

LANDFILL ANNUAL REPORT
For Calendar year 2012

FEB 26 2013
2013-002070

Administrative Information (Please enter all the information requested below)

Facility Name: Intermountain Regional Landfill

Facility Mailing Address: PO Box 1889, Salt Lake City, UT 84110
(Number & Street, Box and/or Route)

City: Fairfield Town Zip Code: 84013

County: Utah County Permit Number: 1102

Owner

Name: ROC Fund Landfill Holdings, LLC Phone No.: (801)403-7651

Owner Mailing Address: PO Box 1889
(Number & Street, Box and/or Route)

City: Salt Lake City State: Utah Zip Code: 84110

Contact Name: Rob Richards Contact Title: General Manager

Contact's Mailing Address: Same

Phone No.: (801)403-7651 Contact's Email Address: robr890@gmail.com

Operator (Complete this section only if the operator is not an employee of the Owner shown above)

Name: <same as above> Phone No.: _____

Owner Mailing Address: _____
(Number & Street, Box and/or Route)

City: _____ State: Utah Zip Code: _____

Contact Name: _____ Contact Title: _____

Contact's Mailing Address: _____

Phone No.: _____ Contact's Email Address: _____

Facility Type and Status

- Class I Class IIIb Class V Facility Closed during the year
 Class II Class IVa Class VI Date Closed: _____
 Class IIIa Class IVb

Annual Disposal (Tons received at the facility for disposal)

Waste Type	Waste Origin		Total	Measurement	
	In-State	Out-of-State		Tons	Cubic Yards
Municipal	<u>18,517.05</u>	<u>0.00</u>	<u>18,517.05</u>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Industrial	_____	_____	_____	<input type="checkbox"/>	<input type="checkbox"/>
C/D*	_____	_____	_____	<input type="checkbox"/>	<input type="checkbox"/>

*C/D waste includes all waste going to a Class IV or VI landfill cell

Conversion Factor Used

- None Used Site Specific From Rules List Site Specific Conversion: _____

RecyclingMaterial Recycled: 17.50 Reported in Tons Cubic Yards **Utah Disposal Fee**Disposal fee required to be paid to State Yes No (If yes please show fees paid below)Municipal: \$2,407.22 Industrial: _____ C/D: _____ Annual: _____

Municipal, Industrial and C/D are fees paid by Commercial Facilities. Annual fee is paid by facilities operated by a municipality

Current Landfill Remaining CapacityTons: 17,000,000.00 Cubic Yards: 27,000,000.00 Acre: 285.00 Years: 50.00Acres Currently Open: 7.50 Acres Currently Closed: 0.00**Financial Assurance**Current Closure Cost Estimate: \$817,036.00Current Post-Closure Cost Estimate: \$690,000.00Current Amount or Balance in Mechanism: \$1,714,711.00

(If facility permit has been renewed and if balance does not equal or exceed total for closure and post-closure care please contact the Division)

Current Financial Assurance Mechanism: Bond

(ie. Bond, Trust Fund, Corporate or government Test etc.)

Current Financial Assurance Mechanism Holder: Travelers Casualty and Surety Company of America

(ie. Name of Bond Company, Bank etc. Account number)

Financial Assurance: Each facility must recalculate the cost of closure and post-closure care to account for inflation and design changes each year. The inflation factor can be found on the Division web page. Facilities that are using a trust account should include a copy of the most recent account statement.**Note** Facilities using "Local Government Financial Test" or the "Corporate Financial Test" must provide the information required in R315-309-8(4) or R315-309-9(3) each year.**Other Reports and Information to be Submitted with Annual Report**Ground Water Monitoring: Class I and V landfills only. Check if exempt Explosive Gas Monitoring: Class I, II and V landfills only. Check if exempt Does the facility have a landfill gas collection system Yes No

If yes please briefly describe use of gas, e.g., flared or used for electricity generation.

Training Report: A report of all training programs or procedures completed by facility personnel during the year.**Signature:** Date: 2-25-2013

Signature should be by an executive officer, general partner, proprietor, elected official, or a duly authorized representative. A duly authorized representative must meet the requirements of the solid waste rules (UAC R315-310-2(4)(d)).

Type Name: Rob Richards Title: General Manager

Intermountain Regional Landfill

2012 Annual Report

Attachment List

Attachment A – Weekly Operator Training Manual

Attachment B – Intermountain Regional Safety Policy Manual

Attachment C – Monthly Training Records for HHW

Attachment D – Landfill Inspection and Load Inspection Forms

Attachment E – December 2012 Groundwater Statistical Analysis Report

Attachment F – Explosive Gas Sampling Report

Attachment G – Closure & Post Closure Care Cost Estimate, Surety Bond

Attachment A – Weekly Operator Training Manual

Includes program for weekly Safety, Operations, and Material Handling

All trainings materials documented and included in Daily Operating Record which is kept at the site



Fire Prevention & Extinguishing – Waste Industry

Toolbox Talks are intended to facilitate health and safety discussions on the job site. For additional Toolbox Talks, please visit SAFETY.CAT.COM™.

TOPIC: Fire Prevention & Extinguishing

General Precautions

- Keep firefighting equipment where it is easy to find and access
- Keep all equipment clean
- Immediately clean up all trash and any oil spills
- Clean materials from heat sources on machines
- Turn off disconnect switch
- Perform proper walk around inspections

Flammable Liquids

- Take care to prevent vapors from flammable liquids, such as solvents, from coming into contact with heat or flames
- Store flammable liquids in appropriate, approved containers
- Always observe no smoking signs
- Never use gasoline as a cleaning agent

Fire Extinguishers and suppression systems

- Never use gasoline as a cleaning agent
- Check that all pins are in place on extinguishers and suppression systems
- Require monthly checks and take time to make sure the extinguisher and suppression system materials are not packed.
- Turn upside down and tap lightly with a rubber hammer to loosen packed material
- Use fire extinguishers on small fires only
- Aim at the base of the fire and use a sweeping motion
- Never block your passage of escape when fighting a fire
- Always use the proper type of extinguisher for the type of fire you are fighting

Discussion Date: _____

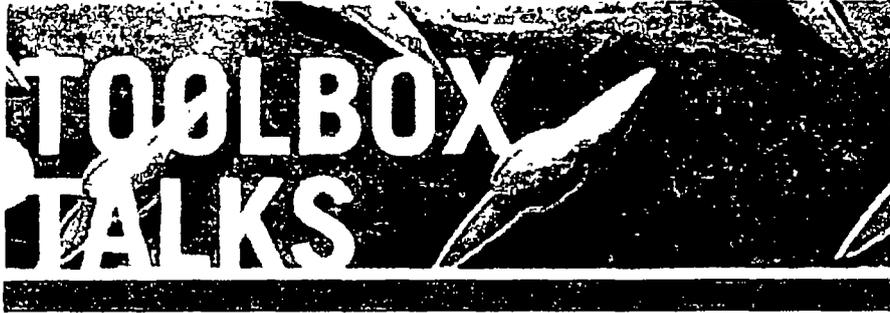
Employee Participants:

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TOPIC: Near Misses

Near Misses are leading indicators in the workplace that must be identified and investigated to reduce overall incidents.

- ☑ Near miss incidents are situations that did not result in personal injury or property damage but had the potential to do so.
☑ To get to the root cause of a near miss incident, they must be treated with the same attention to detail as if the event actually occurred.
☑ If near misses are identified and corrected, future incidents may be prevented.
☑ Near misses are an inexpensive opportunity to make changes in the workplace before something more severe occurs.
☑ For near miss reporting to be effective, there must be a system in place to collect the data, initiate proper root cause analysis, institute corrective action and follow-up to make sure corrective actions were effective.
☑ Near miss reporting must not be punished in order to gain employee participation.

Questions to Generate Discussion

- What is your company's reporting procedures for near miss incidents?
- What are some examples of near miss incidents that have occurred at your workplace?

Near Misses

Discussion Date: _____

Employee Participants:

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TOPIC: Building a Safety Culture

Safety Culture can be thought of as the values, beliefs, perceptions and normal behaviors that are shared by employees.

Whether it is intentional or not, every organization has a safety culture. The question is whether the safety culture is what we want it to be and what can we do to change it.

- POSITIVE SAFETY CULTURE: In a positive safety culture:
- Communication is open at all levels of the organization and feedback is seen as vital to improving safety processes.
- Individuals at all levels focus on what can be done to prevent injuries or illnesses.
- There is a commitment to safety regardless of all other concerns in the business.
- People and their well being are valued. The focus is on protecting people, not the bottom line.
- All personnel, especially senior managers, demonstrate their commitment to safety by following all safety processes and procedures, just as they instruct their employees to do.
NEGATIVE SAFETY CULTURE: In a negative safety culture:
- Communication is not open at all levels; employees do not openly communicate with upper management.
- Safety rules are used to discipline employees.
- Management may not follow safety rules (for example, not wearing hearing protection or other PPE as they are supposed to).
- Production demands require less focus on safety.
- Management's concern is not for the well being of the employees, but rather for a good safety record.

Questions to Generate Discussion

- What kind of safety culture do we have?
- What can our management team do to improve our safety culture?
- What can you do, individually, to improve our safety culture?
- Why is communication so important in establishing a safety culture?
- Do you feel you could approach a peer to discuss something that they could do more safely? Why or why not?
- If you could change one thing about our safety culture, what would it be?

Building a Safety Culture

Discussion Date: _____

Employee Participants:

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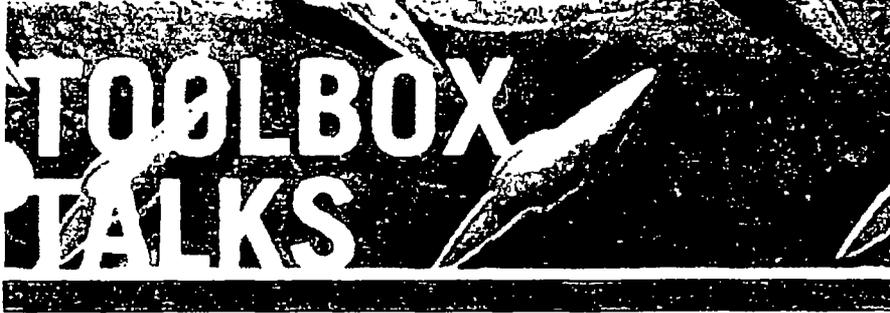
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TOPIC: Lightning Strikes

The average bolt of lightning carries over 100,000,000 volts and can reach out over 100 miles. According to the National Oceanic and Atmospheric Administration (NOAA), lightning is one of the leading weather-related causes of death and injury in the United States. It is estimated that the Earth is struck by this incredible electric force more than 100 times every second. The odds of being struck by lightning in your lifetime are 1 in 3,000.

There is a great deal of misunderstanding and misinformation regarding this powerful natural phenomenon. Let's explore some of the facts.

- Some forms of lightning originate and release from high up in the thunderstorm cloud. This lightning can strike far away from the actual rain storm – up to 5-10 miles in front or behind the storm. Many people are struck by lightning without realizing they are in a lightning risk area.
If you can hear thunder, you are within 10 miles of a storm and are within reach of lightning. This is the time to seek shelter.
Rubber-soled shoes provide absolutely no protection from lightning.
Buildings that are not equipped with grounded plumbing or electrical wiring are unable to conduct electrical current and do not offer protection from lightning. This means that you are still vulnerable if you seek shelter in a bus stop, shed, golf hut, park pavilion, etc.
Stay away from tall objects if caught in a storm. Trees are one of the worst forms of shelter from lightning. They offer a false sense of security and, if anything, attract lightning.
An automobile can offer protection by acting like a Faraday cage, provided that the occupants do not touch the metal of the car while inside.
When lightning strikes it can easily travel through electrical wire. Avoid using electrical devices (computers, hair dryers, etc.) during a storm to prevent injury.

So, what if you are caught in a vulnerable place during a storm?

- If you begin to feel the hair on your body or head begin to rise, this could be a sign that the positive charge of your body is reaching up to the negative charge of the sky. A strike could be imminent. Stay low and seek shelter. If caught in the open, crouch low. Do not lie on the ground. You are more apt to receive a secondary shock from the ground if lightning strikes near you.
If someone is struck, they do not contain an electric charge. Provide first aid immediately and be prepared to provide CPR. Call emergency response services.

Questions to Generate Discussion

- When is the best time to seek shelter from a thunderstorm?
Is it possible to be struck by lightning even when it is sunny?

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Lightning Strikes

Discussion Date: _____

Employee Participants:

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TOPIC: General Decontamination

Sometimes spills can occur even when precautions are taken. Therefore, it is important to know how to recover from a spill by decontaminating. Doing so can help prevent harm to personnel, equipment and/or the environment.

The definition of decontamination is the process of removing or neutralizing contaminants that have accumulated on personnel and/or equipment. This process is critical for a healthy and safe work environment. This Toolbox Talks document covers decontamination suggestions for contaminants that pose low to moderate risk. Typically employers have trained personnel or response teams to handle decontamination of chemicals with a high toxicity. Those specific procedures will not be discussed.

Ways to decontaminate personnel, equipment or the work environment:

- Personnel: Many industrial contaminants can be removed from a person's skin or clothes by scrubbing with soap and water. Even a seemingly benign chemical can cause irritation or other health problems with prolonged contact with the skin. Therefore, it is important to clean skin and/or clothing as soon as possible. If the contaminant has been absorbed into clothing, do not wait for it to dry out, clean it immediately.
Equipment: Soap and water can also be used when decontaminating equipment. Some heavier industrial contaminants may require a degreasing agent. Make sure to wear appropriate PPE when handling degreasing agents or solvents. It is important to collect the washed liquid and dispose of properly. Do not assume it is safe to pour down a drain.
Work Environment: Decontamination of a work environment may include removing contaminants from floors, seats or work tables. Start with an absorbent cloth to remove the bulk of the contaminant. Next, use a mild detergent and water to clean the hard surfaces. Porous or fibrous materials may have to be removed and disposed of properly. If a microbiological contaminant is thought to be present, finish the decontamination by wiping a mild bleach solution (1 teaspoon bleach / 1 quart water) over the surface and allow it to dry.

Questions to Generate Discussion

- Besides a bleach solution, what are other ways to decontaminate an area with a biological contaminant?
What kind of situation would it be best to call for help instead of doing your own decontamination procedure?

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General Decontamination

Discussion Date: _____

Employee Participants:

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Attachment B - Intermountain Regional Safety Policy Manual

Intermountain Regional Landfill

Safety Policy Manual

Company Policy, as well as State and Federal law, make the safety and health of the employees of the Intermountain Regional Landfill the first consideration in operating our business. Safety and health in our business must be a part of every operation, and every employee's responsibility at all levels. It is the intent of the Intermountain Regional Landfill to comply with all laws concerning the operation of the business and the health and safety of our employees and the public. To do this, we must constantly be aware of conditions in all work areas that can produce or lead to injuries. No employee is required to work at a job known to be unsafe or dangerous to his/her health. Your cooperation in detecting hazards, reporting dangerous conditions and controlling workplace hazards is a condition of employment. Inform your supervisor immediately of any situation beyond your ability or authority to correct. Employees will not be disciplined or suffer any retaliation for reporting a safety violation in good faith.

It is the policy of the Intermountain Regional Landfill that accident prevention shall be considered of primary importance in all phases of operation and administration. It is the intention of the Intermountain Regional Landfill management to provide safe and healthy working conditions and to establish and insist upon safe practices at all times by all employees.

The prevention of accidents is an objective affecting all levels of our company and its operations. It is, therefore, a basic requirement that each supervisor make the safety of all employees an integral part of his or her regular management function. It is equally the duty of each employee to accept and follow established safety regulations and procedures.

Every effort will be made to provide adequate training to employees. **However, if an employee is ever in doubt about how to do a job or task safely, it is his or her duty to ask a qualified person for assistance.** Employees are expected to assist management in accident prevention activities. Unsafe conditions must be reported immediately. Fellow employees that need help should be assisted. Everyone is responsible for the housekeeping duties that pertain to their jobs.

Every injury that occurs on the job, even a slight cut or strain, must be reported to management and/or the General Manager as soon as possible. Under no circumstances, except emergency trips to the hospital, should an employee leave the work site without reporting an injury. When you have an accident, everyone is hurt. Please work safely. Safety is everyone's business.

EMPLOYEE ACKNOWLEDGEMENT FORM

The employee safety manual describes important information about the IRL. I understand that I should consult a supervisor if I have any questions that are not answered in the manual.

I understand and acknowledge that there may be changes to the information or policies in the safety manual. I understand that the IRL may add new policies to the manual as well as replace, change, or cancel existing policies. I understand that I will be told about any manual changes.

I understand and acknowledge that this manual is not a contract of employment or a legal document. I have received the manual and I understand that it is my responsibility to read and follow the policies contained in this manual and any changes made to it.

EMPLOYEE'S NAME (printed): _____

EMPLOYEE'S SIGNATURE: _____

Safety & Health Training

Training is one of the most important elements of any injury and illness prevention program. This training is designed to enable employees to learn their jobs properly, bring new ideas to the workplace at the IRL, reinforce existing safety policies and put the ***injury and illness prevention program*** into action.

Training is required for both supervisors and employees alike. The content of each training class will vary, but each class will attempt to teach the following:

1. The success of the IRL's ***injury and illness prevention program*** depends on the actions of individual employees as well as a commitment by the company.
2. Each employee's immediate supervisor will review the safe work procedures unique to that employee's job, and how these safe work procedures protect against risk and danger.
3. Each employee will learn when personal protective equipment is required or necessary, and how to use and maintain the personal protective equipment in good condition.
4. Each employee will learn what to do in case of emergencies occurring in the workplace.

Supervisors are vested with special duties concerning the safety of employees. Supervisors are key figures in the establishment and success of the IRL's ***injury and illness prevention program***. They have primary responsibility for actually implementing the injury and illness prevention program, especially as it relates directly to the workplace. Supervisors are responsible for being familiar with safety and health hazards to which employees are exposed, how to recognize them, the potential effects of these hazards, and rules and procedures for maintaining a safe workplace. Supervisors will convey this information to the employees at the workplace, and will investigate accidents according to the accident investigation policies contained in this manual.

Safety Rules for All Employees

No one likes to see a fellow employee injured by an accident. Therefore, all operations must be planned to prevent accidents. To carry out this policy, the following rules will apply:

1. All employees shall follow the safe practices and rules contained in this manual and such other rules and practices communicated on the job. All employees shall report all unsafe conditions or practices to the proper authority, including the immediate supervision on the job, and, if corrective action is not taken immediately, a senior manager, and if corrective action is not taken immediately, a governmental authority with proper jurisdiction over such practices.
2. The General Manager shall be responsible for implementing these policies by insisting that employees observe and obey all rules and regulations necessary to maintain a safe work place and safe work habits and practices.
3. Good housekeeping must be practiced at all times in the work area. Clean up all waste and eliminate any dangers in the work area.
4. Suitable clothing and footwear must be worn at all times. This includes steel-toed shoes. Personal protection equipment (hard hats, respirators, eye protection, etc.) will be worn whenever needed.
5. All employees will participate in a safety meeting conducted by a manager at least once every month.
6. Anyone under the influence of intoxicating liquor or drugs, including prescription drugs that might impair motor skills and judgment, shall not be allowed on the job.
7. Horseplay, scuffling, and other acts which tend to have an adverse influence on safety or well-being of other

employees are prohibited.

8. No one shall be permitted to work while the employee's ability or alertness is so impaired by fatigue, illness, or other causes that it might expose the employee or others to injury.
9. Employees should be alert to see that all guards and other protective devices are in proper place and adjusted, and shall report deficiencies promptly to a supervisor.
10. Employees shall not handle or tamper with any electrical equipment, machinery, or air or water lines in a manner not within the scope of their duties, unless they have received specific instructions.
11. All injuries should be reported to the General Manager so that arrangements can be made for medical or first aid treatment.
12. When lifting heavy objects, use the muscles of the leg instead of the muscles of the back.

Periodic Safety Training Meetings

The Intermountain Regional Landfill has a safety meeting at least once a month. The purpose of the meeting is to convey safety information and answer employee questions. The format of most meetings will be to review special work site hazards, truck safety, serious concealed dangers and material safety data sheets (MSDS). Each meeting the Safety Manager will review a portion of the company's safe work practices contained in this manual or other safety related information. When a new practice or procedure is introduced into the workplace, it will be thoroughly reviewed for safety.

Employee attendance is mandatory and is compensated unless part of an official state approved training program or pre-employment requirement

Employee responsibility for training

Teaching safety is a two way street. The IRL can preach safety, but only employees can practice safety. Safety education requires employee participation.

The following general rules apply in all situations:

1. An employee should not undertake a job that appears to be unsafe.
2. An employee is not expected to undertake a job until he/she has received adequate safety instructions, and is authorized to perform the task.
3. An employee should not use chemicals without fully understanding their toxic properties and without the knowledge required to work with these chemicals safely.
4. All mechanical safeguards must be kept in place.
5. Employees must report any unsafe conditions to his/her supervisor and the General Manager.
6. Any work-related injury must be reported to a member of management at once.
7. All personal protective equipment must be used when and where required. All personal protective equipment must be properly maintained and replaced when necessary.

Accident Prevention

Each employee has a personal responsibility to prevent accidents. You have a responsibility to your family, to your fellow employees and to the company. You are expected to observe safe practice rules and instructions relating to the efficient handling of your work

Employee responsibilities include the following:

1. Know and obey safe practice rules.
2. Report all unsafe conditions or equipment to your supervisor immediately.
3. Don't take chances.
4. Ask questions when there is any doubt concerning safety.
5. Report all injuries immediately, no matter how slight the injury may be.
6. Don't tamper with anything you do not understand.
7. Incorporate safety into every job procedure.
8. Know that disciplinary action may result from a violation of the safety rules.
9. Caution fellow employees when they perform unsafe acts.
10. Don't remove safety devices or signs.
11. Do not back up any vehicle or equipment without checking, using mirrors, visual senses and/or backup cameras, for pedestrians or other equipment.

Accident Investigation

A primary tool used by the IRL to identify the areas responsible for accidents is a thorough and properly completed accident investigation. The results of each investigation will be reduced into writing and submitted for review by management and the IRL's insurance risk management advisors (Loss Control Engineers). Every incident/accident will be photographed. A written report may be prepared from notes and diagrams made at the scene, or a tape will be made to record direct eyewitness statements as near to the actual time of the observation as possible. All statements should include the time and date given, and all pictures should be similarly identified. If a formal police report of other official investigation is conducted by any governmental agency, get the name and badge number of the official, or a business card, and find out when a copy of the official report will be available to the public. If you are requested to make a statement, you have the right to have the company attorney attend with you at no cost to you.

A complete accident report will answer the following questions:

1. **WHAT HAPPENED?** The investigation report should begin by describing the accident, the injury sustained, the eyewitnesses, the date, time and location of the incident and the date and time of the report. Remember: who, what, when, where and how are the questions that the report must answer.
2. **WHY DID THE ACCIDENT OCCUR?** The ultimate cause of the accident may not be known for several days when all the data is analyzed. However, if an obvious cause suggests itself, include your conclusions as a hypothesis at the time you give your information to the person in charge of the investigation.
3. **WHAT SHOULD BE DONE?** Once a report determines the cause of the accident, it should suggest a method for

avoiding future accidents of a similar nature. This is a decision by the Safety Manager and the supervisor, as well as top management. Once a solution has been adopted, it is everyone's responsibility to implement it.

4. **WHAT HAS BEEN DONE?** A follow up report will be issued after a reasonable amount of time to determine if the suggested solution was implemented, and if so, whether the likelihood of the same type of accident has been reduced.

Emergencies

The Intermountain Regional Landfill requires that during every emergency an organized effort be made to protect personnel from further injury and to minimize property damage; in that order.

All of the IRL's resources can be made available to respond to an emergency. Each supervisor must know what to do during an emergency in his or her area and must be certain that his or her employees understand their roles.

Supervisor Responsibilities

During an emergency, the supervisor must fulfill the following:

1. Ensure that those under his or her supervision are familiar with the plan for the building, particularly the recommended exit routes and how to report an emergency.
2. Render assistance to the person in charge during an emergency, as required.
3. Maintain familiarity with the shutdown procedures for all equipment used by those under his or her supervision.
4. Know the location and use of all safety equipment on his or her floor.
5. Keep employees from re-entering an evacuated area until reentry is safe.

Employee Responsibilities

Employees, other than emergency response groups or teams, involved in any emergency greater than a minor incident are expected to act as follows:

1. If there is threat of further injury or further exposure to hazardous material, remove all injured persons, if possible, and leave the immediate vicinity. If there is no threat of further injury or exposure, leave seriously injured personnel where they are.
2. Report the emergency immediately by telephone. State what happened, the specific location, whether anyone was injured, and your name and telephone number.
3. Proceed with first aid or attempt to control the incident, only if you can do so safely, and have been trained in first aid or the emergency response necessary to control the incident.
4. Show the ranking emergency response officer where the incident occurred, inform him or her of the hazards associated with the area, provide any other information that will help avoid injuries and do as he or she requests.

Exit Corridors

Exit corridors must not be used for storage. The Life Safety Code, NFPA 101, requires that buildings designed for human occupancy must have continuous and unobstructed exits to permit prompt evacuation of the occupants and allow

necessary access for responding emergency personnel. The intent of the Code is to keep exits free from obstructions and clear of combustible materials. Attention to housekeeping, therefore, is very important. Temporary storage of furniture, equipment, supplies, or anything else is not permitted in exit ways. Combustibles, including recyclable waste paper, are not permitted in exit ways.

Fire Safety

Portable fire extinguishers are provided in adequate numbers and type and are located throughout the facility. Fire extinguishers are mounted in readily accessible locations. Fire extinguishers are recharged regularly and the date of the last inspection noted on their tag.

Fire extinguishers must remain accessible at all times. Means of egress should be kept unblocked, well lighted and unlocked during work hours. Excessive combustibles (paper) may not be stored in work areas.

Aisles and hallways must be kept clear at all times. Designated employees have been trained to respond to a fire or other emergency. Workplaces are to be kept free of debris, floor storage and electrical cords.

Adequate aisle space is to be maintained. File cabinet drawers should be opened one at a time and closed when work is finished.

Employees not involved in the emergency must stay away from the scene and follow the instructions issued over the public address system or directly from the person in charge. The sounding of a fire bell means immediate evacuation by the nearest exit. Employees must not reenter an area that they have evacuated until notified that it is safe to return.

FIRE DEPARTMENT

The community fire department is responsible for protecting people and property from fires, explosions, and other hazards through prevention and expeditious control of such events. In addition, the fire department provides first response rescues and transportation services in medical emergencies.

The fire department's inspection staff is responsible for ensuring companywide compliance with fire safety and protection requirements and for reviewing all plans and procedures for compliance with these requirements, for inspecting and testing automatic fire protection and alarm systems and ensuring their maintenance and repair, for conducting fire safety and protection inspections, and for providing fire prevention recommendations. Other responsibilities include training employees in fire safety equipment, practices and procedures.

All these fire protection and response functions are performed in conformance with OSHA regulations, state laws and statutes, nationally recognized standards and guidelines for fire and life safety. The Fire Chief and the Fire Marshall have the authority to enforce applicable requirements of the Uniform Building Code, the Uniform Fire Code, National Fire Protection Association Codes Standards and Recommended Practices, the National Fire Protection Life Safety Code, and the fire protection provisions of OSHA Orders.

All employees must immediately report fires, smoke or potential fire hazards to the fire department.

All employees must conduct their operations in such a way as to minimize the possibility of fire. This means applying rules such as keeping combustibles separated from ignition sources, being careful about smoking, and avoiding needless accumulations of combustible materials.

Supervisors are responsible for keeping their operating areas safe from fire. The Safety Manager and the fire department will provide guidance and construction criteria with respect to fire and life safety as well as inspections. The provision and maintenance of fire detection systems and both automatic and manual fire extinguishing equipment is the responsibility of the Safety Manager. The supervisor, who best knows the day-to-day nature of his or her operations, is

responsible for notifying the Safety Manager of operations that change the degree of fire risk and will therefore require a change in the planned fire protection provisions.

Supervisors must ensure that their personnel are properly instructed regarding potential fire hazards involved in their work and around their workplaces, the proper precautions to minimize fires, and the procedures in case of fire. The local fire department and the Safety Manager also offer formal course and training materials on fire prevention and response:

Cedar Fort Fire Agency Phone Number (Non-Emergency): 801-794-3970

1. Fire Safety
2. Fire Extinguisher Operation
3. Self-Contained Breathing Apparatus

Fire hydrants are maintained for emergency use by the fire department. They must be kept accessible and in good working condition.

No Smoking

Smoking is forbidden in all inside areas in accordance with Utah Law.

Areas that are designated NO SMOKING areas for fire safety reasons are indicated by large rectangular signs consisting of white backgrounds with red letters stating "NO SMOKING".

Company Vehicles

The IRL requires that an operator hold a valid driver's license for the class of vehicle that he/she is authorized to operate.

The IRL's company furnished vehicles are restricted to official company business only. These vehicles are limited to the use of properly authorized personnel. Use of an official vehicle for an employee's personal convenience or benefit constitutes misuse and is prohibited. Employees who misuse company vehicles are subjected to disciplinary action and financial responsibility for any accident.

Drive safely. If vehicles are used during the workday, seat belts and shoulder harness are to be worn at all times. Vehicles must be locked when unattended to avoid criminal misconduct. Do not exceed the speed limit. Vehicles must be parked in legal spaces and must not obstruct traffic. All employees must practice defensive driving. Employees should park their vehicles in well lighted areas at/or near entrances to avoid criminal misconduct.

All drivers of company vehicles are responsible for reporting any damage or deficiency to their supervisor. Repairs, adjustments, and maintenance can only be accomplished if the driver adequately documents and reports these items. Failure to report unsafe vehicle conditions can result in an accident.

Accidents

Any accident involving company vehicles [including private, rented, or leased vehicles used on official company business] must be reported to the driver's supervisor. If the driver is unable to make a report, another employee who knows the details of the accident must make the report.

It is the IRL's policy that employees should not admit to responsibility for vehicle accidents occurring while on official business. It is important that such admissions, when appropriate, be reserved for the company and its insurance carrier. The law requires that each driver involved in a vehicle accident must show his/her license on request by the other party.

Be sure to obtain adequate information on the drivers involved as well as on the owner of the vehicles. Names, addresses, driver's license numbers, vehicle descriptions, and registration information are essential. In addition, a description of damages is needed for completion of accident reports. If the accident is investigated by off-site police agencies, request that a copy of the police report be sent to the Intermountain Regional Landfill, or obtain the name and department of the investigating officer. A printed card titled "In Case Of Accident" is to be kept in each official vehicle to assist in collecting required information.

In case of collision with an unattended vehicle or other property, the driver of the moving vehicle is required by law to notify the other party and to exchange information pertaining to the collision. If unable to locate the other party, leave a note in or attached to the vehicle or property. The note will have your name, address, and vehicle license number.

Performance Measures.

A. Safety

1. Accidents
 - a. Personal Injury.
 - b. Property Damage (The IRL Disposal's or others)
 - c. Issues
2. Distractions.
 - a. Cell phone or excessive phone usage
 - b. Reading route sheet while driving.

B. Other issues.

1. Excessive absentecism or tardiness.
2. Yard speed.
3. Fuel spillage.
4. Excessive oil spillage.
5. Littering company property.
6. Tardy or unexcused from the safety meeting.
7. Work area housekeeping. (Trucks or shop bays)
8. Driving complaints.
9. Landfill complaints.

C. Unsafe Behavior.

1. Failure to use safety equipment.
 - a. Personal protective equipment.
 - b. Hard hats.
 - c. Safety footwear.
 - d. Visibility apparel.
 - e. Safety eyewear where required.
 - f. Fall safe equipment.
 - g. Scat belts.
 - h. Proper lifting, jacking and stability equipment.
 - i. Shop safety equipment.
2. Horseplay.
3. Failure to report an incident/accident.
4. Any safety violation as per company safety manual.
5. Any issues the management or safety committee members observe.

D. Customer Service

1. Excessive service complaints.
 - a. Missed pickups.
 - b. Poor customer relations.
 - c. Not letting your supervisor know of problems on route.

E. Supervisor communication.

1. Route maintenance.
 - a. Routes not in order.
 - b. Not following route sheets.
 - c. Not reporting route equipment issues.
 - d. Any issues the management observes.

F. Equipment Maintenance.

1. Shop housekeeping.
2. Vehicle housekeeping.
3. Equipment abuse.
 - a. Excessive repairs to vehicle.
 - b. Above average fuel consumption.
 - c. Equipment damage.
 - d. Negligent repair work.
 - e. Any issues the management observes.

Prescription Use

It is the policy of the IRL that you report any use of prescription pain/narcotics to the Safety or HR department. This is to protect yourself and others from any harm. If you are using any prescription drug that may alter your ability to operate safety sensitive equipment, or be around it safely, you need to report it. It is illegal to operate equipment under the influence of drugs and/or alcohol.

D.O.T. Introduction

You must have a Class B CDL with an air brake endorsement to operate any single vehicle or combination of equipment with a GVWR of 26,001 or more pounds. All of The IRL's trucks require a Class B CDL to operate unless on company property with permission from the President. If you hold a Class A CDL, this is greater than a Class B and is considered acceptable. You must be 21 to hold a drivers position for The IRL, although you may hold a CDL at age 18.

It is the duty of the employee to learn and keep up to date of all CDL regulations. In the following pages there is information to help you maintain your driving privileges, although this is not a complete rule book, you may find one at any local Division of Motor Vehicles.

Driving Record "MVR"

The IRL follows strict standards to maintain a high safety grade. There may be certain times where these standards are over ruled due to extenuating circumstances. It is the employee's obligation as a CDL holder to make the company aware of any new violations/citations that are received.

Once a year the IRL holds a company-wide MVR compliance review; this is to make sure all drivers are within compliance of these standards. Please be up front with all violations that are given.

The following table represents the current standards; keep in mind that these may be altered at any time without notice.

Driver may not have more than:

Type	Drivers between age 25 - 65	**Drivers between age 21 - 24
Type A Violations (e.g. DUI, Reckless driving, negligent driving)	None in past 3 years	None in past 3 years
"At-Fault" Accidents	1 Accident in the past 3 years	None in past 3 years
Moving Violations	2 violations in 3 years	1 in past 3 years
Combination of Accidents and/or Violations	2 total violations/accidents in the past 3 years.	1 in past 3 years

Pre/Post Trip Inspections

In order to obtain a CDI, you will be required to pass a pre-trip inspection test. You will be tested to see if you know whether your vehicle is safe to drive. As an IRL employee you will find that our pre/post trip inspections are much more extensive due to the nature of the truck. This company specific pre/post-trip will be taught to you during your initial training. By performing a proper pre/post trip every day you will minimize the chance of getting an "out of service" ticket from a DOT officer **If you are to receive an "out of service" ticket, due to negligence, there will be consequences.** If you feel you need more instruction with a pre/post trip inspection, please see the General Manager.

Drug & Alcohol Testing

We are committed to making the IRL a safe, efficient, and productive work environment for all employees. There can be serious safety and health risks if an employee uses or is under the influence of drugs or alcohol on the job. We may ask job applicants and employees to provide body substance samples, such as urine and/or blood. We will use the samples to check for the illegal or illicit use of drugs and alcohol. If you refuse to be tested for drugs, you may be subject to disciplinary action, up to and including termination of employment.

This policy pertains to anyone who conducts safety sensitive functions. If you hold a Commercial Driver's License, this policy pertains to you.

As a safety-sensitive employee you must NOT...

- Use or possess alcohol or any illicit drug while you are on company time.
- Report for work, or remain on duty if you:
 - Are under the influence or impaired by alcohol
 - Have a blood alcohol level of .04 BAC or greater
 - Have used any illicit drug
- Use alcohol within four hours of reporting to work
- Report for work or remain at work when using any controlled substance unless used pursuant to the instructions of an authorized medical practitioner and the company has approved the use of it as well.
- Refuse to submit to any test for alcohol or controlled substance.

- Refuse to submit to any test by adulterating or substituting your specimen.

Circumstances under which you may be tested for Drugs/Alcohol:

- Pre-employment
- Reasonable Suspicion/Cause
 - Any manager or company official may ask you to take an alcohol or drug test under suspicion that you are violating DOT or company policy. Suspicion may be determined by your behavior, speech, appearance, body odor, and/or performance indicators.
- Random
 - Random testing occurs through our consortium. You are put into a pool of employees, and a percent of the employees are randomly chosen to take a drug and/or alcohol test.
- Return-to-duty
 - If you violate any drug or alcohol policy, and you are allowed to return to work, you have to pass an alcohol and drug test before doing so. You are also subject to unannounced follow-up tests at least 6 times in the first 12 months following your return to safety sensitive work.
- Follow-up
 - Follow-up testing is determined by a SAP (substance abuse professional) and may continue for up to 5 years.
- Post-Accident
 - If you are involved in any kind of accident a post-accident test will be required. You will have to take a drug and alcohol test. You are also required to remain available for at least 24 hours for this testing, and are not permitted to refuse testing. Incidents will be tested at manager's discretion depending on severity or frequency.

When you are tested for drugs you will be required to give a urine sample; this may or may not be observed.

**Types of Drugs you will be tested for:
under DOT regulations:**

- Amphetamines (including methamphetamine)
- Cocaine metabolites
- Marijuana metabolites /THC
- Opiates (including codeine, heroin, and morphine)
- Phencyclidine (PCP)

**Types of drugs you may also be tested for
under company policy:**

- Barbiturates
- Benzodiazepines
- Methadone
- o Propoxyphene/metabolite

If there is a suspicion of drug or alcohol use before, during, or after your shift, you will immediately be removed from your safety sensitive function and be suspended until results have been confirmed. If you hold a CDL, your positive test or refusal of a test, will go on your record. Depending on manager's discretion, you may be terminated. If you are not terminated, as a DOT driver, you will not be able to return to work until you complete the following:

- Undergo an evaluation by a Substance Abuse Counselor (SAP)
- Successfully complete counseling or treatment prescribed by the SAP
- Provide a negative test result for drugs and breath test less than .02

Refusal examples are FAILURE TO:

- Appear for your test
- Remain at the testing site until the process is complete
- Provide a urine or breath sample for any required test
- Permit the observation or monitoring of you providing a urine sample
- Provide a sufficient urine or breath sample when directed
- Take a second test when directed to do so
- Cooperate with any part of the testing process

- Undergo a medical evaluation as part of “shy bladder” or shy lung” procedures
- Sign Step #2 of the ATF
- Provide an unaltered specimen

All records are directly sent to Management from the consortium. This is to protect your right to privacy.

Drugs and alcohol affect your health, work, and personal life. If you have a drug or alcohol problem that you need help with resolving, The IRL may be willing to help on a case by case basis. If you are prescribed any drug that may affect the safety of yourself or others, you are **required** to report this to the safety manager or human resource manager.

Remember: Safety sensitive employees are obligated by law to submit to and cooperate in drug and alcohol testing mandated by DOT regulations.

Medical Card & Drivers License Renewals

Medical Cards need to be renewed at least every two years depending on the expiration date. To renew your medical card you may go to your own physician or get an authorization form to the designated company clinic. If you choose to see your own physician, the IRL will reimburse your co-pay. Once you receive your new card HR will need to make a copy of the card for your DOT file.

If you have problems with renewing your card, such as: high blood pressure, diabetes, vision problems, etc. you will not be able to perform safety sensitive functions until these problems are resolved. Certain medical issues such as diabetes restrict you from holding a medical card by federal law. Utah has a program called The Commercial Driver Medical Waiver Program. If medically qualified, this program is allowed to issue you a "K" restriction to supplement your medical card until you can qualify for one. For more information on this program you can contact the Driver License Division Customer Service Section at (801) 965-4437.

Drivers license renewals are done at your own expense. These need to be completed by the expiration date and a copy given to HR to put into your DOT file. **If your medical card and/or drivers license is expired, you cannot operate a commercial motor vehicle.**

Hours and Reporting

CDL holders are regulated by the federal government to only work so many hours. There are different formula's to determine how many hours you can work. In our environment you may not work more than sixty hours per seven consecutive days. These hours are calculated whether you are driving or not; they count as long as you are on company time. These hours are regulated for safety purposes.

If you hold a second job you are required to report it to The IRL Disposal and report the hours you work each week. Regardless of the type of work you do at your other job, your hours there count toward your maximum worked hours, sixty. You would initially speak with Human Resources regarding your other job, and report your weekly hours to your supervisor.

Work Environment

Work sites must be clean and orderly. Work surfaces must be kept dry or appropriate means taken to assure the surfaces are slip-resistant. Spills must be cleaned up immediately. All combustible scrap, debris and waste must be stored safely and removed promptly. Combustible dust must be removed. Metallic or conductive dust must be prevented from entering or accumulating on or around electrical enclosures or equipment.

Waste containers must be covered. Oily and paint soaked rags are combustible and should be discarded in sealable metal containers only.

Tire Maintenance

Work safely when repairing vehicles. Where tires are mounted and/or inflated on drop center wheels, a safe practice procedure must be posted and enforced.

Where tires are mounted and/or inflated on wheels with split rims and/or retainer rings, a safe practice procedure must be posted and enforced. Each tire inflation hose must have a clip-on chuck with at least twenty-four (24) inches of hose between the chuck and an in-line hand valve and gauge. The tire inflation control valve should automatically shut off the airflow when the valve is released.

A tire restraining device such as a cage, rack or other effective means must be used while inflating tires mounted on split rims, or rims using retainer rings.

Employees are strictly forbidden from taking a position directly over or in front of a tire while it's being inflated. Employees must use proper lifting techniques to avoid over-exertion when lifting tires or other heavy items. If you do not know these techniques, please see your Supervisor.

Safety Equipment

Proper safety equipment is necessary for your protection. The company provides the best protective equipment available. Use all safeguards, safety appliances, or devices furnished for your protection and comply with all regulations that may concern or affect your safety. Wear your gear properly; all snaps and straps are fastened, cuffs not cut or rolled. Your supervisor will advise you as to what protective equipment is required for your job.

Certain jobs require standard safety apparel and appliances for the protection of the employee. Your supervisor is aware of the requirements and will furnish you with the necessary approved protective appliances. These items shall be worn and effectively maintained as a condition of your continued employment and part of our mutual obligation to comply with the Occupational Safety and Health Act (OSHA).

Safety goggles, glasses, respirators and face shields shall correspond to the degree of hazard, such as chemical splashes, welding flashes, impact hazard, dust and so forth. Do not alter or replace an approved appliance without permission from your supervisor.

Rubber gloves and rubber aprons shall be worn when working with acids, caustics or other corrosive materials.

Specified footwear must be worn.

No jewelry shall be worn around power equipment.

Long hair must be tied back and in a net to prevent entanglement in moving machinery.

Hearing protection appliances (muffs or plugs) shall be worn by all employees working within any area identified as having excess noise levels. Your supervisor will instruct you in the proper use of the appliance.

Operating Company Equipment

Company equipment refers to all shop machines, trucks, fork lifts, etc. To operate such equipment you first must be properly trained and signed off on each piece of equipment. If you are to operate equipment without proper training, there will be consequences up to and including termination. Shop safety is of the utmost importance to everyone and will be looked down upon not being followed. If you have any questions regarding operation of equipment or shop rules, please seek out a Supervisor to lead you in the right direction.

Backing

When backing up a garbage truck out of a shop bay it is crucial to always have a spotter to guide you. Backing accidents are not tolerated here at the IRL and serious consequences follow a backing accident. If you cannot find someone to spot you, **DO NOT** back up!

Danger of Noise

Exposing the ear to high levels of noise may cause hearing loss. This loss can be temporary or permanent. Temporary hearing loss or auditory fatigue occurs after a few minutes exposure to an intense noise but is recoverable following a period of time away from the noise. If the noise exposure is repeated, there may be only a partial hearing recovery and the loss becomes permanent. Typically, significant hearing losses occur first in the frequency range of 3,000 to 6,000 hertz (Hz). Losses in this frequency range are not critical to speech perception, and the individual is usually completely unaware of this initial symptom. With longer exposures, the hearing loss spreads to lower frequencies, which will affect speech perception.

The evaluation of hearing loss due to noise is complicated by the fact that hearing acuity normally decreases with increasing age. Further, the losses associated with age are quite similar to those caused by excessive noise since the hearing for high frequency sounds is most affected in both instances. Hearing impairment may also result from infections, tumors and degenerative diseases.

Reducing noise exposure

Noise exposure can be reduced by using engineering controls, administrative procedures, or personal protective devices.

PERSONNEL PROTECTIVE DEVICES

Ear muffs

Ear plugs

Federal and state occupational safety and health regulations require that whenever employees are exposed to excessive noise levels, feasible engineering or administrative controls must be used to reduce these levels. When these control measures cannot be completely accomplished and/or while such controls are being initiated, personnel must be protected from the effects of excessive noise levels. Such protection can, in most cases, be provided by wearing suitable protective hearing devices.

The supervisor will be able to provide ear plugs for employees upon request or before going into a high noise area. Only approved plugs should be used. Earplugs should be cleaned daily to prevent ear infections or the disposable type can be thrown in the waste at the end of the shift.

Protection greater than provided by a single device can be obtained by wearing earplugs under an earmuff. While the reduction provided by wearing both devices simultaneously is considerably less than the total of the individual protection devices, it is still greater than when either device is worn separately.

OTHER NOISES

Nuisance noises are noises that are not intense enough to cause hearing loss, but do disturb or interfere with normal

activities of speech communication, telephone communication, listening to TV or radio broadcasts, concentration during mental activities, relaxation, and sleep.

The amount of interference is dependent upon the intensity of the noise and its characteristics, such as steady versus intermittent noise, high or low pitch. The amount of interference may also depend upon the person's personality, attitude toward the source, familiarity with the noise, and the intrusiveness of the noise. What is music to one ear may be noise to another.

First Aid Kits

First aid kits are located in various places around the office, it is your responsibility to become familiar with these sites. First aid items must only be used when an injury occurs. When an injury occurs you must assess the severity of the injury to determine if you need medical help. If the injury is something with in your control, take care of the situation and report it to your supervisor immediately afterwards. Items such as scissors, tweezers, tubes of ointments with caps, or rolls of adhesive tape, bandaids, eye wash kits, etc. will be found in with in the first aid kits.

Electrical Safety

It is the policy of the Intermountain Regional Landfill to follow the fundamental principles of safety, which are described below. A clear understanding of these principles will improve the safety of working with or around electrical equipment and power.

Practice proper housekeeping and cleanliness. Poor housekeeping is a major factor in many accidents. A cluttered area is likely to be both unsafe and inefficient. Every employee is responsible for keeping a clean area and every supervisor is responsible for ensuring that his or her areas of responsibility remain clean.

Identify hazards and anticipate problems. Think through what might go wrong and what the consequences would be. Do not hesitate to discuss any situation or question with your supervisor and coworkers.

Resist 'hurry-up' pressure. Program pressures should not cause you to bypass thoughtful consideration and planned procedures.

Design for safety. Consider safety to be an integral part of the design process. Protective devices, warning signs, and administrative procedures are supplements to good design but can never fully compensate for its absence. Completed designs should include provisions for safe maintenance.

Maintain for safety. Good maintenance is essential to safe operations. Maintenance procedures and schedules for servicing and maintaining equipment and facilities, including documentation of repairs, removals, replacement, and disposals, should be established.

Document your work. An up to date set of documentation adequate for operation, maintenance, testing, and safety should be available to anyone working on potentially hazardous equipment. Keep drawings and prints up to date. Dispose of obsolete drawings and be certain that active file drawings have the latest corrections.

Test equipment safety. Tests should be made when the electrical equipment is de-energized, or, at most, energized with reduced hazard. **Know emergency procedures!**

Flammable and toxic material control

The use of flammable or toxic material must be kept to a minimum. When components with such fluids are used, a catch basin or other approved method must be provided to prevent the spread of these materials should the normal component case fail.

Welding, cutting & brazing

Only authorized and trained personnel are permitted to use welding, cutting or brazing equipment. All operators must have a copy of the appropriate operating instructions and arc directed to follow them.

Compressed gas cylinders should be regularly examined for obvious signs of defects, deep rusting, or leakage. Use care in handling and storing cylinders, safety valves, relief valves, to prevent damage. Precaution must be taken to prevent mixture of air or oxygen with flammable gases, except at a burner or in a standard torch. Only approved apparatus (torches, regulators, pressure-reducing valves, acetylene generators, and manifold) may be used.

Cylinders must be kept away from sources of heat. It is prohibited to use cylinders as rollers or supports. Empty cylinders must be appropriately marked, their valves closed and valve-protection caps on.

Signs reading: "Danger No Smoking, Matches, Open Lights, or equivalent must be posted. Cylinders, cylinder valves, couplings, regulators, hoses and apparatus must be kept free of oily or greasy substances. Care must be taken not to drop or strike cylinders.

Unless secured on special trucks, all regulators must be removed and valve-protection caps put in place before moving cylinders.

All cylinders without fixed hand wheels must have keys, handles, or non-adjustable wrenches on stem valves when in service.

Liquefied gases must be stored and shipped valve-end up with valve covers in place. Before a regulator is removed, the valve must be closed and gas released from the regulator.

All employees are instructed never to crack a fuel-gas cylinder valve near sources of ignition.

RED is used to identify the acetylene (and other fuel-gas) hose.

GREEN is for oxygen hose.

BLACK is for inert gas and air hose.

All pressure-reducing regulators must be used only for the gas and pressures for which they are intended.

The open circuit (No Load) voltage of arc welding and cutting machines must be as low as possible and not in excess of the recommended limits. Under wet conditions, automatic controls for reducing no-load voltage must be used. Grounding of the machine frame and safety ground connections of portable machines must be checked periodically.

Electrodes must be removed from the holders when not in use.

All electric power to the welder must be shut off when no one is in attendance.

Suitable fire extinguishing equipment must be available for immediate use before starting to ignite the welding torch.

The welder is strictly forbidden to coil or loop welding electrode cable around his/her body.

All wet welding machines must be thoroughly dried and tested before being used.

All work and electrode lead cables must be frequently inspected for wear and damage, and replaced when needed. All connecting cable lengths must have adequate insulation. When the object to be welded cannot be moved and fire hazards cannot be removed, shields must be used to confine heat, sparks and slag.

When welding is done on metal walls, precautions must be taken to protect combustibles on the other side. Before hot work is begun, used drums, barrels, tanks and other containers must be so thoroughly cleaned that no substances remain that could explode, ignite or produce toxic vapors. It is required that eye protection helmets, hand shields and goggles meet appropriate standards.

Employees exposed to the hazards created by welding, cutting or brazing operations must be protected with personal protective equipment and clothing.

Check for adequate ventilation where welding or cutting is performed. When working in confined spaces, environmental monitoring tests should be taken and means provided for quick removal of welders in case of emergency.

Machine Guarding

Before operating any machine, every employee must have completed a training program on safe methods of machine operations. It is the primary purpose of supervision to ensure that employees are following safe machine operating procedures. There will be a regular program of safety inspection of machinery and equipment.

All machinery and equipment must be kept clean and properly maintained. There must be sufficient clearance provided around and between machines to allow for safe operations, set up, servicing, material handling, and waste removal.

All machinery will be securely placed and anchored when necessary, to prevent tipping or other movement that could result in personal injury. Most of the time, machinery should be bolted to the floor to prevent movement. The electrical cord to the machinery will be attached to a breaker or other shut-off device to stop power in case of machine movement.

There must be a power shut-off switch within reach of the operator's position at each machine. Electrical power to each machine shall be capable of being locked out for maintenance, repair or security. The non-current carrying metal parts of electrically operated machines must be bonded and grounded.

The foot-operated switches are guarded and/or arranged to prevent accidental actuation by personnel or falling objects. All manually operated valves and switches controlling the operation of equipment and machines must be clearly identified and readily accessible.

All emergency stop buttons are colored RED.

All the pulleys and belts which are within seven (7) feet of the floor or working level are to be properly guarded.

All moving chains and gears must be properly guarded.

The supervisor will instruct every employee in the work area on the methods provided to protect the operator and other employees in the machine area from hazards created by the operation of a machine, such as nip points, rotating parts, flying chips and sparks.

The machinery guards must be secure and arranged so they do not present a hazard.

If the machinery is cleaned with compressed air, the air must be pressure controlled and personal protective equipment or other safeguards used to protect operators and other workers from eye and bodily injury.

Walkways

All aisles and passageways must be kept clear and clearly marked with tape or paint. Wet surfaces must be covered with non-slip material and all holes properly covered or marked with warning guards. All spills must be cleaned up immediately, and a caution sign placed on all wet or drying surfaces.

In cases of passageways used by forklifts, trucks or other machinery, use a separate aisle for walking, if available. If no separately marked aisle is available, use extreme caution. Remember, walking in a passageway used by machinery is like walking in the middle of a street used by cars. Walking employees may have the right of way, but the heavy vehicles can't always see you and can't always stop in time. The key to moving around in such circumstances is to stop, look and listen and then to move when there is no danger. Make eye contact with the drivers of moving vehicles so that you know they know you are there.

If an employee is aware of any breach of these standards, please inform the Responsible Safety Officer.

Material Handling

In handling materials the employees must know the following:

1. There must be safe clearance for equipment through aisles and doorways.
2. Aisle ways must be designated, permanently marked, and kept clear to allow unhindered passage.
3. Motorized vehicles and mechanized equipment will be inspected daily or prior to use.
4. Vehicles must be shut off and brakes must be set prior to loading or unloading.
5. Material Safety Data Sheets will be available to employees handling hazardous substances.

Fall Safety

When your feet are four feet or higher above the floor, you must practice proper fall safety. If you have any questions concerning proper fall safety, please see the General Manager.

Attachment C - Monthly Training Records for HHW

*Monthly Training - HHW
September '12*

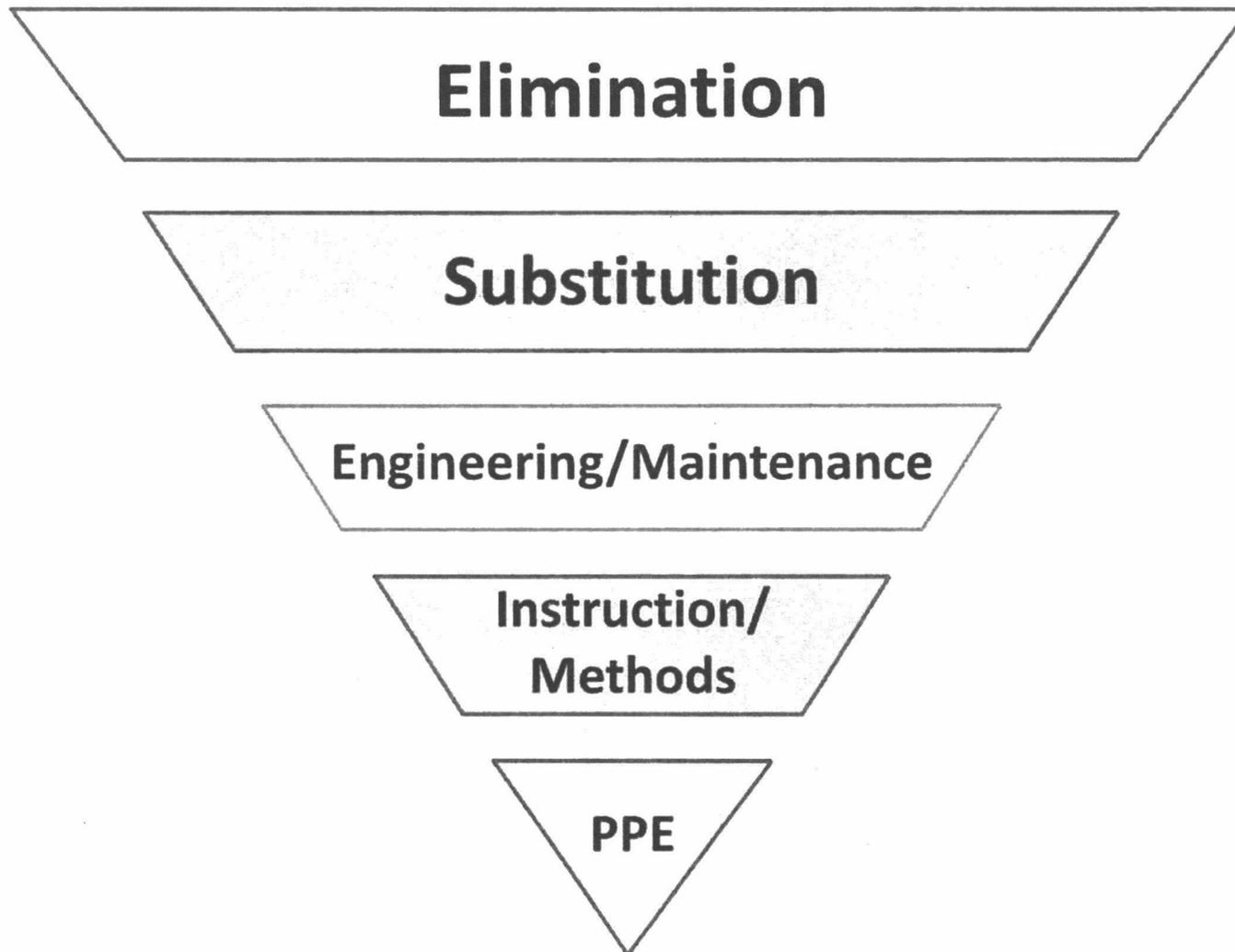
Major Categories of HHW

- E-waste
- Radioactive Waste
- Mercury Containing Wastes (Fluorescent lamps, Thermostats)
- Batteries
- Refrigerant Containing Devices
- Paints and Solvents
- Cleaning Agents
- Pesticides, Herbicides, & Insecticides
- Aerosols, Propane Cylinders
- Automotive Wastes (Oil, Antifreeze, etc.)
- Ammunition
- Pharmaceuticals

What to do with it?

- **Use it up**
- **Reuse/Recycling**
- **Neutralization (for Corrosives)**
- **Incineration, Destruction and Waste-to-energy**
- **Hazardous waste landfill (sequestering, isolation, etc.)**

Safety Hierarchy



Everything is Toxic

There are 4 Toxicity Classes.

Classes I to III are required to carry a Signal Word on the label.

Toxicity Class IV

- Practically nontoxic
- No Signal Word required since 2002

Toxicity Class III

- Slightly toxic
- Signal Word: "Caution", possibly followed by:
- "Harmful if swallowed", "May be harmful if absorbed through the skin", "May be harmful if inhaled", or "May irritate eyes, nose, throat, and skin"
- Class III materials are estimated to be fatal to an adult human at some dose in excess of 30 grams.

How Toxic is it?

Toxicity Class II

- Moderately toxic
- Signal Word: "**Warning**", possibly followed by:
- "**Harmful or fatal if swallowed**", "**Harmful or fatal if absorbed through the skin**", "**Harmful or fatal if inhaled**", or "**Causes skin and eye irritation**"
- Class II materials are estimated to be fatal to an adult human at a dose of 5 to 30 grams.

Toxicity Class I

- Most toxic;
- Requires Signal Word: "**Danger-Poison**", with skull and crossbones symbol, possibly followed by:
- "**Fatal if swallowed**", "**Poisonous if inhaled**", "**Extremely hazardous by skin contact--rapidly absorbed through skin**", or "**Corrosive--causes eye damage and severe skin burns**"
- Class I materials are estimated to be fatal to an adult human at a dose of less than 5 grams (less than a teaspoon).

Household Hazardous Waste Chart

TYPE OF WASTE	DISPOSAL METHOD		
	Drain	Garbage	Recycle
KITCHEN			
Aerosol cans (empty)		■	
Aluminum cleaners	■	■	
Ammonia-based cleaners	■	■	
Bug sprays		■	
Drain cleaners	■	■	
Floor care products		■	
Furniture polish		■	
Metal polish with solvent		■	
Window cleaner	■	■	
Oven cleaner (lye base)		■	
Used kitchen oil and grease (contained)		■	
BATHROOM			
Alcohol-based lotions (aftershave, perfumes, etc.)	■	■	
Bathroom cleaners	■	■	
Depilatories	■	■	
Disinfectants	■	■	
Permanent lotions	■	■	
Hair relaxers	■	■	
Medicine (expired)		■	
Nail polish (solidified)		■	
Toilet bowl cleaner	■	■	
Tub and tile cleaners	■	■	
GARAGE			
Antifreeze		■	■
Automatic transmission fluid		■	
Auto body repair products	■		
Battery (auto)		■	■
Brake fluid		■	
Car wax with solvent		■	
Diesel fuel		■	
Fuel oil		■	
Gasoline		■	
Kerosene		■	
Metal polish with solvent		■	
Motor oil & oil filters		■	■
Other oils		■	
Windshield washer solution	■	■	
WORKSHOP			
Paint brush cleaner with solvent		■	
Paint brush cleaner with TSP	■	■	
Aerosol cans (empty)		■	
Cutting oil		■	
Glue (solvent-based)		■	
Glue (water-based)	■	■	
Paint — latex		■	
Paint — oil-based		■	
Paint — auto		■	
Paint — model		■	
Paint thinner		■	
Paint stripper		■	
Paint stripper (lye-based)		■	
Primer		■	
Rust remover (with phosphoric acid)		■	
Turpentine		■	
Varnish		■	
Wood preservative		■	
GARDEN			
Fertilizer	■		
Fungicide		■	
Herbicide		■	
Insecticide		■	
Rat poison		■	
Weed killer		■	
MISCELLANEOUS			
Ammunition		■	
Artists' paints		■	
Batteries (household)		■	
Dry cleaning solvents		■	
Fiberglass epoxy		■	
Gun cleaning solvents		■	
Lighter fluid		■	
Mercury batteries		■	
Moth balls		■	
Old fire alarms		■	
Photographic chemicals		■	
Shoe polish		■	
Swimming pool acid		■	
Water softener salt			Switch to potassium chloride

- Products that can be poured down the drain with plenty of water or taken to the household hazardous waste center
- Materials that cannot be poured down the drain, but can be safely disposed of in the garbage
- Hazardous wastes that should be taken to your landfill's household hazardous waste collection center. Call Monterey Peninsula, 394 5513 Salinas/Castroville/Punonville 753-7295
- Recyclable material: Take to a recycling center or call 1-800-CLEANUP for curbside oil pick-up

Monthly Training - HHW
August '12

Civica Software

CALIFORNIA

Identifying Household Hazardous Waste

There are many factors that can contribute to a waste being considered household hazardous waste. For example, toxicity, environmental hazards, flammability, reactivity and corrosivity are all characteristics of products that can cause them to be hazardous waste in California. Unfortunately, there's no master list of household hazardous products created by state or federal government for residents to check to determine if the products under their shelves are household hazardous waste.

Therefore, we must use common sense and look for warning labels on products to make our best judgment whether or not any product is household hazardous waste. Please err on the side of caution. If you suspect a product of being hazardous, treat it that way.



Warning labels on products can give us important clues that a product may be hazardous. Common warnings associated with HHW include: **DANGER, CAUTION, WARNING, FLAMMABLE, POISON, REACTIVE, CORROSIVE, HARMFUL WHEN SWALLOWED OR EXPLOSIVE**. If you need help determining if a product in your house is a hazardous waste and cannot be disposed of in the trash, email or call us.

Here are some examples of common household hazardous wastes that must be disposed through our service and NOT in the regular trash.

Once you have know what you have to get rid of you can make an appointment here [Online Appointment System](#)

- Brake Fluid
- Paint Oil-Based, Water-Based & Latex
- Flammable Paint thinner, Deck Stains, Varnish, Lacquer, Shellac and Water Repellants
 - Flammable Polishes
- Motor Oil, Transmission Fluid or Oil filters
- Antifreeze
- Propane (Compressed Gas Cylinders LESS than 5 gallons or 20 lbs i.e. BBQ or camping-sized) Tanks
- Batteries (all types including AA)
- TV or Computer Monitors
- Gasoline/Kerosene
- Household Aerosols
- Lamps - (mercury based) Fluorescent, Compact Fluorescent, Metal Halide, High Pressure

Sodium

- Fats, Oils, Grease, Fryer Oil (while these are not hazardous, the City prefers to pick these items up and recycle them to prevent future problems with the City's sewer system)
 - Mercury Containing devices Mercury Thermostats, Thermometers and Switches (We can now pick these up with the weekly service too)
- Electronics (otherwise known as Consumer Electronics including but not limited to VCRs, DVDs, Amps, Printers, Microwaves, Computer CPUs, Scanners)
- Chlorinated or Solvent Based Cleaners and Degreasers
- Acids
- Flammable Polishes
- Pesticides
- Herbicides
- Fungicides
- Algaecides
- Oxidizers (Tree Stump Removers, compressed Oxygen or Ammonium Nitrate Fertilizer)
- Pharmaceuticals (Take controlled substances to Folsom PD)
- Asbestos
- Lead Scraps
- Drain Cleaner
- Paint Strippers
- Wood Preservatives
- Floor and Furniture Cleaners
- Gopher Baits and Gassers
- Pool Chemicals (chlonnators and ph adjustors)
- Poisons and Foggers
- Chlorine Bleach or Chlorine Based Cleaners
- Ammonia Based Cleaners
- Household Degreasers (containing glycol ethers - Simply Green and Formula 409)

Special Wastes

- Pharmaceuticals (Take controlled substances to Folsom PD)

Attachment D - Landfill Inspection and Load Inspection Forms

Inspection Report – Intermountain Regional Landfill

Type of Inspection: **Daily/Weekly/Monthly/Quarterly/Semiannually** (circle one)

Performed By: _____ Date: _____

	<u>Overall Condition</u>		<u>Monitoring</u>
	<u>Satisfactory</u>	<u>Needs Work*</u>	<u>Results</u>
1. Structures & Roads			
Fences & Gates ¹	_____	_____	_____
Access Roads ¹	_____	_____	_____
Ditches ¹	_____	_____	_____
2. Landfill Operations			
Fences & Gates ¹	_____	_____	_____
Litter Control ¹	_____	_____	_____
Protective Cover ¹	_____	_____	_____
Daily Cover ¹	_____	_____	_____
Intermediate Cover ²	_____	_____	_____
Final Cover ⁴	_____	_____	_____
Equipment ¹	_____	_____	_____
Stormwater Ditches ²	_____	_____	_____
3. Leachate Pond			
Fences & Gates ¹	_____	_____	_____
Liner System ²	_____	_____	_____
Influent Pipe ²	_____	_____	_____
Gravity Lines ²	_____	_____	_____
Monitoring Facilities			
Weed Control ⁴	_____	_____	_____
Groundwater Wells ⁴	_____	_____	_____

* Specify the work needed and timeframe.

Key: 1 = daily; 2 = weekly; 3 = monthly; 4 = quarterly; 5 = semiannually

Other Comments: _____

Intermountain Regional Landfill

Load Inspection Form

<u>Material</u>		<u>Present?</u>		<u>Comment</u>
Hazardous Waste/Materials				
PCB Materials				
Liquid Wastes				
Batteries				
Flourescent Bulbs				
Tires				
Aerosal Cans				
Oily Rags, Used Sorbent Materials				
Appliances, Computer Components				
Pesticides				
Asbestos Containing Materials				
Shingles/Asphalt				
Other				

Hauler: _____ TK# _____

Origin: _____

Inspector: _____

Date: _____

Signature: _____

Comments: _____

Attachment E - December 2012 Groundwater Statistical Analysis Report

January 21, 2013

Rob Richards
Intermountain Regional Landfill
800 South Allen Ranch Road
Fairfield, UT 84013

Re: December 2012 Groundwater Monitoring Statistical Results for Intermountain Regional Landfill

Dear Mr. Richards:

HDR Engineering, Inc. (HDR) has prepared this letter report regarding the groundwater monitoring program at the Intermountain Regional Landfill (IRL). This report summarizes the statistical analyses performed on analytical results from the groundwater sampling conducted in **December 2012**. Attachment 1 contains the control charts and prediction limit graphs used in the statistical analyses. Attachment 2 contains the results of the latest laboratory analyses and the results of the field-measured parameters, including a recording of the static water level found in each well.

Statistical Methods

The initial inter-well analysis of the groundwater chemistry indicated enough variability between wells to justify using an intra-well analysis approach. The results of the inter-well analysis were presented in a report submitted to the Division of Solid and Hazardous Waste on July 6, 2012. A software package called SANITAS, developed by SANITAS technologies (formerly NIC Environmental), was used to perform the statistical analysis of the groundwater data.

The statistical analysis approach uses intra-well methods consisting of control charts and prediction limits. The purpose of this analysis is to determine if there are any statistically significant changes in the compliance data relative to background concentrations. These methods establish limit values based on the background water quality data collected for each well.

In the case of control charts, a statistically significant change is based on the standard deviation established by the background data. When using the control charts method, the constituents will have the following characteristics:

- The data will be tested for normality using the Shipiro-Wilk normality test (for <50 samples) or the Shipiro-Francia test (for >50 samples) included in the SANITAS statistical analysis package. The Shapiro-Wilk normality test is the preferred method based on EPA guidance¹. When data are considered normal, the values are consistent and follow a normal, bell-shaped curve (Gaussian curve). The majority of the values (95%) are within two standard deviations from the mean of the concentration values.
- The percentage of non-detects will be less than 50%.

¹ EPA, June 1992. Statistical Analysis of Groundwater Monitoring Data at RCRA Facilities, Addendum to Interim Final Guidance. EPA 530SW89026.

- The data will have no statistical trends as shown by the trend analysis plots.
- This method assumes that the landfill has not previously affected the groundwater.

The SANITAS program will not execute a control chart if the data set is transformed normal using Cohen's adjustment. In general, Cohen's adjustment accounts for data that are below the set detection limit or practical quantitation limit (PQL) for the method established by the laboratory. The Cohen adjustment is executed when the data set includes at least 15% non-detects.

The constituents that do not meet all the criteria above are analyzed using a prediction limit (PL). Typically, for inorganic constituents, the preferred method is to use a parametric intra-well analysis approach. Under this approach, the false positive rate or alpha is 0.01 or 1%. The assumption under the parametric approach is that the background data are normal or transformed normal. The PL for a particular constituent is calculated from the mean value (\bar{X}) of the entire background data set, excluding the most recent data point, using the following equation:

$$PL = \text{Mean } (\bar{X}) + (T\text{-value} \times \text{Standard Deviation})$$

Note. T-value from standard statistical tables

Not all constituents in this data set allow the use of a parametric approach. A non-parametric approach will be used in lieu of a parametric approach if the data set fails the normality test using the Shapiro-Wilk normality test, cannot be transformed normal, and has between 50% and 90% non-detects. When the data set has greater than 90% non-detects, an intra-well Poisson PL is executed, and the non-detect values are substituted with one-half the detection limit. Data that fall under the Poisson criteria have a low probability of detection but stay constant from sampling period to sampling period.² When a non-parametric approach is applied, the highest background concentration from the data set is used for the PL.

Summary of Statistical Analysis

The statistical analysis summarized in this report is for data from wells DMW-1 and TMW-4 on December 4, 2012. The background sampling period was performed from August 2011, to March 2012. Well DMW-1 is located upgradient to the entire landfill site. Well TMW-4 currently serves as the down-gradient compliance well for the first stages of landfill operation, Cell #1, Phase #1. The laboratory analytical results were reviewed to determine whether a statistical analysis was needed. If the laboratory results reported a non-detect for a particular constituent from a particular monitoring well, no statistical analysis was conducted for that constituent. However, the information was placed in the groundwater quality database to maintain a complete record.

Samples were also collected from Wells DMW-2, DMW-6, and DMW-7, which are located along the site perimeter, down-gradient from future landfill activities. Samples were collected from these wells and analyzed to increase the sample size and improve the background data and future statistical analysis. These wells do not serve as a point of compliance for the IRL landfill units at this time. Therefore, no statistical analysis was conducted.

² EPA, June 1992. Statistical Analysis of Groundwater Monitoring Data at RCRA Facilities, Addendum to Interim Final Guidance. EPA 530SW89026.

Statistically Significant Changes

The data were analyzed using control charts (titled Combined Shewhart-Cusum Charts) and PL graphs to determine if there were any statistically significant changes from background levels. Only statistically significant changes in the reported values from the latest sampling event are reported below

Downgradient Monitoring Well

TMW-4

Laboratory reported concentration of carbon disulfide (15.8 µg/L) was determined by statistical analysis to be a significant change from the background concentration in temporary monitoring well TMW-4. Carbon disulfide was not previously detected in TMW-4. However, concentrations ranging from 2.38 µg/L to 8.03 µg/L were reported during background characterization in monitoring wells DMW-1, DMW-5, and DMW-8. Attachment 1 contains a time-series chart showing the reported concentrations of carbon disulfide. Carbon disulfide is known to be a naturally occurring byproduct of the biodegradation of organic material.³ Because carbon disulfide was detected in groundwater before landfill operations began, it could be naturally occurring at these levels or another groundwater contamination source is discharging carbon disulfide resulting in concentrations near the Practical Quantitation Limits (PQL) of the laboratory method (2 µg/L) at the IRL.

Up-gradient Monitoring Well

DMW 1

No statistically significant changes were detected

Conclusions

Statistical analysis conducted for the December 2012 groundwater sampling event indicate overall chemical concentrations in groundwater at the IRL remain near background concentrations for all constituents except carbon disulfide in TMW-4. As mentioned above, carbon disulfide was detected by the analytical laboratory at similarly low concentrations during background sampling. In addition, the Utah Solid Waste Ground Water Quality standard (Rule R315-308) for carbon disulfide is 4 mg/L (4,000 µg/L) which is well above the reported concentrations (15.8 µg/L) in TMW-4. Further, because no other VOCs were detected, no other reported chemical concentrations in groundwater exhibited statistically significant increases over background concentrations during the last sampling event, and considering the limited amount of waste (1,800 tons) in place and the lack of leachate being generated at the IRL, we do not believe the existence of carbon disulfide is a result of landfill operations. You should request that the next scheduled semi-annual sampling event be used to confirm the presence of carbon disulfide in groundwater at the IRL.

³ http://www.epa.gov/chemfact/s_carbds.txt

December 2012 Groundwater Monitoring Statistical Results
January 21, 2013
Page 4 of 6

If you have any questions regarding this letter or the results of the analysis, please contact me at (801) 743-7812.

Sincerely,

A handwritten signature in black ink, appearing to read "Terry Warner". The signature is fluid and cursive, with a long horizontal stroke extending to the right.

Terry Warner, PE
HDR Engineering, Inc.

Attachment 1: Statistical Analysis Results including prediction limit graph of carbon disulfide in TMW-4 and carbon disulfide time-series plot.

Attachment 2: Results of laboratory analysis, field-measured parameters, and chain-of-custody form

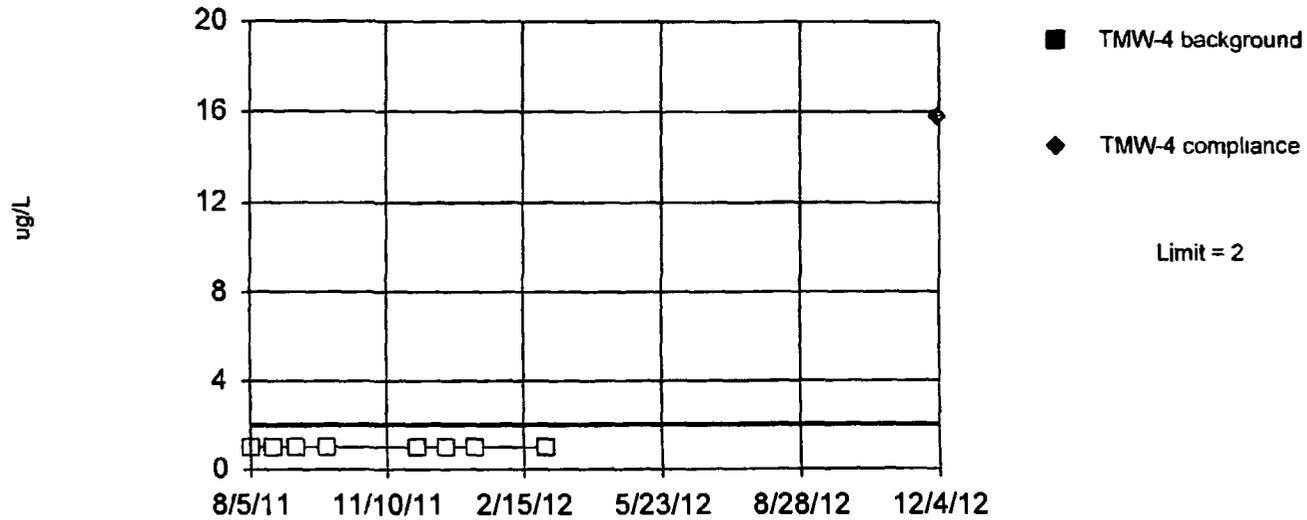
Attachment 1

Statistical Analysis Results

v.9.2.17 Santas software licensed to HDR, Inc. only EPA
Hollow symbols indicate censored values.

Exceeds Limit

Prediction Limit Intrawell Non-parametric



Non-parametric test used in lieu of control chart because non-detects exceed user-adjustable maximum of 50%. All background values were censored; limit is most recent reporting limit. Report alpha = 0.1111. Most recent point compared to limit.

Constituent: Carbon disulfide Analysis Run 12/18/2012 2:42 PM

Facility: Intermountain Regional LF Client: HDR, Inc. Data File: IRLgroundwaterSanitas San8_1

Time Series



Constituent: Carbon disulfide Analysis Run 1/11/2013 11:16 AM

Facility: Intermountain Regional LF Client: HDR, Inc. Data File: IRLgroundwaterSanitas San8_1



Background Data Summary: Mean=0.0196, Std. Dev.=0.001485, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.05, calculated = 0.9758, critical = 0.818. Dates ending 3/2/2012 used for control stats.

Constituent: Arsenic Analysis Run 1/16/2013 12:09 PM

Facility: Intermountain Regional LF Client: HDR, Inc. Data File: IRLgroundwaterSanitas San8_1



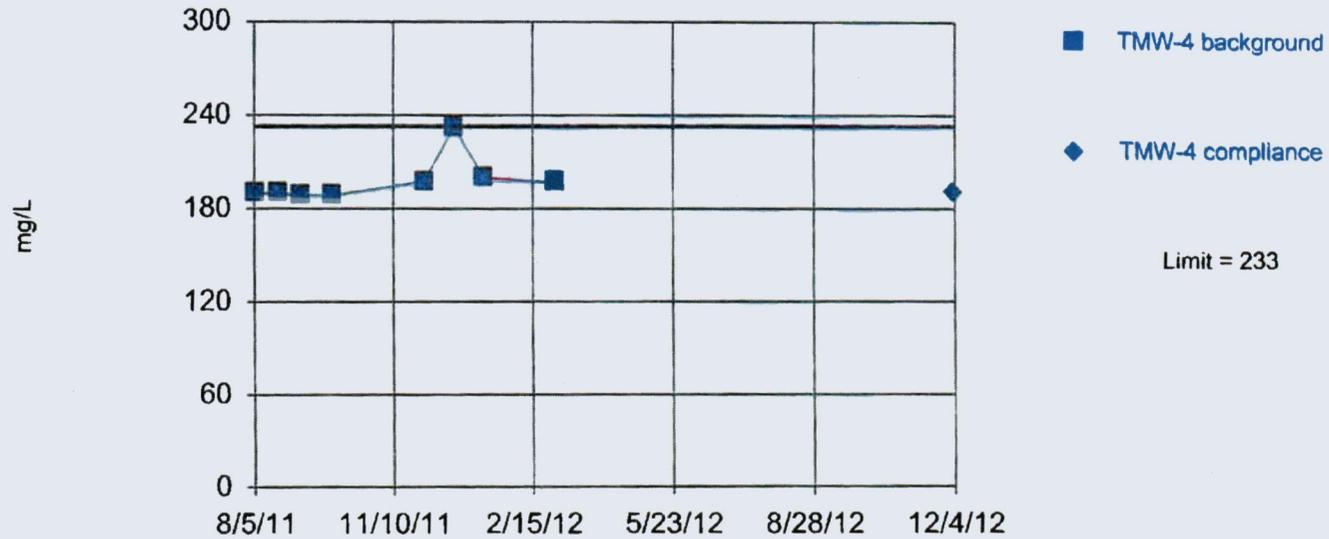
Background Data Summary (based on cube transformation): Mean=0.001307, Std. Dev.=0.001141, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.05, calculated = 0.8185, critical = 0.818. Dates ending 3/2/2012 used for control stats.

Constituent: Barium Analysis Run 1/16/2013 12:10 PM

Facility: Intermountain Regional LF Client: HDR, Inc. Data File: IRLgroundwaterSanitas San8_1

Within Limit

Prediction Limit Intrawell Non-parametric



Non-parametric test used in lieu of control chart because the Shapiro Wilk normality test showed the data to be non-normal at the 0.05 alpha level. Limit is highest of 8 background values. Report alpha = 0.1111. Most recent point compared to limit.

Constituent: Bicarbonate [as CaCO₃] Analysis Run 1/16/2013 12:11 PM
Facility: Intermountain Regional LF Client: HDR, Inc. Data File: IRLgroundwaterSanitas San8_1



Background Data Summary: Mean=53.3, Std. Dev.=18.96, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.05, calculated = 0.8473, critical = 0.818. Dates ending 3/2/2012 used for control stats.

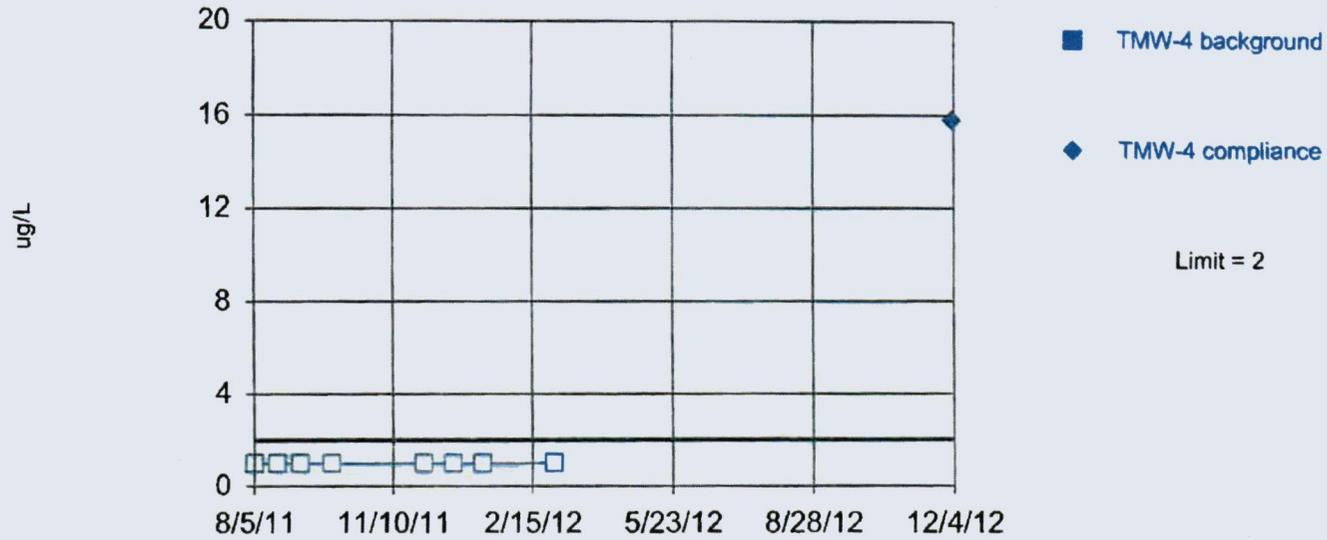
Constituent: Calcium Analysis Run 1/16/2013 12:13 PM

Facility: Intermountain Regional LF Client: HDR, Inc. Data File: IRLgroundwaterSanitas San8_1

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Hollow symbols indicate censored values.

Exceeds Limit

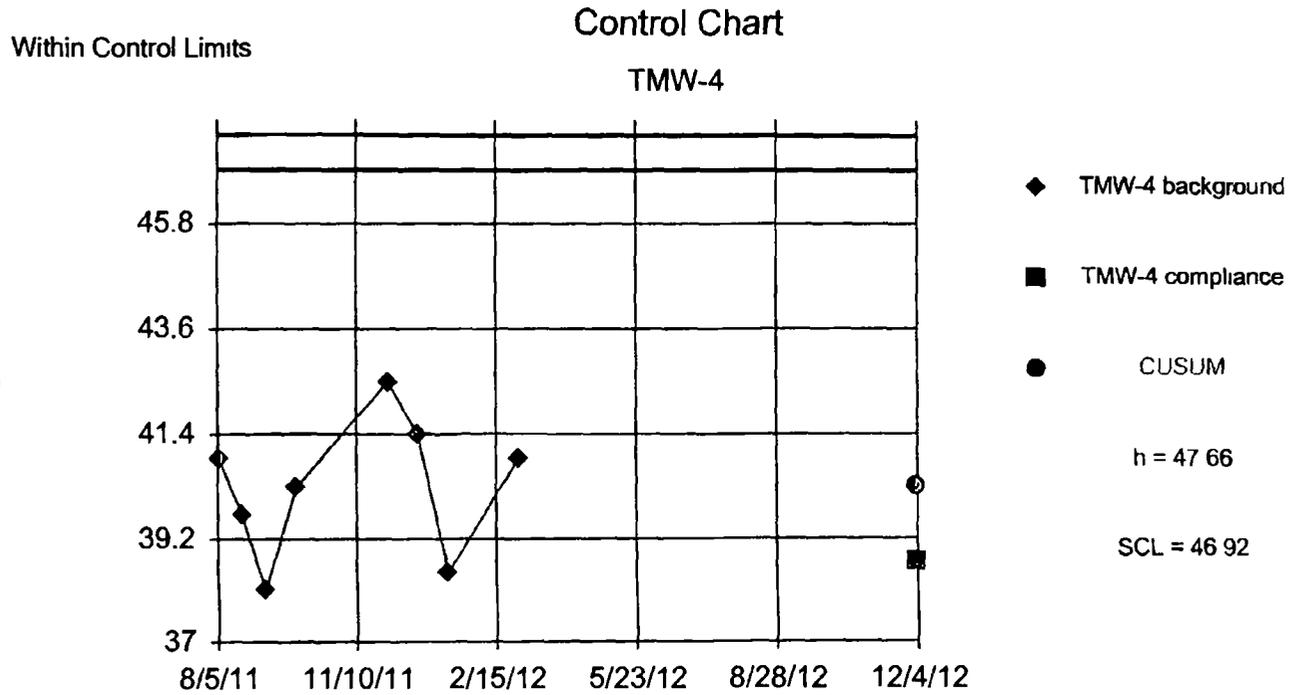
Prediction Limit Intrawell Non-parametric



Non-parametric test used in lieu of control chart because non-detects exceed user-adjustable maximum of 50%. All background values were censored; limit is most recent reporting limit. Report alpha = 0.1111. Most recent point compared to limit.

Constituent: Carbon disulfide Analysis Run 1/16/2013 12:14 PM

Facility: Intermountain Regional LF Client: HDR, Inc. Data File: IRLgroundwaterSanitas San8_1



Background Data Summary: Mean=40.29, Std. Dev.=1.474, n=8. Insufficient data to test for seasonality. data were not deseasonalized. Normality test. Shapiro Wilk @alpha = 0.05, calculated = 0.9611, critical = 0.818. Dates ending 3/2/2012 used for control stats.

Constituent: Chloride Analysis Run 1/16/2013 12:15 PM

Facility: Intermountain Regional LF Client: HDR, Inc. Data File: IRLgroundwaterSanitas San8_1



Background Data Summary: Mean=0.01933, Std. Dev.=0.005324, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.05, calculated = 0.914, critical = 0.818. Dates ending 3/2/2012 used for control stats.

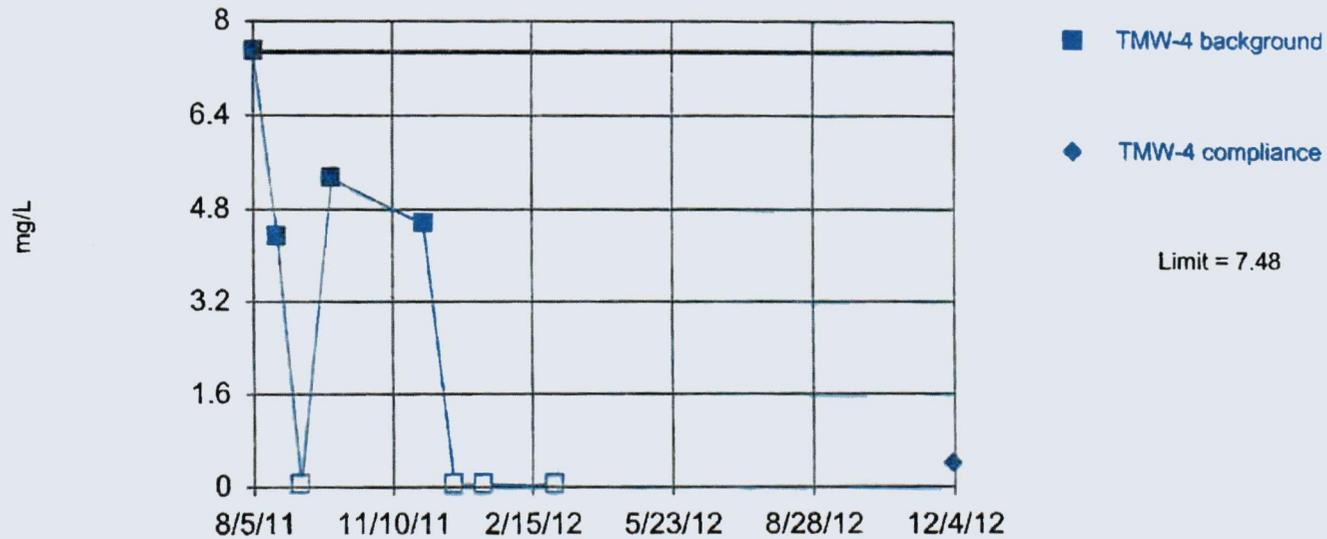
Constituent: Chromium Analysis Run 1/16/2013 12:17 PM

Facility: Intermountain Regional LF Client: HDR, Inc. Data File: IRLgroundwaterSanitas San8_1

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Hollow symbols indicate censored values.

Within Limit

Prediction Limit Intrawell Non-parametric



Non-parametric test used in lieu of control chart because the Shapiro Wilk normality test showed the data to be non-normal at the 0.05 alpha level. Limit is highest of 8 background values. 50% NDs. Report alpha = 0.1111. Most recent point compared to limit.

Constituent: Iron Analysis Run 1/16/2013 12:21 PM

Facility: Intermountain Regional LF Client: HDR, Inc. Data File: IRLgroundwaterSanitas San8_1



Background Data Summary: Mean=45.3, Std. Dev.=4.153, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.05, calculated = 0.8648, critical = 0.818. Dates ending 3/2/2012 used for control stats.

Constituent: Magnesium Analysis Run 1/16/2013 12:22 PM

Facility: Intermountain Regional LF Client: HDR, Inc. Data File: IRLgroundwaterSanitas San8_1

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Hollow symbols indicate censored values.

Within Limit

Prediction Limit Intrawell Non-parametric



Non-parametric test used in lieu of control chart because the data required both a power transformation and Cohen's adjustment. Limit is highest of 8 background values. 50% NDs. Report alpha = 0.1111. Most recent point compared to limit.

Constituent: Manganese Analysis Run 1/16/2013 12:23 PM

Facility: Intermountain Regional LF Client: HDR, Inc. Data File: IRLgroundwaterSanitas San8_1



Background Data Summary: Mean=0.006396, Std. Dev.=0.004146, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.05, calculated = 0.922, critical = 0.818. Dates ending 3/2/2012 used for control stats.

Constituent: Nickel Analysis Run 1/16/2013 12:24 PM

Facility: Intermountain Regional LF Client: HDR, Inc. Data File: IRLgroundwaterSanitas San8_1



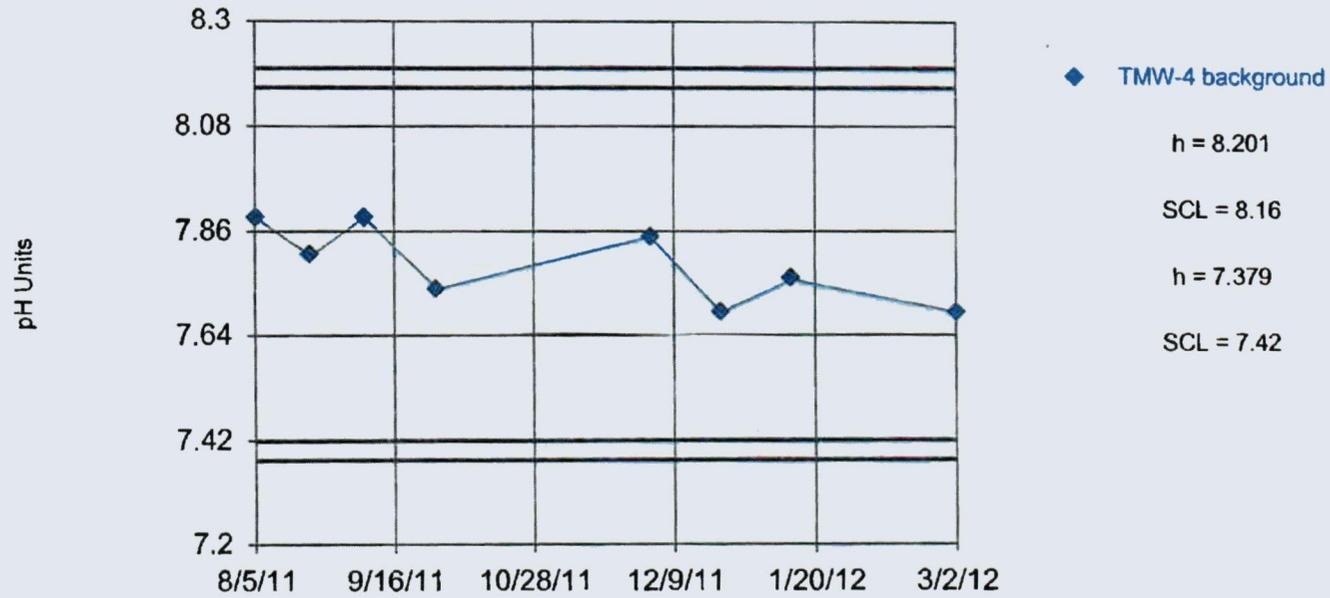
Background Data Summary: Mean=0.4018, Std. Dev.=0.04454, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.05, calculated = 0.8304, critical = 0.818. Dates ending 3/2/2012 used for control stats.

Constituent: Nitrate [as N] Analysis Run 1/16/2013 12:24 PM

Facility: Intermountain Regional LF Client: HDR, Inc. Data File: IRLgroundwaterSanitas San8_1

Control Chart

TMW-4



Background Data Summary: Mean=7.79, Std. Dev.=0.08229, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.05, calculated = 0.8979, critical = 0.818. Dates ending 3/2/2012 used for control stats.

Constituent: pH @ 25??? C Analysis Run 1/16/2013 12:25 PM

Facility: Intermountain Regional LF Client: HDR, Inc. Data File: IRLgroundwaterSanitas San8_1



Background Data Summary: Mean=2.514, Std. Dev.=1.41, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.05, calculated = 0.8532, critical = 0.818. Dates ending 3/2/2012 used for control stats.

Constituent: Potassium Analysis Run 1/16/2013 12:25 PM

Facility: Intermountain Regional LF Client: HDR, Inc. Data File: IRLgroundwaterSanitas San8_1



Background Data Summary: Mean=23.21, Std. Dev.=0.9478, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.05, calculated = 0.9182, critical = 0.818. Dates ending 3/2/2012 used for control stats.

Constituent: Sodium Analysis Run 1/16/2013 12:26 PM

Facility: Intermountain Regional LF Client: HDR, Inc. Data File: IRLgroundwaterSanitas San8_1



Background Data Summary: Mean=54.24, Std. Dev.=2.068, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.05, calculated = 0.9771, critical = 0.818. Dates ending 3/2/2012 used for control stats.

Constituent: Sulfate Analysis Run 1/16/2013 12:27 PM

Facility: Intermountain Regional LF Client: HDR, Inc. Data File: IRLgroundwaterSanitas San8_1



Background Data Summary: Mean=381, Std. Dev.=36.14, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.05, calculated = 0.949, critical = 0.818. Dates ending 3/2/2012 used for control stats.

Constituent: Total Dissolved Solids Analysis Run 1/16/2013 12:29 PM
Facility: Intermountain Regional LF Client: HDR, Inc. Data File: IRLgroundwaterSanitas San8_1



Background Data Summary: Mean=0.02825, Std. Dev.=0.004553, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.05, calculated = 0.8562, critical = 0.818. Dates ending 3/2/2012 used for control stats.

Constituent: Vanadium Analysis Run 1/16/2013 12:32 PM

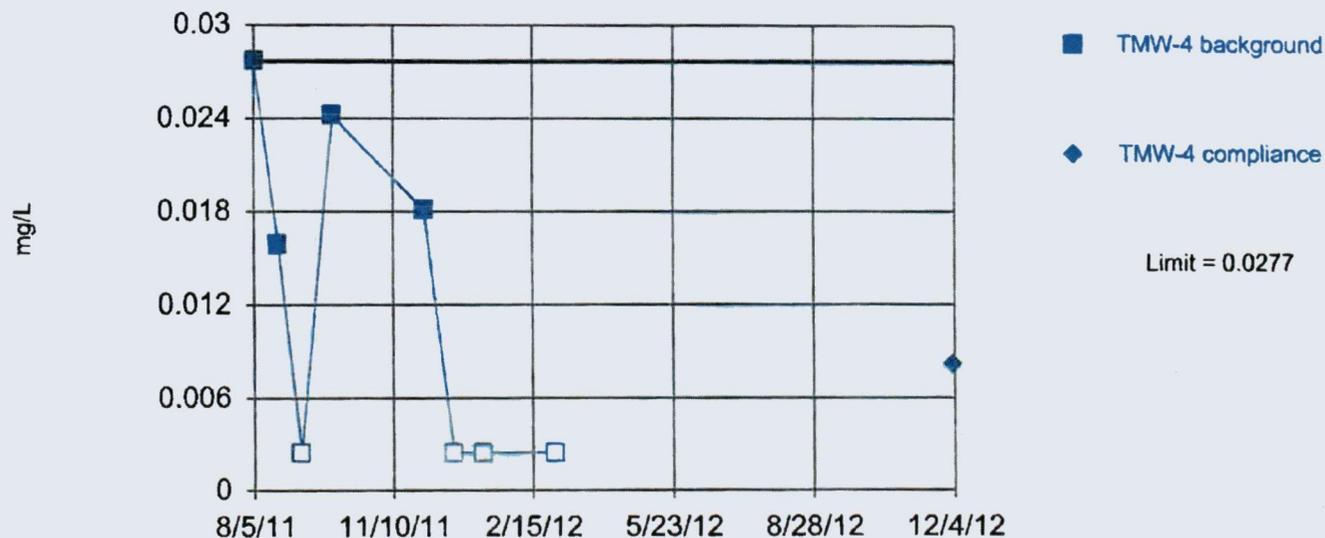
Facility: Intermountain Regional LF Client: HDR, Inc. Data File: IRLgroundwaterSanitas San8_1

Hollow symbols indicate censored values.

Within Limit

Prediction Limit

Intrawell Non-parametric



Non-parametric test used in lieu of control chart because the Shapiro Wilk normality test showed the data to be non-normal at the 0.05 alpha level. Limit is highest of 8 background values. 50% NDs. Report alpha = 0.1111. Most recent point compared to limit.

Constituent: Zinc Analysis Run 1/16/2013 12:34 PM

Facility: Intermountain Regional LF Client: HDR, Inc. Data File: IRLgroundwaterSanitas San8_1

Within Limit

Prediction Limit Intrawell Non-parametric



Non-parametric test used in lieu of control chart because the Shapiro Wilk normality test showed the data to be non-normal at the 0.05 alpha level. Limit is highest of 8 background values. Report alpha = 0.1111. Most recent point compared to limit.

Constituent: Chloride Analysis Run 1/16/2013 12:15 PM

Facility: Intermountain Regional LF Client: HDR, Inc. Data File: IRLgroundwaterSanitas San8_1



Background Data Summary: Mean=0.04124, Std. Dev.=0.0181, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.05, calculated = 0.9298, critical = 0.818. Dates ending 3/2/2012 used for control stats.

Constituent: Manganese Analysis Run 1/16/2013 12:22 PM

Facility: Intermountain Regional LF Client: HDR, Inc. Data File: IRLgroundwaterSanitas San8_1



Background Data Summary: Mean=0.005253, Std. Dev.=0.001747, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.05, calculated = 0.9774, critical = 0.818. Dates ending 3/2/2012 used for control stats.

Constituent: Nickel Analysis Run 1/16/2013 12:24 PM

Facility: Intermountain Regional LF Client: HDR, Inc. Data File: IRLgroundwaterSanitas San8_1



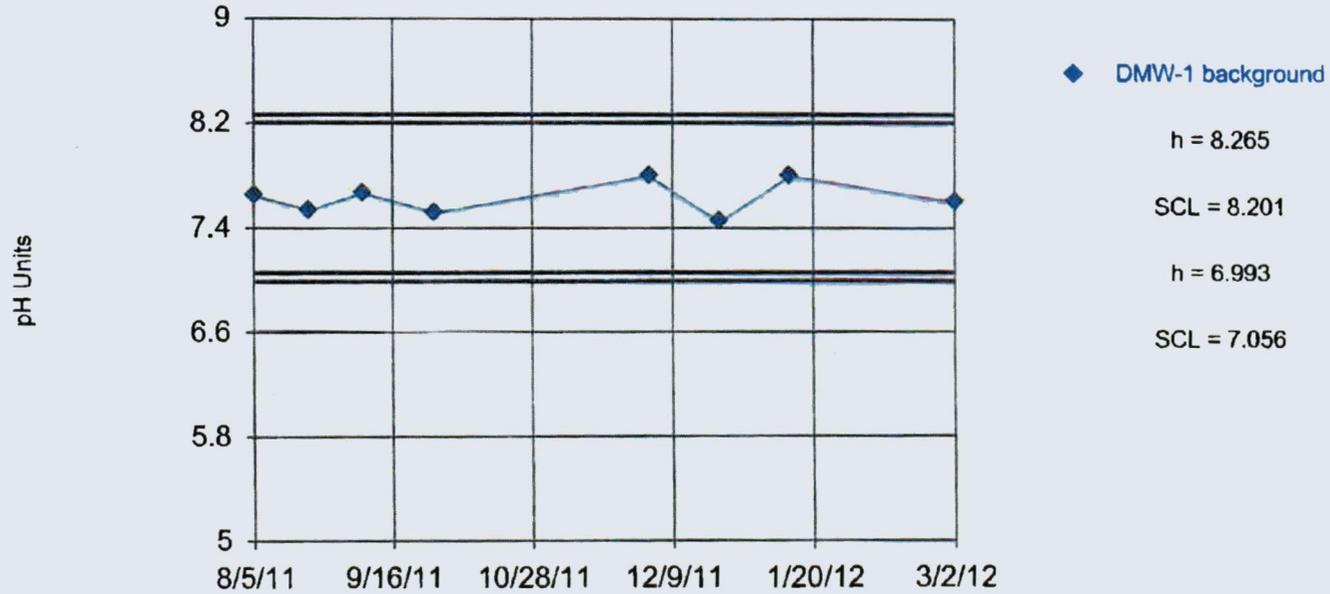
Background Data Summary: Mean=0.0469, Std. Dev.=0.01977, n=8, 12.5% NDs. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.05, calculated = 0.8512, critical = 0.818. Dates ending 3/2/2012 used for control stats.

Constituent: Nitrate [as N] Analysis Run 1/16/2013 12:24 PM

Facility: Intermountain Regional LF Client: HDR, Inc. Data File: IRLgroundwaterSanitas San8_1

Control Chart

DMW-1



Background Data Summary: Mean=7.629, Std. Dev.=0.1272, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.05, calculated = 0.9374, critical = 0.818. Dates ending 3/2/2012 used for control stats.

Constituent: pH @ 25??? C Analysis Run 1/16/2013 12:25 PM

Facility: Intermountain Regional LF Client: HDR, Inc. Data File: IRLgroundwaterSanitas San8_1



Background Data Summary: Mean=1.911, Std. Dev.=0.5257, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.05, calculated = 0.9204, critical = 0.818. Dates ending 3/2/2012 used for control stats.

Constituent: Potassium Analysis Run 1/16/2013 12:25 PM

Facility: Intermountain Regional LF Client: HDR, Inc. Data File: IRLgroundwaterSanitas San8_1

Within Limit

Prediction Limit

Intrawell Non-parametric



Non-parametric test used in lieu of control chart because the Shapiro Wilk normality test showed the data to be non-normal at the 0.05 alpha level. Limit is highest of 8 background values. Report alpha = 0.1111. Most recent point compared to limit.

Constituent: Sodium Analysis Run 1/16/2013 12:26 PM

Facility: Intermountain Regional LF Client: HDR, Inc. Data File: IRLgroundwaterSanitas San8_1



Background Data Summary: Mean=58.15, Std. Dev.=9.834, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.05, calculated = 0.8362, critical = 0.818. Dates ending 3/2/2012 used for control stats.

Constituent: Sulfate Analysis Run 1/16/2013 12:27 PM

Facility: Intermountain Regional LF Client: HDR, Inc. Data File: IRLgroundwaterSanitas San8_1



Background Data Summary: Mean=41.81, Std. Dev.=2.511, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.05, calculated = 0.94, critical = 0.818. Dates ending 3/2/2012 used for control stats.

Constituent: Magnesium Analysis Run 1/16/2013 12:22 PM

Facility: Intermountain Regional LF Client: HDR, Inc. Data File: IRLgroundwaterSanitas San8_1



Background Data Summary: Mean=0.00948, Std. Dev.=0.0008053, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.05, calculated = 0.9738, critical = 0.818. Dates ending 3/2/2012 used for control stats.

Constituent: Arsenic Analysis Run 1/16/2013 12:09 PM

Facility: Intermountain Regional LF Client: HDR, Inc. Data File: IRLgroundwaterSanitas San8_1



Background Data Summary: Mean=0.07546, Std. Dev.=0.01173, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.05, calculated = 0.8314, critical = 0.818. Dates ending 3/2/2012 used for control stats.

Constituent: Barium Analysis Run 1/16/2013 12:09 PM

Facility: Intermountain Regional LF Client: HDR, Inc. Data File: IRLgroundwaterSanitas San8_1



Background Data Summary: Mean=438, Std. Dev.=47.76, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.05, calculated = 0.8756, critical = 0.818. Dates ending 3/2/2012 used for control stats.

Constituent: Total Dissolved Solids Analysis Run 1/16/2013 12:29 PM
Facility: Intermountain Regional LF Client: HDR, Inc. Data File: IRLgroundwaterSanitas San8_1



Background Data Summary: Mean=0.01026, Std. Dev.=0.001315, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.05, calculated = 0.9107, critical = 0.818. Dates ending 3/2/2012 used for control stats.

Constituent: Vanadium Analysis Run 1/16/2013 12:32 PM

Facility: Intermountain Regional LF Client: HDR, Inc. Data File: IRLgroundwaterSanitas San8_1



Background Data Summary: Mean=218.6, Std. Dev.=11.88, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.05, calculated = 0.9036, critical = 0.818. Dates ending 3/2/2012 used for control stats.

Constituent: Bicarbonate [as CaCO₃] Analysis Run 1/16/2013 12:11 PM
Facility: Intermountain Regional LF Client: HDR, Inc. Data File: IRLgroundwaterSanitas San8_1



Background Data Summary: Mean=56.71, Std. Dev.=3.55, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.05, calculated = 0.9063, critical = 0.818. Dates ending 3/2/2012 used for control stats.

Constituent: Calcium Analysis Run 1/16/2013 12:13 PM

Facility: Intermountain Regional LF Client: HDR, Inc. Data File: IRLgroundwaterSanitas San8_1

Attachment 2

Field Monitored Data

Laboratory Results

Chain of Custody



Nate Nichols
HDR Engineering
3949 South 700 East # 500
Salt Lake City, Utah 84107
TEL: (801) 743-7800

RE: IRL Groundwater

Dear Nate Nichols

Lab Set ID: 1212052

463 West 3600 South
Salt Lake City, UT 84115

American West Analytical Laboratories received 5 sample(s) on 12/4/2012 for the analyses presented in the following report.

Phone (801) 263-8686
Toll Free (888) 263-8686
Fax (801) 263-8687
e-mail awal@awal-labs.com
web www.awal-labs.com

American West Analytical Laboratories (AWAL) is accredited by The National Environmental Laboratory Association Conference (NELAC) Institute in Utah and Texas; and is state accredited in Colorado, Idaho, New Mexico, and Missouri. In addition, AWAL is also accredited by the American Analytical Laboratory Association (A2LA) on ISO IEC 17025:2005, Department of Defense (DOD), UST for the State of Wyoming, and the National Lead Laboratory Accreditation Program (NLLAP). All analyses were performed in accordance to The NELAC Institute and/or A2LA protocols unless noted otherwise. Accreditation documents are available upon request. If you have any questions or concerns regarding this report please feel free to call

Kyle F. Gross
Laboratory Director

Jose Rocha
QA Officer

The abbreviation "Surr" found in organic reports indicates a surrogate compound that is intentionally added by the laboratory to determine sample injection, extraction, and/or purging efficiency. The "Reporting Limit" found on the report is equivalent to the practical quantitation limit (PQL). This is the minimum concentration that can be reported by the method referenced and the sample matrix. The reporting limit must not be confused with any regulatory limit. Analytical results are reported to three significant figures for quality control and calculation purposes.

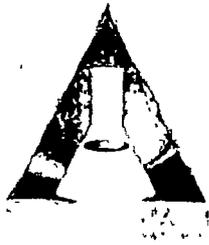
Thank You,

**Kyle F.
Gross**

Digitally signed by Kyle F. Gross
DN: cn=Kyle F. Gross, o=AWAL,
ou=AWAL-Laboratory Director,
email=kyle@awal-labs.com, c=US
Date: 2012.12.18 12:12:07-0700

Approved by:

Laboratory Director or designee



INORGANIC ANALYTICAL REPORT

Client: HDR Engineering **Contact:** Nate Nichols
Project: IRL Groundwater
Lab Sample ID: 1212052-001
Client Sample ID: DMW-1
Collection Date: 12/4/2012 1250h
Received Date: 12/4/2012 1603h

Analytical Results

TOTAL METALS

463 West 3600 South
 Salt Lake City UT 84115

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 web www.awal-labs.com

Kyle F. Gross
 Laboratory Director

 Jose Rocha
 QA Officer

Compound	Units	Date Prepared	Date Analyzed	Method Used	Reporting Limit	Analytical Result	Qual
Antimony	mg/L	12/5/2012 910h	12/13/2012 450h	SW6020A	0.00200	< 0.00200	
Arsenic	mg/L	12/5/2012 910h	12/13/2012 450h	SW6020A	0.00200	0.0101	
Barium	mg/L	12/5/2012 910h	12/13/2012 450h	SW6020A	0.00200	0.0763	
Beryllium	mg/L	12/5/2012 910h	12/13/2012 2115h	SW6020A	0.00200	< 0.00200	
Cadmium	mg/L	12/5/2012 910h	12/13/2012 450h	SW6020A	0.000500	< 0.000500	
Calcium	mg/L	12/5/2012 910h	12/12/2012 1059h	SW6010C	10.0	48.5	
Chromium	mg/L	12/5/2012 910h	12/12/2012 1156h	SW6010C	0.0100	< 0.0100	
Cobalt	mg/L	12/5/2012 910h	12/13/2012 450h	SW6020A	0.00200	< 0.00200	
Copper	mg/L	12/5/2012 910h	12/13/2012 450h	SW6020A	0.00200	< 0.00200	
Iron	mg/L	12/5/2012 910h	12/12/2012 1156h	SW6010C	0.100	< 0.100	
Lead	mg/L	12/5/2012 910h	12/13/2012 450h	SW6020A	0.00200	< 0.00200	
Magnesium	mg/L	12/5/2012 910h	12/12/2012 1059h	SW6010C	10.0	36.5	
Manganese	mg/L	12/5/2012 910h	12/13/2012 2115h	SW6020A	0.00200	0.00233	
Mercury	mg/L	12/5/2012 1630h	12/6/2012 918h	SW7470A	0.000150	< 0.000150	
Nickel	mg/L	12/5/2012 910h	12/13/2012 450h	SW6020A	0.00200	0.00259	
Potassium	mg/L	12/5/2012 910h	12/12/2012 1156h	SW6010C	1.00	1.15	
Selenium	mg/L	12/5/2012 910h	12/13/2012 450h	SW6020A	0.00200	< 0.00200	
Silver	mg/L	12/5/2012 910h	12/13/2012 450h	SW6020A	0.00200	< 0.00200	
Sodium	mg/L	12/5/2012 910h	12/12/2012 1059h	SW6010C	10.0	24.6	
Thallium	mg/L	12/5/2012 910h	12/13/2012 2115h	SW6020A	0.00200	< 0.00200	
Vanadium	mg/L	12/5/2012 910h	12/12/2012 1156h	SW6010C	0.00500	0.0100	
Zinc	mg/L	12/5/2012 910h	12/14/2012 1609h	SW6020A	0.00500	< 0.00500	

* - Matrix spike recovery indicates matrix interference. The method is in control as indicated by the LCS.



INORGANIC ANALYTICAL REPORT

Client: HDR Engineering **Contact:** Nate Nichols
Project: IRL Groundwater
Lab Sample ID: 1212052-001
Chem Sample ID: DMW-1
Collection Date: 12/4/2012 1250h
Received Date: 12/4/2012 1603h

Analytical Results

463 West 3600 South
 Salt Lake City, UT 84115

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 Fax (801) 263-8687
 e-mail awal@awal-labs.com
 web www.awal-labs.com

Compound	Units	Date Prepared	Date Analyzed	Method Used	Reporting Limit	Analytical Result	Qual
Ammonia (as N)	mg/L	12/6/2012 1000h	12/6/2012 2102h	E350 1	0.0500	< 0.0500	
Bicarbonate (as CaCO3)	mg/L		12/5/2012 1114h	SM2320B	20 0	220	
Carbonate (as CaCO3)	mg/L		12/5/2012 1114h	SM2320B	20 0	< 20 0	
Chemical Oxygen Demand	mg/L		12/6/2012 1000h	HACH 8000	10 0	< 10 0	
Chloride	mg/L		12/12/2012 1434h	E300 0	1 00	54.4	
Nitrate (as N)	mg/L		12/4/2012 1720h	E353 2	0 0100	0.0882	
pH @ 25° C	pH Units		12/4/2012 1700h	SM4500-H+B	1 00	7.31	
Sulfate	mg/L		12/11/2012 1906h	E300 0	7 50	48.4	
Total Dissolved Solids	mg/L		12/7/2012 1310h	SM2546C	20 0	404	
Total Organic Carbon	mg/L		12/11/2012 1243h	SM5310B	1 00	< 1 00	

Kyle F. Gross
 Laboratory Director

Jose Rocha
 QA Officer

** - Matrix spike recovery indicates matrix interference. The method is in control as indicated by the LCS*



ORGANIC ANALYTICAL REPORT

Client: HDR Engineering **Contact:** Nate Nichols
Project: IRL Groundwater
Lab Sample ID: 1212052-001A
Client Sample ID: DMW-1
Collection Date: 12/4/2012 1250h
Received Date: 12/4/2012 1603h

Analytical Results

VOAs Landfill List by GC/MS Method 8260C/5030C

Analyzed: 12/5/2012 917h

Units: µg/L **Dilution Factor:** 1 **Method:** SW8260C

463 West 3600 South
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Toll Free: 1-888-263-8686

Fax: (801) 263-8687

e-mail: awal@awal-labs.com

web: www.awal-labs.com

Kyle F. Gross

Laboratory Director

Jose Rocha

QA Officer

Compound	CAS Number	Reporting Limit	Analytical Result	Qual
1,1,1,2-Tetrachloroethane	630-20-6	2.00	< 2.00	
1,1,1-Trichloroethane	71-55-6	2.00	< 2.00	
1,1,2,2-Tetrachloroethane	79-34-5	2.00	< 2.00	
1,1,2-Trichloroethane	79-00-5	2.00	< 2.00	
1,1-Dichloroethane	75-34-3	2.00	< 2.00	
1,1-Dichloroethene	75-35-4	2.00	< 2.00	
1,2,3-Trichloropropane	96-18-4	2.00	< 2.00	
1,2-Dibromo-3-chloropropane	96-12-8	5.00	< 5.00	
1,2-Dibromoethane	106-93-4	2.00	< 2.00	
1,2-Dichlorobenzene	95-50-1	2.00	< 2.00	
1,2-Dichloroethane	107-06-2	2.00	< 2.00	
1,2-Dichloropropane	78-87-5	2.00	< 2.00	
1,4-Dichlorobenzene	106-46-7	2.00	< 2.00	
2-Butanone	78-93-3	10.0	< 10.0	
2-Hexanone	591-78-6	5.00	< 5.00	
4-Methyl-2-pentanone	108-10-1	5.00	< 5.00	
Acetone	67-64-1	10.0	< 10.0	
Acrylonitrile	107-13-1	10.0	< 10.0	
Benzene	71-43-2	2.00	< 2.00	
Bromochloromethane	74-97-5	2.00	< 2.00	
Bromodichloromethane	75-27-4	2.00	< 2.00	
Bromoform	75-25-2	2.00	< 2.00	
Bromomethane	74-83-9	5.00	< 5.00	
Carbon disulfide	75-15-0	2.00	< 2.00	
Carbon tetrachloride	56-23-5	2.00	< 2.00	
Chlorobenzene	108-90-7	2.00	< 2.00	
Chloroethane	75-00-3	2.00	< 2.00	
Chloroform	67-66-3	2.00	< 2.00	



Lab Sample ID: 1212052-001A

Client Sample ID: DMW-1

Analyzed: 12/5/2012 917h

Units: µg/L

Dilution Factor: 1

Method: SW8260C

463 West 3600 South
Salt Lake City UT 84115

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web: www.awal-labs.com

Kyle F. Gross
Laboratory Director

Jose Rocha
QA Officer

Compound	CAS Number	Reporting Limit	Analytical Result	Qual		
Chloromethane	74-87-3	3.00	< 3.00			
cis-1,2-Dichloroethene	156-59-2	2.00	< 2.00			
cis-1,3-Dichloropropene	10061-01-5	2.00	< 2.00			
Dibromochloromethane	124-48-1	2.00	< 2.00			
Dibromomethane	74-95-3	2.00	< 2.00			
Ethylbenzene	100-41-4	2.00	< 2.00			
Iodomethane	74-88-4	5.00	< 5.00			
Methylene chloride	75-09-2	2.00	< 2.00			
Styrene	100-42-5	2.00	< 2.00			
Tetrachloroethene	127-18-4	2.00	< 2.00			
Toluene	108-88-3	2.00	< 2.00			
trans-1,2-Dichloroethene	156-60-5	2.00	< 2.00			
trans-1,3-Dichloropropene	10061-02-6	2.00	< 2.00			
trans-1,4-Dichloro-2-butene	110-57-6	2.00	< 2.00			
Trichloroethene	79-01-6	2.00	< 2.00			
Trichlorofluoromethane	75-69-4	2.00	< 2.00			
Vinyl acetate	108-05-4	10.0	< 10.0			
Vinyl chloride	75-01-4	1.00	< 1.00			
Xylenes, Total	1330-20-7	2.00	< 2.00			
Surrogate	CAS	Result	Amount Spiked	% REC	Limits	Qual
Surr 1,2-Dichloroethane-d4	17060-07-0	51.1	50.00	102	72-151	
Surr 4-Bromofluorobenzene	460-00-4	52.1	50.00	104	80-128	
Surr Dibromofluoromethane	1868-53-7	50.7	50.00	101	80-124	
Surr Toluene-d8	2037-26-5	49.8	50.00	99.6	77-129	



ORGANIC ANALYTICAL REPORT

Client: HDR Engineering **Contact:** Nate Nichols
Project: IRL Groundwater
Lab Sample ID: 1212052-001B
Client Sample ID: DMW-1
Collection Date: 12/4/2012 1250h
Received Date: 12/4/2012 1603h

Analytical Results EDB & DBCP by GC/ECD Method 504 1

Analyzed: 12/7/2012 045h **Extracted:** 12/5/2012 1432h
Units: µg/L **Dilution Factor:** 1 **Method:** E504 1

463 West 3600 South
Salt Lake City, UT 84115

Phone: (801) 263-8686
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 Fax: (801) 263-8687
 e-mail: awal@awal-labs.com

web: www.awal-labs.com

Compound	CAS Number	Reporting Limit	Analytical Result	Qual		
1,2-Dibromo-3-chloropropane	96-12-8	0.0104	< 0.0104			
1,2-Dibromoethane	106-93-4	0.0104	< 0.0104			
Surrogate	CAS	Result	Amount Spiked	% REC	Limits	Qual
Surr 1,2-Dibromopropane	98-75-1	0.122	0.09857	123	65-157	

Kyle F. Gross
Laboratory Director

Jose Rocha
QA Officer



INORGANIC ANALYTICAL REPORT

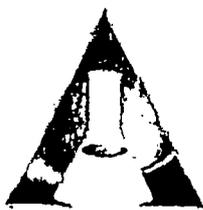
Client: HDR Engineering **Contact:** Nate Nichols
Project: IRL Groundwater
Lab Sample ID: 1212052-003
Client Sample ID: TMW-4
Collection Date: 12/4/2012 1215h
Received Date: 12/4/2012 1603h

Analytical Results

		Compound	Units	Date Prepared	Date Analyzed	Method Used	Reporting Limit	Analytical Result	Qual
463 West 3600 South		Ammonia (as N)	mg/L	12/6/2012 1000h	12/6/2012 2111h	E350 1	0.0500	< 0.0500	
Salt Lake City, UT 84115		Bicarbonate (as CaCO ₃)	mg/L		12/5/2012 1114h	SM2320B	20.0	190	
		Carbonate (as CaCO ₃)	mg/L		12/5/2012 1114h	SM2320B	20.0	< 20.0	
Phone (801) 263-8686		Chemical Oxygen Demand	mg/L		12/6/2012 1000h	HACH 8000	10.0	< 10.0	
Toll Free (888) 263-8686		Chloride	mg/L		12/12/2012 1625h	E300 0	1.00	38.7	✓
Fax (801) 263-8687		Nitrate (as N)	mg/L		12/4/2012 1735h	E353 2	0.0100	0.427	✓
e-mail awal@awal-labs.com		pH @ 25° C	pH Units		12/4/2012 1700h	SM4500-H+B	1.00	7.58	✓
web www.awal-labs.com		Sulfate	mg/L		12/11/2012 2058h	E300 0	7.50	51.9	✓
		Total Dissolved Solids	mg/L		12/7/2012 1310h	SM2540C	20.0	392	✓
		Total Organic Carbon	mg/L		12/11/2012 1412h	SM5310B	1.00	< 1.00	

Kyle F. Gross
Laboratory Director

Jose Rocha
QA Officer



INORGANIC ANALYTICAL REPORT

Client: HDR Engineering **Contact:** Nate Nichols
Project: IRL Groundwater
Lab Sample ID: 1212052-003
Client Sample ID: TMW-4
Collection Date: 12/4/2012 1215h
Received Date: 12/4/2012 1603h

Analytical Results

TOTAL METALS

Compound	Units	Date Prepared	Date Analyzed	Method Used	Reporting Limit	Analytical Result	Qual
Antimony	mg/L	12/5/2012 910h	12/13/2012 613h	SW6020A	0.00200	< 0.00200	
Arsenic	mg/L	12/5/2012 910h	12/13/2012 613h	SW6020A	0.00200	0.0191	
Barium	mg/L	12/5/2012 910h	12/13/2012 613h	SW6020A	0.00200	0.0856	
Beryllium	mg/L	12/5/2012 910h	12/13/2012 2225h	SW6020A	0.00200	< 0.00200	
Cadmium	mg/L	12/5/2012 910h	12/13/2012 613h	SW6020A	0.000500	< 0.000500	
Calcium	mg/L	12/5/2012 910h	12/12/2012 1119h	SW6010C	10.0	49.4	✓
Chromium	mg/L	12/5/2012 910h	12/12/2012 1212h	SW6010C	0.0100	0.0166	✓
Cobalt	mg/L	12/5/2012 910h	12/13/2012 613h	SW6020A	0.00200	< 0.00200	
Copper	mg/L	12/5/2012 910h	12/13/2012 613h	SW6020A	0.00200	< 0.00200	
Iron	mg/L	12/5/2012 910h	12/12/2012 1212h	SW6010C	0.100	0.380	✓
Lead	mg/L	12/5/2012 910h	12/13/2012 613h	SW6020A	0.00200	< 0.00200	
Magnesium	mg/L	12/5/2012 910h	12/12/2012 1119h	SW6010C	10.0	42.0	✓
Manganese	mg/L	12/5/2012 910h	12/13/2012 2225h	SW6020A	0.00200	0.0451	✓
Mercury	mg/L	12/5/2012 1630h	12/6/2012 929h	SW7470A	0.000150	< 0.000150	
Nickel	mg/L	12/5/2012 910h	12/13/2012 613h	SW6020A	0.00200	0.00359	✓
Potassium	mg/L	12/5/2012 910h	12/12/2012 1212h	SW6010C	1.00	1.44	✓
Selenium	mg/L	12/5/2012 910h	12/13/2012 613h	SW6020A	0.00200	< 0.00200	
Silver	mg/L	12/5/2012 910h	12/13/2012 613h	SW6020A	0.00200	< 0.00200	
Sodium	mg/L	12/5/2012 910h	12/12/2012 1119h	SW6010C	10.0	21.9	✓
Thallium	mg/L	12/5/2012 910h	12/13/2012 2225h	SW6020A	0.00200	< 0.00200	
Vanadium	mg/L	12/5/2012 910h	12/12/2012 1212h	SW6010C	0.00500	0.0240	✓
Zinc	mg/L	12/5/2012 910h	12/14/2012 1628h	SW6020A	0.00500	0.00823	✓



ORGANIC ANALYTICAL REPORT

Client: HDR Engineering
Project: IRL Groundwater
Lab Sample ID: 1212052-003A
Client Sample ID: TMW-4
Collection Date: 12/4/2012 1215h
Received Date: 12/4/2012 1603h

Contact: Nate Nichols

Analytical Results

VOAs Landfill List by GC/MS Method 8260C/5030C

Analyzed: 12/5/2012 955h

Units: µg/L

Dilution Factor: 1

Method: SW8260C

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Kyle F. Gross
Laboratory Director

Jose Rocha
QA Officer

Compound	CAS Number	Reporting Limit	Analytical Result	Qual
1,1,1,2-Tetrachloroethane	630-20-6	2.00	< 2.00	
1,1,1-Trichloroethane	71-55-6	2.00	< 2.00	
1,1,2,2-Tetrachloroethane	79-34-5	2.00	< 2.00	
1,1,2-Trichloroethane	79-00-5	2.00	< 2.00	
1,1-Dichloroethane	75-34-3	2.00	< 2.00	
1,1-Dichloroethene	75-35-4	2.00	< 2.00	
1,2,3-Trichloropropane	96-18-4	2.00	< 2.00	
1,2-Dibromo-3-chloropropane	96-12-8	5.00	< 5.00	
1,2-Dibromoethane	106-93-4	2.00	< 2.00	
1,2-Dichlorobenzene	95-50-1	2.00	< 2.00	
1,2-Dichloroethane	107-06-2	2.00	< 2.00	
1,2-Dichloropropane	78-87-5	2.00	< 2.00	
1,4-Dichlorobenzene	106-46-7	2.00	< 2.00	
2-Butanone	78-93-3	10.0	< 10.0	
2-Hexanone	591-78-6	5.00	< 5.00	
4-Methyl-2-pentanone	108-10-1	5.00	< 5.00	
Acetone	67-64-1	10.0	< 10.0	
Acrylonitrile	107-13-1	10.0	< 10.0	
Benzene	71-43-2	2.00	< 2.00	
Bromochloromethane	74-97-5	2.00	< 2.00	
Bromodichloromethane	75-27-4	2.00	< 2.00	
Bromoform	75-25-2	2.00	< 2.00	
Bromomethane	74-83-9	5.00	< 5.00	
Carbon disulfide	75-15-0	2.00	15.8	✓
Carbon tetrachloride	56-23-5	2.00	< 2.00	
Chlorobenzene	108-90-7	2.00	< 2.00	
Chloroethane	75-00-3	2.00	< 2.00	
Chloroform	67-66-3	2.00	< 2.00	



Lab Sample ID: 1212052-003A

Client Sample ID: TMW-4

Analyzed: 12/5/2012 955h

Units: µg/L

Dilution Factor: 1

Method: SW8260C

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Laboratory Director

Jose Rocha

QA Officer

Compound	CAS Number	Reporting Limit	Analytical Result	Qual		
Chloromethane	74-87-3	3.00	< 3.00			
cis-1,2-Dichloroethene	156-59-2	2.00	< 2.00			
cis-1,3-Dichloropropene	10061-01-5	2.00	< 2.00			
Dibromochloromethane	124-48-1	2.00	< 2.00			
Dibromomethane	74-95-3	2.00	< 2.00			
Ethylbenzene	100-41-4	2.00	< 2.00			
Iodomethane	74-88-4	5.00	< 5.00			
Methylene chloride	75-09-2	2.00	< 2.00			
Styrene	100-42-5	2.00	< 2.00			
Tetrachloroethene	127-18-4	2.00	< 2.00			
Toluene	108-88-3	2.00	< 2.00			
trans-1,2-Dichloroethene	156-60-5	2.00	< 2.00			
trans-1,3-Dichloropropene	10061-02-6	2.00	< 2.00			
trans-1,4-Dichloro-2-butene	110-57-6	2.00	< 2.00			
Trichloroethene	79-01-6	2.00	< 2.00			
Trichlorofluoromethane	75-69-4	2.00	< 2.00			
Vinyl acetate	108-05-4	10.0	< 10.0			
Vinyl chloride	75-01-4	1.00	< 1.00			
Xylenes, Total	1330-20-7	2.00	< 2.00			
Surrogate	CAS	Result	Amount Spiked	% REC	Limits	Qual
Surr 1,2-Dichloroethane-d4	17060-07-0	52.4	50.00	105	72-151	
Surr 4-Bromofluorobenzene	460-00-4	53.3	50.00	107	80-128	
Surr Dibromofluoromethane	1868-53-7	52.2	50.00	104	80-124	
Surr Toluene-d8	2037-26-5	50.3	50.00	101	77-129	



ORGANIC ANALYTICAL REPORT

Client: HDR Engineering
Project: JRL Groundwater
Lab Sample ID: 1212052-003B
Client Sample ID: TMW-4
Collection Date: 12/4/2012 1215h
Received Date: 12/4/2012 1603h

Contact: Nate Nichols

Analytical Results

EDB & DBCP by GC/ECD Method 504 I

Analyzed: 12/7/2012 145h **Extracted:** 12/5/2012 1432h
Units: µg/L **Dilution Factor:** 1 **Method:** E504 I

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Compound	CAS Number	Reporting Limit	Analytical Result	Qual		
1,2-Dibromo-3-chloropropane	96-12-8	0.0103	< 0.0103			
1,2-Dibromoethane	106-93-4	0.0103	< 0.0103			
Surrogate	CAS	Result	Amount Spiked	% REC	Limits	Qual
Surr 1,2-Dibromopropane	98-75-1	0.131	0.09837	134	65-157	

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Kyle F. Gross
Laboratory Director

Jose Rocha
QA Officer



ORGANIC ANALYTICAL REPORT

Client: HDR Engineering
Project: IRL Groundwater
Lab Sample ID: 1212052-002A
Client Sample ID: DMW-2
Collection Date: 12/4/2012 1140h
Received Date: 12/4/2012 1603h

Contact: Nate Nichols

Analytical Results

VOAs Landfill List by GC/MS Method 8260C/5030C

Analyzed: 12/5/2012 936h

Units: µg/L

Dduction Factor: 1

Method:

SW8260C

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Kyle F. Gross
 Laboratory Director

Jose Rocha
 QA Officer

Compound	CAS Number	Reporting Limit	Analytical Result	Qual
1,1,1,2-Tetrachloroethane	630-20-6	2.00	< 2.00	
1,1,1-Trichloroethane	71-55-6	2.00	< 2.00	
1,1,2,2-Tetrachloroethane	79-34-5	2.00	< 2.00	
1,1,2-Trichloroethane	79-00-5	2.00	< 2.00	
1,1-Dichloroethane	75-34-3	2.00	< 2.00	
1,1-Dichloroethene	75-35-4	2.00	< 2.00	
1,2,3-Trichloropropane	96-18-4	2.00	< 2.00	
1,2-Dibromo-3-chloropropane	96-12-8	5.00	< 5.00	
1,2-Dibromoethane	106-93-4	2.00	< 2.00	
1,2-Dichlorobenzene	95-50-1	2.00	< 2.00	
1,2-Dichloroethane	107-06-2	2.00	< 2.00	
1,2-Dichloropropane	78-87-5	2.00	< 2.00	
1,4-Dichlorobenzene	106-46-7	2.00	< 2.00	
2-Butanone	78-93-3	10.0	< 10.0	
2-Hexanone	591-78-6	5.00	< 5.00	
4-Methyl-2-pentanone	108-10-1	5.00	< 5.00	
Acetone	67-64-1	10.0	< 10.0	
Acrylonitrile	107-13-1	10.0	< 10.0	
Benzene	71-43-2	2.00	< 2.00	
Bromochloromethane	74-97-5	2.00	< 2.00	
Bromodichloromethane	75-27-4	2.00	< 2.00	
Bromoform	75-25-2	2.00	< 2.00	
Bromomethane	74-83-9	5.00	< 5.00	
Carbon disulfide	75-15-0	2.00	< 2.00	
Carbon tetrachloride	56-23-5	2.00	< 2.00	
Chlorobenzene	108-90-7	2.00	< 2.00	
Chloroethane	75-00-3	2.00	< 2.00	
Chloroform	67-66-3	2.00	< 2.00	



Lab Sample ID: 1212052-002A

Client Sample ID: DMW-2

Analyzed: 12/5/2012 936h

Units: µg/L

Dilution Factor: 1

Method:

SW8260C

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Kyle F. Gross
Laboratory Director

Jose Rocha
QA Officer

Compound	CAS Number	Reporting Limit	Analytical Result	Qual
Chloromethane	74-87-3	3.00	< 3.00	
cis-1,2-Dichloroethene	156-59-2	2.00	< 2.00	
cis-1,3-Dichloropropene	10061-01-5	2.00	< 2.00	
Dibromochloromethane	124-48-1	2.00	< 2.00	
Dibromomethane	74-95-3	2.00	< 2.00	
Ethylbenzene	100-41-4	2.00	< 2.00	
Iodomethane	74-88-4	5.00	< 5.00	
Methylene chloride	75-09-2	2.00	< 2.00	
Styrene	100-42-5	2.00	< 2.00	
Tetrachloroethene	127-18-4	2.00	< 2.00	
Toluene	108-88-3	2.00	< 2.00	
trans-1,2-Dichloroethene	156-60-5	2.00	< 2.00	
trans-1,3-Dichloropropene	10061-02-6	2.00	< 2.00	
trans-1,4-Dichloro-2-butene	110-57-6	2.00	< 2.00	
Trichloroethene	79-01-6	2.00	< 2.00	
Trichlorofluoromethane	75-69-4	2.00	< 2.00	
Vinyl acetate	108-05-4	10.0	< 10.0	
Vinyl chloride	75-01-4	1.00	< 1.00	
Xylenes, Total	1330-20-7	2.00	< 2.00	

Surrogate	CAS	Result	Amount Spiked	% REC	Limits	Qual
Surr 1,2-Dichloroethane-d4	17060-07-0	52.2	50.00	104	72-151	
Surr 4-Bromofluorobenzene	460-00-4	52.8	50.00	106	80-128	
Surr Dibromofluoromethane	1868-53-7	51.9	50.00	104	80-124	
Surr Toluene-d8	2037-26-5	50.1	50.00	100	77-129	



ORGANIC ANALYTICAL REPORT

Client: HDR Engineering **Contact:** Nate Nichols
Project: IRL Groundwater
Lab Sample ID: 1212052-002B
Client Sample ID: DMW-2
Collection Date: 12/4/2012 1140h
Received Date: 12/4/2012 1603h

Analytical Results EDB & DBCP by GC/ECD Method 504 1

Analyzed: 12/7/2012 130h **Extracted:** 12/5/2012 1432h
Units: µg/L **Dilution Factor:** 1 **Method:** E504 1

463 West 3600 South
Salt Lake City, UT 84115

Compound	CAS Number	Reporting Limit	Analytical Result	Qual
1,2-Dibromo-3-chloropropane	96-12-8	0.0103	< 0.0103	
1,2-Dibromoethane	106-93-4	0.0103	< 0.0103	

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Surrogate	CAS	Result	Amount Spiked	% REC	Limits	Qual
Surr 1,2-Dibromopropane	98-75-1	0.113	0.09848	115	65-157	

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Kyle F. Gross
Laboratory Director

Jose Rocha
QA Officer



INORGANIC ANALYTICAL REPORT

Client: HDR Engineering **Contact:** Nate Nichols
Project: IRL Groundwater
Lab Sample ID: 1212052-002
Client Sample ID: DMW-2
Collection Date: 12/4/2012 1140h
Received Date: 12/4/2012 1603h

Analytical Results

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Compound	Units	Date Prepared	Date Analyzed	Method Used	Reporting Limit	Analytical Result	Qual
Ammonia (as N)	mg/L	12/6/2012 1000h	12/6/2012 2105h	E350 1	0.0500	< 0.0500	
Bicarbonate (as CaCO ₃)	mg/L		12/5/2012 1114h	SM2320B	20.0	238	
Carbonate (as CaCO ₃)	mg/L		12/5/2012 1114h	SM2320B	20.0	< 20.0	
Chemical Oxygen Demand	mg/L		12/6/2012 1000h	HACH 8000	10.0	< 10.0	
Chloride	mg/L		12/12/2012 1603h	E300 0	10.0	187	
Nitrate (as N)	mg/L		12/4/2012 1734h	E353 2	0.0100	1.38	
pH @ 25° C	pH Units		12/4/2012 1700h	SM4500-H+B	1.00	7.28	
Sulfate	mg/L		12/11/2012 2035h	E300 0	7.50	49.0	
Total Dissolved Solids	mg/L		12/7/2012 1310h	SM2540C	20.0	676	
Total Organic Carbon	mg/L		12/11/2012 1352h	SM5310B	1.00	1.31	

Kyle F. Gross
 Laboratory Director

Jose Rocha
 QA Officer



INORGANIC ANALYTICAL REPORT

Client: HDR Engineering
Project: IRL Groundwater
Lab Sample ID: 1212052-002
Client Sample ID: DMW-2
Collection Date: 12/4/2012 1140h
Received Date: 12/4/2012 1603h

Contact: Nate Nichols

Analytical Results

TOTAL METALS

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Jose Rocha
 QA Officer

Compound	Units	Date Prepared	Date Analyzed	Method Used	Reporting Limit	Analytical Result	Qual
Antimony	mg/L	12/5/2012 910h	12/13/2012 603h	SW6020A	0.00200	< 0.00200	
Arsenic	mg/L	12/5/2012 910h	12/13/2012 603h	SW6020A	0.00200	0.00989	
Barium	mg/L	12/5/2012 910h	12/13/2012 603h	SW6020A	0.00200	0.105	
Beryllium	mg/L	12/5/2012 910h	12/13/2012 2143h	SW6020A	0.00200	< 0.00200	
Cadmium	mg/L	12/5/2012 910h	12/13/2012 603h	SW6020A	0.000500	< 0.000500	
Calcium	mg/L	12/5/2012 910h	12/12/2012 1115h	SW6010C	10.0	66.9	
Chromium	mg/L	12/5/2012 910h	12/12/2012 1208h	SW6010C	0.0100	< 0.0100	
Cobalt	mg/L	12/5/2012 910h	12/13/2012 603h	SW6020A	0.00200	< 0.00200	
Copper	mg/L	12/5/2012 910h	12/13/2012 603h	SW6020A	0.00200	< 0.00200	
Iron	mg/L	12/5/2012 910h	12/12/2012 1208h	SW6010C	0.100	< 0.100	
Lead	mg/L	12/5/2012 910h	12/13/2012 603h	SW6020A	0.00200	< 0.00200	
Magnesium	mg/l	12/5/2012 910h	12/12/2012 1115h	SW6010C	10.0	74.6	
Manganese	mg/L	12/5/2012 910h	12/13/2012 2143h	SW6020A	0.00200	0.0219	
Mercury	mg/L	12/5/2012 1630h	12/6/2012 924h	SW7470A	0.000150	< 0.000150	
Nickel	mg/L	12/5/2012 910h	12/13/2012 603h	SW6020A	0.00200	0.00417	
Potassium	mg/L	12/5/2012 910h	12/12/2012 1208h	SW6010C	1.00	4.53	
Selenium	mg/L	12/5/2012 910h	12/13/2012 603h	SW6020A	0.00200	0.0115	
Silver	mg/l	12/5/2012 910h	12/13/2012 603h	SW6020A	0.00200	< 0.00200	
Sodium	mg/L	12/5/2012 910h	12/12/2012 1115h	SW6010C	10.0	32.7	
Thallium	mg/L	12/5/2012 910h	12/13/2012 2143h	SW6020A	0.00200	< 0.00200	
Vanadium	mg/L	12/5/2012 910h	12/12/2012 1208h	SW6010C	0.00500	0.0134	
Zinc	mg/L	12/5/2012 910h	12/14/2012 1623h	SW6020A	0.00500	0.00580	



ORGANIC ANALYTICAL REPORT

Client: HDR Engineering
Project: IRL Groundwater
Lab Sample ID: 1212052-004A
Client Sample ID: DMW-6
Collection Date: 12/4/2012 1330h
Received Date: 12/4/2012 1603h

Contact: Nate Nichols

Analytical Results

VOAs Landfill List by GC/MS Method 8260C/5030C

Analyzed: 12/5/2012 1014h

Units: µg/L

Dilution Factor: 1

Method: SW8260C

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Kyle F. Gross
Laboratory Director

Jose Rocha
QA Officer

Compound	CAS Number	Reporting Limit	Analytical Result	Qual
1,1,1,2-Tetrachloroethane	630-20-6	2.00	< 2.00	
1,1,1-Trichloroethane	71-55-6	2.00	< 2.00	
1,1,2,2-Tetrachloroethane	79-34-5	2.00	< 2.00	
1,1,2-Trichloroethane	79-00-5	2.00	< 2.00	
1,1-Dichloroethane	75-34-3	2.00	< 2.00	
1,1-Dichloroethene	75-35-4	2.00	< 2.00	
1,2,3-Trichloropropane	96-18-4	2.00	< 2.00	
1,2-Dibromo-3-chloropropane	96-12-8	5.00	< 5.00	
1,2-Dibromoethane	106-93-4	2.00	< 2.00	
1,2-Dichlorobenzene	95-50-1	2.00	< 2.00	
1,2-Dichloroethane	107-06-2	2.00	< 2.00	
1,2-Dichloropropane	78-87-5	2.00	< 2.00	
1,4-Dichlorobenzene	106-46-7	2.00	< 2.00	
2-Butanone	78-93-3	10.0	< 10.0	
2-Hexanone	591-78-6	5.00	< 5.00	
4-Methyl-2-pentanone	108-10-1	5.00	< 5.00	
Acetone	67-64-1	10.0	< 10.0	
Acrylonitrile	107-13-1	10.0	< 10.0	
Benzene	71-43-2	2.00	< 2.00	
Bromochloromethane	74-97-5	2.00	< 2.00	
Bromodichloromethane	75-27-4	2.00	< 2.00	
Bromoform	75-25-2	2.00	< 2.00	
Bromomethane	74-83-9	5.00	< 5.00	
Carbon disulfide	75-15-0	2.00	< 2.00	
Carbon tetrachloride	56-23-5	2.00	< 2.00	
Chlorobenzene	108-90-7	2.00	< 2.00	
Chloroethane	75-00-3	2.00	< 2.00	
Chloroform	67-66-3	2.00	< 2.00	



Lab Sample ID: 1212052-004A

Client Sample ID: DMW-6

Analyzed: 12/5/2012 1014h

Units: µg/L

Dilution Factor: 1

Method: SW8260C

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Jose Rocha
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Compound	CAS Number	Reporting Limit	Analytical Result	Qual
Chloromethane	74-87-3	3.00	< 3.00	
cis-1,2-Dichloroethene	156-59-2	2.00	< 2.00	
cis-1,3-Dichloropropene	10061-01-5	2.00	< 2.00	
Dibromochloromethane	124-48-1	2.00	< 2.00	
Dibromomethane	74-95-3	2.00	< 2.00	
Ethylbenzene	100-41-4	2.00	< 2.00	
Iodomethane	74-88-4	5.00	< 5.00	
Methylene chloride	75-09-2	2.00	< 2.00	
Styrene	100-42-5	2.00	< 2.00	
Tetrachloroethene	127-18-4	2.00	< 2.00	
Toluene	108-88-3	2.00	< 2.00	
trans-1,2-Dichloroethene	156-60-5	2.00	< 2.00	
trans-1,3-Dichloropropene	10061-02-6	2.00	< 2.00	
trans-1,4-Dichloro-2-butene	110-57-6	2.00	< 2.00	
Trichloroethene	79-01-6	2.00	< 2.00	
Trichlorofluoromethane	75-69-4	2.00	< 2.00	
Vinyl acetate	108-05-4	10.0	< 10.0	
Vinyl chloride	75-01-4	1.00	< 1.00	
Xylenes, Total	1330-20-7	2.00	< 2.00	

Surrogate	CAS	Result	Amount Spiked	% REC	Limits	Qual
Surr 1,2-Dichloroethane-d4	17060-07-0	52.1	50.00	104	72-151	
Surr 4-Bromofluorobenzene	460-00-4	53.1	50.00	106	80-128	
Surr Dibromofluoromethane	1868-53-7	52.0	50.00	104	80-124	
Surr Toluene-d8	2037-26-5	50.0	50.00	100	77-129	



ORGANIC ANALYTICAL REPORT

Client: HDR Engineering **Contact:** Nate Nichols
Project: IRL Groundwater
Lab Sample ID: 1212052-004B
Client Sample ID: DMW-6
Collection Date: 12/4/2012 1330h
Received Date: 12/4/2012 1603h

Analytical Results EDB & DBCP by GC/ECD Method 504.1

Analyzed: 12/7/2012 200h **Extracted:** 12/5/2012 1432h
Units: µg/L **Dilution Factor:** 1 **Method:** E504.1

Compound	CAS Number	Reporting Limit	Analytical Result	Qual		
1,2-Dibromo-3-chloropropane	96-12-8	0.0105	< 0.0105			
1,2-Dibromoethane	106-93-4	0.0105	< 0.0105			
Surrogate	CAS	Result	Amount Spiked	% REC	Limits	Qual
Surr 1,2-Dibromopropane	98-75-1	0.0913	0.09969	91.6	65-157	

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Kyle F. Gross
 Laboratory Director

Jose Rocha
 QA Officer



INORGANIC ANALYTICAL REPORT

Client: HDR Engineering
Project: IRL Groundwater
Lab Sample ID: 1212052-004
Client Sample ID: DMW-6
Collection Date: 12/4/2012 1330h
Received Date: 12/4/2012 1603h

Contact: Nate Nichols

Analytical Results

	Compound	Units	Date Prepared	Date Analyzed	Method Used	Reporting Limit	Analytical Result	Qual
463 West 3600 South	Ammonia (as N)	mg/L	12/6/2012 1000h	12/6/2012 2112h	E350 I	0.0500	< 0.0500	
Salt Lake City, UT 84115	Bicarbonate (as CaCO ₃)	mg/L		12/5/2012 1114h	SM2320B	20.0	208	
	Carbonate (as CaCO ₃)	mg/L		12/5/2012 1114h	SM2320B	20.0	< 20.0	
Phone (801) 263-8686	Chemical Oxygen Demand	mg/L		12/6/2012 1000h	HACH 8000	10.0	< 10.0	
Toll Free (888) 263-8686	Chloride	mg/L		12/12/2012 1648h	E300 0	1.00	43.6	
Fax (801) 263-8687	Nitrate (as N)	mg/L		12/4/2012 1737h	E353.2	0.0100	0.340	
e-mail awal@awal-labs.com	pH @ 25° C	pH Units		12/4/2012 1700h	SM4500-H+B	1.00	7.74	
web www.awal-labs.com	Sulfate	mg/L		12/11/2012 2120h	E300 0	7.50	55.0	
	Total Dissolved Solids	mg/L		12/7/2012 1310h	SM2540C	20.0	416	
	Total Organic Carbon	mg/L		12/11/2012 1433h	SM5310B	1.00	< 1.00	

Kyle F. Gross

Laboratory Director

Jose Rocha

QA Officer



INORGANIC ANALYTICAL REPORT

Client: HDR Engineering **Contact:** Nate Nichols
Project: IRL Groundwater
Lab Sample ID: 1212052-004
Client Sample ID: DMW-6
Collection Date: 12/4/2012 1330h
Received Date: 12/4/2012 1603h

Analytical Results

TOTAL METALS

463 West 3600 South
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Jose Rocha
QA Officer

Compound	Units	Date Prepared	Date Analyzed	Method Used	Reporting Limit	Analytical Result	Qual
Antimony	mg/L	12/5/2012 910h	12/13/2012 622h	SW6020A	0.00200	< 0.00200	
Arsenic	mg/L	12/5/2012 910h	12/13/2012 622h	SW6020A	0.00200	0.0279	
Barium	mg/L	12/5/2012 910h	12/13/2012 622h	SW6020A	0.00200	0.0638	
Beryllium	mg/L	12/5/2012 910h	12/13/2012 2234h	SW6020A	0.00200	< 0.00200	
Cadmium	mg/L	12/5/2012 910h	12/13/2012 622h	SW6020A	0.000500	< 0.000500	
Calcium	mg/L	12/5/2012 910h	12/12/2012 1122h	SW6010C	10.0	33.1	
Chromium	mg/L	12/5/2012 910h	12/12/2012 1216h	SW6010C	0.0100	< 0.0100	
Cobalt	mg/L	12/5/2012 910h	12/13/2012 622h	SW6020A	0.00200	< 0.00200	
Copper	mg/L	12/5/2012 910h	12/13/2012 622h	SW6020A	0.00200	< 0.00200	
Iron	mg/L	12/5/2012 910h	12/12/2012 1216h	SW6010C	0.100	< 0.100	
Lead	mg/L	12/5/2012 910h	12/13/2012 622h	SW6020A	0.00200	< 0.00200	
Magnesium	mg/L	12/5/2012 910h	12/12/2012 1122h	SW6010C	10.0	50.0	
Manganese	mg/L	12/5/2012 910h	12/13/2012 2234h	SW6020A	0.00200	0.00724	
Mercury	mg/L	12/5/2012 1630h	12/6/2012 931h	SW7470A	0.000150	< 0.000150	
Nickel	mg/L	12/5/2012 910h	12/13/2012 622h	SW6020A	0.00200	0.00239	
Potassium	mg/L	12/5/2012 910h	12/12/2012 1216h	SW6010C	1.00	10.7	
Selenium	mg/L	12/5/2012 910h	12/13/2012 622h	SW6020A	0.00200	< 0.00200	
Silver	mg/L	12/5/2012 910h	12/13/2012 622h	SW6020A	0.00200	< 0.00200	
Sodium	mg/L	12/5/2012 910h	12/12/2012 1122h	SW6010C	10.0	23.7	
Thallium	mg/L	12/5/2012 910h	12/13/2012 2234h	SW6020A	0.00200	< 0.00200	
Vanadium	mg/L	12/5/2012 910h	12/12/2012 1216h	SW6010C	0.00500	0.0220	
Zinc	mg/L	12/5/2012 910h	12/14/2012 1633h	SW6020A	0.00500	< 0.00500	



ORGANIC ANALYTICAL REPORT

Client: HDR Engineering
Project: IRL Groundwater
Lab Sample ID: 1212052-005A
Client Sample ID: DMW-7
Collection Date: 12/4/2012 1400h
Received Date: 12/4/2012 1603h

Contact: Nate Nichols

Analytical Results

VOAs Landfill List by GC/MS Method 8260C/5030C

Analyzed: 12/5/2012 1033h

Units: µg/L

Dilution Factor: 1

Method: SW8260C

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Kyle F. Gross
 Laboratory Director

Jose Rocha
 QA Officer

Compound	CAS Number	Reporting Limit	Analytical Result	Qual
1,1,1,2-Tetrachloroethane	630-20-6	2.00	< 2.00	
1,1,1-Trichloroethane	71-55-6	2.00	< 2.00	
1,1,2,2-Tetrachloroethane	79-34-5	2.00	< 2.00	
1,1,2-Trichloroethane	79-00-5	2.00	< 2.00	
1,1-Dichloroethane	75-34-3	2.00	< 2.00	
1,1-Dichloroethene	75-35-4	2.00	< 2.00	
1,2,3-Trichloropropane	96-18-4	2.00	< 2.00	
1,2-Dibromo-3-chloropropane	96-12-8	5.00	< 5.00	
1,2-Dibromoethane	106-93-4	2.00	< 2.00	
1,2-Dichlorobenzene	95-50-1	2.00	< 2.00	
1,2-Dichloroethane	107-06-2	2.00	< 2.00	
1,2-Dichloropropane	78-87-5	2.00	< 2.00	
1,4-Dichlorobenzene	106-46-7	2.00	< 2.00	
2-Butanone	78-93-3	10.0	< 10.0	
2-Hexanone	591-78-6	5.00	< 5.00	
4-Methyl-2-pentanone	108-10-1	5.00	< 5.00	
Acetone	67-64-1	10.0	< 10.0	
Acrylonitrile	107-13-1	10.0	< 10.0	
Benzene	71-43-2	2.00	< 2.00	
Bromochloromethane	74-97-5	2.00	< 2.00	
Bromodichloromethane	75-27-4	2.00	< 2.00	
Bromoform	75-25-2	2.00	< 2.00	
Bromomethane	74-83-9	5.00	< 5.00	
Carbon disulfide	75-15-0	2.00	< 2.00	
Carbon tetrachloride	56-23-5	2.00	< 2.00	
Chlorobenzene	108-90-7	2.00	< 2.00	
Chloroethane	75-00-3	2.00	< 2.00	
Chloroform	67-66-3	2.00	< 2.00	



Lab Sample ID: 1212052-005A

Client Sample ID: DMW-7

Analyzed: 12/5/2012 1033h

Units: µg/L

Dilution Factor: 1

Method: SW8260C

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Laboratory Director

Jose Rocha
QA Officer

Compound	CAS Number	Reporting Limit	Analytical Result	Qual
Chloromethane	74-87-3	3.00	< 3.00	
cis-1,2-Dichloroethene	156-59-2	2.00	< 2.00	
cis-1,3-Dichloropropene	10061-01-5	2.00	< 2.00	
Dibromochloromethane	124-48-1	2.00	< 2.00	
Dibromomethane	74-95-3	2.00	< 2.00	
Ethylbenzene	100-41-4	2.00	< 2.00	
Iodomethane	74-88-4	5.00	< 5.00	
Methylene chloride	75-09-2	2.00	< 2.00	
Styrene	100-42-5	2.00	< 2.00	
Tetrachloroethene	127-18-4	2.00	< 2.00	
Toluene	108-88-3	2.00	< 2.00	
trans-1,2-Dichloroethene	156-60-5	2.00	< 2.00	
trans-1,3-Dichloropropene	10061-02-6	2.00	< 2.00	
trans-1,4-Dichloro-2-butene	110-57-6	2.00	< 2.00	
Trichloroethene	79-01-6	2.00	< 2.00	
Trichlorofluoromethane	75-69-4	2.00	< 2.00	
Vinyl acetate	108-05-4	10.0	< 10.0	
Vinyl chloride	75-01-4	1.00	< 1.00	
Xylenes, Total	1330-20-7	2.00	< 2.00	

Surrogate	CAS	Result	Amount Spiked	% REC	Limits	Qual
Surr 1,2-Dichloroethane-d4	17060-07-0	51.9	50.00	104	72-151	
Surr 4-Bromofluorobenzene	460-00-4	53.0	50.00	106	80-128	
Surr Dibromofluoromethane	1868-53-7	51.6	50.00	103	80-124	
Surr Toluene-d8	2037-26-5	49.8	50.00	99.6	77-129	



ORGANIC ANALYTICAL REPORT

Client: HDR Engineering
Project: IRL Groundwater
Lab Sample ID: 1212052-005B
Client Sample ID: DMW-7
Collection Date: 12/4/2012 1400h
Received Date: 12/4/2012 1603h

Contact: Nate Nichols

Analytical Results

EDB & DBCP by GC/ECD Method 504.1

Analyzed: 12/7/2012 215h **Extracted:** 12/5/2012 1432h
Units: µg/L **Dilution Factor:** 1 **Method:** E504.1

463 West 3600 South
Salt Lake City, UT 84115

Compound	CAS Number	Reporting Limit	Analytical Result	Qual
1,2-Dibromo-3-chloropropane	96-12-8	0.0107	< 0.0107	
1,2-Dibromoethane	106-93-4	0.0107	< 0.0107	

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Surrogate	CAS	Result	Amount Spiked	% REC	Limits	Qual
Surr 1,2-Dibromopropane	98-75-1	0.0904	0.1019	88.7	65-157	

web www.awal-labs.com

Kyle F. Gross
Laboratory Director

Jose Rocha
QA Officer



INORGANIC ANALYTICAL REPORT

Client: HDR Engineering **Contact:** Nate Nichols
Project: IRL Groundwater
Lab Sample ID: 1212052-005
Client Sample ID: DMW-7
Collection Date: 12/4/2012 1400h
Received Date: 12/4/2012 1603h

Analytical Results

463 West 3600 South Salt Lake City, UT 84115	Compound	Units	Date Prepared	Date Analyzed	Method Used	Reporting Limit	Analytical Result	Qual
Phone (801) 263-8686	Ammonia (as N)	mg/L	12/6/2012 1000h	12/6/2012 2113h	E350 1	0.0500	< 0.0500	
Toll Free (888) 263-8686	Bicarbonate (as CaCO ₃)	mg/L		12/5/2012 1114h	SM2320B	20.0	217	
Fax (801) 263-8687	Carbonate (as CaCO ₃)	mg/L		12/5/2012 1114h	SM2320B	20.0	< 20.0	
e-mail: awal@awal-labs.com	Chemical Oxygen Demand	mg/L		12/6/2012 1000h	HACH 8000	10.0	< 10.0	
web: www.awal-labs.com	Chloride	mg/L		12/12/2012 1839h	E300 0	1.00	37.9	
	Nitrate (as N)	mg/L		12/4/2012 1738h	E353 2	0.0100	0.138	
	pH @ 25° C	pH Units		12/4/2012 1700h	SM4500-H+B	1.00	7.67	
	Sulfate	mg/L		12/11/2012 2142h	E300 0	7.50	47.9	
	Total Dissolved Solids	mg/L		12/7/2012 1310h	SM2540C	20.0	436	
	Total Organic Carbon	mg/L		12/11/2012 1454h	SM5310B	1.00	< 1.00	

Kyle F. Gross

Laboratory Director

Jose Rocha

QA Officer



INORGANIC ANALYTICAL REPORT

Client: HDR Engineering **Contact:** Nate Nichols
Project: IRL Groundwater
Lab Sample ID: 1212052-005
Client Sample ID: DMW-7
Collection Date: 12/4/2012 1400h
Received Date: 12/4/2012 1603h

Analytical Results

TOTAL METALS

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Compound	Units	Date Prepared	Date Analyzed	Method Used	Reporting Limit	Analytical Result	Qual
Antimony	mg/L	12/5/2012 910h	12/13/2012 631h	SW6020A	0.00200	< 0.00200	
Arsenic	mg/L	12/5/2012 910h	12/13/2012 631h	SW6020A	0.00200	0.0487	
Barium	mg/L	12/5/2012 910h	12/13/2012 631h	SW6020A	0.00200	0.0709	
Beryllium	mg/L	12/5/2012 910h	12/13/2012 2243h	SW6020A	0.00200	< 0.00200	
Cadmium	mg/L	12/5/2012 910h	12/13/2012 631h	SW6020A	0.000500	< 0.000500	
Calcium	mg/L	12/5/2012 910h	12/12/2012 1139h	SW6010C	10.0	50.5	
Chromium	mg/L	12/5/2012 910h	12/12/2012 1220h	SW6010C	0.0100	< 0.0100	
Cobalt	mg/L	12/5/2012 910h	12/13/2012 631h	SW6020A	0.00200	< 0.00200	
Copper	mg/L	12/5/2012 910h	12/13/2012 631h	SW6020A	0.00200	< 0.00200	
Iron	mg/L	12/5/2012 910h	12/12/2012 1220h	SW6010C	0.100	0.441	
Lead	mg/L	12/5/2012 910h	12/13/2012 631h	SW6020A	0.00200	< 0.00200	
Magnesium	mg/L	12/5/2012 910h	12/12/2012 1139h	SW6010C	10.0	52.3	
Manganese	mg/L	12/5/2012 910h	12/13/2012 2243h	SW6020A	0.00200	0.0696	
Mercury	mg/L	12/5/2012 1630h	12/6/2012 932h	SW7470A	0.000150	< 0.000150	
Nickel	mg/L	12/5/2012 910h	12/13/2012 631h	SW6020A	0.00200	0.00318	
Potassium	mg/L	12/5/2012 910h	12/12/2012 1220h	SW6010C	1.00	5.59	
Selenium	mg/L	12/5/2012 910h	12/13/2012 631h	SW6020A	0.00200	0.0126	
Silver	mg/L	12/5/2012 910h	12/13/2012 631h	SW6020A	0.00200	< 0.00200	
Sodium	mg/L	12/5/2012 910h	12/12/2012 1139h	SW6010C	10.0	22.9	
Thallium	mg/L	12/5/2012 910h	12/13/2012 2243h	SW6020A	0.00200	< 0.00200	
Vanadium	mg/L	12/5/2012 910h	12/12/2012 1220h	SW6010C	0.00500	0.0414	
Zinc	mg/L	12/5/2012 910h	12/14/2012 1702h	SW6020A	0.00500	0.00981	

**UTAH LANDFILL GROUNDWATER PARAMETERS
FOR DETECTION AND
ASSESSMENT MONITORING**

Analysis	Method	Unit Price	Discounted Price
Metals Prep.	SW846 3005A	20.00	\$18.00
Antimony	SW846 6010C/6020A	10.00	9.00
Arsenic	SW846 6010C/6020A	10.00	9.00
Barium	SW846 6010C/6020A	10.00	9.00
Beryllium	SW846 6010C/6020A	10.00	9.00
Cadmium	SW846 6010C/6020A	10.00	9.00
Chromium	SW846 6010C/6020A	10.00	9.00
Cobalt	SW846 6010C/6020A	10.00	9.00
Copper	SW846 6010C/6020A	10.00	9.00
Lead	SW846 7421/6020	10.00	9.00
Mercury	SW846 7470A	28.00	25.20
Nickel	SW846 6010C/6020A	10.00	9.00
Selenium	SW846 6010C/6020A	10.00	9.00
Silver	SW846 6010C/6020A	10.00	9.00
Thallium	SW846 6010C/6020A	10.00	9.00
Vanadium	SW846 6010C/6020A	10.00	9.00
Zinc	SW846 6010C/6020A	10.00	9.00

Ammonia	EPA 350.1	38.00	34.20
Bicarb/Carbonate	EPA 310.1	20.00	18.00
Calcium	SW846 6010C/6020A	10.00	9.00
COD	HACH 8000	28.00	25.20
Chloride	SM4500Cl E/EPA 300.0	13.00	11.70
Iron	SW846 6010C/6020A	10.00	9.00
Magnesium	SW846 6010C/6020A	10.00	9.00
Manganese	SW846 6010C/6020A	10.00	9.00
Nitrate	EPA 353.2/300.0	13.00	11.70
pH	SM 4500 (H+) B	13.00	11.70
Potassium	SW846 6010C/6020A	10.00	9.00
Sodium	SW846 6010C/6020A	10.00	9.00
Sulfate	EPA 375.4/300.0	13.00	11.70
TDS	SM 2540C	15.00	13.50
Total Organic Carbon	SM 5310B	\$25.00	22.50

Volatiles (Det Mon)	SW846 8260C	\$170.00	\$153.00
EDB & DBCP	EPA 504	110.00	99.00
TOTAL COST FOR DETECTION MONITORING PER WELL			\$644.40

ADDITIONAL INORGANICS FOR ASSESSMENT MONITORING (APPENDIX II)			
Cyanide	EPA 335.2, 335.4	38.00	34.20
Sulfide	SM 4500 (S-) F	13.00	11.70
Tin	SW846 6010C/6020A	10.00	9.00

ADDITIONAL ORGANICS FOR ASSESSMENT MONITORING (APPENDIX II)			
Semivolatiles (App. II)	SW846 8270D	365.00	324.00
Pesticides (App. II)	SW846 8081B	180.00	162.00
PCBs (App. II)	SW846 8082A	120.00	108.00
Herbicides (App. II)	SW846 8151A	320.00	288.00
Volatiles (App. II)	SW846 8260C	170.00	153.00
TOTAL COST FOR DETECTION & ASSESSMENT MONITORING			\$1581.30/well

American West Analytical Laboratories

D
:ric Landfill

WORK ORDER Summary

Client: HDR Engineering
Client ID: HDR200
Project: IRL Groundwater
Comments: QC 2+. EDD; Intermountain Regional Landfill;

Contact: Nate Nichols
QC Level: II+

Work Order: 1212052
Page 1 of 4 12/4/2012
WO Type: Project

DB

Sample ID	Client Sample ID	Collected Date	Received Date	Date Due	Matrix	Test Code	Sel	Storage	
1212052-001A	DMW-1	12/4/2012 1250h	12/4/2012 1603h	12/18/2012	Aqueous	8260-W	<input checked="" type="checkbox"/>	VOCFrndge	3
1212052-001B						504-W	<input checked="" type="checkbox"/>	hall - edb	
						504-W-PR	<input type="checkbox"/>	hall - edb	
1212052-001C						TOC-W-5310B	<input type="checkbox"/>	df - toc	
1212052-001D						300 0-W	<input checked="" type="checkbox"/>	df - wc	1
SEL Analytes: CL SO4									
SEL Analytes: ALKB ALKC									
						ALK-W-2320B	<input checked="" type="checkbox"/>	df - wc	
						NO3-W-353 2	<input type="checkbox"/>	df - wc	
						PH-4500H+B	<input type="checkbox"/>	df - wc	
1212052-001E						TDS-W-2540C	<input type="checkbox"/>	ww - tds	
1212052-001F						COD-HACH8000	<input type="checkbox"/>	ww - cod	
1212052-001G						NH3-W-350 1	<input type="checkbox"/>	df - nh3	
						NH3-W-PR	<input type="checkbox"/>	df - nh3	
1212052-001H						3005A-ICPMS-PR	<input checked="" type="checkbox"/>	MET/HG	
						6010C-W	<input checked="" type="checkbox"/>	MET/HG	
SEL Analytes: CA CR FE MG K NA V									
SEL Analytes: SB AS BA BE CD CO CU PB MN NI SE AG TL ZN									
						6020-W	<input checked="" type="checkbox"/>	MET/HG	
						HG-W-7470A	<input type="checkbox"/>	MET/HG	
						HG-W-PR	<input type="checkbox"/>	MET/HG	
1212052-002A	DMW-2	12/4/2012 1140h				8260-W	<input checked="" type="checkbox"/>	VOCFrndge	3
1212052-002B						504-W	<input checked="" type="checkbox"/>	hall - edb	
						504-W-PR	<input type="checkbox"/>	hall - edb	
1212052-002C						TOC-W-5310B	<input type="checkbox"/>	df - toc	
1212052-002D						300.0-W	<input checked="" type="checkbox"/>	df - wc	1
SEL Analytes: CL SO4									
SEL Analytes: ALKB ALKC									
						ALK-W-2320B	<input checked="" type="checkbox"/>	df - wc	
						NO3-W-353 2	<input type="checkbox"/>	df - wc	
						PH-4500H+B	<input type="checkbox"/>	df - wc	

FOR LABORATORY USE ONLY (fill out on page 1): %M RT CN TAT QC HOK _____ HOK _____ HOK _____ COC Emailed _____

WORK ORDER Summary

Work Order: **1212052**

Client: **HDR Engineering**

Page 2 of 4 12/4/2012

Sample ID	Client Sample ID	Collected Date	Received Date	Date Due	Matrix	Test Code	Sel Storage	
1212052-002E	DMW-2	12/4/2012 1140h	12/4/2012 1603h	12/18/2012	Aqueous	TDS-W-2540C	<input type="checkbox"/> ww - tds	1
1212052-002F						COD-HACH8000	<input type="checkbox"/> ww - cod	
1212052-002G						NH3-W-350 1	<input type="checkbox"/> df - nh3	
						NH3-W-PR	<input type="checkbox"/> df - nh3	
1212052-002H						3005A-ICPMS-PR	<input checked="" type="checkbox"/> MET/HG	
						6010C-W	<input checked="" type="checkbox"/> MET/HG	
SEL Analytes: CA CR FE MG K NA V								
						6020-W	<input checked="" type="checkbox"/> MET/HG	
SEL Analytes: SB AS BA BE CD CO CU PB MN NI SE AG TL ZN								
						HG-W-7470A	<input type="checkbox"/> MET/HG	
						HG-W-PR	<input type="checkbox"/> MET/HG	
1212052-003A	TMW-4	12/4/2012 1215h				8260-W	<input checked="" type="checkbox"/> VOCFridge	3
1212052-003B						504-W	<input checked="" type="checkbox"/> hall - edb	
						504-W-PR	<input type="checkbox"/> hall - edb	
1212052-003C						TOC-W-5310B	<input type="checkbox"/> df - toc	
1212052-003D						300 0-W	<input checked="" type="checkbox"/> df - wc	1
SEL Analytes: CL SO4								
						ALK-W-2320B	<input checked="" type="checkbox"/> df - wc	
SEL Analytes: ALKB ALKC								
						NO3-W-353 2	<input type="checkbox"/> df - wc	
						PH-4500H+B	<input type="checkbox"/> df - wc	
1212052-003E						TDS-W-2540C	<input type="checkbox"/> ww - tds	
1212052-003F						COD-HACH8000	<input type="checkbox"/> ww - cod	
1212052-003G						NH3-W-350 1	<input type="checkbox"/> df - nh3	
						NH3-W-PR	<input type="checkbox"/> df - nh3	
1212052-003H						3005A-ICPMS-PR	<input checked="" type="checkbox"/> MET/HG	
						6010C-W	<input checked="" type="checkbox"/> MET/HG	
SEL Analytes: CA CR FE MG K NA V								
						6020-W	<input checked="" type="checkbox"/> MET/HG	
SEL Analytes: SB AS BA BE CD CO CU PB MN NI SE AG TL ZN								
						HG-W-7470A	<input type="checkbox"/> MET/HG	
						HG-W-PR	<input type="checkbox"/> MET/HG	
1212052-004A	DMW-6	12/4/2012 1330h				8260-W	<input checked="" type="checkbox"/> VOCFridge	3
1212052-004B						504-W	<input checked="" type="checkbox"/> hall - edb	
						504-W-PR	<input type="checkbox"/> hall - edb	
1212052-004C						TOC-W-5310B	<input type="checkbox"/> df - toc	

WORK ORDER Summary

Client: HDR Engineering

Work Order: 1212052

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Sample ID	Client Sample ID	Collected Date	Received Date	Date Due	Matrix	Test Code	Sel Storage	
1212052-004D	DMW-6	12/4/2012 1330h	12/4/2012 1603h	12/18/2012	Aqueous	300 0-W	<input checked="" type="checkbox"/> df - wc	1
						ALK-W-2320B	<input checked="" type="checkbox"/> df - wc	
SEL Analytes: CL SO4								
SEL Analytes: ALKB ALKC								
						NO3-W-353 2	<input type="checkbox"/> df - wc	
						PH-4500H+B	<input type="checkbox"/> df - wc	
1212052-004E						TDS-W-2540C	<input type="checkbox"/> ww - tds	
1212052-004F						COD-HACH8000	<input type="checkbox"/> ww - cod	
1212052-004G						NH3-W-350 1	<input type="checkbox"/> df - nh3	
						NH3-W-PR	<input type="checkbox"/> df - nh3	
1212052-004H						3005A-ICPMS-PR	<input checked="" type="checkbox"/> MET/HG	
						6010C-W	<input checked="" type="checkbox"/> MET/HG	
SEL Analytes: CA CR FE MG K NA V								
SEL Analytes: SB AS BA BE CD CO CU PB MN NI SE AG TL ZN								
						6020-W	<input checked="" type="checkbox"/> MET/HG	
						HG-W-7470A	<input type="checkbox"/> MET/HG	
						HG-W-PR	<input type="checkbox"/> MET/HG	
1212052-005A	DMW-7	12/4/2012 1400h				8260-W	<input checked="" type="checkbox"/> VOCFndge	3
1212052-005B						504-W	<input checked="" type="checkbox"/> hall - edb	
						504-W-PR	<input type="checkbox"/> hall - edb	
1212052-005C						TOC-W-5310B	<input type="checkbox"/> df - toc	
1212052-005D						300 0-W	<input checked="" type="checkbox"/> df - wc	1
SEL Analytes: CL SO4								
SEL Analytes: ALKB ALKC								
						ALK-W-2320B	<input checked="" type="checkbox"/> df - wc	
						NO3-W-353 2	<input type="checkbox"/> df - wc	
						PH-4500H+B	<input type="checkbox"/> df - wc	
1212052-005E						TDS-W-2540C	<input type="checkbox"/> ww - tds	
1212052-005F						COD-HACH8000	<input type="checkbox"/> ww - cod	
1212052-005G						NH3-W-350 1	<input type="checkbox"/> df - nh3	
						NH3-W-PR	<input type="checkbox"/> df - nh3	
1212052-005H						3005A-ICPMS-PR	<input checked="" type="checkbox"/> MET/HG	
						6010C-W	<input checked="" type="checkbox"/> MET/HG	
SEL Analytes: CA CR FE MG K NA V								
SEL Analytes: SB AS BA BE CD CO CU PB MN NI SE AG TL ZN								
						6020-W	<input checked="" type="checkbox"/> MET/HG	
						HG-W-7470A	<input type="checkbox"/> MET/HG	

WORK ORDER Summary

Work Order: **1212052**

Client: HDR Engineering

Page 4 of 4 12/4/2012

Sample ID	Client Sample ID	Collected Date	Received Date	Date Due	Matrix	Test Code	Sel Storage
1212052-005H	DMW-7	12/4/2012 1400h	12/4/2012 1603h	12/18/2012	Aqueous	HG-W-PR	<input type="checkbox"/> MET/HG 1

Sample Set: 1212052

Preservation Check Sheet

Sample Set Extension and pH

Bottle Type	Preservative	All OK	Except -001	Except -002	Except -003	Except -004	Except -005	Except									
Ammonia	pH < 2 H ₂ SO ₄		YES	YES	YES	YES	YES										
COD	pH < 2 H ₂ SO ₄		YES	YES	YES	YES	YES										
Cyanide	pH > 12 NaOH																
Metals	pH < 2 HNO ₃		YES	YES	YES	YES	YES										
NO ₂ & NO ₃	pH < 2 H ₂ SO ₄																
Nutrients	pH < 2 H ₂ SO ₄																
O & G	pH < 2 HCL																
Phenols	pH < 2 H ₂ SO ₄																
Sulfide	pH > 9 NaOH, Zn Acetate																
TKN	pH < 2 H ₂ SO ₄																
TOC	pH < 2 H ₃ PO ₄																
TOX	pH < 2 H ₂ SO ₄																
T PO ₄	pH < 2 H ₂ SO ₄																
TPH	pH < 2 HCL																

DB 12/4/12

- Procedure:
- 1) Pour a small amount of sample in the sample lid
 - 2) Pour sample from Lid gently over wide range pH paper
 - 3) Do Not dip the pH paper in the sample bottle or lid
 - 4) If sample is not preserved properly list its extension and receiving pH in the appropriate column above
 - 5) Flag COC, notify client if requested
 - 6) Place client conversation on COC
 - 7) Samples may be adjusted

Frequency All samples requiring preservation

Client Hick AC

Address _____

City State Zip

Phone 801-713-7800 Fax _____

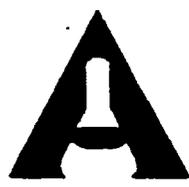
Contact Nate Nichols

E-mail nathyn.nichols@hadrinc.

Project Name IRL Grandwater

Project Number/P O.# _____

Sampler Name N Nichols



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CHAIN OF CUSTODY

Lab Sample Set # 1217622

Page _____ of _____

Turn Around Time (Circle One)

1 day 2 day 3 day 4 day 5 day Standard

Sample ID	Date/Time Collected	Matrix	Number of Containers (Total)	TESTS REQUIRED										QC LEVEL				COMMENTS	LABORATORY USE ONLY														
				1	2	3	4	5	6	7	8	9	10	1	2	3	4		1	2	3	4	5	6									
DMW-1	12/4/12 12:50	A		Spec Attached												2+									1 Shipped or hand delivered Notes								
DMW-2	12/4/12 11:40	A																															2 Ambient or Chilled Notes on ice
DMW-4	12/4/12 12:15	A																															3 Temperature 8.1°
DMW-6	12/4/12 1:30	A																															4 Received Broken/Leaking (Improperly Sealed) Y N
DMW-7	12/4/12 2:00	A																															5 Property Preserved Y N Checked at Bench Y N Notes
																							6 Received Within Holding Times Y N Notes										

Relinquished By: Signature <u>Nate Nichols</u>	Date 12/4/12	Received By: Signature <u>Denise Brown</u>	Date 12/4/12
PRINT NAME Nate Nichols	Time 16:07	PRINT NAME Denise Brown	Time 16:03
Relinquished By: Signature	Date	Received By: Signature	Date
PRINT NAME	Time	PRINT NAME	Time
Relinquished By: Signature	Date	Received By: Signature	Date
PRINT NAME	Time	PRINT NAME	Time
Relinquished By: Signature	Date	Received By: Signature	Date
PRINT NAME	Time	PRINT NAME	Time

Special Instructions	1 Present on Outer Package Y N <u>NA</u>
	2 Unbroken on Outer Package Y N <u>NA</u>
	3 Present on Sample Y N <u>NA</u>
	4 Unbroken on Sample Y N <u>NA</u>
	Discrepancies Between Sample Labels and COC Record? Y <u>N</u> Notes



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Kyle F. Gross
 Laboratory Director

 Jose Rocha
 QA Officer

QC SUMMARY REPORT

Client: HDR Engineering
Lab Set ID: 1212052
Project: IRL Groundwater

Contact: Nate Nichols
Dept: ME
QC Type: LCS

Sample ID	Analyte	Units	Method	Result	Amount Spiked	Original Amount	%REC	Limits	%RPD	RPD Limit	Qual	Date Analyzed
LCS-22523	Calcium	mg/L	SW6010C	9.24	10.00	0	92.4	80-120				12/12/2012 1051h
LCS-22523	Chromium	mg/L	SW6010C	0.194	0.2000	0	97.1	80-120				12/12/2012 1051h
LCS-22523	Iron	mg/L	SW6010C	0.970	1.000	0	97.0	80-120				12/12/2012 1051h
LCS-22523	Magnesium	mg/L	SW6010C	9.94	10.00	0	99.4	80-120				12/12/2012 1051h
LCS-22523	Potassium	mg/L	SW6010C	9.79	10.00	0	97.9	80-120				12/12/2012 1051h
LCS-22523	Sodium	mg/L	SW6010C	9.70	10.00	0	97.0	80-120				12/12/2012 1051h
LCS-22523	Vanadium	mg/L	SW6010C	0.196	0.2000	0	97.8	80-120				12/12/2012 1051h
LCS-22523	Antimony	mg/L	SW6020A	0.202	0.2000	0	101	85-115				12/13/2012 440h
LCS-22523	Arsenic	mg/L	SW6020A	0.197	0.2000	0	98.5	85-115				12/13/2012 440h
LCS-22523	Barium	mg/L	SW6020A	0.186	0.2000	0	92.8	85-115				12/13/2012 440h
LCS-22523	Cadmium	mg/L	SW6020A	0.198	0.2000	0	98.8	85-115				12/13/2012 440h
LCS-22523	Cobalt	mg/L	SW6020A	0.190	0.2000	0	95.1	85-115				12/13/2012 440h
LCS-22523	Copper	mg/L	SW6020A	0.201	0.2000	0	100	85-115				12/13/2012 440h
LCS-22523	Lead	mg/L	SW6020A	0.202	0.2000	0	101	85-115				12/13/2012 440h
LCS-22523	Nickel	mg/L	SW6020A	0.193	0.2000	0	96.5	85-115				12/13/2012 440h
LCS-22523	Selenium	mg/L	SW6020A	0.193	0.2000	0	96.3	85-115				12/13/2012 440h
LCS-22523	Silver	mg/L	SW6020A	0.198	0.2000	0	99.2	85-115				12/13/2012 440h
LCS-22523	Beryllium	mg/L	SW6020A	0.203	0.2000	0	101	85-115				12/13/2012 2106h
LCS-22523	Manganese	mg/L	SW6020A	0.207	0.2000	0	103	85-115				12/13/2012 2106h
LCS-22523	Thallium	mg/L	SW6020A	0.200	0.2000	0	100	85-115				12/13/2012 2106h
LCS-22523	Zinc	mg/L	SW6020A	0.979	1.000	0	97.9	85-115				12/14/2012 1604h
LCS-22538	Mercury	mg/L	SW7470A	0.00329	0.003330	0	98.8	80-120				12/6/2012 914h



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Kyle F. Gross
 Laboratory Director

Jose Rocha
 QA Officer

QC SUMMARY REPORT

Client: HDR Engineering
Lab Set ID: 1212052
Project: IRL Groundwater

Contact: Nate Nichols
Dept: ME
QC Type: MBLK

Sample ID	Analyte	Units	Method	Result	Amount Spiked	Original Amount	%REC	Limits	%RPD	RPD Limit	Qual	Date Analyzed
MB-22523	Calcium	mg/L	SW6010C	< 1.00				-				12/12/2012 1046h
MB-22523	Chromium	mg/L	SW6010C	< 0.0100				-				12/12/2012 1046h
MB-22523	Iron	mg/L	SW6010C	< 0.100				-				12/12/2012 1046h
MB-22523	Magnesium	mg/L	SW6010C	< 1.00				-				12/12/2012 1046h
MB-22523	Potassium	mg/L	SW6010C	< 1.00				-				12/12/2012 1046h
MB-22523	Sodium	mg/L	SW6010C	< 1.00				-				12/12/2012 1046h
MB-22523	Vanadium	mg/L	SW6010C	< 0.00500				-				12/12/2012 1046h
MB-22523	Antimony	mg/L	SW6020A	< 0.00200				-				12/13/2012 431h
MB-22523	Arsenic	mg/L	SW6020A	< 0.00200				-				12/13/2012 431h
MB-22523	Barium	mg/L	SW6020A	< 0.00200				-				12/13/2012 431h
MB-22523	Cadmium	mg/L	SW6020A	< 0.000500				-				12/13/2012 431h
MB-22523	Cobalt	mg/L	SW6020A	< 0.00200				-				12/13/2012 431h
MB-22523	Copper	mg/L	SW6020A	< 0.00200				-				12/13/2012 431h
MB-22523	Lead	mg/L	SW6020A	< 0.00200				-				12/13/2012 431h
MB-22523	Nickel	mg/L	SW6020A	< 0.00200				-				12/13/2012 431h
MB-22523	Selenium	mg/L	SW6020A	< 0.00200				-				12/13/2012 431h
MB-22523	Silver	mg/L	SW6020A	< 0.00200				-				12/13/2012 431h
MB-22523	Beryllium	mg/L	SW6020A	< 0.00200				-				12/13/2012 2057h
MB-22523	Manganese	mg/L	SW6020A	< 0.00200				-				12/13/2012 2057h
MB-22523	Thallium	mg/L	SW6020A	< 0.00200				-				12/13/2012 2057h
MB-22523	Zinc	mg/L	SW6020A	< 0.00500				-				12/14/2012 1559h
MB-22538	Mercury	mg/L	SW7470A	< 0.000150				-				12/6/2012 913h



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Kyle F. Gross
 Laboratory Director

Jose Rocha
 QA Officer

QC SUMMARY REPORT

Client: HDR Engineering
Lab Set ID: 1212052
Project: IRL Groundwater

Contact: Nate Nichols
Dept: ME
QC Type: MS

Sample ID	Analyte	Units	Method	Result	Amount Spiked	Original Amount	%REC	Limits	%RPD	RPD Limit	Qual	Date Analyzed
1212052-001HMS	Calcium	mg/L	SW6010C	55.7	10.00	48.54	71.3	75-125				12/12/2012 1107h
1212052-001HMS	Magnesium	mg/L	SW6010C	45.3	10.00	36.47	88.4	75-125				12/12/2012 1107h
1212052-001HMS	Sodium	mg/L	SW6010C	33.3	10.00	24.59	86.8	75-125				12/12/2012 1107h
1212052-001HMS	Chromium	mg/L	SW6010C	0.196	0.2000	0.003340	96.2	75-125				12/12/2012 1200h
1212052-001HMS	Iron	mg/L	SW6010C	0.946	1.000	0	94.6	75-125				12/12/2012 1200h
1212052-001HMS	Potassium	mg/L	SW6010C	10.9	10.00	1.150	97.2	75-125				12/12/2012 1200h
1212052-001HMS	Vanadium	mg/L	SW6010C	0.204	0.2000	0.01004	97.1	75-125				12/12/2012 1200h
1212052-001HMS	Antimony	mg/L	SW6020A	0.205	0.2000	0.0005030	102	75-125				12/13/2012 517h
1212052-001HMS	Arsenic	mg/L	SW6020A	0.200	0.2000	0.01013	95.0	75-125				12/13/2012 517h
1212052-001HMS	Barium	mg/L	SW6020A	0.257	0.2000	0.07631	90.2	75-125				12/13/2012 517h
1212052-001HMS	Cadmium	mg/L	SW6020A	0.195	0.2000	0.0001200	97.2	75-125				12/13/2012 517h
1212052-001HMS	Cobalt	mg/L	SW6020A	0.179	0.2000	0.0001870	89.6	75-125				12/13/2012 517h
1212052-001HMS	Copper	mg/L	SW6020A	0.185	0.2000	0.0007780	92.0	75-125				12/13/2012 517h
1212052-001HMS	Lead	mg/L	SW6020A	0.201	0.2000	0.0006650	100	75-125				12/13/2012 517h
1212052-001HMS	Nickel	mg/L	SW6020A	0.183	0.2000	0.002587	90.2	75-125				12/13/2012 517h
1212052-001HMS	Selenium	mg/L	SW6020A	0.186	0.2000	0.001750	92.2	75-125				12/13/2012 517h
1212052-001HMS	Silver	mg/L	SW6020A	0.196	0.2000	0	98.1	75-125				12/13/2012 517h
1212052-001HMS	Beryllium	mg/L	SW6020A	0.192	0.2000	0.00008300	96.2	75-125				12/13/2012 2124h
1212052-001HMS	Manganese	mg/L	SW6020A	0.198	0.2000	0.002332	97.8	75-125				12/13/2012 2124h
1212052-001HMS	Thallium	mg/L	SW6020A	0.195	0.2000	0.0006640	97.1	75-125				12/13/2012 2124h
1212052-001HMS	Zinc	mg/L	SW6020A	0.966	1.000	0.003385	96.3	75-125				12/14/2012 1614h
1212052-001HMS	Mercury	mg/L	SW7470A	0.00333	0.003330	0	100	80-120				12/6/2012 921h

* - Matrix spike recovery indicates matrix interference. The method is in control as indicated by the LCS



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Kyle F. Gross
Laboratory Director

Jose Rocha
QA Officer

QC SUMMARY REPORT

Client: HDR Engineering
Lab Set ID: 1212052
Project: IRL Groundwater

Contact: Nate Nichols
Dept: ME
QC Type: MSD

Sample ID	Analyte	Units	Method	Result	Amount Spiked	Original Amount	%REC	Limits	%RPD	RPD Limit	Qual	Date Analyzed
1212052-001HMSD	Calcium	mg/L	SW6010C	59.6	10.00	48.54	111	75-125	6.83	20		12/12/2012 1111h
1212052-001HMSD	Magnesium	mg/L	SW6010C	47.8	10.00	36.47	113	75-125	5.35	20		12/12/2012 1111h
1212052-001HMSD	Sodium	mg/L	SW6010C	35.4	10.00	24.59	108	75-125	6.3	20		12/12/2012 1111h
1212052-001HMSD	Chromium	mg/L	SW6010C	0.198	0.2000	0.003340	97.1	75-125	0.928	20		12/12/2012 1204h
1212052-001HMSD	Iron	mg/L	SW6010C	0.977	1.000	0	97.7	75-125	3.24	20		12/12/2012 1204h
1212052-001HMSD	Potassium	mg/L	SW6010C	11.0	10.00	1.150	98.2	75-125	0.904	20		12/12/2012 1204h
1212052-001HMSD	Vanadium	mg/L	SW6010C	0.206	0.2000	0.01004	97.9	75-125	0.727	20		12/12/2012 1204h
1212052-001HMSD	Antimony	mg/L	SW6020A	0.204	0.2000	0.0005030	102	75-125	0.223	20		12/13/2012 554h
1212052-001HMSD	Arsenic	mg/L	SW6020A	0.202	0.2000	0.01013	96.0	75-125	0.982	20		12/13/2012 554h
1212052-001HMSD	Barium	mg/L	SW6020A	0.261	0.2000	0.07631	92.5	75-125	1.8	20		12/13/2012 554h
1212052-001HMSD	Cadmium	mg/L	SW6020A	0.196	0.2000	0.0001200	97.8	75-125	0.575	20		12/13/2012 554h
1212052-001HMSD	Cobalt	mg/L	SW6020A	0.176	0.2000	0.0001870	88.1	75-125	1.6	20		12/13/2012 554h
1212052-001HMSD	Copper	mg/L	SW6020A	0.185	0.2000	0.0007780	92.1	75-125	0.162	20		12/13/2012 554h
1212052-001HMSD	Lead	mg/L	SW6020A	0.202	0.2000	0.0006650	101	75-125	0.667	20		12/13/2012 554h
1212052-001HMSD	Nickel	mg/L	SW6020A	0.182	0.2000	0.002587	89.5	75-125	0.737	20		12/13/2012 554h
1212052-001HMSD	Selenium	mg/L	SW6020A	0.189	0.2000	0.001750	93.6	75-125	1.56	20		12/13/2012 554h
1212052-001HMSD	Silver	mg/L	SW6020A	0.197	0.2000	0	98.4	75-125	0.309	20		12/13/2012 554h
1212052-001HMSD	Beryllium	mg/L	SW6020A	0.194	0.2000	0.00008300	96.8	75-125	0.656	20		12/13/2012 2133h
1212052-001HMSD	Manganese	mg/L	SW6020A	0.200	0.2000	0.002332	98.8	75-125	1.02	20		12/13/2012 2133h
1212052-001HMSD	Thallium	mg/L	SW6020A	0.196	0.2000	0.0006640	97.5	75-125	0.467	20		12/13/2012 2133h
1212052-001HMSD	Zinc	mg/L	SW6020A	0.974	1.000	0.003385	97.1	75-125	0.811	20		12/14/2012 1618h
1212052-001HMSD	Mercury	mg/L	SW7470A	0.00327	0.003330	0	98.2	80-120	1.82	20		12/6/2012 923h

Report Date: 12/17/2012 Page 30 of 44

All analyses applicable to the CWA, SDWA, and RCRA are performed in accordance to NLLM protocols. Location of sampling information is located on the attached COC. This report is provided for the exclusive use of the addressee. Privileges of subsequent use of the name of this company or any member of its staff, or reproduction of this report in connection with the advertisement, promotion or sale of any product or process, or in connection with the republication of this report for any purpose other than for the addressee, will be granted only on contact. This company accepts no responsibility except for the due performance of inspection and/or analysis in good faith and according to the rules of the trade and of science.



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Jose Rocha
QA Officer

QC SUMMARY REPORT

Client: HDR Engineering
Lab Set ID: 1212052
Project: IRL Groundwater

Contact: Nate Nichols
Dept: WC
QC Type: DUP

Sample ID	Analyte	Units	Method	Result	Amount Spiked	Original Amount	%REC	Limits	%RPD	RPD Limit	Qual	Date Analyzed
1212052-001DDUP	pH @ 25° C	pH Units	SM4500-H+B	7.30	7.310	7.310	-	-	0.137	5		12/4/2012 1700h
1212052-001EDUP	Total Dissolved Solids	mg/L	SM2540C	420	404.0	404.0	-	-	3.88	5		12/7/2012 1310h



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Jose Rocha
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QC SUMMARY REPORT

Client: HDR Engineering
Lab Set ID: 1212052
Project: IRL Groundwater

Contact: Nate Nichols
Dept: WC
QC Type: LCS

Sample ID	Analyte	Units	Method	Result	Amount Spiked	Original Amount	%REC	Limits	%RPD	RPD Limit	Qual	Date Analyzed
LCS-R48302	Sulfate	mg/L	E300 0	4.99	5 000	0	99.8	90-110				12/11/2012 1608h
LCS-R48360	Chloride	mg/L	E300 0	4.91	5 000	0	98.3	90-110				12/12/2012 1412h
LCS-R48050	Alkalinity (as CaCO3)	mg/L	SM2320B	51,000	50,000	0	102	90-110				12/5/2012 1114h
LCS1-R48114	Chemical Oxygen Demand	mg/L	HACH 8000	316	300 0	0	105	85-115				12/6/2012 1000h
LCS2-R48114	Chemical Oxygen Demand	mg/L	HACH 8000	101	100 0	0	101	85-115				12/6/2012 1000h
LCS3-R48114	Chemical Oxygen Demand	mg/L	HACH 8000	9.00	10.00	0	90.0	85-115				12/6/2012 1000h
LCS-R48114	Chemical Oxygen Demand	mg/L	HACH 8000	1,020	1,000	0	102	85-115				12/6/2012 1000h
LCS-22549	Ammonia (as N)	mg/L	E350 1	1.08	1 000	0	108	90-110				12/6/2012 2055h
LCS-R48015	Nitrate (as N)	mg/L	E353 2	1.08	1 000	0	108	90-110				12/4/2012 1715h
LCS-R48010	pH @ 25° C	pH Units	SM4500-H+B	9.01	9 000	0	100	98-102				12/4/2012 1700h
LCS-R48178	Total Dissolved Solids	mg/L	SM2540C	198	205 0	0	96.6	80-120				12/7/2012 1310h
LCS-R48290	Total Organic Carbon	mg/L	SM5310B	10.4	10 00	0	104	90-110				12/11/2012 1223h



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QC SUMMARY REPORT

Client: HDR Engineering
Lab Set ID: 1212052
Project: IRL Groundwater

Contact: Nate Nichols
Dept: WC
QC Type: MBLK

Sample ID	Analyte	Units	Method	Result	Amount Spiked	Original Amount	%REC	Limits	%RPD	RPD Limit	Qual	Date Analyzed
MB-R48302	Sulfate	mg/L	E300 0	< 0.750				-				12/11/2012 1546h
MB-R48360	Chloride	mg/L	E300 0	< 0.100				-				12/12/2012 1349h
MB-R48050	Bicarbonate (as CaCO3)	mg/L	SM2320B	< 10.0				-				12/5/2012 1114h
MB-R48050	Carbonate (as CaCO3)	mg/L	SM2320B	< 10.0				-				12/5/2012 1114h
MB-R48114	Chemical Oxygen Demand	mg/L	HACH 8000	< 10.0				-				12/6/2012 1000h
MB-22549	Ammonia (as N)	mg/L	E350 1	< 0.0500				-				12/6/2012 2054h
MB-R48015	Nitrate (as N)	mg/L	E353 2	< 0.0100				-				12/4/2012 1708h
MB-R48178	Total Dissolved Solids	mg/L	SM2340C	< 10.0				-				12/7/2012 1310h
MB-R48290	Total Organic Carbon	mg/L	SM5310B	< 1.00				-				12/11/2012 1200h



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QC SUMMARY REPORT

Client: HDR Engineering
Lab Set ID: 1212052
Project: IRL Groundwater

Contact: Nate Nichols
Dept: WC
QC Type: MS

Sample ID	Analyte	Units	Method	Result	Amount Spiked	Original Amount	%REC	Limits	%RPD	RPD Limit	Qual	Date Analyzed
1212052-001DMS	Sulfate	mg/L	E300 0	557	500 0	48 39	102	90-110				12/11/2012 1928h
1212052-001DMS	Chloride	mg/L	E300 0	541	500 0	54 42	97 3	90-110				12/12/2012 1456h
1212052-001DMS	Alkalinity (as CaCO3)	mg/L	SM2320B	322	100 0	220 2	102	80-120				12/5/2012 1114h
1212052-005FMS	Chemical Oxygen Demand	mg/L	HACH 8000	52.0	50.00	0	104	85-115				12/6/2012 1000h
1212052-001GMS	Ammonia (as N)	mg/L	E350 1	1 02	1 000	0	102	90-110				12/6/2012 2103h
1212052-001DMS NO3	Nitrate (as N)	mg/L	E353.2	1 18	1 000	0 08820	110	90-110				12/4/2012 1731h
1212052-001CMS	Total Organic Carbon	mg/L	SM5310B	6 14	5 000	0 7752	107	80-120				12/11/2012 1309h



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QC SUMMARY REPORT

Client: HDR Engineering
Lab Set ID: 1212052
Project: IRL Groundwater

Contact: Nate Nichols
Dept: WC
QC Type: MSD

Sample ID	Analyte	Units	Method	Result	Amount Spiked	Original Amount	%REC	Limits	%RPD	RPD Limit	Qual	Date Analyzed
1212052-001DMSD	Sulfate	mg/L	E300.0	588	500.0	48.39	108	90-110	5.47	20		12/11/2012 1951h
1212052-001DMSD	Chloride	mg/L	E300.0	542	500.0	54.42	97.6	90-110	0.264	20		12/12/2012 1518h
1212052-001DMSD	Alkalinity (as CaCO ₃)	mg/L	SM2320B	319	100.0	220.2	98.4	80-120	1.12	10		12/5/2012 1114h
1212052-005FMMSD	Chemical Oxygen Demand	mg/L	HACH 8000	53.0	50.00	0	106	85-115	1.9	10		12/6/2012 1000h
1212052-001GMSD	Ammonia (as N)	mg/L	E350.1	1.04	1.000	0	104	90-110	2.74	10		12/6/2012 2104h
1212052-001DMSD NO3	Nitrate (as N)	mg/L	E353.2	1.20	1.000	0.08820	111	90-110	1.11	10		12/4/2012 1733h
1212052-001CMSD	Total Organic Carbon	mg/L	SM5310B	5.62	5.000	0.7752	96.9	80-120	8.78	20		12/11/2012 1331h

1 - Matrix spike recovery indicates matrix interference. The method is in control as indicated by the LCS.



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QC SUMMARY REPORT

Client: HDR Engineering
Lab Set ID: 1212052
Project: IRL Groundwater

Contact: Nate Nichols
Dept: GC
QC Type: LCS

Sample ID	Analyte	Units	Method	Result	Amount Spiked	Original Amount	%REC	Limits	%RPD	RPD Limit	Qual	Date Analyzed
LCS-22530	1,2-Dibromo-3-chloropropane	µg/L	E504.1	0.103	0.1000	0	103	60-130				12/7/2012 030h
LCS-22530	1,2-Dibromoethane	µg/L	E504.1	0.0865	0.1000	0	86.5	48.8-146				12/7/2012 030h
LCS-22530	Surr. 1,2-Dibromopropane	%REC	E504.1	0.126	0.1000		126	65-157				12/7/2012 030h



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QC SUMMARY REPORT

Client: HDR Engineering
Lab Set ID: 1212052
Project: IRL Groundwater

Contact: Nate Nichols
Dept: GC
QC Type: MBLK

Sample ID	Analyte	Units	Method	Result	Amount Spiked	Original Amount	%REC	Limits	%RPD	RPD Limit	Qual	Date Analyzed
MB-22530	1,2-Dibromo-3-chloropropane	µg/L	E504.1	< 0.0105				-				12/7/2012 016h
MB-22530	1,2-Dibromoethane	µg/L	E504.1	< 0.0105				-				12/7/2012 016h
MB-22530	Surr 1,2-Dibromopropane	%REC	E504.1	0.0762	0.1000		76.2	65-158				12/7/2012 016h

Report Date 12/17/2012 Page 37 of 44

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QC SUMMARY REPORT

Client: HDR Engineering
Lab Set ID: 1212052
Project: IRL Groundwater

Contact: Nate Nichols
Dept: GC
QC Type: MS

Sample ID	Analyte	Units	Method	Result	Amount Spiked	Original Amount	%REC	Limits	%RPD	RPD Limit	Qual	Date Analyzed
1212052-001BMS	1,2-Dibromo-3-chloropropane	µg/L	E504.1	0.109	0.09876	0	110	58-148				12/7/2012 100h
1212052-001BMS	1,2-Dibromoethane	µg/L	E504.1	0.0883	0.09876	0	89.4	34-161				12/7/2012 100h
1212052-001BMS	Surr: 1,2-Dibromopropane	%REC	E504.1	0.126	0.09876		128	65-157				12/7/2012 100h

Report Date 12/17/2012 Page 38 of 44

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QC SUMMARY REPORT

Client: HDR Engineering
Lab Set ID: 1212052
Project: IRL Groundwater

Contact: Nate Nichols
Dept: GC
QC Type: MSD

Sample ID	Analyte	Units	Method	Result	Amount Spiked	Original Amount	%REC	Limits	%RPD	RPD Limit	Qual	Date Analyzed
1212052-001BMSD	1,2-Dibromo-3-chloropropane	µg/L	ES04.1	0.114	0.09974	0	114	58-148	4.39	25		12/7/2012 115h
1212052-001BMSD	1,2-Dibromoethane	µg/L	ES04.1	0.0908	0.09974	0	91.0	34-161	2.73	25		12/7/2012 115h
1212052-001BMSD	Surr. 1,2-Dibromopropane	%REC	ES04.1	0.127	0.09974		128	65-157				12/7/2012 115h



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QC SUMMARY REPORT

Client: HDR Engineering
Lab Set ID: 1212052
Project: IRL Groundwater

Contact: Nate Nichols
Dept: MSVOA
QC Type: LCS

Sample ID	Analyte	Units	Method	Result	Amount Spiked	Original Amount	%REC	Limits	%RPD	RPD Limit	Qual	Date Analyzed
LCS VOC 120512A	1,1,1-Trichloroethane	µg/L	SW8260C	24.4	20.00	0	122	59-156				12/5/2012 820h
LCS VOC 120512A	1,1-Dichloroethene	µg/L	SW8260C	28.9	20.00	0	145	46-171				12/5/2012 820h
LCS VOC 120512A	1,2-Dichlorobenzene	µg/L	SW8260C	22.5	20.00	0	112	67-135				12/5/2012 820h
LCS VOC 120512A	1,2-Dichloroethane	µg/L	SW8260C	22.8	20.00	0	114	60-137				12/5/2012 820h
LCS VOC 120512A	1,2-Dichloropropane	µg/L	SW8260C	20.9	20.00	0	104	59-135				12/5/2012 820h
LCS VOC 120512A	Benzene	µg/L	SW8260C	23.2	20.00	0	116	62-127				12/5/2012 820h
LCS VOC 120512A	Chlorobenzene	µg/L	SW8260C	23.6	20.00	0	118	63-140				12/5/2012 820h
LCS VOC 120512A	Chloroform	µg/L	SW8260C	23.2	20.00	0	116	67-132				12/5/2012 820h
LCS VOC 120512A	Ethylbenzene	µg/L	SW8260C	24.3	20.00	0	121	55-133				12/5/2012 820h
LCS VOC 120512A	Methylene chloride	µg/L	SW8260C	24.9	20.00	0	125	32-185				12/5/2012 820h
LCS VOC 120512A	Toluene	µg/L	SW8260C	23.8	20.00	0	119	64-128				12/5/2012 820h
LCS VOC 120512A	Trichloroethene	µg/L	SW8260C	24.2	20.00	0	121	54-152				12/5/2012 820h
LCS VOC 120512A	Xylenes, Total	µg/L	SW8260C	72.2	60.00	0	120	52-134				12/5/2012 820h
LCS VOC 120512A	Surr 1,2-Dichloroethane-d4	%REC	SW8260C	49.8	50.00		99.7	76-138				12/5/2012 820h
LCS VOC 120512A	Surr 4-Bromofluorobenzene	%REC	SW8260C	51.2	50.00		103	77-121				12/5/2012 820h
LCS VOC 120512A	Surr Dibromofluoromethane	%REC	SW8260C	51.7	50.00		103	67-128				12/5/2012 820h
LCS VOC 120512A	Surr Toluene-d8	%REC	SW8260C	50.1	50.00		100	81-135				12/5/2012 820h



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QC SUMMARY REPORT

Client: HDR Engineering
Lab Set ID: 1212052
Project: IRL Groundwater

Contact: Nate Nichols
Dept: MSVOA
QC Type: MBLK

Sample ID	Analyte	Units	Method	Result	Amount Spiked	Original Amount	%REC	Limits	%RPD	RPD Limit	Qual	Date Analyzed
MB VOC 120512A	1,1,1,2-Tetrachloroethane	µg/L	SW8260C	< 2.00	-	-	-	-	-	-	-	12/5/2012 858h
MB VOC 120512A	1,1,1-Trichloroethane	µg/L	SW8260C	< 2.00	-	-	-	-	-	-	-	12/5/2012 858h
MB VOC 120512A	1,1,2,2-Tetrachloroethane	µg/L	SW8260C	< 2.00	-	-	-	-	-	-	-	12/5/2012 858h
MB VOC 120512A	1,1,2-Trichloroethane	µg/L	SW8260C	< 2.00	-	-	-	-	-	-	-	12/5/2012 858h
MB VOC 120512A	1,1-Dichloroethane	µg/L	SW8260C	< 2.00	-	-	-	-	-	-	-	12/5/2012 858h
MB VOC 120512A	1,1-Dichloroethene	µg/L	SW8260C	< 2.00	-	-	-	-	-	-	-	12/5/2012 858h
MB VOC 120512A	1,2,3-Trichloropropane	µg/L	SW8260C	< 2.00	-	-	-	-	-	-	-	12/5/2012 858h
MB VOC 120512A	1,2-Dibromo-3-chloropropane	µg/L	SW8260C	< 5.00	-	-	-	-	-	-	-	12/5/2012 858h
MB VOC 120512A	1,2-Dibromoethane	µg/L	SW8260C	< 2.00	-	-	-	-	-	-	-	12/5/2012 858h
MB VOC 120512A	1,2-Dichlorobenzene	µg/L	SW8260C	< 2.00	-	-	-	-	-	-	-	12/5/2012 858h
MB VOC 120512A	1,2-Dichloroethane	µg/L	SW8260C	< 2.00	-	-	-	-	-	-	-	12/5/2012 858h
MB VOC 120512A	1,2-Dichloropropane	µg/L	SW8260C	< 2.00	-	-	-	-	-	-	-	12/5/2012 858h
MB VOC 120512A	1,4-Dichlorobenzene	µg/L	SW8260C	< 2.00	-	-	-	-	-	-	-	12/5/2012 858h
MB VOC 120512A	2-Butanone	µg/L	SW8260C	< 10.0	-	-	-	-	-	-	-	12/5/2012 858h
MB VOC 120512A	2-Hexanone	µg/L	SW8260C	< 5.00	-	-	-	-	-	-	-	12/5/2012 858h
MB VOC 120512A	4-Methyl-2-pentanone	µg/L	SW8260C	< 5.00	-	-	-	-	-	-	-	12/5/2012 858h
MB VOC 120512A	Acetone	µg/L	SW8260C	< 10.0	-	-	-	-	-	-	-	12/5/2012 858h
MB VOC 120512A	Acrylonitrile	µg/L	SW8260C	< 10.0	-	-	-	-	-	-	-	12/5/2012 858h
MB VOC 120512A	Benzene	µg/L	SW8260C	< 2.00	-	-	-	-	-	-	-	12/5/2012 858h
MB VOC 120512A	Bromochloromethane	µg/L	SW8260C	< 2.00	-	-	-	-	-	-	-	12/5/2012 858h
MB VOC 120512A	Bromodichloromethane	µg/L	SW8260C	< 2.00	-	-	-	-	-	-	-	12/5/2012 858h
MB VOC 120512A	Bromoform	µg/L	SW8260C	< 2.00	-	-	-	-	-	-	-	12/5/2012 858h
MB VOC 120512A	Bromomethane	µg/L	SW8260C	< 5.00	-	-	-	-	-	-	-	12/5/2012 858h
MB VOC 120512A	Carbon disulfide	µg/L	SW8260C	< 2.00	-	-	-	-	-	-	-	12/5/2012 858h
MB VOC 120512A	Carbon tetrachloride	µg/L	SW8260C	< 2.00	-	-	-	-	-	-	-	12/5/2012 858h
MB VOC 120512A	Chlorobenzene	µg/L	SW8260C	< 2.00	-	-	-	-	-	-	-	12/5/2012 858h
MB VOC 120512A	Chloroethane	µg/L	SW8260C	< 2.00	-	-	-	-	-	-	-	12/5/2012 858h

Report Date 12/17/2012 Page 41 of 44

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 QA Officer

QC SUMMARY REPORT

Client: HDR Engineering
 Lab Set ID: 1212052
 Project: IRL Groundwater

Contact: Nate Nichols
 Dept: MSVOA
 QC Type: MBLK

Sample ID	Analyte	Units	Method	Result	Amount Spiked	Original Amount	%REC	Limits	%RPD	RPD Limit	Qual	Date Analyzed
MB VOC 120512A	Chloroform	µg/L	SW8260C	< 2.00				-				12/5/2012 858h
MB VOC 120512A	Chloromethane	µg/L	SW8260C	< 3.00				-				12/5/2012 858h
MB VOC 120512A	cis-1,2-Dichloroethene	µg/L	SW8260C	< 2.00				-				12/5/2012 858h
MB VOC 120512A	cis-1,3-Dichloropropene	µg/L	SW8260C	< 2.00				-				12/5/2012 858h
MB VOC 120512A	Dibromochloromethane	µg/L	SW8260C	< 2.00				-				12/5/2012 858h
MB VOC 120512A	Dibromomethane	µg/L	SW8260C	< 2.00				-				12/5/2012 858h
MB VOC 120512A	Ethylbenzene	µg/L	SW8260C	< 2.00				-				12/5/2012 858h
MB VOC 120512A	Iodomethane	µg/L	SW8260C	< 5.00				-				12/5/2012 858h
MB VOC 120512A	Methylene chloride	µg/L	SW8260C	< 2.00				-				12/5/2012 858h
MB VOC 120512A	Styrene	µg/L	SW8260C	< 2.00				-				12/5/2012 858h
MB VOC 120512A	Tetrachloroethene	µg/L	SW8260C	< 2.00				-				12/5/2012 858h
MB VOC 120512A	Toluene	µg/L	SW8260C	< 2.00				-				12/5/2012 858h
MB VOC 120512A	trans-1,2-Dichloroethene	µg/L	SW8260C	< 2.00				-				12/5/2012 858h
MB VOC 120512A	trans-1,3-Dichloropropene	µg/L	SW8260C	< 2.00				-				12/5/2012 858h
MB VOC 120512A	trans-1,4-Dichloro-2-butene	µg/L	SW8260C	< 2.00				-				12/5/2012 858h
MB VOC 120512A	Trichloroethene	µg/L	SW8260C	< 2.00				-				12/5/2012 858h
MB VOC 120512A	Trichlorofluoromethane	µg/L	SW8260C	< 2.00				-				12/5/2012 858h
MB VOC 120512A	Vinyl acetate	µg/L	SW8260C	< 10.0				-				12/5/2012 858h
MB VOC 120512A	Vinyl chloride	µg/L	SW8260C	< 1.00				-				12/5/2012 858h
MB VOC 120512A	Xylenes, Total	µg/L	SW8260C	< 2.00				-				12/5/2012 858h
MB VOC 120512A	Surr: 1,2-Dichloroethane-d4	%REC	SW8260C	50.4	50.00		101	76-138				12/5/2012 858h
MB VOC 120512A	Surr: 4-Bromofluorobenzene	%REC	SW8260C	51.2	50.00		102	77-121				12/5/2012 858h
MB VOC 120512A	Surr: Dibromofluoromethane	%REC	SW8260C	50.5	50.00		101	67-128				12/5/2012 858h
MB VOC 120512A	Surr: Toluene-d8	%REC	SW8260C	49.3	50.00		98.6	81-135				12/5/2012 858h



463 West South
 Salt Lake City, UT 84115
 Phone: (801) 263-8686 Toll Free (888) 263-8686 Fax (801) 263-8687
 e-mail: awal@awal-labs.com, web: www.awal-labs.com

Kyle F. Gros,
 Laboratory Director

Jose Rocha
 QA Officer

QC SUMMARY REPORT

Client: HDR Engineering
 Lab Set ID: 1212052
 Project: IRL Groundwater

Contact: Nate Nichols
 Dept: MSVOA
 QC Type: MS

Sample ID	Analyte	Units	Method	Result	Amount Spiked	Original Amount	%REC	Limits	%RPD	RPD Limit	Qual	Date Analyzed
1212052-001AMS	1,1,1-Trichloroethane	µg/L	SW8260C	23.5	20.00	0	118	67-147				12/5/2012 1227h
1212052-001AMS	1,1-Dichloroethene	µg/L	SW8260C	27.5	20.00	0	138	51-152				12/5/2012 1227h
1212052-001AMS	1,2-Dichlorobenzene	µg/L	SW8260C	20.4	20.00	0	102	70-130				12/5/2012 1227h
1212052-001AMS	1,2-Dichloroethane	µg/L	SW8260C	21.6	20.00	0	108	39-162				12/5/2012 1227h
1212052-001AMS	1,2-Dichloropropane	µg/L	SW8260C	19.3	20.00	0	96.7	59-135				12/5/2012 1227h
1212052-001AMS	Benzene	µg/L	SW8260C	22.1	20.00	0	111	66-145				12/5/2012 1227h
1212052-001AMS	Chlorobenzene	µg/L	SW8260C	22.2	20.00	0	111	63-140				12/5/2012 1227h
1212052-001AMS	Chloroform	µg/L	SW8260C	21.9	20.00	0	109	50-146				12/5/2012 1227h
1212052-001AMS	Ethylbenzene	µg/L	SW8260C	22.8	20.00	0	114	69-133				12/5/2012 1227h
1212052-001AMS	Methylene chloride	µg/L	SW8260C	23.7	20.00	0	118	30-192				12/5/2012 1227h
1212052-001AMS	Toluene	µg/L	SW8260C	22.3	20.00	0	111	18-192				12/5/2012 1227h
1212052-001AMS	Trichloroethene	µg/L	SW8260C	23.0	20.00	0	115	61-153				12/5/2012 1227h
1212052-001AMS	Xylenes, Total	µg/L	SW8260C	67.5	60.00	0	113	42-167				12/5/2012 1227h
1212052-001AMS	Surr: 1,2-Dichloroethane-d4	%REC	SW8260C	50.4	50.00		101	72-151				12/5/2012 1227h
1212052-001AMS	Surr: 4-Bromofluorobenzene	%REC	SW8260C	50.1	50.00		100	80-128				12/5/2012 1227h
1212052-001AMS	Surr: Dibromofluoromethane	%REC	SW8260C	51.6	50.00		103	80-124				12/5/2012 1227h
1212052-001AMS	Surr: Toluene-d8	%REC	SW8260C	48.8	50.00		97.5	77-129				12/5/2012 1227h



463 West 1000 South
Salt Lake City, UT 84115

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e-mail awal@awal-labs.com web www.awal-labs.com

Kyle F. Gross
Laboratory Director

Jose Rocha
QA Officer

QC SUMMARY REPORT

Client: HDR Engineering
Lab Set ID: 1212052
Project: IRL Groundwater

Contact: Nate Nichols
Dept: MSVOA
QC Type: MSD

Sample ID	Analyte	Units	Method	Result	Amount Spiked	Original Amount	%REC	Limits	%RPD	RPD Limit	Qual	Date Analyzed
1212052-001AMSD	1,1,1-Trichloroethane	µg/L	SW8260C	22.7	20.00	0	113	67-147	3.77	25		12/5/2012 1246h
1212052-001AMSD	1,1-Dichloroethene	µg/L	SW8260C	27.2	20.00	0	136	51-152	1.1	25		12/5/2012 1246h
1212052-001AMSD	1,2-Dichlorobenzene	µg/L	SW8260C	19.8	20.00	0	99.2	70-130	2.88	25		12/5/2012 1246h
1212052-001AMSD	1,2-Dichloroethane	µg/L	SW8260C	20.6	20.00	0	103	39-162	4.84	25		12/5/2012 1246h
1212052-001AMSD	1,2-Dichloropropane	µg/L	SW8260C	18.9	20.00	0	94.6	59-135	2.2	25		12/5/2012 1246h
1212052-001AMSD	Benzene	µg/L	SW8260C	21.6	20.00	0	108	66-145	2.43	25		12/5/2012 1246h
1212052-001AMSD	Chlorobenzene	µg/L	SW8260C	21.4	20.00	0	107	63-140	3.39	25		12/5/2012 1246h
1212052-001AMSD	Chloroform	µg/L	SW8260C	21.3	20.00	0	106	50-146	2.59	25		12/5/2012 1246h
1212052-001AMSD	Ethylbenzene	µg/L	SW8260C	21.8	20.00	0	109	69-133	4.75	25		12/5/2012 1246h
1212052-001AMSD	Methylene chloride	µg/L	SW8260C	23.1	20.00	0	115	30-192	2.69	25		12/5/2012 1246h
1212052-001AMSD	Toluene	µg/L	SW8260C	21.6	20.00	0	108	18-192	3.15	25		12/5/2012 1246h
1212052-001AMSD	Trichloroethene	µg/L	SW8260C	22.1	20.00	0	111	61-153	3.9	25		12/5/2012 1246h
1212052-001AMSD	Xylenes, Total	µg/L	SW8260C	65.2	60.00	0	109	42-167	3.54	25		12/5/2012 1246h
1212052-001AMSD	Surr 1,2-Dichloroethane-d4	%REC	SW8260C	50.4	50.00		101	72-151				12/5/2012 1246h
1212052-001AMSD	Surr 4-Bromofluorobenzene	%REC	SW8260C	50.0	50.00		100	80-128				12/5/2012 1246h
1212052-001AMSD	Surr Dibromofluoromethane	%REC	SW8260C	51.5	50.00		103	80-124				12/5/2012 1246h
1212052-001AMSD	Surr Toluene-d8	%REC	SW8260C	48.8	50.00		97.7	77-129				12/5/2012 1246h

Report Date 12/17/2012 Page 44 of 44

All analyses applicable to the CWA, SDWA and RCRA are performed in accordance to NELAP protocols. Pertinent sampling information is located on the attached CCR. This report is provided for the exclusive use of the user. See Privileges of subsequent use on the name of this company or any member of its staff or reproduction of this report in connection with the advertisement, promotion or sale of any product or service, or in connection with the resale thereof or this report for any purpose other than for the address will be granted only on contact. This company accepts no responsibility except for the due performance of inspection and/or analysis in good faith and according to the rules of the state and of science.

Attachment F - Explosive Gas Sampling Report

To	Rob Richards, Intermountain Regional Landfill		
From	Terry Warner	Project	December 2012 Explosive Gas Monitoring
CC	Nate Nichols		
Date	December 5, 2012	Job No	

I:\Templates\HDR_Memo.doc

RE:Intermountain Regional Lanfill Explosive Gas Quarterly Monitoring

Dear Rob,

This letter transmits HDR's findings related to on site explosive gas monitoring at the Intermountain Regional Landfill. In accordance with Utah State Regulation R315-303-02(2), Intermountain Regional Landfill is required to monitor for explosive gases within all structures and at the landfill property limits once quarterly, or 4 times a year. This memo discusses results of monitoring effort during the fourth quarter of 2012, which took place on December 4th, 2012.

HDR staff analyzed 5 locations within Intermountain Regional Landfill, including the scale house/office and the North, South, East and West limits of the current and only active landfill cell. Results of all 5 samples indicated that the current landfill operations are not producing methane in detectable amounts. These results are below reportable limits as defined by Utah State Regulation R315-303-2(2)(a). All results showed 00.0% - 00.1% methane, and 20.7- 20.8% oxygen. See attached for all field documentation and calibration certificates.

These results should be included in your 2012 annual report to the Utah Division of Solid and Hazardous Waste.

If you have any questions regarding this letter or the results of the analysis, please contact me at (801) 743-7812.

Sincerely,



Terry Warner, PE
HDR Engineering, Inc

Attachments.

- 1 Methane gas field monitoring results
- 2 GEM 200+ Calibration Certificate



Calibrated at Geotech's Colorado service center
 2650 East 40th Avenue
 Denver, CO 80205
 (800) 833-7958 Fax: (303) 322-7242

Gem 2000+ Calibration Certificate

Unit Number 3639 Factory Calibration Date: 4/20/2012 Field Calibration Date 11/29/2012 09:27 AM
 Serial Number GM13973 Technician: Larry Lundberg

- Cleaned Unit and Case Battery charge 100 % **Pass**
- Visually Inspect for damage and missing parts Pump flow 600 ml/min **Pass**
- Manual Is in case

Zero									
<u>Gas Zered</u>	<u>Zero</u>	<u>Reading</u>	<u>Variance</u>		<u>Zero Gas</u>	<u>Lot #</u>	<u>Exp Date</u>		
CH ₄	0 %	0 %	0.00%	Pass	Ambient Air	Not Applicable			
CO ₂	0 %	0.1 %	0.10%	Pass	Ambient Air	Not Applicable			
CO	0 ppm	0 ppm	0.00%	Pass	Ambient Air	Not Applicable			
H ₂ S	0 ppm	0 ppm	0.00%	Pass	Ambient Air	Not Applicable			
O ₂	0 %	0 %	0.00%	Pass	Gem Gas	IAM-399-S-2	6/14	Pass	

Span									
<u>Gas Spanned</u>	<u>Span</u>	<u>Reading</u>	<u>Variance</u>		<u>Calibration Gas</u>	<u>Lot #</u>	<u>Exp Date</u>		
CH ₄	15 %	15 %	0.00%	Pass	Gem Gas	IAM-399-S-2	6/14	Pass	
CO ₂	15 %	15 %	0.00%	Pass	Gem Gas	IAM-399-S-2	6/14	Pass	
CO	50 ppm	49 ppm	-2.00%	Pass	4 Gas	1372740	9/14	Pass	
H ₂ S	10 ppm	10 ppm	0.00%	Pass	4 Gas	1372740	9/14	Pass	
O ₂	20.9 %	20.8 %	-0.48%	Pass	Ambient Air	Not Applicable			

Geotech Environmental Equipment, Inc. takes pride in ensuring this instrument is tested to function as specified by the manufacturer and was calibrated in accordance to manufacturer specifications. All calibration standards used are NIST traceable. With the provided lot numbers we can provide NIST documents on request. Call us at (800) 833-7958 and we will be glad to help.

Attachment G - Closure & Post Closure Care Cost Estimate, Surety Bond



ONE COMPANY | Many Solutions™

February 25, 2013

Rob Richards
General Manager
Intermountain Regional Landfill
PO Box 1889
Salt Lake City, UT 84110

**Re: 2013 Closure and Post Closure Care Cost Estimates,
Intermountain Regional Landfill (Permit #1102)**

Dear Rob:

This letter transmits Closure and Post Closure Care cost estimates for the 2013 financial assurance program at the Intermountain Regional Landfill (IRL).

Closure and post closure care cost estimates were originally prepared in 2010 for the Class V permit application. The financial assurance mechanism is a surety bond, in the amount of \$1,714,711, which was originally submitted to the Utah Division of Solid and Hazardous Waste on July 2, 2012. This bond is attached. The current Closure (\$817,036) and Post Closure Care (\$690,000) cost estimate totals **\$1,507,036**. These estimates are also attached. The factors that led to a decrease in the cost estimates are as follows:

- A reduced landfill area. The 2010 cost estimates in the permit application were based on conceptual design for an 8-acre landfill operating area. The final designed and as-constructed active liner area is 7.5 acres. This change reduces the estimated material quantities in the landfill cover system.
- Adjusted unit costs. Contractor bids from the 2012 Cell 1 Phase 1 liner construction project were reviewed, and several unit costs in the closure estimate could be adjusted.
- Lowered contingencies. With better estimates of unit costs and more accurate closure material quantities, we lowered the contingency line items.

I appreciate the opportunity to provide engineering services to the IRL. If you have any questions or comments, please contact me at (801) 743-7812.

Sincerely,

Terry Warner, PE

Enclosures: Closure and Post Closure Care Cost Estimates and Surety Bond

HDR Engineering, Inc

3949 South 700 East
Suite 500
Salt Lake City, UT 84107

Phone (801) 743-7800
Fax (801) 743-7878
www.hdrinc.com

**Intermountain Regional Landfill
Closure Cost Estimate
Cell 1 (2013 Dollars)**

Cell 1 Phase 1	7.50	Acres
Total	7.50	Acres

1	Engineering/Management	Unit	Unit Cost	Quantity	Cost
1.01	Topo Survey Initial	HR	\$150	25	\$3,750
1.02	Topo Survey Final	HR	\$150	16	\$2,400
1.03	Site Reconnaissance	HR	\$150	8	\$1,200
1.04	Boundary Survey	HR	\$150	16	\$2,400
1.05	Construction Plans/Specs	LUMP	\$40,000	1	\$40,000
1.06	Bidding and Award	LUMP	\$5,000	1	\$5,000
1.07	Quality Control Testing	LUMP	\$10,000	1	\$10,000
1.08	Construction Management/QC	LUMP	\$50,000	1	\$50,000
1.09	Closure Report/As-Builts	LUMP	\$25,000	1	\$25,000
1.10	Obtain UPDES and other permits	LUMP	\$10,000	1	\$10,000
Subtotal					\$149,750
Contingency 10%					\$14,975
Engineering Subtotal					\$164,725

2	Construction	Unit	Unit Cost	Quantity	Cost
2.01	Grading Top of Intermediate Cover	SY	\$1.25	36,300	\$45,375
2.02	Top Liner (60 mil FML)	SF	\$0.60	326,700	\$196,020
2.03	Clay Final Cover (1.5') ^[3]	CY	\$12.00	18,150	\$217,800
2.04	Topsoil (0.5') ^[4]	CY	\$4.00	6,050	\$24,200
2.05	Seed and Seeding	ACRE	\$1,000.00	7.5	\$7,500
2.06	Silt Fence/Erosion Control	LF	\$2.50	5,000	\$12,500
2.07	Dust Control and Watering	LS	\$10,000.00	1	\$10,000
2.08	Drainage Ditches	LF	\$2.00	5,000	\$10,000
2.09	Temporary Drainage Control	LS	\$10,000.00	1	\$10,000
2.10	Gas Collection System ^[5]	ACRE	\$15,000.00	0	\$0
Subtotal					\$533,395
Contingency 15%					\$80,009
Construction Subtotal					\$613,404

Closure Cost Summary

	Engineering Subtotal		\$164,725
	Construction Subtotal		\$613,404
	Subtotal		\$778,129
	Legal/Regulatory Oversight Contingency	5%	\$38,906
	Total		\$817,036

Assumptions/Notes

- 1 Estimate assumes closure of Cell 1 Phase 1 only
- 2 No permanent culverts or drainage piping is required
- 3 Assumes clay cover can be constructed from material at the landfill
- 4 Assumes topsoil is available onsite
- 5 Active gas collection system not required at this time

Now, therefore, if the above bound PRINCIPAL shall fully comply with the above stated provisions for closure and post-closure care of said Class Landfill, then this obligation shall be null and void, otherwise to remain in full force and effect

This bond may be increased by rider or other means as necessary to equal the amount as established by the annual up-date of the cost estimate for closure and post-closure care as required by UAC R315-309-2(3) and (4) for said Class Landfill

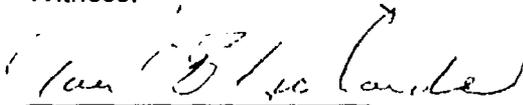
The duration of this bond shall be from the time same is filed with the Director until such time as the Director may cancel the same or release the SURETY from all liability

The SURETY may cancel this bond by giving the Director 120 days written notice addressed to the Director, Utah Division of Solid and Hazardous Waste. Upon cancellation of this bond, the Director shall release the SURETY from all liability.

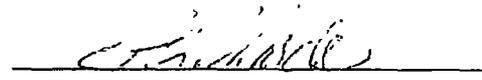
In the event of default by the PRINCIPAL of any of the prior stated provisions and conditions of closure and post-closure care of said Class Landfill, the SURETY shall conduct or cause to be conducted the closure and post-closure activities as required in permit # 1102 Upon the completion of the required activities, not to exceed the penal sum of this bond, this obligation of the SURETY shall terminate.

Signed and Sealed this 28th day of June, 2012

Witness:


Paul B. Richards
(Print Name)

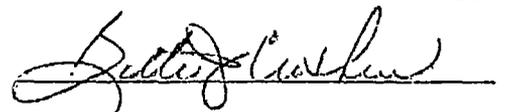
ROC Fund Landfill Holdings, LLC


Robert P. Richards
(Print Name)

Witness:


Linda Rowlette
(Print Name)

Travelers Casualty and Surety Company of America

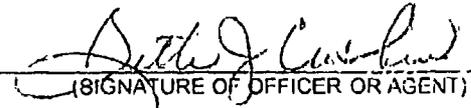

Bette J. Croshaw Attorney-in-Fact
(Print Name)

**AFFIDAVIT OF QUALIFICATION
FOR SURETY COMPANIES**

STATE OF UTAH) SS
COUNTY OF SALT LAKE)

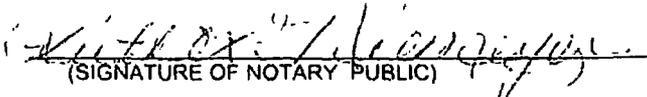
BETTE J. CROSHAW, BEING FIRST AND DULY SWORN, ON OATH DEPOSES AND SAYS THAT SHE IS THE ATTORNEY-IN-FACT (OFFICER OR AGENT) OF SAID COMPANY, AND THAT SHE IS DULY AUTHORIZED TO EXECUTE THE SAME AND HAS COMPLIED IN ALL RESPECTS WITH THE LAWS OF THE STATE OF UTAH, IN REFERENCE TO BECOMING SOLE SURETY UPON BONDS, UNDERTAKINGS AND OBLIGATIONS.

SUBSCRIBED AND SWORN TO BEFORE
ME THIS 28th DAY OF June 2012 A D.

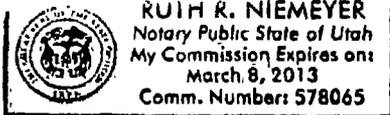


(SIGNATURE OF OFFICER OR AGENT)

P.O. Box 58139
709 East South Temple
Salt Lake City, UT 84158-0139
(RESIDENCE)
(SURETY SEAL)



(SIGNATURE OF NOTARY PUBLIC)



(SEAL)

MY COMMISSION EXPIRES:
3-8-2013

(THIS FORM REQUIRED TO
BE FILLED OUT BY SECTION
31-24-3, UCA 1953)

709 East South Temple
Salt Lake City, Utah 84102



POWER OF ATTORNEY

Farmington Casualty Company
Fidelity and Guaranty Insurance Company
Fidelity and Guaranty Insurance Underwriters, Inc.
St Paul Fire and Marine Insurance Company
St. Paul Guardian Insurance Company

St. Paul Mercury Insurance Company
Travelers Casualty and Surety Company
Travelers Casualty and Surety Company of America
United States Fidelity and Guaranty Company

Attorney-In Fact No. 224879

Certificate No. 004784150

KNOW ALL MEN BY THESE PRESENTS: That St. Paul Fire and Marine Insurance Company, St. Paul Guardian Insurance Company and St. Paul Mercury Insurance Company are corporations duly organized under the laws of the State of Minnesota...

William R. Moreton, Philip S. Waller, Belle J. Croshaw, and Judy Parry

of the City of Salt Lake City, State of Utah, their true and lawful Attorney(s)-in-Fact, each in their separate capacity if more than one is named above, to sign, execute, seal and acknowledge any and all bonds, recognizances, conditional undertakings and other writings obligatory in the nature thereof on behalf of the Companies in their business of guaranteeing the fidelity of persons guaranteeing the performance of contracts and executing or guaranteeing bonds and undertakings required or permitted in any actions or proceedings allowed by law

IN WITNESS WHEREOF, the Companies have caused this instrument to be signed and their corporate seals to be hereto affixed, this 22nd day of March 2012

Farmington Casualty Company
Fidelity and Guaranty Insurance Company
Fidelity and Guaranty Insurance Underwriters, Inc.
St Paul Fire and Marine Insurance Company
St Paul Guardian Insurance Company

St. Paul Mercury Insurance Company
Travelers Casualty and Surety Company
Travelers Casualty and Surety Company of America
United States Fidelity and Guaranty Company



State of Connecticut
City of Hartford ss

By [Signature]
George W. Thompson, Senior Vice President

On this the 22nd day of March, 2012, before me personally appeared George W. Thompson, who acknowledged himself to be the Senior Vice President of Farmington Casualty Company, Fidelity and Guaranty Insurance Company, Fidelity and Guaranty Insurance Underwriters, Inc., St. Paul Fire and Marine Insurance Company, St. Paul Guardian Insurance Company, St. Paul Mercury Insurance Company, Travelers Casualty and Surety Company, Travelers Casualty and Surety Company of America, and United States Fidelity and Guaranty Company, and that he, as such, being authorized so to do, executed the foregoing instrument for the purposes therein contained by signing on behalf of the corporations by himself as a duly authorized officer

In Witness Whereof, I hereunto set my hand and official seal
My Commission expires the 30th day of June, 2016



[Signature]
Marie C. Tetreault
Marie C. Tetreault, Notary Public

WARNING THIS POWER OF ATTORNEY IS INVALID WITHOUT THE RED BORDER

This Power of Attorney is granted under and by the authority of the following resolutions adopted by the Boards of Directors of Farmington Casualty Company, Fidelity and Guaranty Insurance Company, Fidelity and Guaranty Insurance Underwriters, Inc., St. Paul Fire and Marine Insurance Company, St. Paul Guardian Insurance Company, St. Paul Mercury Insurance Company, Travelers Casualty and Surety Company, Travelers Casualty and Surety Company of America, and United States Fidelity and Guaranty Company, which resolutions are now in full force and effect, reading as follows:

RESOLVED, that the Chairman, the President, any Vice Chairman, any Executive Vice President, any Senior Vice President, any Vice President, any Second Vice President, the Treasurer, any Assistant Treasurer, the Corporate Secretary or any Assistant Secretary may appoint Attorneys-in-Fact and Agents to act for and on behalf of the Company and may give such appointee such authority as his or her certificate of authority may prescribe to sign with the Company's name and seal with the Company's seal bonds, recognizances, contracts of indemnity, and other writings obligatory in the nature of a bond, recognizance, or conditional undertaking, and any of said officers or the Board of Directors at any time may remove any such appointee and revoke the power given him or her; and it is

FURTHER RESOLVED, that the Chairman, the President, any Vice Chairman, any Executive Vice President, any Senior Vice President or any Vice President may delegate all or any part of the foregoing authority to one or more officers or employees of this Company, provided that each such delegation is in writing and a copy thereof is filed in the office of the Secretary; and it is

FURTHER RESOLVED, that any bond, recognizance, contract of indemnity, or writing obligatory in the nature of a bond, recognizance, or conditional undertaking shall be valid and binding upon the Company when (a) signed by the President, any Vice Chairman, any Executive Vice President, any Senior Vice President or any Vice President, any Second Vice President, the Treasurer, any Assistant Treasurer, the Corporate Secretary or any Assistant Secretary and duly attested and sealed with the Company's seal by a Secretary or Assistant Secretary, or (b) duly executed (under seal, if required) by one or more Attorneys-in-Fact and Agents pursuant to the power prescribed in his or her certificate or their certificates of authority or by one or more Company officers pursuant to a written delegation of authority, and it is

FURTHER RESOLVED, that the signature of each of the following officers: President, any Executive Vice President, any Senior Vice President, any Vice President, any Assistant Vice President, any Secretary, any Assistant Secretary, and the seal of the Company may be affixed by facsimile to any Power of Attorney or to any certificate relating thereto appointing Resident Vice Presidents, Resident Assistant Secretaries or Attorneys-in-Fact for purposes only of executing and attesting bonds and undertakings and other writings obligatory in the nature thereof, and any such Power of Attorney or certificate bearing such facsimile signature or facsimile seal shall be valid and binding upon the Company and any such power so executed and certified by such facsimile signature and facsimile seal shall be valid and binding on the Company in the future with respect to any bond or understanding to which it is attached

I, Kevin E. Hughes, the undersigned, Assistant Secretary, of Farmington Casualty Company, Fidelity and Guaranty Insurance Company, Fidelity and Guaranty Insurance Underwriters, Inc., St. Paul Fire and Marine Insurance Company, St. Paul Guardian Insurance Company, St. Paul Mercury Insurance Company, Travelers Casualty and Surety Company, Travelers Casualty and Surety Company of America, and United States Fidelity and Guaranty Company do hereby certify that the above and foregoing is a true and correct copy of the Power of Attorney executed by said Companies, which is in full force and effect and has not been revoked

IN TESTIMONY WHEREOF, I have hereunto set my hand and affixed the seals of said Companies this 28th day of June, 2012


Kevin E. Hughes, Assistant Secretary



To verify the authenticity of this Power of Attorney, call 1-800-421-3880 or contact us at www.travelersbond.com. Please refer to the Attorney-In-Fact number, the above-named individuals and the details of the bond to which the power is attached

WARNING THIS POWER OF ATTORNEY IS INVALID WITHOUT THE RED BORDER