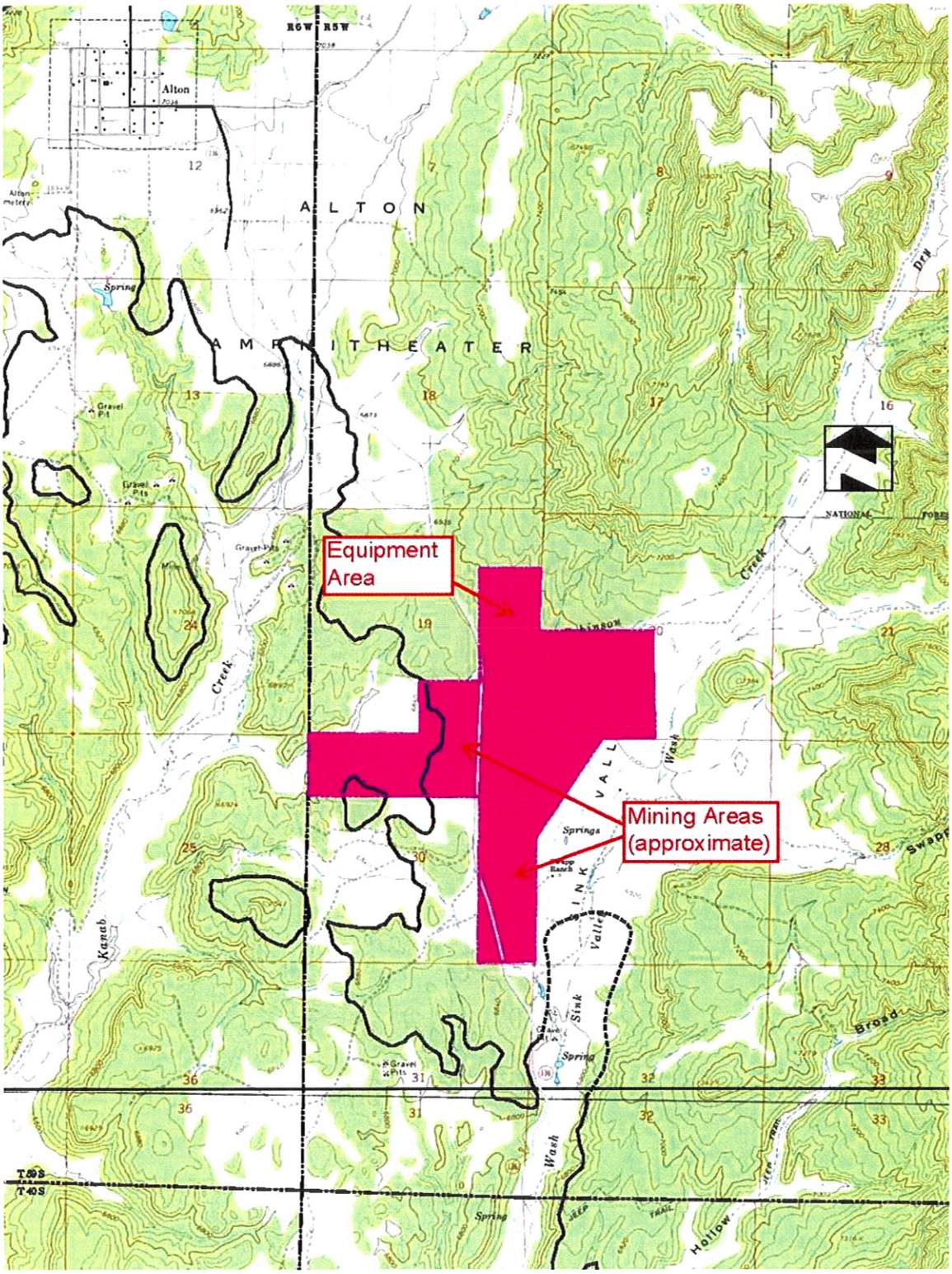
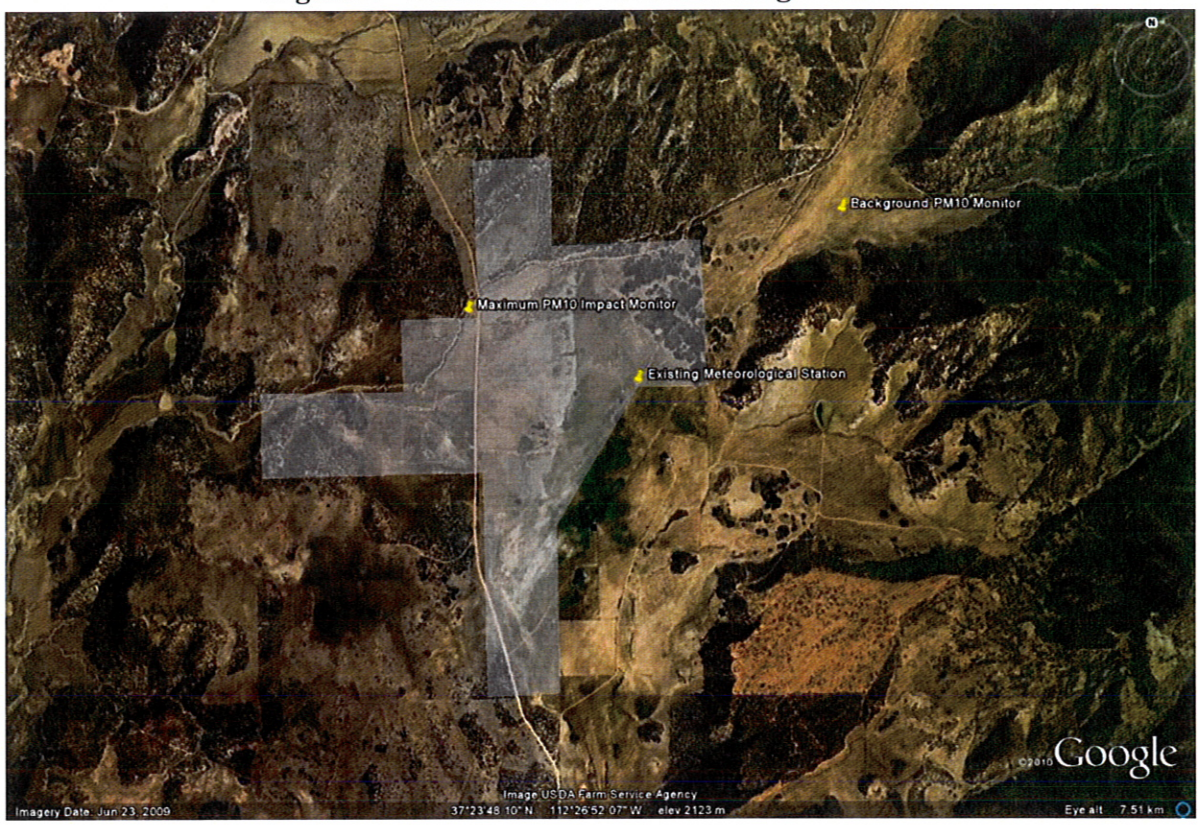


Figure 2 - Satellite View of Monitoring Locations



3.0 AIR QUALITY DATA SUMMARIES

A listing of the measured PM_{10} concentrations for the quarter are presented in Appendix B (individual data sheets found on the enclosed disk in the PDF version of Appendix B) and Field Data Sheets generated during the collection of each sample are presented in Appendix D. Measurements were collected during a 24-hour periods and represent the average PM_{10} concentration during the midnight to midnight data collection cycle. As required by the operating permit, duplicate measurements were made with Sampler #963B (designated as a compliance monitor) and Sampler #964C (designated as a co-located sampler) to the extent possible. The #964C monitor lost a memory chip requiring repairs by the manufacturing company, the monitor was out of service for eight sampling intervals from January 25th through March 6th while repairs were being made. The quarterly mean PM_{10} concentration and the comparison of measured concentrations to standards are based on measurements from the primary Sampler #963B. If a measurement from Sampler #963B was missing or invalid, the measurement from the secondary Sampler #964C would be used.

The highest 24-hour mean PM_{10} concentrations measured during the quarter from the two monitoring locations are summarized in Table I, Table II, and Table III. The three highest concentrations, # of valid samples, and the arithmetic mean concentrations from each of the

sites are listed. All measured PM_{10} concentrations were below the 24-hour National Ambient Air Quality Standard (NAAQS) of 150 $\mu g/m^3$.

Table I - Summary of Measured PM_{10} Concentrations ($\mu g/m^3$)
Background Monitor - 962A

RANK	DATE	PM_{10} CONCENTRATION
Highest	3/17/2013	9.0
2nd Highest	3/29/2013	8.1
Monthly Mean	1/1/13-1/31/13	2.8
Monthly Mean	2/1/13-2/28/13	2.2
Monthly Mean	3/1/13-3/31/13	7.1
Quarterly Mean	1/1/13-3/31/13 (15 valid samples)	4.0

Table II - Summary of Measured PM_{10} Concentrations ($\mu g/m^3$)
Compliance Monitor - 963B

RANK	DATE	PM_{10} CONCENTRATION
Highest	3/29/2013	81.3
2nd Highest	1/4/2013	59.6
Monthly Mean	1/1/13-1/31/13	25.6
Monthly Mean	2/1/13-2/28/13	6.1
Monthly Mean	3/1/13-3/31/13	40.0
Quarterly Mean	1/1/13-3/31/13 (15 valid samples)	23.9

Table III - Summary of Measured PM_{10} Concentrations ($\mu g/m^3$)
Compliance Monitor – 964C

RANK	DATE	PM_{10} CONCENTRATION
Highest	3/23/2013	39.9
2nd Highest	3/29/2013	27.4
Monthly Mean	1/1/13-1/31/13	13.1
Monthly Mean	2/1/13-2/28/13	NA
Monthly Mean	3/1/13-3/31/13	27.9
Quarterly Mean	1/1/13-3/31/13 (5 valid samples)	22.0

Table IV – Mean Quarterly and Monthly Wind Speed

	1st Quarter 2013	January	February	March
Mean Wind Speed (m/s)	2.85	2.39	3.22	2.98

4.0 DATA RECOVERY AND QUALITY ASSURANCE

4.1 Data Recovery

Monitor 962A

Monitor 962A collected 15 of the 15 samples during the quarter. The percent recovery for this quarter is 100%.

Monitor 963B

Monitor 963B collected 15 of the 15 samples during the quarter. The percent recovery for this quarter is 100%.

Monitor 964C

Monitor 964C collected 5 of the 15 samples during the quarter. The percent recovery for this quarter is 33.3%. The monitor for the date of January 4th malfunctioned. The monitor for the

date of January 22nd indicates that the monitor flow rate varied more than +/- 5 percent. The #964C monitor lost a memory chip requiring repairs by the manufacturing company, the monitor was out of service for eight sampling intervals from January 25th through March 6th while repairs were being made.

The PM_{10} data recoveries for the three monitoring stations are presented below:

Table V - Summary of Data Recovery

SAMPLER	POSSIBLE SAMPLES	VALID SAMPLES	PERCENT DATA RECOVERY
962A	15	15	100%
963B	15	15	100%
964C	15	3	33.3%

4.2 Quality Assurance

Quality assurance procedures utilized to verify the integrity of the measured PM_{10} data included the following:

1. Review of PM_{10} precision measurements based upon duplicate, collocated measurements.
2. Independent quarterly audits of the PM_{10} samplers.
3. Monthly zero and single point flow rate checks of the PM_{10} samplers.

4.2.1 Precision of PM_{10} Measurements

The precision of the PM_{10} measurements was determined from the duplicate samples collected from the collocated BGI PQ200 Monitors 963B and 964C. As recommended in *40 CFR, Part 58*, Appendix A, Section 5.3.1, PM_{10} precision checks are reported for instances when the concentrations for duplicate samples both exceed 3 $\mu g/m^3$. Duplicate samples that did not meet this condition were omitted for the purposes of the precision checks. Appendix C, of this report summarizes precision calculations between the compliance monitor and the co-located monitor. Monthly flow rate verification data is also summarized in Appendix C.

Precision calculations were developed based on 5 valid pairs of co-located monitoring data during the quarter. Single point precision based on *40 CFR, Part 58*, Appendix A Equation

10 ranged from -7.4% to 99.2%. The aggregate coefficient of variability (CV) calculated in accordance with *40 CFR, Part 58*, Appendix A Equation 11 is 53.4%. This value is above the 10% goal for aggregate CV. The value for first quarter CV was significantly impacted by the absence of the 964C monitor during repairs reducing the number of pairs for comparison. Four of the five values exceeded the 10%, with values of 99.2%, 43.0%, 29.8% and 24.8%. The large variability can be attributed to the proximity of a haulage road (less than 80 feet) to the Monitors. At the date of this report, the haulage road is being relocated. ACD will continue to investigate other causes that may have an effect on the correlation of precision calculations.

4.2.2 Audit Results

The accuracy of the PM_{10} sampler flows was verified by a performance audit conducted by Air Resource Specialist on March 22, 2013. A copy of the audit report is presented in Appendix E and is summarized in Table VI. The audit results indicate that the two samplers were operating properly, the collocated monitor was out for repairs.

Table VI - Audit Summary

SAMPLER	AUDIT % DIFFERENCE	LIMIT*	DESIGN % DIFFERENCE	LIMIT*
962A	-3.9	±4%	0.0	± 5%
963B	-3.8	±4%	0.0	± 5%
964C	Out for repairs at time of audit			
*Values between ± 7% and ± 10% require recalibration but no data are invalidated.				

4.2.3 Zero and Single Point Flow Rate Checks

Zero and single-point flow rate verifications are performed by a site technician on a monthly basis. The data was then input into a statistical calculator to calculate percent difference and bias between each of the monitors and the monthly single point flow rate measured by a NIST traceable calibration orifice. The calculator used is called the "Data Assessment Statistical Calculator" DASC Tool. DASC was developed for the data user community and can be found in the Precision and Accuracy Reporting System within the Quality Assurance section of EPA's Ambient Monitoring Technology Information System. Monitor 964C has only one of three data points due to the monitor being out for repairs during the quarter. This data is presented in Appendix C of this report.