

## **Site Characterization Report**

Buena LUST Site  
Buena, Washington

*for*

**Washington State Department of Ecology and  
Science Applications International Corporation**

October 21, 2010



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**GEOENGINEERS** 

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30 YEARS  
2010

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## Buena LUST Site Buena, Washington

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October 21, 2010

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## 1.0 INTRODUCTION

This report presents results of site characterization activities conducted between July 8, 2010 and July 26, 2010 at three properties located in Buena, Washington. The approximate location of the site is presented in the Vicinity Map, Figure 1. The three properties, collectively referred to as the “site”, include: 1) Roby’s property, 2) the Fred Dill property and 3) the Gold Nugget property. The site and areas of interest are shown in the Site Plan, Figure 2.

The activities described in this report were conducted to characterize the nature and extent of petroleum contamination of soil and groundwater at the site, and provide information regarding the characteristics of the shallow unconfined aquifer underlying the site. This report describes: 1) the field investigation; 2) chemical analytical results from soil and groundwater sampling, and 3) shallow aquifer (slug test) results. Logs of borings and monitoring wells installed in July 2010 are presented in Appendix A.

## 2.0 BACKGROUND

### 2.1. Property Description

Petroleum contamination was identified in 1993 at the three properties that comprise the site (Fred Dill’s property, Roby’s property and the Gold Nugget property) during installation of underground sewer lines. Underground storage tanks (USTs) were removed from the three properties in 2001, 2005, and 2000, respectively. None of the properties are currently operated as a service station. The Fred Dill’s property is vacant; the Roby property is occupied by an abandoned and dilapidated Texaco service station; and the Gold Nugget Market property is occupied by the active Gold Nugget Market.

Twelve groundwater monitoring wells were installed at the site in 1997 to define the lateral extent of petroleum contamination. Ten of the twelve wells were sampled as recently as 2008. Ecology reported that only six wells were visible during a recent site visit, and one was filled with silt. The physical information for the wells is summarized in Table 1.

### 2.2. Historical Operations and Existing Data

Petroleum-impacted soil and groundwater was first observed at all three properties in 1993, during installation of underground sewer lines, according to Ecology. USTs were removed from each of the properties between 2000 and 2005. Information regarding uses of the site before 1993 is currently unavailable.

Chemical analytical results from groundwater sampling in October 2008 indicate that gasoline-, diesel-, and oil-range petroleum hydrocarbons (GRPH, DRPH, and ORPH, respectively) were present in groundwater samples collected from two monitoring wells (MW-3 and MW-4) at concentrations greater than the Model Toxics Control Act (MTCA) Method A groundwater cleanup levels. 1,2,4-trimethylbenzene was detected at a concentration greater than the MTCA Method B groundwater cleanup level. Chemical data from the October 2008 sampling event and logs of wells installed in 1997 are included with the data provided by Ecology in Appendix B.

### 3.0 SCOPE OF SERVICES

The purpose of the work was to conduct a soil and groundwater assessment to evaluate the current conditions with respect to petroleum hydrocarbons at the site.

#### 3.1. Phase I: Preliminary Field Assessment

GeoEngineers conducted a preliminary field assessment to determine the condition of the existing groundwater monitoring wells and to collect groundwater samples, where possible. Specific tasks conducted during the preliminary assessment are listed below:

- Located and assessed the condition of the 12 existing monitoring wells.
- Measured and recorded the depth to groundwater and groundwater quality parameters in wells that were found in good condition. Water quality parameters (temperature, pH, conductivity, dissolved oxygen, oxidation-reduction potential (ORP), and turbidity) were measured at regular intervals using low-flow well purging procedures.
- Submitted groundwater samples to Anatek Labs Inc. (Anatek) in Spokane, Washington for analysis of diesel and heavy oil (NWTPH-Dx), gasoline, benzene, toluene, ethylbenzene and xylenes (BTEX) and methyl tert-butyl ether (MTBE) (NWTPH-Gx/EPA 8260B), sulfate and nitrate (EPA 300.0), alkalinity (SM 2320), soluble iron and manganese (EPA 200.8), and methane (RSK 175M).

#### 3.2. Phase II: Direct-Push Soil and Groundwater Assessment

GeoEngineers evaluated soil and groundwater conditions at the site using direct-push drilling techniques at locations selected by Ecology. The information obtained during the direct-push soil and groundwater assessment was used to identify locations for permanent groundwater monitoring wells. Specific tasks conducted during the direct-push soil and groundwater assessment are listed below:

- Coordinated subsurface utility locating using the One Call system and a private utility locator, and developed a traffic control plan and retained a traffic control contractor.
- Conducted subsurface explorations using direct-push drilling techniques. Eight direct-push explorations extended to depths in the range of about 6 to 8 feet below the ground surface (bgs).
- Collected continuous soil samples from each direct-push exploration. Samples of material recovered were field-screened using water sheen and headspace vapor measurements to assess possible presence of petroleum-related contaminants.
- Submitted one soil sample from each direct-push exploration for chemical analysis. The soil samples were submitted to Anatek for analysis of diesel and heavy oil (NWTPH-Dx), and gasoline, BTEX and MTBE (NWTPH-Gx/EPA 8021).
- Developed and purged water within each temporary direct-push boring and collected a groundwater sample from each boring location. Development and purge water were drummed, labeled and stored for future disposal.
- Measured the direct-push boring locations with respect to site features.

- Submitted groundwater samples to Anatek for the analyses listed in Section 3.1.

### 3.3. Phase III: Monitoring Well Installation and Groundwater Sampling

GeoEngineers installed and sampled six groundwater monitoring wells during the third phase of the field investigation. The monitoring wells were installed at locations identified during the direct-push investigation as selected by Ecology and were intended to delineate the boundaries of the petroleum hydrocarbon plume in groundwater. The groundwater monitoring wells can also be used to inject groundwater remediation products into the subsurface. Specific tasks conducted during the monitoring well installation phase of work are listed below:

- Drilled six borings to depths of approximately 13 to 14 feet. Soil samples were obtained from each boring at approximate 5-foot-depth intervals using standard penetration test (SPT) and modified Dames & Moore samplers beginning at about 3 feet bgs (the likely seasonal high groundwater depth). Samples were field-screened using water sheen and headspace vapor measurements to assess possible presence of petroleum-related contaminants. Cuttings were drummed, labeled and stored on-site pending results of analytical testing.
- Submitted one soil sample from each well boring to Anatek for analysis of diesel and heavy oil (NWTPH-Dx), gasoline, BTEX and MTBE (NWTPH-Gx/EPA 8260B).
- Installed 2-inch-diameter groundwater monitoring wells in each boring with approximately 10 feet of well screen and developed each new well.
- Measured and recorded the depth to groundwater in all accessible site wells.
- Measured and recorded groundwater quality parameters in the six new wells. Water quality parameters (temperature, pH, conductivity, dissolved oxygen, ORP, and turbidity) were measured at regular intervals using low-flow well purging procedures.
- Collected groundwater samples from each new groundwater monitoring well and submitted samples to Anatek for the analyses listed in Section 3.1.
- Subcontracted a licensed surveyor to record elevations and locations of the new and existing monitoring wells, and direct push borings.
- Completed aquifer slug tests within 12 monitoring wells to estimate saturated hydraulic conductivity of the uppermost (shallow) aquifer underlying the site.
- Analyzed aquifer slug test data for hydraulic conductivity.

## 4.0 FIELD ACTIVITIES

### 4.1. Initial Site Assessment

GeoEngineers' mobilized to the site on July 8 and 9, 2010 to conduct an initial assessment of the existing monitoring wells and to collect groundwater samples from the accessible wells. GeoEngineers field geologist and a representative from Ecology located monitoring wells MW-1 through MW-7, MW-9, and MW-10 and assessed their condition. Monitoring wells MW-8, MW-11, and MW-12 were not found. Well assessment included:

- Visually inspecting the well monument;



- Measuring volatile vapors in the well headspace using a photoionization detector (PID)
- Measuring the total depth of the well and the depth to the water;
- Measuring turbidity.

The wells were re-developed in preparation for sampling. Data obtained during the well assessment and re-development is included in the table below.

**TABLE 1 – INITIAL ASSESSMENT CONDITIONS**

Well	Head Space Vapors (ppm)	Depth to Water (feet)	Total Measured Well Depth (feet)	Turbidity (NTU)	Purged Volume (gallons)	Notes
MW-1	0.0	2.78	14.68	0.0	6	Poor seal on cap
MW-2	5.0	4.58	14.56	0.0	6	
MW-3	0.0	3.43	14.71	0.0	6	Poor seal on cap
MW-4	0.0	3.58	12.59	0.0	6	Poor seal on cap
MW-5	0.0	2.71	9.71	0.0	--	Poor seal on cap; sediment in casing; monument filled with sediment
MW-6	0.0	3.53	12.79	0.0	6	Poor seal on cap
MW-7	0.0	3.95	14.95	0.0	7	Poor seal on cap
MW-9	0.0	2.72	13.04	0.0	10	Poor seal on cap
MW-10	0.0	3.28	14.52	0.0	10	Poor seal on cap

ppm = parts per million NTU = nephelometric turbidity unit

A groundwater sample was collected from each well, except MW-5, using low flow groundwater sampling methods. Samples were submitted to Anatek for analysis of diesel and heavy oil (NWTPH-Dx), gasoline, BTEX and MTBE (NWTPH-Gx/EPA 8260B), sulfate and nitrate (EPA 300.0), soluble iron and manganese (EPA 200.8) and alkalinity (SM 2320).

Well MW-5 was not sampled because sediment had partially filled the well casing, which likely was a result of poor well monument and seal maintenance. Ecology and GeoEngineers jointly decided well MW-5 could not readily be properly developed or sampled.

Development and purge water was stored in drums on Roby's property pending analytical results. Field sampling procedures are included in Appendix C. Well locations are shown in Figure 2.

#### 4.2. Direct-Push Soil and Groundwater Assessment

GeoEngineers mobilized to the site on July 20, 2010 to conduct soil and groundwater assessment activities using a direct-push drill rig. Prior to commencing subsurface explorations, GeoEngineers utilized the One Call system and subcontracted Applied Professional Services Inc. (APS) to locate and mark underground utilities near the proposed work areas. During the direct-push assessment and the subsequent monitoring well installation, Pavement Surface Control provided traffic control.

Eight direct-push borings (DP-1 through DP-8) were advanced by Environmental West Exploration Inc. (Environmental West) to depths ranging from 6 to 8 feet below ground surface (bgs). Four borings (DP-1 through DP-4) were advanced near Fred Dill's property and four borings (DP-5 through DP-8) were advanced near the Gold Nugget Market and Café (see Figure 2). Continuous soil samples were collected from each boring and one soil sample from each boring was submitted to Anatek for analysis of diesel and heavy oil (NWTPH-Dx), and gasoline, BTEX and MTBE (NWTPH-Gx/EPA 8021). A slight sheen and a low concentration of headspace vapors (<10 ppm) were observed in boring DP-1 from 2 to 4 feet bgs. A low concentration of headspace vapors (<10 ppm) was observed in boring DP-8 from 2 to 3 feet bgs. No other field screening evidence of contamination was observed during the direct-push assessment activities.

With the probe in the ground at each location, groundwater was purged through the temporary screen and a groundwater sample was collected from each direct push boring location. Groundwater samples were submitted for analysis of diesel and heavy oil (NWTPH-Dx), gasoline, BTEX and MTBE (NWTPH-Gx/EPA 8021B), sulfate and nitrate (EPA 300.0), alkalinity (SM 2320), soluble iron and manganese (EPA 200.8), and methane (RSK 175M).

Purge and decontamination water and excess soil cuttings were drummed and left on Roby's property for disposal. Boring logs are included in Appendix A.

#### **4.3. Monitoring Well Installation, Sampling, and Testing**

Monitoring wells MW-13 through MW-18 were installed on July 21 and July 22, 2010. Monitoring wells MW-13, MW-14, and MW-15 are located near Fred Dill's and Roby's property. Monitoring wells MW-16 through MW-18 are located near the Gold Nugget Market and Café. Borings were advanced to depths about 13 to 14 feet bgs using a hollow-stem auger drill rig. Soil samples were collected approximately every 5 feet beginning about 3 feet bgs. One soil sample, collected from near the groundwater table, was submitted from each monitoring well to Anatek for analysis of diesel- and heavy oil-range petroleum hydrocarbons (NWTPH-Dx), and gasoline, BTEX and MTBE (NWTPH-Gx/EPA 8021). Low headspace vapor concentrations (<10 ppm) and a hydrocarbon odor were observed during advancement of monitoring wells MW-14 and MW-17. Field screening evidence of contamination was not observed from the other monitoring well borings.

A 2-inch-diameter monitoring well with a 10-foot screened interval was installed in each boring. Monitoring wells were developed on July 22, 2010 by surging and pumping. Groundwater sampling was conducted on July 25, 2010. Groundwater samples were submitted to Anatek for diesel- and heavy oil-range petroleum hydrocarbons (NWTPH-Dx), gasoline, BTEX and MTBE (NWTPH-Gx/EPA 8260B), sulfate and nitrate (EPA 300.0), alkalinity (SM 2320), soluble iron and manganese (EPA 200.8), and methane (RSK 175M).

GeoEngineers conducted slug tests on July 26, 2010 in monitoring wells MW-1 through MW-7, MW-9 and MW-10, and MW-16 through MW-18 to estimate saturated hydraulic conductivity. Field procedures for the slug tests are included in Appendix C. The calculated values of hydraulic conductivity are presented in Table 2.

**TABLE 2 – AQUIFER SLUG TEST RESULTS**

Well	Type of Slug Test	Primary Soil Type Adjacent to Screen	Hydraulic Conductivity	
			(cm/s)	(ft/day)
MW-1	Rising Head	Gravel with sand	0.11	310
MW-2	Rising Head	Gravel with sand and silt	0.054	150
MW-3	Rising Head	Sand and gravel	0.39	1,100
MW-4	Rising Head	Sand and gravel	0.18	510
MW-5	Falling Head	Silt with gravel and sand	0.00028	0.79
MW-6	Rising Head	Gravel with sand	0.25	710
MW-7	Rising Head	Gravel with silt and sand	0.14	400
MW-9	Rising Head	Gravel, sand and silt	0.055	160
MW-10	Rising Head	Gravel with sand and silt	0.33	940
MW-16	Rising Head	Sand with gravel and silt	0.0032	9.1
MW-17	Rising Head	Sand with gravel	0.090	260
MW-18	Rising Head	Gravel with sand	0.032	91

cm/s = centimeters per second

The calculated hydraulic conductivity values were generally between 0.03 and 0.4 cm/s (centimeters per second). These values are typical for the sand and gravel aquifer material observed during drilling. The lower value calculated at MW-16 (approximately 0.003 cm/s) might have been influenced by the silty sand unit observed near the water table. The relatively low value calculated at MW-5 (approximately 0.0003 cm/s) was likely influenced by silt and silty gravel noted in its boring log. Field measurements indicate that the bottom 3 to 4 feet of MW-5 is likely filled with sediment and potentially reducing the hydraulic connection with the more permeable sediments observed near the base of the boring.

Gray and Osborne, Inc. (licensed surveyors) visited the site July 22, 2010 and July 26, 2010 to survey the locations and elevations of the direct-push borings and the monitoring wells. Monitoring well casing and groundwater elevations are presented in Table 6. Monitoring well logs are included in Appendix A and survey data is included in Appendix E.

Static groundwater levels were measured in all 15 monitoring wells (MW-1 through MW-7, MW-9, MW-10, and MW-13 through MW-18) between July 25 and 26, 2010. A map showing the groundwater level elevation distribution and groundwater flow direction is provided in Figure 3. The groundwater elevation distribution indicates a hydraulic gradient of approximately 0.005 (5 feet per 1,000 feet), with flow toward the south-southeast. The groundwater level measured in MW-5 was anomalously high and therefore not included in estimation of the groundwater contours shown in Figure 3. The high groundwater level measured in MW-5 is interpreted to represent a perched condition that might be caused by the noted silt formation and/or the partially filled well casing.

## 5.0 CHEMICAL ANALYTICAL AND TESTING RESULTS

### 5.1. General

A total of 23 groundwater samples were collected during the course of field work activities. One groundwater sample was collected from each of the eight direct push borings. One sample was collected from each of the eight viable existing wells, and one sample was collected from each of the six new wells. One duplicate sample also was collected from monitoring well MW-14. A total of 14 soil samples were submitted for analytical testing, including one sample from each of the direct push borings and new monitoring wells. A summary of the groundwater analytical results are presented in Table 3. A summary of the soil analytical results are presented in Table 4. A summary of water quality parameters measured in the field during collection of groundwater samples is presented in Table 5.

### 5.2. Groundwater Analytical Results

#### 5.2.1. Contaminant Analysis

Diesel-range petroleum hydrocarbons were detected in sample MW15-072510 from monitoring well MW-15 at a concentration of 2,080 micrograms per liter ( $\mu\text{g/l}$ ), which exceeds the MTCA Method A cleanup level. Well MW-15 is located south and downgradient of Roby's property. Diesel-range petroleum hydrocarbons also were detected in sample MW-13-072510 from monitoring well MW-13 at a concentration of 103  $\mu\text{g/l}$ , which is less than the MTCA Method A cleanup level. Diesel- and oil-range petroleum hydrocarbons were not detected at concentrations greater than the laboratory practical quantitation limit (PQL) in the remaining samples.

Gasoline-range petroleum hydrocarbons were detected in sample MW14-07510 and duplicate sample MW14D-072510 from monitoring well MW-14 at concentrations of 3,360  $\mu\text{g/l}$  and 3,210  $\mu\text{g/L}$ , respectively, and from sample MW17-072510 from monitoring well MW-17 at a concentration of 4,230  $\mu\text{g/l}$ , all of which exceed MTCA Method A cleanup levels. Gasoline-range petroleum hydrocarbons also were detected in sample DP-1-072010 from direct push boring DP-1, sample MW3-070910 from monitoring wells MW-3, and sample MW4-070910 from monitoring well MW-4 at concentrations of 422  $\mu\text{g/l}$ , 675  $\mu\text{g/l}$  and 619  $\mu\text{g/l}$ , respectively, which are below the MTCA Method A cleanup level. Wells MW-3, MW-4, MW-14 and direct push probe DP-1 are all located at or directly south (downgradient) of Dill's property. Well MW-17 is located at the Gold Nugget Market & Café property. Gasoline-range petroleum hydrocarbons were not detected in the remaining samples.

Benzene was detected in sample MW17-072510 from monitoring well MW-17 at a concentration of 62.0  $\mu\text{g/L}$ , which exceeds MTCA Method A cleanup levels. Benzene was not detected at concentrations greater than the laboratory PQL in the remaining samples.

MTBE was detected in sample MW-17-072510 at a concentration of 9.78  $\mu\text{g/l}$ , which is below the MTCA Method A cleanup level. MTBE was not detected at concentrations greater than the laboratory PQL in the remaining samples.

Ethylbenzene was detected in sample DP-1-072010 from direct push boring DP-1 at a concentration of 2.92  $\mu\text{g/l}$ , and in samples MW3-070910, MW14-072510, MW14D-072510 and MW17-072510 at concentrations of 6.99  $\mu\text{g/l}$ , 20.5  $\mu\text{g/l}$ , 20.4  $\mu\text{g/l}$  and 125  $\mu\text{g/l}$ , respectively. All

of which are below the MTCA Method A cleanup level. Ethylbenzene was not detected at concentrations greater than the laboratory PQL in the remaining samples.

Samples MW-3-070910, MW14-072510, MW14D-072510 and MW17-072510 contained m+p-Xylene and o-Xylene at concentrations ranging from 0.54 µg/l to 613 µg/l. O-xylene also was detected in sample DP-1-072010 at a concentration of 2.05 µg/L and sample MW15-072510 at a concentration of 0.54 µg/L. The concentration of total xylenes detected in samples DP-1-072010, MW-3-070910, MW14-072510, MW14D-072510, MW15-072510 and MW17-072510 were 2.05 µg/l, 30.0µg/l, 3.00 µg/l, 2.99 µg/l, 0.54 µg/L and 823 µg/L, respectively. The concentrations of total xylenes were less than the MTCA Method A cleanup level in all of the samples. Xylenes were not detected at concentrations greater than the laboratory PQL in the remaining samples.

Naphthalene was detected in samples MW14-072510, MW14D-072510 and MW17-072510 at concentrations of 32.5 µg/L, 32.9 µg/L and 39.9 µg/l, respectively, all of which are less than the MTCA Method A cleanup level. Naphthalene was not detected at concentrations greater than the laboratory PQL in the remaining samples.

Toluene was detected in sample MW17-072510 at a concentration of 289 µg/L, which is less than the MTCA Method A cleanup level. Toluene was not detected at concentrations greater than the laboratory PQL in the remaining samples.

### **5.2.2. Water Quality Parameters**

Alkalinity measured from samples from the monitoring wells and direct push borings ranged from 144 mg/l to 353 mg/L, with an average of 276 mg/L. Measured concentrations of dissolved iron ranged from 0.0704 mg/l to 146 mg/L, with an average of 16.6 mg/L. Measured concentrations of iron generally were greater from the groundwater samples obtained from the direct push borings than from the monitoring wells. Concentrations of dissolved iron collected from direct push borings ranged from 2.75 mg/L to 146 mg/L, with an average of 46.4 mg/L. Measured concentrations of dissolved iron collected from monitoring wells ranged from 0.0704 mg/L to 3.86 mg/L, with an average of 0.741 mg/L. Measured concentrations of dissolved manganese ranged from 0.0301 mg/L to 5.8 mg/L, with an average of 1.11 mg/L. Measured concentrations of nitrates ranged from less than 0.1 mg/L to 10 mg/L. Measured concentrations of sulfates ranged from 18.6 mg/L to 52.7 mg/L. Measured concentrations of methane ranged from less than 0.0008 mg/L to 17.7 mg/L. The measured concentrations of methane generally were greater in samples collected from the direct push borings.

### **5.3. Soil Analytical Results**

Gasoline-range petroleum hydrocarbons were detected in sample DP-1-2.5-072010 (DP-1 at 2.5-foot depth) at a concentration of 102 milligrams per kilogram (mg/kg), which is greater than the MTCA Method A cleanup level for unrestricted land use. Gasoline-range petroleum hydrocarbons also were detected in sample MW14-3.5-072110 at a concentration of 53.2 mg/kg, which is below the MTCA Method A cleanup level for unrestricted land use. GRPH was not detected at concentrations greater than the laboratory PQL in the remaining samples.

Oil-range petroleum hydrocarbons were detected in sample DP-2-4.0-072010 (DP-2 at 4.5-foot depth) at a concentration of 577 mg/kg, sample DP-6-5.0-072010 (DP-6 at 5-foot depth) at a concentration of 300 mg/kg, sample DP-7-2.0-072010 (DP-7 at 2-foot depth) at a concentration of 141 mg/kg, and sample MW14-3.5-072110 (MW-14 at 3.5-foot depth) at a concentration of 293 mg/kg. All of the measured concentrations were below the MTCA Method A cleanup level for unrestricted land use. ORPH was not detected in the remaining samples above the laboratory PQL. Diesel-range petroleum hydrocarbons were not detected at concentrations greater than the laboratory PQL in any of the samples.

Ethylbenzene and toluene were detected in sample DP-1-2.5-072010 at concentrations of 0.481 mg/kg and 0.116 mg/kg, respectively, which are below the MTCA Method A cleanup levels for unrestricted land use. Ethylbenzene and toluene were not detected at concentrations greater than the laboratory PQL in the remaining samples.

Xylenes were detected in samples DP-1-2.5-072010 and MW14-3.5-072110 at concentrations of 1.12 mg/kg and 0.252 mg/kg, respectively, which are below the MTCA Method A cleanup level for unrestricted land use. Xylenes were not detected at concentrations greater than the laboratory PQL in the remaining samples.

Benzene, MTBE and naphthalene were not detected at concentrations greater than the laboratory PQL in any of the samples.

## 6.0 SUMMARY

GeoEngineers conducted soil and groundwater assessment activities from July 8, 2010 to July 26, 2010 for the site located in Buena, Washington. Field activities consisted of 1) an initial assessment and groundwater monitoring event of the previously installed monitoring wells, 2) soil and groundwater sampling using a direct-push drill rig, and 3) advancement of six new monitoring wells with soil and groundwater sampling. Aquifer slug tests also were conducted in 12 monitoring wells. Monitoring well and direct-push soil boring locations and elevations were surveyed by a licensed surveyor.

Nine of the existing monitoring wells (MW-1 through MW-7, MW-9, and MW-10) were located during the initial assessment. Monitoring well MW-5 was found to be in poor physical condition and not practical to sample. The remaining monitoring wells were re-developed and sampled. Eight direct-push soil borings (DP-1 through DP-8) were advanced and six new monitoring wells (MW-13 through MW-18) were installed. Soil and groundwater samples were collected from both the direct-push borings and the monitoring wells.

General chemistry parameters (alkalinity, dissolved manganese, nitrate, sulfate, and methane) were detected at concentrations consistent with typical groundwater conditions. Dissolved iron concentrations were anomalously high in two samples collected from borings DP-7 and DP-8 at 136 mg/L and 146 mg/L, respectively. Gasoline-range hydrocarbons were detected at concentrations greater than MTCA Method A cleanup levels in samples collected from monitoring wells MW-14 and MW-17. Diesel-range petroleum hydrocarbons were detected at concentrations greater than MTCA Method A cleanup levels in the sample collected from MW-15. Benzene also

was detected at a concentration greater than the MTCA Method A cleanup level in the sample collected from MW-17. BTEX and MTBE were either not detected or were detected at concentrations less than MTCA Method A cleanup levels in groundwater samples collected from the remaining wells.

Gasoline-range hydrocarbons were detected in soil sample DP-1-2.5-072010 at a concentration (102 mg/kg) greater than the MTCA Method A unrestricted land use cleanup level. Gasoline-, diesel- and oil-range hydrocarbons, BTEX and MTBE were either not detected or were detected at concentrations less than MTCA Method A unrestricted land use cleanup level in the remaining direct-push and monitoring well samples.

Results of groundwater monitoring and slug testing indicate that the shallow unconfined aquifer underlying the silt has a gradient of approximately 0.005 ft/ft with flow towards the south-southeast. The saturated hydraulic conductivity values calculated from the slug tests range between about 0.03 cm/s and 0.4 cm/s.

## 7.0 LIMITATIONS

We have prepared this report for the exclusive use of the Science Applications International Corporation, Washington State Department of Ecology and their authorized agents for the Buena LUST Site located in Buena, Washington.

Within the limitations of scope, schedule and budget, our services have been executed in accordance with generally accepted environmental science practices in this area at the time this report was prepared. The conclusions and opinions presented in this report are based on our professional knowledge, judgment and experience. No warranty or other conditions, express or implied, should be understood.

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Please refer to the Appendix F titled "Report Limitations and Guidelines for Use" for additional information pertaining to use of this report.





**Table 3**  
**Summary of Chemical Analytical Results - Groundwater<sup>1</sup>**  
**Buena LUST Site**  
**Buena, Washington**

Sample Number	Date Sampled	Alkalinity <sup>2</sup> (mg/l)	Dissolved Iron <sup>3</sup> (mg/l)	Dissolved Manganese <sup>3</sup> (mg/l)	NO3/N <sup>4</sup> (mg/l)	Sulfate <sup>4</sup> (mg/l)	Methane <sup>5</sup> (mg/l)	Benzene <sup>6</sup> (µg/l)	Ethylbenzene <sup>6</sup> (µg/l)	m+p-Xylene <sup>6,9</sup> (µg/l)	MTBE <sup>6</sup> (µg/l)	Naphthalene <sup>6</sup> (µg/l)	o-Xylene <sup>6,9</sup> (µg/l)	Toluene <sup>6</sup> (µg/l)	Diesel <sup>7</sup> (µg/l)	Lube Oil <sup>7</sup> (µg/l)	Gasoline <sup>8</sup> (µg/l)
DP-1-072010	07/20/10	294	2.75	0.509	4.03	22.9	0.0014	<1	2.92	<2	<1	<5	2.05	<1	<100	<500	422
DP-2-072010	07/20/10	289	36.7	2.87	6.58	28.8	<0.0008	<1	<1	<2	<1	<5	<1	<1	<100	<500	<100
DP-3-072010	07/20/10	321	3.32	0.145	9	29.2	0.00096	<1	<1	<2	<1	<5	<1	<1	<100	<500	<100
DP-4-072010	07/20/10	144	4.25	0.199	3.63	21.4	0.00082	<1	<1	<2	<1	<5	<1	<1	<100	<500	<100
DP-5-072010	07/20/10	330	38	2.37	2.88	42.2	0.0008	<1	<1	<2	<1	<5	<1	<1	<100	<500	<100
DP-6-072010	07/20/10	218	4.47	1.07	2.48	32.4	0.0013	<1	<1	<2	<1	<5	<1	<1	<100	<500	<100
DP-7-072010	07/20/10	254	146	5.8	2.44	46.3	0.0008	<1	<1	<2	<1	<5	<1	<1	<100	<500	<100
DP-8-072010	07/20/10	254	136	2.61	<0.1	40.6	0.0177	<1	<1	<2	<1	<5	<1	<1	<100	<500	<100
MW-1-070910	07/09/10	265	0.259	0.156	10	29.5	<0.0008	<0.5	<0.5	<1	<0.5	<0.5	<0.5	<0.5	<100	<500	<100
MW-2-070910	07/09/10	279	0.0542	0.0301	6.31	24.6	<0.0008	<0.5	<0.5	<1	<0.5	<0.5	<0.5	<0.5	<100	<500	<100
MW-3-070910	07/09/10	285	0.407	0.107	8.36	24.5	0.232	<0.5	6.99	18.6	<0.5	2.94	11.4	<0.5	<100	<500	675
MW-4-070910	07/09/10	306	3.5	0.828	2.19	18.6	0.141	<0.5	<0.5	<1	<0.5	<0.5	<0.5	<0.5	<100	<500	619
MW-6-070910	07/09/10	323	0.0704	0.909	0.74	29.9	0.00858	<0.5	<0.5	<1	<0.5	<0.5	<0.5	<0.5	<100	<500	<100
MW-7-070910	07/09/10	304	3.86	1.43	<0.1	29.6	0.0140	<0.5	<0.5	<1	<0.5	<0.5	<0.5	<0.5	<100	<500	<100
MW-9-070910	07/09/10	274	0.115	0.427	2.34	52.7	0.0011	<0.5	<0.5	<1	<0.5	<0.5	<0.5	<0.5	<100	<500	<100
MW-10-070910	07/09/10	234	0.113	1.05	1.55	28.5	0.0142	<0.5	<0.5	<1	<0.5	<0.5	<0.5	0.69	<100	<500	<100
MW-13-072510	07/25/10	219	1.1	0.312	5.6	23.3	0.00389	<0.5	<0.5	<1.0	<0.5	<0.5	<0.5	<0.5	103	<500	<100
MW14-072510	07/25/10	301	0.108	1.14	3.11	23.5	0.00459	<0.5	20.5	2.16	<0.5	32.5	0.84	<0.5	<100	<500	<b>3,360</b>
MW14D-072510	07/25/10	304	0.162	1.18	3.13	23.5	0.00401	<0.5	20.4	2.16	<0.5	32.9	0.83	<0.5	<100	<500	<b>3,210</b>
MW15-072510	07/25/10	353	0.515	0.939	<0.1	30.7	0.158	<0.5	<0.5	<1.0	<0.5	<0.5	0.54	<0.5	<b>2,080</b>	<500	<100
MW16-072510	07/25/10	266	0.116	0.325	2.53	46.7	0.00191	<0.5	<0.5	<1.0	<0.5	<0.5	<0.5	<0.5	<100	<500	<100
MW17-072510	07/25/10	280	0.722	0.41	0.25	48.0	0.0919	<b>62.0</b>	125	613	9.78	39.9	210	289	<100	<500	<b>4,930</b>
MW18-072510	07/25/10	250	0.017	0.804	1.45	32.2	0.00605	<0.5	<0.5	<1.0	<0.5	<0.5	<0.5	<0.5	<100	<500	<100
MTCA Method A Cleanup Levels <sup>10</sup>								5	700	1,000	20	160	1,000	1,000	500	500	1,000/800 <sup>11</sup>

**Notes:**

<sup>1</sup>Chemical analyses conducted by Anatek Labs, Inc. of Spokane, Washington.

<sup>2</sup>Alkalinity was analyzed using SM2320B.

<sup>3</sup>Dissolved iron and dissolved manganese were analyzed using EPA Method 200.8.

<sup>4</sup>NO3/N and sulfate were analyzed using EPA Method 300.0.

<sup>5</sup>Methane was analyzed using RSK 175 MOD.

<sup>6</sup>Benzene, ethylbenzene, m+p-xylene, methyl-t-butyl ether (MTBE), naphthalene, o-xylene and toluene were analyzed using EPA Method 8260B for samples from MW-1 through MW-18, and EPA Method 8021 for samples from DP-1 through DP-8.

<sup>7</sup>Diesel- and lube oil-range petroleum hydrocarbons were analyzed using NWTPHDX.

<sup>8</sup>Gasoline-range petroleum hydrocarbons were analyzed using NWTPHG.

<sup>9</sup>MTCA Method A cleanup level for total xylenes is 1,000 µg/L

<sup>10</sup>MTCA = Washington State, Model Toxics Control Act, Method A Cleanup levels

<sup>11</sup>Gasoline-range petroleum hydrocarbons cleanup level is 1,000 µg/l if benzene is not present; 800 µg/l if benzene is present.

mg/l = milligrams per liter; µg/l = micrograms per liter

**Table 4**  
**Summary of Chemical Analytical Results - Soil<sup>1</sup>**  
**Buena LUST Site**  
**Buena, Washington**

Sample Number	Date Sampled	GRPH <sup>2</sup> (mg/kg)	Benzene <sup>3</sup> (mg/kg)	Ethyl-Benzene <sup>3</sup> (mg/kg)	Toluene <sup>4</sup> (mg/kg)	Total Xylenes <sup>4</sup> (mg/kg)	MTBE <sup>4</sup> (mg/kg)	Naphthalene <sup>4</sup> (mg/kg)	DRPH <sup>5</sup> (mg/kg)	ORPH <sup>5</sup> (mg/kg)
DP-1-2.5-072010	07/20/10	<b>102</b>	<0.03	0.481	0.116	1.12	<0.0625	<0.312	<25	<100
DP-2-4.0-072010	07/20/10	<4.9	<0.03	<0.049	<0.049	<0.098	<0.049	<0.245	<25	577
DP-3-5.0-072010	07/20/10	<5.5	<0.03	<0.055	<0.055	<0.11	<0.055	<0.275	<25	<100
DP-4-4.5-072010	07/20/10	<4.875	<0.03	<0.04875	<0.04875	<0.0975	<0.04875	<0.2435	<25	<100
DP-5-4.5-072010	07/20/10	<5.575	<0.03	<0.0555	<0.0555	<0.111	<0.0555	<0.278	<25	<100
DP-6-5.0-072010	07/20/10	<6.65	<0.03	<0.06625	<0.06625	<0.1325	<0.06625	<0.3315	<25	300
DP-7-2.0-072010	07/20/10	<6.875	<0.03	<0.06875	<0.06875	<0.1375	<0.06875	<0.3435	<25	141
DP-8-2.5-072010	07/20/10	<8.95	<0.03	<0.0895	<0.0895	<0.179	<0.0895	<0.447	<25	<100
MW13-4.0-072110	07/21/10	<6.2	<0.03	<0.062	<0.062	<0.124	<0.062	<0.31	<25	<100
MW14-3.5-072110	07/21/10	53.2	<0.03	<0.05625	<0.05625	0.252	<0.05625	<0.281	<25	293
MW15-3.5-072110	07/21/10	<4.775	<0.03	<0.04775	<0.04775	<0.0955	<0.04775	<0.2385	<25	<100
MW16-3.5-072110	07/21/10	<6.725	<0.03	<0.06725	<0.06725	<0.1345	<0.06725	<0.3365	<25	<100
MW17-4.0-072210	07/21/10	<7.25	<0.03	<0.0725	<0.0725	<0.145	<0.0725	<0.362	<25	<100
MW18-3.5-072110	07/21/10	<5.35	<0.03	<0.0535	<0.0535	<0.107	<0.0535	<0.267	<25	<100
MTCA <sup>6</sup> Method A cleanup levels		100/30 <sup>7</sup>	0.03	6	7	9	0.1	5	2,000	2,000

**Notes:**

<sup>1</sup>Chemical analyses conducted by Anatek Labs, Inc. of Spokane, Washington.

<sup>2</sup>Gasoline-range petroleum hydrocarbons (GRPH) were analyzed using NWTPH-G.

<sup>3</sup>Benzene was analyzed using EPA Method 8260B in order for the laboratory practical quantitation limit to meet MTCA Method A cleanup levels.

<sup>4</sup>Toluene, ethylbenzene, total xylenes, methyl-tert-butyl ether (MTBE) and naphthalene were analyzed using EPA Method 8021.

<sup>5</sup>Diesel- (DRPH) and heavy oil-(ORPH) range petroleum hydrocarbons were analyzed using NWTPH-Dx.

<sup>6</sup>MTCA = Washington State, Model Toxics Control Act, Method A Cleanup levels

<sup>7</sup>GRPH cleanup level is 100 mg/kg if benzene is not present; 30 mg/kg if benzene is present.

mg/kg = milligrams per kilogram; **BOLD** indicates concentration exceeds MTCA unrestricted land use cleanup levels.

[http://projects/sites/0050406000/Final/\[050406000 Tables.xlsx\]Groundwater Elevations](http://projects/sites/0050406000/Final/[050406000 Tables.xlsx]Groundwater Elevations)

**Table 5**  
**Summary of Field Quality Parameters**  
**Buena LUST Site**  
**Buena, Washington**

Sample Number	Date Sampled	pH	Specific Conductivity (mS/m)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temperature (°C)	ORP (mV)
DP-1	07/20/10	7.28	37.7	94.5	0.00	21.5	-64
DP-2	07/20/10	7.03	35.3	>1000	0.00	21.7	-34
DP-3	07/20/10	6.98	41.0	580	0.00	21.8	-8
DP-4	07/20/10	6.80	21.2	246	0.43	22.3	61
DP-5	07/20/10	7.28	34.3	>1000	0.00	22.6	-53
DP-6	07/20/10	6.74	30.6	328	0.00	23.2	38
DP-7	07/20/10	6.76	35.1	320	0.00	24.8	65
DP-8	07/20/10	7.86	32.1	831	0.00	25.2	-153
MW-1	07/09/10	6.79	86.1	12.1	0.00	17.5	254
MW-2	07/09/10	6.82	87.4	0.9	0.00	18.5	276
MW-3	07/09/10	6.73	92.3	34.8	0.00	17.2	70
MW-4	07/09/10	6.46	90.0	16.3	0.00	20.7	-64
MW-6	07/09/10	6.71	96.5	15.8	0.00	17.4	216
MW-7	07/09/10	6.72	93.8	4.0	0.00	15.4	-105
MW-9	07/09/10	6.68	94.5	20.5	0.00	20.0	298
MW-10	07/09/10	6.76	73.6	16.2	0.00	16.9	156
MW-13	07/25/10	7.07	26.7	111	0.00	19.2	49
MW-14	07/25/10	7.68	37.1	3.0	0.00	22.4	-82
MW-15	07/25/10	9.53	46.8	48.9	0.00	20.9	-327
MW-16	07/25/10	7.44	33.1	11.6	0.00	18.3	11
MW-17	07/25/10	7.80	35.4	2.0	0.00	23.6	-107
MW-18	07/25/10	7.70	29.4	0.3	0.00	18.6	-21

[http://projects/sites/0050406000/Final/\[050406000 Tables.xlsx\]Groundwater Elevations](http://projects/sites/0050406000/Final/[050406000 Tables.xlsx]Groundwater Elevations)

**Table 6**  
**Groundwater Elevations**  
**Buena LUST Site**  
**Buena, Washington**

Well ID	Date Surveyed	Top of Casing Elevation <sup>1</sup> (feet)	Depth to Groundwater <sup>2</sup> (feet)	Date Measured	Groundwater Elevation (feet)
MW-1	07/22/10	793.44	2.78	07/08/10	790.66
			2.81	07/26/10	790.63
MW-2	07/22/10	795.34	4.58	07/08/10	790.76
			4.65	07/26/10	790.69
MW-3	07/22/10	794.12	3.43	07/08/10	790.69
			3.51	07/26/10	790.61
MW-4	07/22/10	794.25	3.58	07/08/10	790.67
			3.64	07/26/10	790.61
MW-5 <sup>2</sup>	07/22/10	794.19	2.71	07/08/10	791.48
			2.77	07/26/10	791.42
MW-6	07/22/10	794.18	3.53	07/08/10	790.65
			3.59	07/26/10	790.59
MW-7	07/26/10	793.52	3.95	07/08/10	789.57
			4.01	07/26/10	789.51
MW-9	07/22/10	789.73	2.72	07/08/10	787.01
			2.78	07/26/10	786.95
MW-10	07/22/10	788.47	3.28	07/08/10	785.19
			3.19	07/26/10	785.28
MW-13	07/26/10	794.41	3.70	07/25/10	790.71
MW-14	07/22/10	794.38	3.78	07/25/10	790.60
MW-15	07/22/10	792.66	3.38	07/25/10	789.28
MW-16	07/22/10	789.07	3.39	07/25/10	785.68
	07/26/10	789.07	3.44	07/26/10	785.63
MW-17	07/22/10	790.68	5.25	07/25/10	785.43
	07/26/10	790.68	5.29	07/26/10	785.39
MW-18	07/22/10	789.35	4.56	07/25/10	784.79
	07/26/10	789.35	4.58	07/26/10	784.77

**Notes:**

<sup>1</sup>Elevation surveyed at the ground surface for direct-push (DP) borings. Elevation surveyed at the top of casing (toc) for monitoring wells (MW).

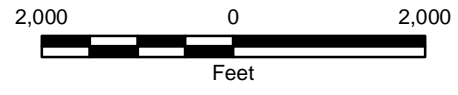
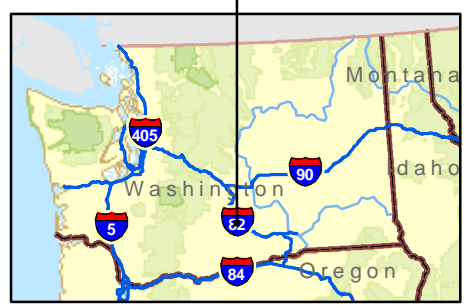
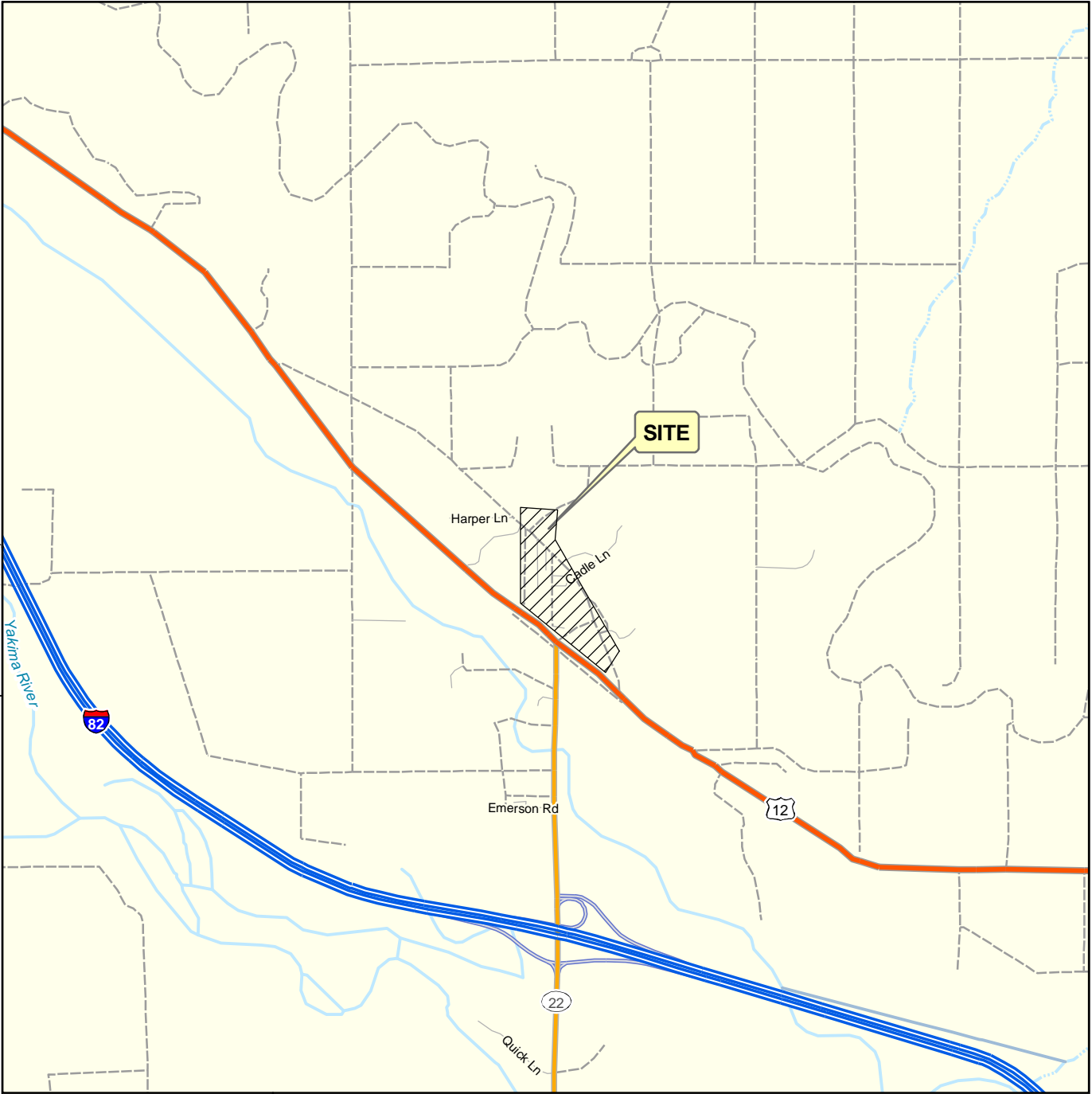
<sup>2</sup>Refer to text regarding discussion of MW-5.

[http://projects/sites/0050406000/Final/\[050406000 Tables.xlsx\]Groundwater Elevations](http://projects/sites/0050406000/Final/[050406000 Tables.xlsx]Groundwater Elevations)



Map Revised: 7/8/2010 .dbc

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**Vicinity Map**

Buena LUST Site  
Buena, Washington



**Figure 1**



Notes:  
 1. The locations of all features shown are approximate.  
 2. This drawing is for information purposes. It is intended to assist in showing features discussed in an attached document.  
 GeoEngineers, Inc. cannot guarantee the accuracy and content of electronic files. The master file is stored by GeoEngineers, Inc. and will serve as the official record of this communication.

Reference: ESRI Data & Maps, Street Maps 2005.

Map Revised: 7/29/2010, CRC

Path: \\spoi\Projects\0\0504060\GIS\050406000\_F2\_SitePlan\Samples.mxd



- MW-1  Monitoring Well Number and Approximate Location
- DP-1  Direct Push Boring Number and Approximate Location



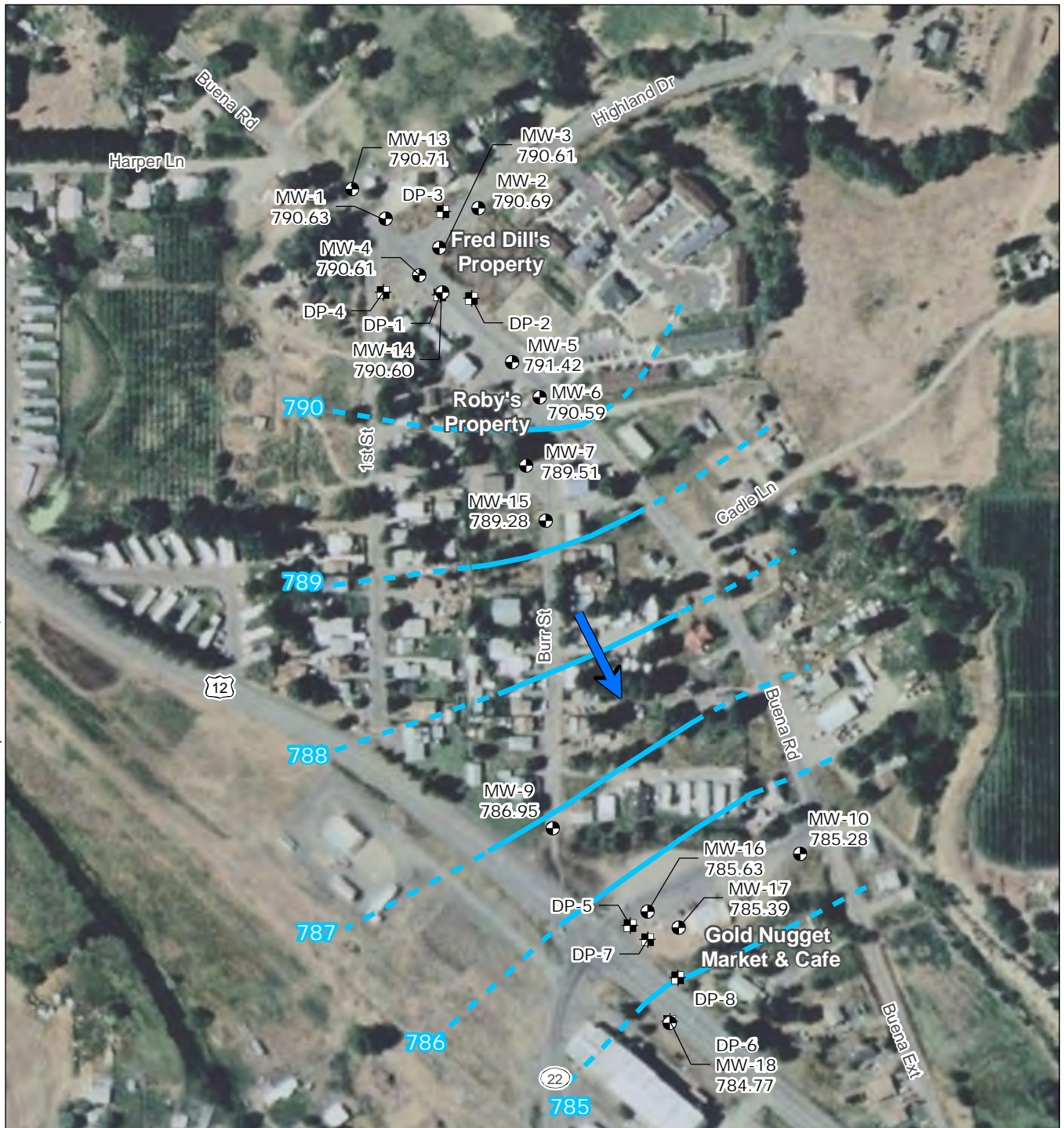
Notes:  
 1. The locations of all features shown are approximate.  
 2. This drawing is for information purposes. It is intended to assist in showing features discussed in an attached document.  
 GeoEngineers, Inc. cannot guarantee the accuracy and content of electronic files. The master file is stored by GeoEngineers, Inc. and will serve as the official record of this communication.





Reference: ESRI I3 Imagery (2006), ESRI Streets & Maps.

<b>Site Plan</b>	
Buena LUST Site Buena, Washington	
	<b>Figure 2</b>

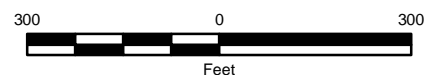
Map Revised: 7/29/2010, CRC


Path: \\spoi\Projects\010504060\GIS\050406000\_F3\_GroundwaterElevations.mxd



- MW-1  
790.63  
 Monitoring Well Number, Approximate Location and Groundwater Elevation on July 25 and 26, 2010
- DP-1  
 Direct Push Boring Number and Approximate Location
-  Groundwater Level Elevation Contour (dashed where inferred)
-  Groundwater Flow Direction

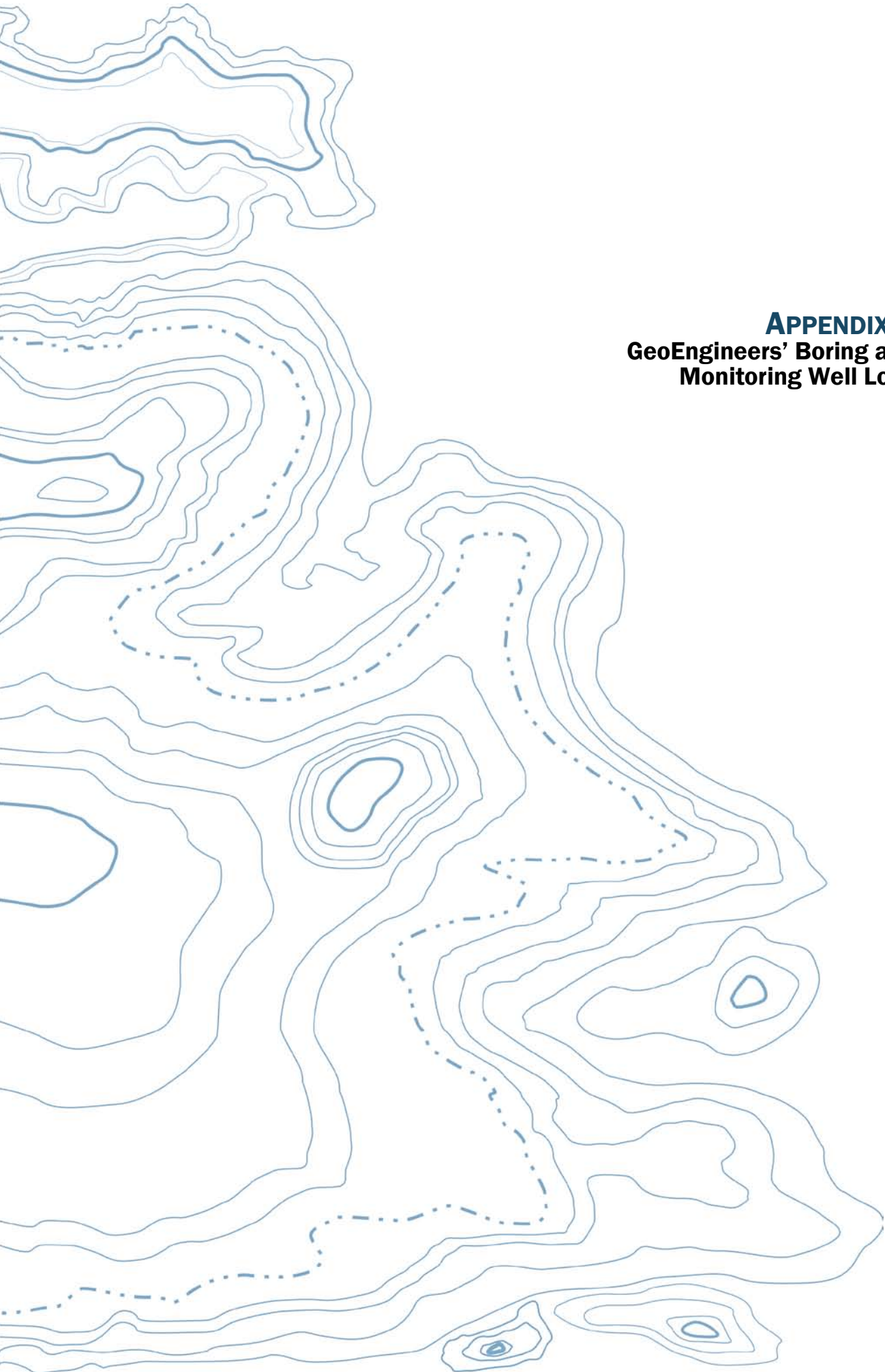
Notes:  
 1. The locations of all features shown are approximate.  
 2. This drawing is for information purposes. It is intended to assist in showing features discussed in an attached document. GeoEngineers, Inc. cannot guarantee the accuracy and content of electronic files. The master file is stored by GeoEngineers, Inc. and will serve as the official record of this communication.  
 3. Based on July 25 & 26, 2010 groundwater level measurements. Reference: ESRI I3 Imagery (2006), ESRI Streets & Maps.



<b>Groundwater Elevations, July 25 and 26, 2010</b>	
Buena LUST Site Buena, Washington	
	<b>Figure 3</b>







**APPENDIX A**  
**GeoEngineers' Boring and**  
**Monitoring Well Logs**

## SOIL CLASSIFICATION CHART

MAJOR DIVISIONS			SYMBOLS		TYPICAL DESCRIPTIONS
			GRAPH	LETTER	
COARSE GRAINED SOILS  MORE THAN 50% RETAINED ON NO. 200 SIEVE	GRAVEL AND GRAVELLY SOILS  MORE THAN 50% OF COARSE FRACTION RETAINED ON NO. 4 SIEVE	CLEAN GRAVELS <small>(LITTLE OR NO FINES)</small>		<b>GW</b>	WELL-GRADED GRAVELS, GRAVEL - SAND MIXTURES
		GRAVELS WITH FINES <small>(APPRECIABLE AMOUNT OF FINES)</small>		<b>GP</b>	POORLY-GRADED GRAVELS, GRAVEL - SAND MIXTURES
		CLEAN SANDS <small>(LITTLE OR NO FINES)</small>		<b>GM</b>	SILTY GRAVELS, GRAVEL - SAND - SILT MIXTURES
		SANDS WITH FINES <small>(APPRECIABLE AMOUNT OF FINES)</small>		<b>GC</b>	CLAYEY GRAVELS, GRAVEL - SAND - CLAY MIXTURES
	SAND AND SANDY SOILS  MORE THAN 50% OF COARSE FRACTION PASSING NO. 4 SIEVE	CLEAN SANDS <small>(LITTLE OR NO FINES)</small>		<b>SW</b>	WELL-GRADED SANDS, GRAVELLY SANDS
		SANDS WITH FINES <small>(APPRECIABLE AMOUNT OF FINES)</small>		<b>SP</b>	POORLY-GRADED SANDS, GRAVELLY SAND
		SANDS WITH FINES <small>(APPRECIABLE AMOUNT OF FINES)</small>		<b>SM</b>	SILTY SANDS, SAND - SILT MIXTURES
		SANDS WITH FINES <small>(APPRECIABLE AMOUNT OF FINES)</small>		<b>SC</b>	CLAYEY SANDS, SAND - CLAY MIXTURES
FINE GRAINED SOILS  MORE THAN 50% PASSING NO. 200 SIEVE	SILTS AND CLAYS  LIQUID LIMIT LESS THAN 50	SILTS AND CLAYS		<b>ML</b>	INORGANIC SILTS, ROCK FLOUR, CLAYEY SILTS WITH SLIGHT PLASTICITY
		SILTS AND CLAYS		<b>CL</b>	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS
		SILTS AND CLAYS		<b>OL</b>	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY
	SILTS AND CLAYS  LIQUID LIMIT GREATER THAN 50	SILTS AND CLAYS		<b>MH</b>	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS SILTY SOILS
		SILTS AND CLAYS		<b>CH</b>	INORGANIC CLAYS OF HIGH PLASTICITY
		SILTS AND CLAYS		<b>OH</b>	ORGANIC CLAYS AND SILTS OF MEDIUM TO HIGH PLASTICITY
HIGHLY ORGANIC SOILS			<b>PT</b>	PEAT, HUMUS, SWAMP SOILS WITH HIGH ORGANIC CONTENTS	

NOTE: Multiple symbols are used to indicate borderline or dual soil classifications

### Sampler Symbol Descriptions

- 2.4-inch I.D. split barrel
- Standard Penetration Test (SPT)
- Shelby tube
- Piston
- Direct-Push
- Bulk or grab

Blowcount is recorded for driven samplers as the number of blows required to advance sampler 12 inches (or distance noted). See exploration log for hammer weight and drop.

A "P" indicates sampler pushed using the weight of the drill rig.

## ADDITIONAL MATERIAL SYMBOLS

SYMBOLS		TYPICAL DESCRIPTIONS
GRAPH	LETTER	
	<b>CC</b>	Cement Concrete
	<b>AC</b>	Asphalt Concrete
	<b>CR</b>	Crushed Rock/ Quarry Spalls
	<b>TS</b>	Topsoil/ Forest Duff/Sod



Measured groundwater level in exploration, well, or piezometer



Groundwater observed at time of exploration



Perched water observed at time of exploration



Measured free product in well or piezometer

### Stratigraphic Contact



Distinct contact between soil strata or geologic units



Gradual change between soil strata or geologic units



Approximate location of soil strata change within a geologic soil unit

### Laboratory / Field Tests

- %F Percent fines
- AL Atterberg limits
- CA Chemical analysis
- CP Laboratory compaction test
- CS Consolidation test
- DS Direct shear
- HA Hydrometer analysis
- MC Moisture content
- MD Moisture content and dry density
- OC Organic content
- PM Permeability or hydraulic conductivity
- PP Pocket penetrometer
- SA Sieve analysis
- TX Triaxial compression
- UC Unconfined compression
- VS Vane shear

### Sheen Classification

- NS No Visible Sheen
- SS Slight Sheen
- MS Moderate Sheen
- HS Heavy Sheen
- NT Not Tested

NOTE: The reader must refer to the discussion in the report text and the logs of explorations for a proper understanding of subsurface conditions. Descriptions on the logs apply only at the specific exploration locations and at the time the explorations were made; they are not warranted to be representative of subsurface conditions at other locations or times.

## KEY TO EXPLORATION LOGS

Drilled	7/20/2010	Total Depth (ft)	8	Logged By	RM	Driller	Environmental West	Drilling Method	Direct Push
Location		Groundwater		Date Measured	7/20/2010	Depth to Water (ft)	4.0	Drilling Equipment	Geoprobe 5400
Ground Surface Elevation: 794.07 (ft)									
Vertical Datum: NAVD88									
East (X): 1687048.833		North (Y): 400127.439							
Datum: NAD 83-96-CORS- ()									

Elevation (feet)	Depth (feet)	FIELD AND RUN DATA							Group Classification	MATERIAL DESCRIPTION		
		Run Number	Run Length (ft)	Actual Recovered (ft)	Testing	SAMPLE NAME	Sheen	Headspace Vapor (ppm)			Water Level	Graphic Log
0										GP	Gray to brown fine gravel with sand and trace silt (medium dense, moist)	
		1	4	4	CA	2	SS	7			SM	Gray silty sand with occasional fine gravel (medium dense, moist)
						3	SS	2				Slight hydrocarbon odor
790									▽			Becomes wet
5		2	4	4		4	NS	2			GP	Gray to brown fine to coarse gravel with sand and trace silt (medium dense, wet)
						5	NS	0				

Notes: Please refer to figure A-1 for an explanation of symbols.

### Log of Direct Push Boring DP-1



Project: Buena LUST Site  
 Project Location: Buena, Washington  
 Project Number: 0504-060-00

Spokane: Date: 7/20/10 Path: P:\05054060\GINT\0504060\GPJ\_DBTemplate\lib\template\GEOENGINEERS8.GDT\0506117\_SONICLOG

Drilled	7/20/2010	Total Depth (ft)	8	Logged By	RM	Driller	Environmental West	Drilling Method	Direct Push
Location		Groundwater		Date Measured	7/20/2010	Depth to Water (ft)	4.0	Drilling Equipment	Geoprobe 5400
Ground Surface Elevation: 794.38 (ft)									
Vertical Datum: NAVD88									
East (X): 1687112.187		North (Y): 400120.706							
Datum: NAD 83-96-CORS- ()									

Elevation (feet)	Depth (feet)	FIELD AND RUN DATA							Group Classification	MATERIAL DESCRIPTION			
		Run	Run Number	Run Length (ft)	Actual Recovered (ft)	Testing	SAMPLE NAME	Sheen			Headspace Vapor (ppm)	Water Level	Graphic Log
0											GP	Gray to brown fine to coarse gravel with sand and trace silt (medium dense, moist)	
		1	4	4			2	NS	0			SM	Brown silty sand with gravel (medium dense, moist)
					CA		3	NS	0	▽		GP	Becomes wet
		2	4	4			4	NS	0			GP	Brown fine to coarse gravel with sand and trace silt (medium dense, wet)
							5	NS	0				

Notes: Please refer to figure A-1 for an explanation of symbols.

### Log of Direct Push Boring DP-2



Project: Buena LUST Site  
 Project Location: Buena, Washington  
 Project Number: 0504-060-00

Figure A-3  
 Sheet 1 of 1

Spokane: Date: 7/20/10 Path: P:\05054060\GINT\0504060\GPJ\_DB\Template\Lib\Template:GEOENGINEERS8.GDT\0506117\_SONICLOG

Drilled	7/20/2010	Total Depth (ft)	8	Logged By	RM	Driller	Environmental West	Drilling Method	Direct Push
Location		Groundwater			Date Measured		Depth to Water (ft)		Drilling Equipment
Ground Surface Elevation: 794.52 (ft)		7/20/2010			5.0		Geoprobe 5400		
Vertical Datum: NAVD88									
East (X): 1687054.616 North (Y): 400293.212									
Datum: NAD 83-96-CORS- ( )									

Elevation (feet)	FIELD AND RUN DATA								Group Classification	MATERIAL DESCRIPTION	
	Depth (feet)	Run Number	Run Length (ft)	Actual Recovered (ft)	Testing	SAMPLE NAME	Sheen	Headspace Vapor (ppm)			Water Level
0										GP	Gray to brown fine gravel with sand and trace silt (medium dense, moist)
		1	4	4			NS	0			
										SP-SM	Brown fine to medium sand with gravel and silt (medium dense, moist)
							NS	0			
											Orange mottling at 4½ feet
5					CA		NS	0		GP	Gray to brown fine to coarse gravel with sand and trace silt (medium dense, wet)
		2	4	4			NS	0			
							NS	0			

Notes: Please refer to figure A-1 for an explanation of symbols.

### Log of Direct Push Boring DP-3



Project: Buena LUST Site  
 Project Location: Buena, Washington  
 Project Number: 0504-060-00

Figure A-4  
 Sheet 1 of 1

Spokane: Date: 7/20/10 Path: P:\05054060\GINT\0504060\GPJ\_DBTemplate\LibTemplate\GEOENGINEERS8.GDT\0506117\_SONICLOG

Drilled	7/20/2010	Total Depth (ft)	8	Logged By	RM	Driller	Environmental West	Drilling Method	Direct Push
Location		Groundwater		Date Measured		Depth to Water (ft)		Drilling Equipment	
Ground Surface Elevation: 794.74 (ft)		Date Measured		7/20/2010		4.5		Geoprobe 5400	
Vertical Datum: NAVD88		East (X): 1686936.136		North (Y): 400132.098		Datum: NAD 83-96-CORS- ( )			

Elevation (feet)	Depth (feet)	FIELD AND RUN DATA							Group Classification	MATERIAL DESCRIPTION		
		Run	Run Number	Run Length (ft)	Actual Recovered (ft)	Testing	SAMPLE NAME	Sheen			Headspace Vapor (ppm)	Water Level
0											GP	Light brown fine to coarse gravel with sand and trace silt (medium dense, dry)
		1	4	4			1	NS	0			Becomes moist at 1½ feet
							2	NS	0			
5					CA		3	NS	0	▽		Becomes wet
		2	4	3			4	NS	0			

Notes: Please refer to figure A-1 for an explanation of symbols.

### Log of Direct Push Boring DP-4



Project: Buena LUST Site  
 Project Location: Buena, Washington  
 Project Number: 0504-060-00

Spokane: Date: 7/20/10 Path: P:\0504060\GINT\0504060\GPJ\_DBTemplate\LibTemplate\GEOENGINEERS8.GDT\0506117\_SONICLOG

Drilled	7/20/2010	Total Depth (ft)	8	Logged By	RM	Driller	Environmental West	Drilling Method	Direct Push
Checked By		DRL		Groundwater			Drilling Equipment		Geoprobe 5400
Location				Date Measured		Depth to Water (ft)			
Ground Surface Elevation: 789.26 (ft)				7/20/2010		4.5			
Vertical Datum: NAVD88									
East (X): 1687428.393 North (Y): 398870.157									
Datum: NAD 83-96-CORS- ( )									

Elevation (feet)	FIELD AND RUN DATA								Group Classification	MATERIAL DESCRIPTION		
	Depth (feet)	Run Number	Run Length (ft)	Actual Recovered (ft)	Testing	SAMPLE NAME	Sheen	Headspace Vapor (ppm)			Water Level	Graphic Log
0											GP	Gray to brown fine to coarse gravel with sand and trace silt (medium dense, dry)
		1	4	3.5		1	NS	0				Becomes moist at 1½ feet
						2	NS	0			GP-GM	Brown fine to coarse gravel with silt and sand (medium dense, moist)
785					CA	3	NS	0	▽			Becomes wet at 4½ feet
5		2	4	3		4	NS	0				

Notes: Please refer to figure A-1 for an explanation of symbols.

### Log of Direct Push Boring DP-5



Project: Buena LUST Site  
 Project Location: Buena, Washington  
 Project Number: 0504-060-00



Drilled	7/20/2010	Total Depth (ft)	8	Logged By	RM	Driller	Environmental West	Drilling Method	Direct Push
Location		Groundwater		Date Measured	7/20/2010	Depth to Water (ft)	5.0	Drilling Equipment	Geoprobe 5400
Ground Surface Elevation: 789.32 (ft)									
Vertical Datum: NAVD88									
East (X): 1687506.99 North (Y): 398679.198									
Datum: NAD 83-96-CORS- ( )									

Elevation (feet)	FIELD AND RUN DATA							Group Classification	MATERIAL DESCRIPTION			
	Depth (feet)	Run Number	Run Length (ft)	Actual Recovered (ft)	Testing	SAMPLE NAME	Sheen			Headspace Vapor (ppm)	Water Level	Graphic Log
0											GP	Light brown fine gravel with sand and trace silt (medium dense, dry)
		1	4	4			NS	0				Becomes moist at 1½ feet
											SM	Brown silty fine sand (medium dense, moist)
785												
					CA						GP	Brown to gray fine to coarse gravel with sand and trace silt (medium dense, wet)
5		2	4	3			NS	0				

Notes: Please refer to figure A-1 for an explanation of symbols.

### Log of Direct Push Boring DP-6



Project: Buena LUST Site  
 Project Location: Buena, Washington  
 Project Number: 0504-060-00

Spokane: Date: 7/20/10 Path: P:\05054060\GINT\0504060\GPJ\_DBTemplate\LibTemplate\GEOENGINEERS8.GDT\0506117\_SONICLOG

Drilled	7/20/2010	Total Depth (ft)	6	Logged By	RM	Driller	Environmental West	Drilling Method	Direct Push
Location		Groundwater			Date Measured		Depth to Water (ft)		Drilling Equipment
Ground Surface Elevation: 787.47 (ft)		Date Measured			7/20/2010		2.0		Geoprobe 5400
Vertical Datum: NAVD88									
East (X): 1687463.394 North (Y): 398842.063									
Datum: NAD 83-96-CORS- ( )									

Elevation (feet)	FIELD AND RUN DATA								MATERIAL DESCRIPTION			
	Depth (feet)	Run Number	Run Length (ft)	Actual Recovered (ft)	Testing	SAMPLE NAME	Sheen	Headspace Vapor (ppm)		Water Level	Graphic Log	Group Classification
0											GP	Light brown fine gravel with sand and trace silt (medium dense, dry)
						1	NS	0				Becomes moist at 1½ feet
		1	4	4	CA	2	NS	0	▽		SM	Brown silty fine to medium sand with gravel (medium dense, wet)
						3	NS	0			SP	Gray medium sand with occasional gravel and trace silt (medium dense, wet)
5		2	2	2		4	NS	0			GP	Gray with orange mottling fine to coarse gravel with sand and trace silt (medium dense, wet)

Notes: Please refer to figure A-1 for an explanation of symbols.

### Log of Direct Push Boring DP-7



Project: Buena LUST Site  
 Project Location: Buena, Washington  
 Project Number: 0504-060-00

Figure A-8  
 Sheet 1 of 1

Spokane: Date: 7/20/10 Path: P:\0504060\GINT\0504060\GPJ\_DBTemplate\lib\template\GEOENGINEERS8.GDT\0506117\_SONICLOG

Drilled	7/20/2010	Total Depth (ft)	6.5	Logged By	RM	Driller	Environmental West	Drilling Method	Direct Push
Location		Groundwater		Date Measured	7/20/2010	Depth to Water (ft)	2.5	Drilling Equipment	Geoprobe 5400
Ground Surface Elevation: 787.28 (ft)									
Vertical Datum: NAVD88									
East (X): 1687523.551 North (Y): 398766.615									
Datum: NAD 83-96-CORS- ()									

Elevation (feet)	FIELD AND RUN DATA							Group Classification	MATERIAL DESCRIPTION			
	Depth (feet)	Run Number	Run Length (ft)	Actual Recovered (ft)	Testing	SAMPLE NAME	Sheen			Headspace Vapor (ppm)	Water Level	Graphic Log
0											GP	Light brown fine to coarse gravel with sand and trace silt (medium dense, dry)
		1	4	3.5			NS	0				Becomes moist at 1½ feet
					CA		NS	3				Grades to gray
							NS	0				Becomes wet
		2	2.5	2.5			NS	0				
							NS	0				

Notes: Please refer to figure A-1 for an explanation of symbols.

### Log of Direct Push Boring DP-8

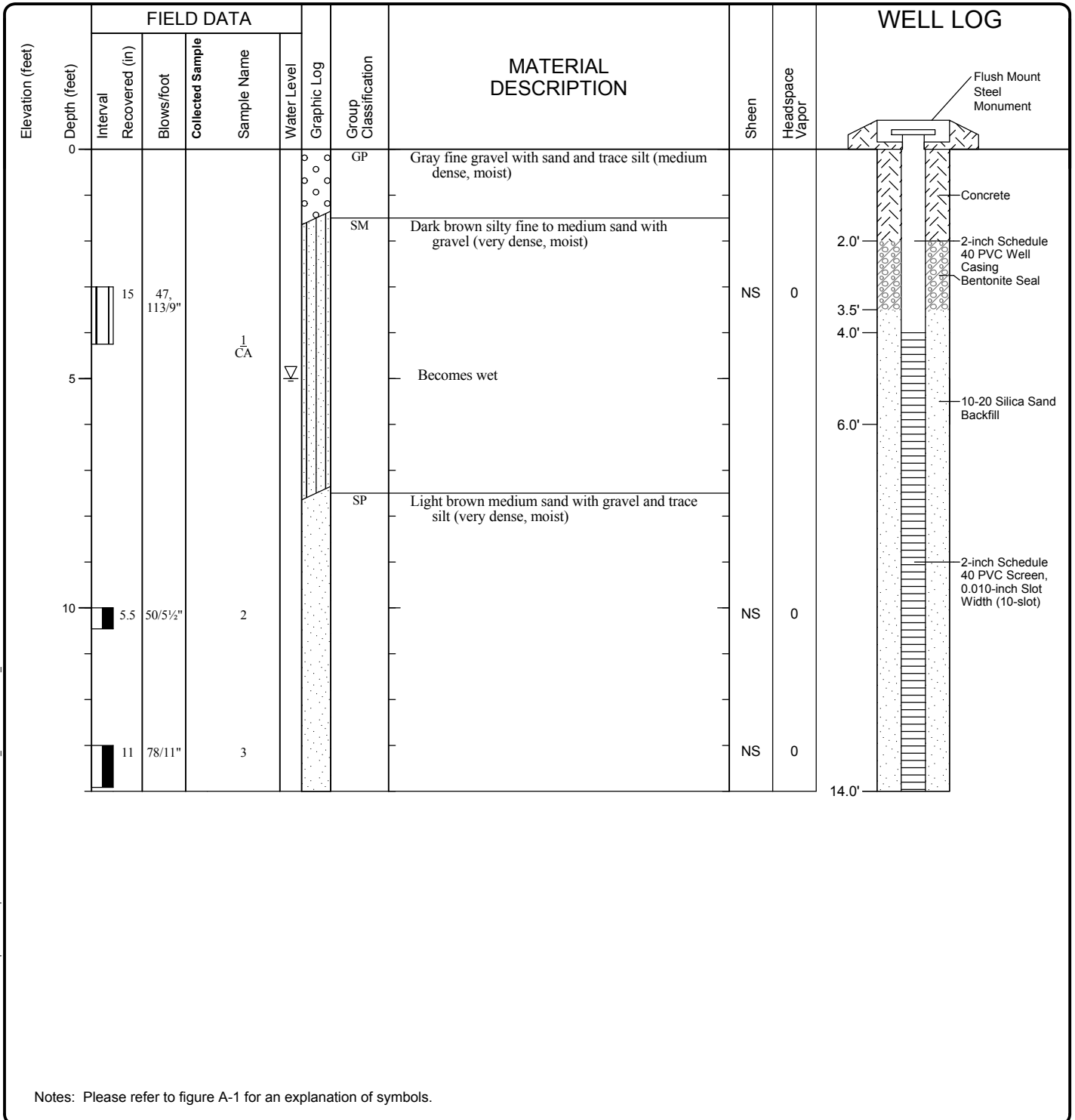


Project: Buena LUST Site  
 Project Location: Buena, Washington  
 Project Number: 0504-060-00

Figure A-9  
 Sheet 1 of 1

Spokane: Date: 7/20/10 Path: P:\0504060\GINT\0504060\GPJ\_DB\Template\Lib\Template:GEOENGINEERS8.GDT\0506117\_SONICLOG

Drilled	<u>Start</u> 7/21/2010	<u>End</u> 7/21/2010	Total Depth (ft)	14	Logged By Checked By	RM DRL	Driller	Environmental West	Drilling Method	Hollow-Stem Auger
Hammer Data	140 (lbs) / 30 (in) Drop				Drilling Equipment	Truck-mounted Mobile B-90		A 2 (in) well was installed on 7/21/2010 to a depth of 14 (ft).		
Surface Elevation (ft) Vertical Datum	Undetermined NAVD88		Top of Casing Elevation (ft)	794.41		<u>Groundwater Date Measured</u>	<u>Depth to Water (ft)</u>		<u>Elevation (ft)</u>	
Easting (X) Northing (Y)	1686873.665 400338.233		Horizontal Datum	NAD 83-96-CORS		7/21/2010	5.0			
Notes:										



Notes: Please refer to figure A-1 for an explanation of symbols.

### Log of Monitoring Well MW-13



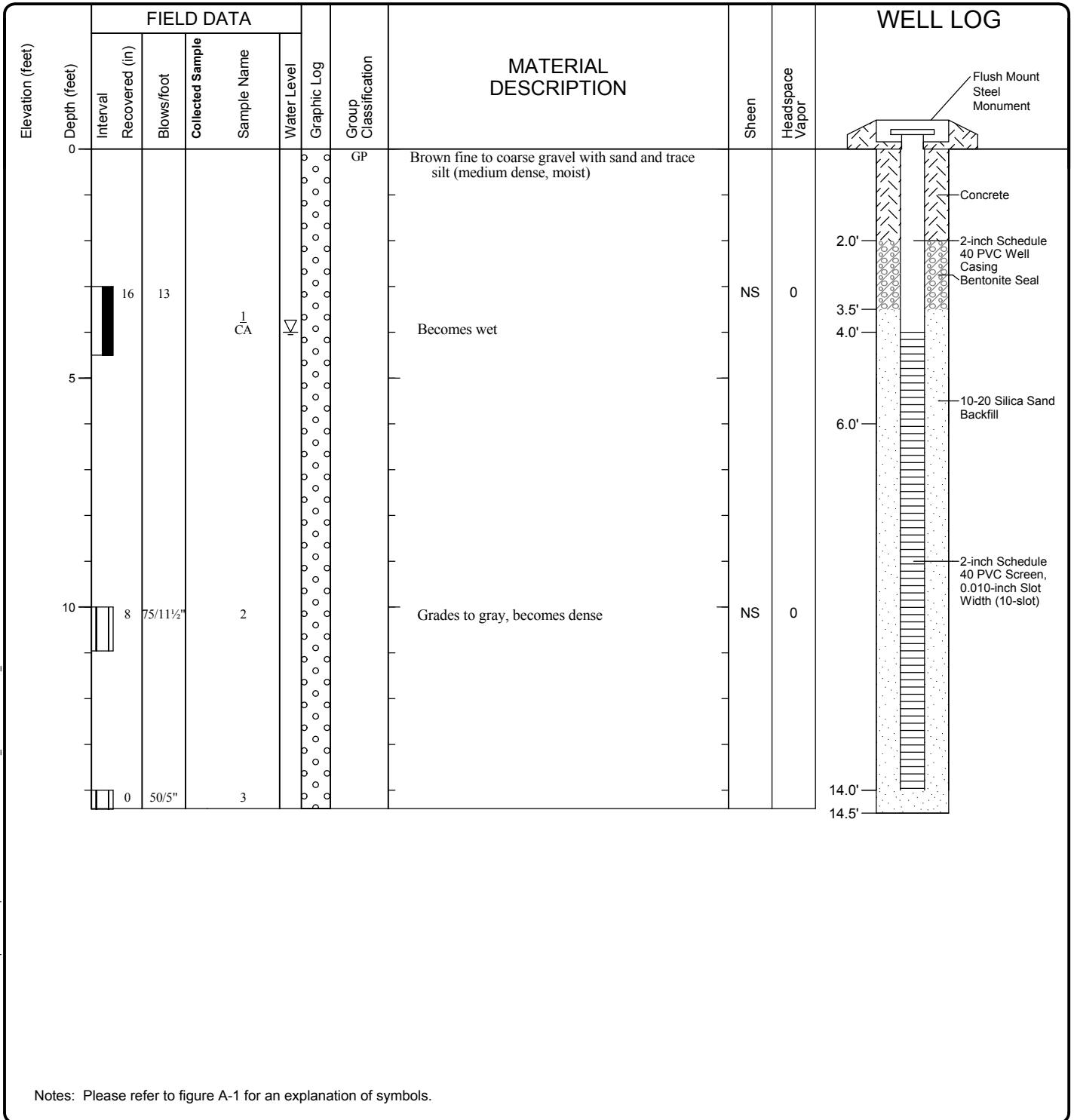
Project: Buena LUST Site  
 Project Location: Buena, Washington  
 Project Number: 0504-060-00

Figure A-10  
 Sheet 1 of 1

Spokane: Date: 7/30/10 Path: P:\0504060\GINT\0504060\GPJ\_DBTemplate\LibTemplate\GEOENGINEERS8\_GDT\GELB\_ENVIRONMENTAL\_WELL



Drilled	<u>Start</u> 7/21/2010	<u>End</u> 7/21/2010	Total Depth (ft)	14.4	Logged By Checked By	RM DRL	Driller	Environmental West	Drilling Method	Hollow-Stem Auger
Hammer Data	140 (lbs) / 30 (in) Drop			Drilling Equipment			Truck-mounted Mobile B-90			A 2 (in) well was installed on 7/21/2010 to a depth of 14 (ft).
Surface Elevation (ft) Vertical Datum	Undetermined NAVD88			Top of Casing Elevation (ft)			792.66			<u>Groundwater Date Measured</u> 7/21/2010
Easting (X) Northing (Y)	1687260.444 399677.856			Horizontal Datum			NAD 83-96-CORS			<u>Depth to Water (ft)</u> 4.0
<u>Elevation (ft)</u>										
Notes:										



Notes: Please refer to figure A-1 for an explanation of symbols.

### Log of Monitoring Well MW-15

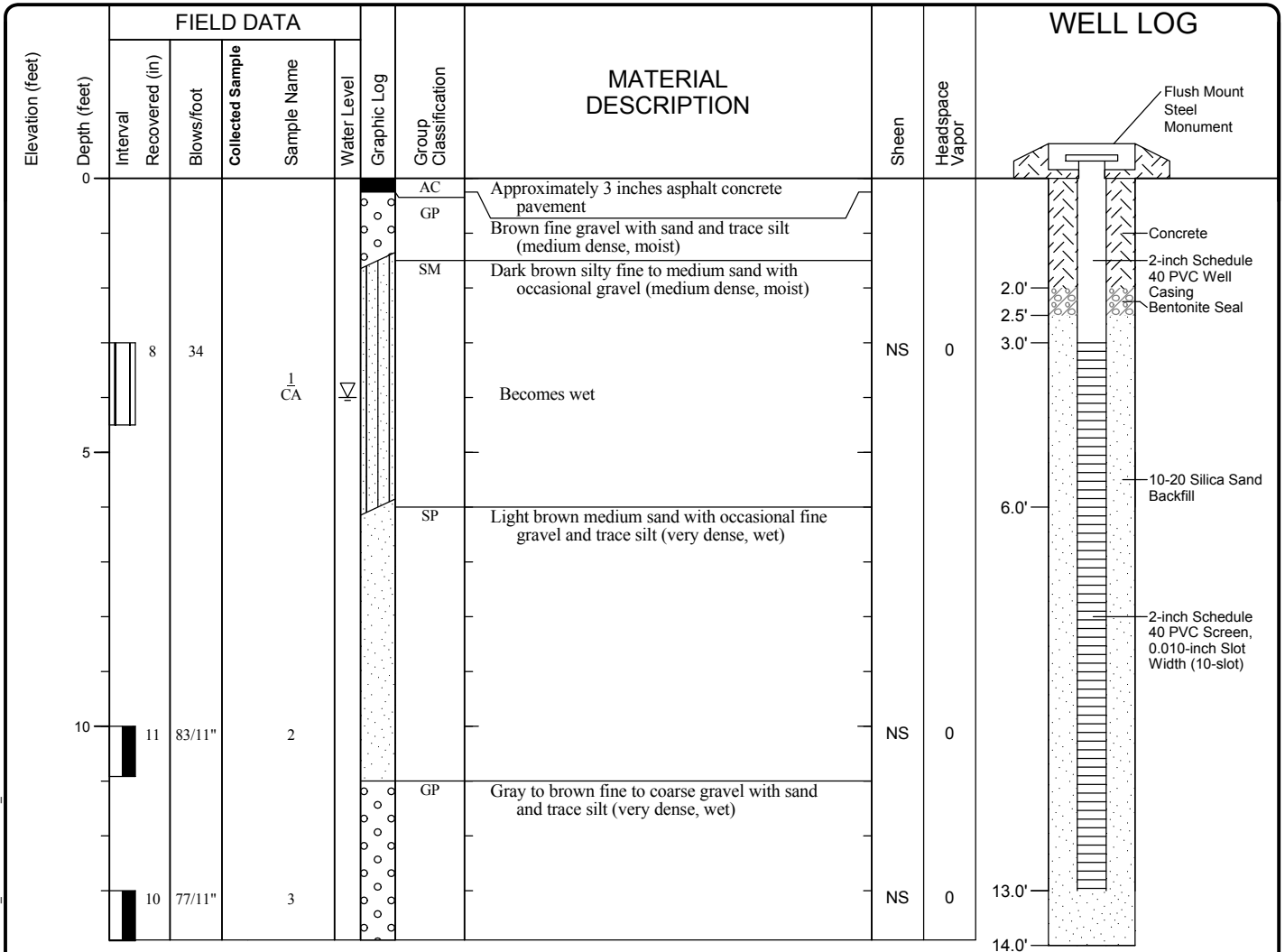


Project: Buena LUST Site  
 Project Location: Buena, Washington  
 Project Number: 0504-060-00

Figure A-12  
 Sheet 1 of 1

Spokane: Date: 7/30/10 Path: P:\0504060\GINT\0504060.GPJ DBTemplate\lib\template\GEOENGINEERS8.GDT\GELib\_ENV\IRONMENTAL\_WELL

Drilled	<u>Start</u> 7/21/2010	<u>End</u> 7/21/2010	Total Depth (ft)	13.9	Logged By Checked By	RM DRL	Driller	Environmental West	Drilling Method	Hollow-Stem Auger
Hammer Data	140 (lbs) / 30 (in) Drop			Drilling Equipment			Truck-mounted Mobile B-90			A 2 (in) well was installed on 7/21/2010 to a depth of 13 (ft).
Surface Elevation (ft) Vertical Datum	Undetermined NAVD88			Top of Casing Elevation (ft)			790.07			<u>Groundwater Date Measured</u> 7/21/2010
Easting (X) Northing (Y)	1687463.12 398898.073			Horizontal Datum			NAD 83-96-CORS			<u>Depth to Water (ft)</u> 4.0
Notes:										



Notes: Please refer to figure A-1 for an explanation of symbols.

### Log of Monitoring Well MW-16

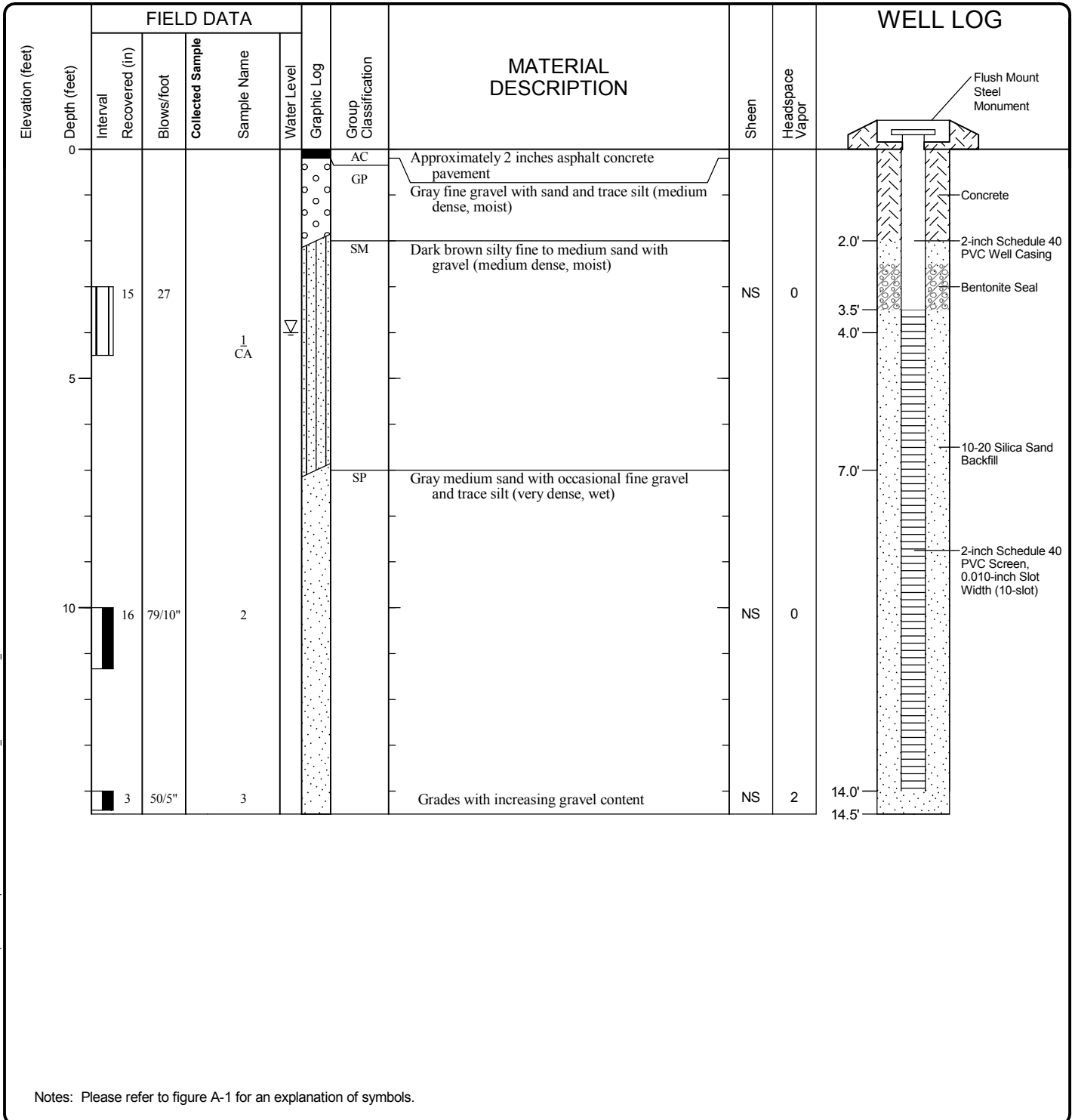


Project: Buena LUST Site  
 Project Location: Buena, Washington  
 Project Number: 0504-060-00

Figure A-13  
 Sheet 1 of 1

Spokane: Date: 7/30/10 Path: P:\0504060\GINT\0504060\GPJ\_DB\Template\lib\template\GEOENGINEERS8\_GDT\GELB\_ENVIRONMENTAL\_WELL

Drilled	Start 7/22/2010	End 7/22/2010	Total Depth (ft)	14.5	Logged By Checked By	RM DRL	Driller	Environmental West	Drilling Method	Hollow-Stem Auger	
Hammer Data	140 (lbs) / 30 (in) Drop				Drilling Equipment	Truck-mounted Mobile B-90		A 2 (in) well was installed on 7/21/2010 to a depth of 14 (ft).			
Surface Elevation (ft) Vertical Datum	Undetermined NAVD88		Top of Casing Elevation (ft)	790.68		Groundwater Date Measured		7/21/2010	Depth to Water (ft)	4.0	Elevation (ft)
Easting (X) Northing (Y)	1687525.541 398866.17		Horizontal Datum	NAD 83-96-CORS							
Notes:											



Notes: Please refer to figure A-1 for an explanation of symbols.

### Log of Monitoring Well MW-17



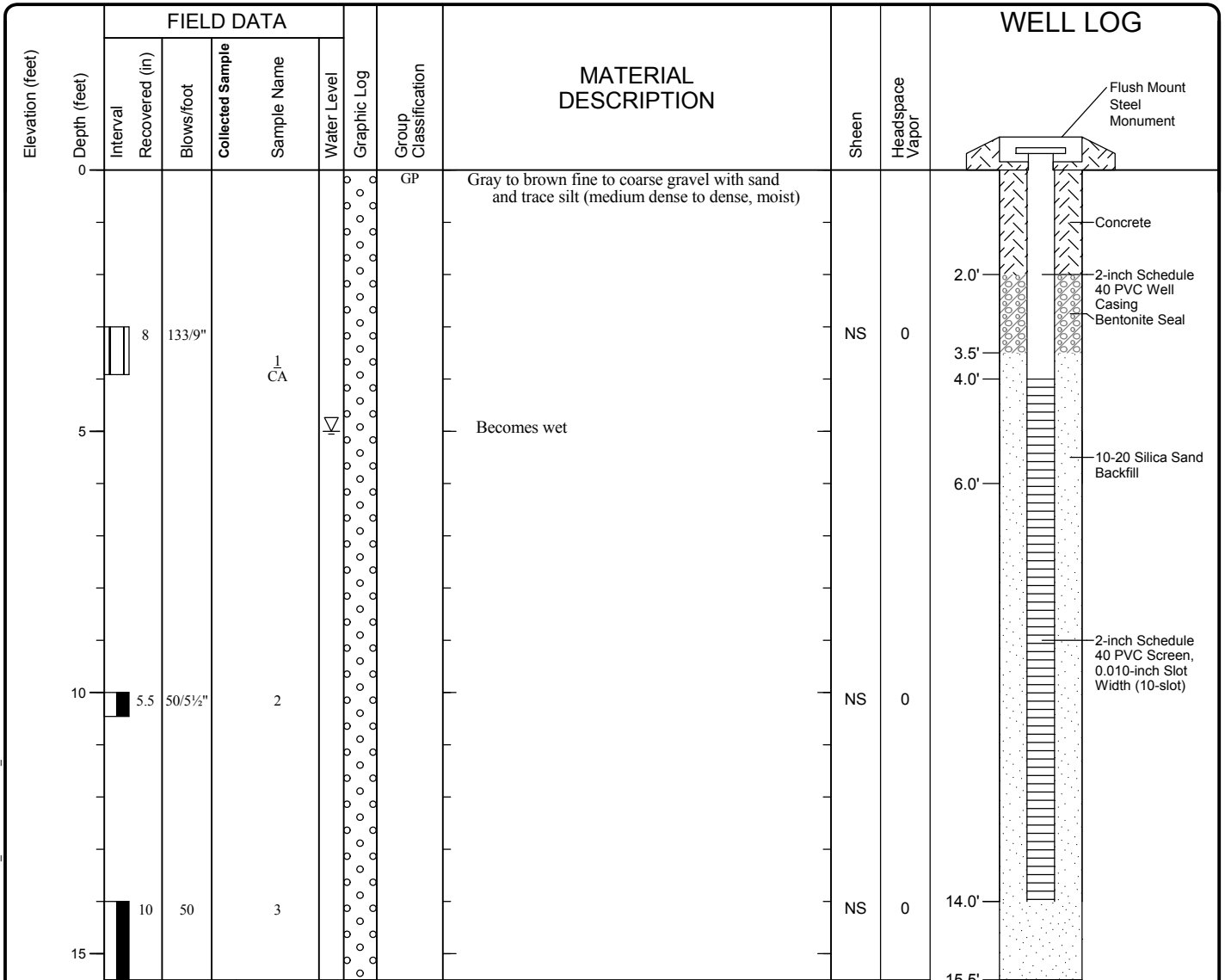
Project: Buena LUST Site  
 Project Location: Buena, Washington  
 Project Number: 0504-060-00

Figure A-14  
 Sheet 1 of 1

Spokane: Date: 10/21/10 Path: P:\00504060\GINT\0504060.GPJ DB Template\Lib\Template\GEOENGINEERS.GDT\GELS\_ENVIRONMENTAL\_WELL



Drilled	<u>Start</u> 7/21/2010	<u>End</u> 7/21/2010	Total Depth (ft)	15.5	Logged By Checked By	RM DRL	Driller	Environmental West	Drilling Method	Hollow-Stem Auger		
Hammer Data	140 (lbs) / 30 (in) Drop			Drilling Equipment			Truck-mounted Mobile B-90			A 2 (in) well was installed on 7/21/2010 to a depth of 15.5 (ft).		
Surface Elevation (ft) Vertical Datum	Undetermined NAVD88			Top of Casing Elevation (ft)			789.35			<u>Groundwater Date Measured</u>	<u>Depth to Water (ft)</u>	<u>Elevation (ft)</u>
Easting (X) Northing (Y)	1687507.012 398676.893			Horizontal Datum			NAD 83-96-CORS			7/21/2010	5.0	
Notes:												



Notes: Please refer to figure A-1 for an explanation of symbols.

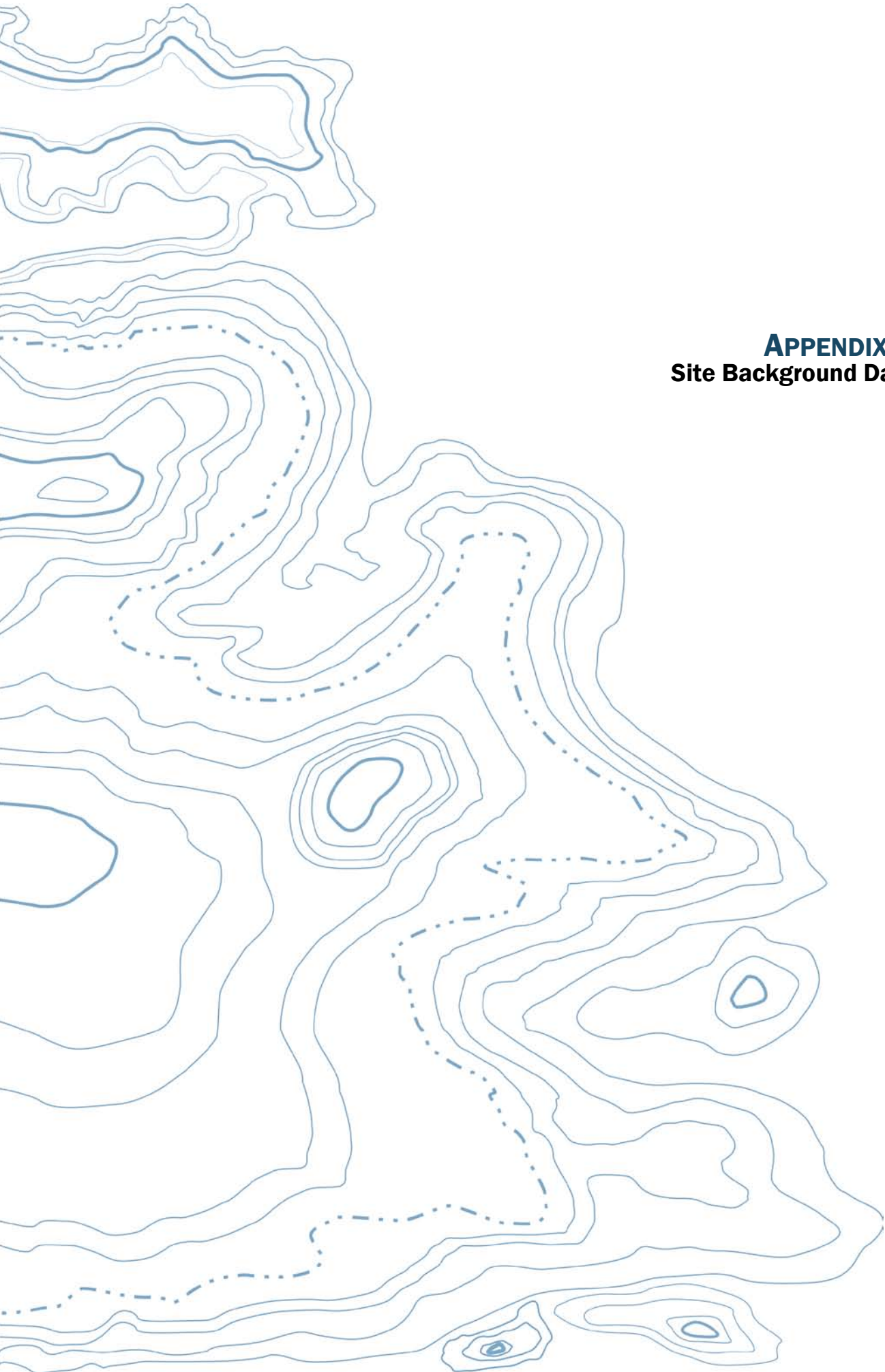
### Log of Monitoring Well MW-18



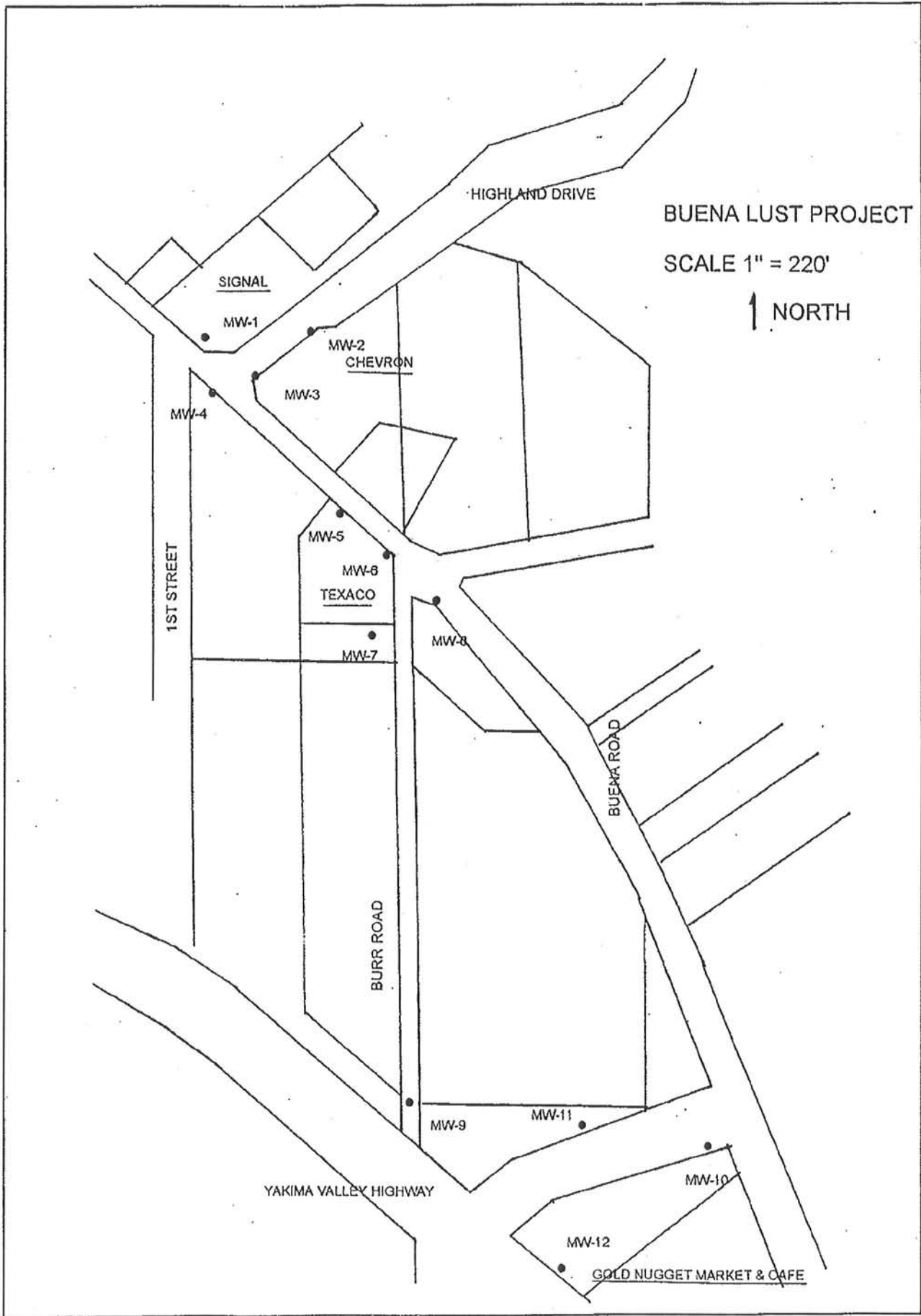
Project: Buena LUST Site  
 Project Location: Buena, Washington  
 Project Number: 0504-060-00

Figure A-15  
 Sheet 1 of 1

Spokane: Date: 7/30/10 Path: P:\0504060\GINT\0504060.GPJ DBTemplate\lib\template\GEOENGINEERS8.GDT\GELib\_FNV\IRONMENTAL\_WELL



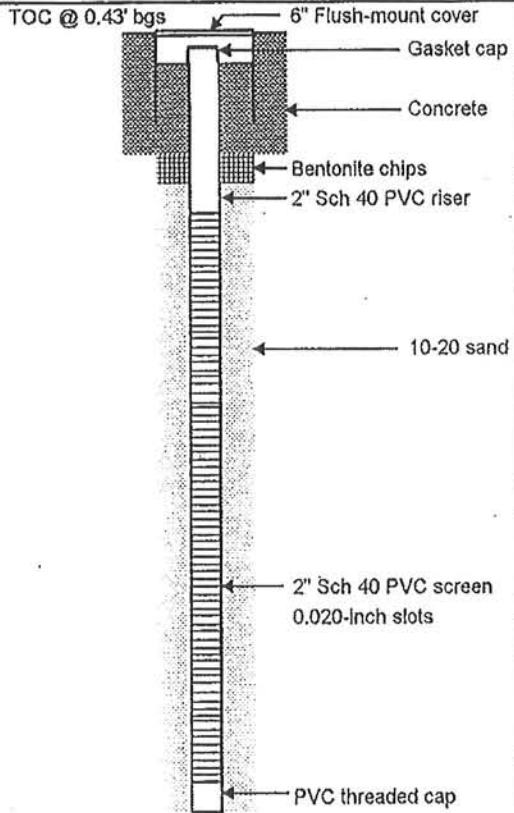
**APPENDIX B**  
**Site Background Data**



CRO - TOXICS CLEANUP PROGRAM Washington Department of Ecology			Soil Boring/Monitoring Well Log	
			Site Name:	Buena LUST
			TCP ID:	C-39-2055-000
Depth (feet)	Sample Type	Soil Boring Description of Materials (Based on return cuttings)	Monitoring Well Construction Details	
0		Fill <5/8" Crushed		
		Gravel <4", w/sand (GW) Moist		
5		Gravel, clean some sand (GW)		
	GS	Gravel, w/sand clean (GW) w/gasoline smell, saturated		
10		Gravel, some sand (GW)		
15		Gravel <4", some sand (GW) No fines T.D.	Total Depth of Well: 14.62' (TOC) Length of Screen: 10' Stabilized Water Level: 2.66' (TOC) (measured on): June 18, 1997	
		GS: Grab sample off auger flights ▾ Observed ground water level at time of drilling Total Borehole Depth: 15 feet		
Drilling Method:		Hollow-stem Auger, 4" ID, 8" OD	MW No: MW-1	
Drilling Contractor:		Holt Drilling, Clyde Moore	Street: On Buena Rd ROW, N of Highland Dr	
Installed:		June 11, 1997	Location: NE1/4NE1/4Sec21T11NR20E	
Developed:		June 12, 1996	Lat/Long: 46°25'50"N, 120°18'59"W	
Hydrogeologist:		Tom Mackie, Ecology CRO-HWTR	TOC Elev: 102.58' (relative to YVHwy fire hydrant)	

CRO - TOXICS CLEANUP PROGRAM Washington Department of Ecology			Soil Boring/Monitoring Well Log	
			Site Name: Buena LUST	TCP ID: C-39-2055-000
Depth (feet)	Sample Type	Soil Boring Description of Materials	Monitoring Well Construction Details	
0		(Based on return cuttings) Crashed basalt <5/8, Lt Brn Shoulder material, fill Silt, native top soil w/gravel, Dk Brn (ML)	TOC @ 0.37' bgs	
		Gravel <2", w/silt & sand, moist, Dr Brn (GM)	6" Flush-mount cover	
5		Gravel <2", w/sand & silt, saturated Dk Brn, (GM)	Gasket cap	
			Concrete	
			Bentonite chips	
			2" Sch 40 PVC riser	
			10-20 sand	
	GS		2" Sch 40 PVC screen 0.020-inch slots	
10		Gravel, w/sand & slit, Dr Brn (GM)	PVC threaded cap	
15		Gravel, w/sand & slit, no smell (GM) T.D.		
		GS: Grab sample off auger flights Observed ground water level at time of drilling Total Borehole Depth: 15 feet	Total Depth of Well: 14.53' (TOC) Length of Screen: 10' Stabilized Water Level: 4.54' (TOC) (measured on): June 18, 1997	
Drilling Method: Hollow-stem Auger, 4" ID, 8" OD Drilling Contractor: Holt Drilling, Clyde Moore Installed: June 11, 1997 Developed: June 13, 1996 Hydrogeologist: Tom Mackie, Ecology CRO-HWTR			MW No: MW-2 Street: On Highland Dr ROW, E of Buena Rd Location: NE1/4NE1/4Sec21T11NR20E Lat/Long: 46°25'52"N, 120°18'55"W TOC Elev: 104.35' (relative to YVHwy fire hydrant)	

CRO - TOXICS CLEANUP PROGRAM Washington Department of Ecology			Soil Boring/Monitoring Well Log	
			Site Name:	Buena LUST
			TCP ID:	C-39-2055-000
Depth (feet)	Sample Type	Soil Boring Description of Materials (Based on return cuttings)	Monitoring Well Construction Details	
0		Fill <5/8" crushed	TOC @ 0.57' bgs	
		Gravel, w/sand (GP)		
5		Gravel, w/sand (GP)		
		Sand, w/gravel <1" (SP)		
	GS	Gasoline smell		
10		Sand, w/gravel <1" Less gravel in the last 2 feet		
		Gravel - 4", w/sand (GP) Larger gravel than above		
		Gravel <4", w/sand		
15		T.D.		
		GS: Grab sample off auger flights ▼ Observed ground water level at time of drilling Total Borehole Depth: 15 feet	Total Depth of Well: 14.62' (TOC) Length of Screen: 10' Stabilized Water Level: 3.39' (TOC) (measured on): June 18, 1997	
Drilling Method:		Hollow-stem Auger, 4" ID, 8" OD	MW No:	
Drilling Contractor:		Holt Drilling, Clyde Moore	Street:	
Installed:		June 12, 1997	Location:	
Developed:		June 13, 1996	Lat/Long:	
Hydrogeologist:		Tom Mackie, Ecology CRO-HWTR	TOC Elev:	
			103.13' (relative to YVHwy fire hydrant)	

CRO - TOXICS CLEANUP PROGRAM Washington Department of Ecology			Soil Boring/Monitoring Well Log	
			Site Name:	Buena LUST
			TCP ID:	C-39-2055-000
Depth (feet)	Sample Type	Soil Boring Description of Materials (Based on return cuttings)	Monitoring Well Construction Details	
0		Fill <5/8", dry	 <p>TOC @ 0.43' bgs</p> <p>6" Flush-mount cover</p> <p>Gasket cap</p> <p>Concrete</p> <p>Bentonite chips</p> <p>2" Sch 40 PVC riser</p> <p>10-20 sand</p> <p>2" Sch 40 PVC screen 0.020-inch slots</p> <p>PVC threaded cap</p>	
		Gravel <2", w/silt & sand, Brn (GM) Moist		
	GS	Gravel <4" (GM), harder than above		
5		Gravel <4" (GM), moist		
		Sand, med-coarse grained		
		Heaves up auger when auger pulled back		
10		T.D.		
15				
		GS: Grab sample off auger flights		
		▼ Observed ground water level at time of drilling		
		Total Borehole Depth: 13 feet	Total Depth of Well: 14.53' (TOC)	
			Length of Screen: 10'	
			Stabilized Water Level: 4.54' (TOC)	
			(measured on): June 18, 1997	
Drilling Method: Hollow-stem Auger, 4" ID, 8" OD			MW No:	MW-4
Drilling Contractor: Holt Drilling, Clyde Moore			Street:	On Buena Rd ROW, E of First Street
Installed: June 11, 1997			Location:	NE1/4NE1/4Sec21T11NR20E
Developed: June 13, 1996			Lat/Long:	46°25'51"N, 120°18'55"W
Hydrogeologist: Tom Mackie, Ecology CRO-HWTR			TOC Elev:	103.24' (relative to YVHwy fire hydrant),

CRO - TOXICS CLEANUP PROGRAM Washington Department of Ecology			Soil Boring/Monitoring Well Log		
			Site Name:	Buena LUST	
			TCP ID:	C-39-2055-000	
Depth (feet)	Sample Type	Soil Boring Description of Materials (Based on return cuttings)	Monitoring Well Construction Details		
0		Asphalt <5/8" dry Silt, Gray (ML) Wet			
		Silt, Gray (ML)			
5		Silt, Gray Saturated			
	GS	Gravel, w/sand & silt (GM)			
		Bedded gravels & silts			
10		Gravel <4" Lager than above T.D.			
15					
		GS: Grab sample off auger flights ▼ Observed ground water level at time of drilling Total Borehole Depth: 13 feet			
					Total Depth of Well: 12.70' (TOC) Length of Screen: 10' Stabilized Water Level: 3.15' (TOC) (measured on): June 18, 1997
Drilling Method: Hollow-stem Auger, 4" ID, 8" OD Drilling Contractor: Holt Drilling, Clyde Moore Installed: June 13, 1997 Developed: June 13, 1996 Hydrogeologist: Tom Mackie, Ecology CRO-HWTR					MW No: MW-5 Street: On Buena Rd ROW, E of Burr Road Location: NE1/4NE1/4Sec21T11NR20E Lat/Long: 46°25'50"N, 120°18'51"W TOC Elev: 102.80' (relative to YVHwy fire hydrant)



CRO - TOXICS CLEANUP PROGRAM Washington Department of Ecology			Soil Boring/Monitoring Well Log	
			Site Name: Buena LUST	
			TCP ID: C-39-2055-000	
Depth (feet)	Sample Type	Soil Boring Description of Materials (Based on return cuttings)	Monitoring Well Construction Details	
0		Fill gravel, dry		
		Silt, w/fine sand, med Gray Moist		
5	GS	Silt		
		Gravel, w/sand Saturated		
10		T.D.		
15			<p>Total Depth of Well: 12.70' (TOC)</p> <p>Length of Screen: 10'</p> <p>Stabilized Water Level: 3.57' (TOC) (measured on): June 18, 1997</p>	
<p>GS: Grab sample off auger flights</p> <p>▼ Observed ground water level at time of drilling</p> <p>Total Borehole Depth: 13 feet</p>			<p>Drilling Method: Hollow-stem Auger, 4" ID, 8" OD</p> <p>Drilling Contractor: Holt Drilling, Clyde Moore</p> <p>Installed: June 12, 1997</p> <p>Developed: June 17, 1996</p> <p>Hydrogeologist: Tom Mackie, Ecology GRO-HWTR</p>	
			<p>MW No: MW-6</p> <p>Street: On Buena Rd ROW, W of Burr Road</p> <p>Location: NE1/4NE1/4Sec21T11NR20E</p> <p>Lat/Long: 46°25'48"N, 120°18'50"W</p> <p>TOC Elev: 103.16' (relative to YVHwy fire hydrant)</p>	

CRO - TOXICS CLEANUP PROGRAM Washington Department of Ecology			Soil Boring/Monitoring Well Log	
			Site Name: Buena LUST	TCP ID: C-39-2055-000
Depth (feet)	Sample Type	Soil Boring Description of Materials (Based on return cuttings)	Monitoring Well Construction Details	
0		Fill, Gravel		
		Silt w/sand, Brn moist		
5	GS	Gravel, w/silt & sand, Blue Gray (GM) Strong gasoline smell		
10		Gravel, w/silt sand Dark Brn Blue tint Strong gasoline smell		
15		T.D.	Total Depth of Well: 14.86' (TOC) Length of Screen: 10' Stabilized Water Level: 3.96' (TOC) (measured on): June 18, 1997	
		GS: Grab sample off auger flights ▾ Observed ground water level at time of drilling Total Borehole Depth: 15 feet		
Drilling Method:		Hollow-stem Auger, 4" ID, 8" OD	MW No: MW-7	
Drilling Contractor:		Holt Drilling, Clyde Moore	Street: On Yakima Fire District Property, Burr Rd	
Installed:		June 12, 1997	Location: NE1/4NE1/4Sec21T11NR20E	
Developed:		June 17, 1996	Lat/Long: 46°25'45"N, 120°18'51"W	
Hydrogeologist:		Tom Mackie, Ecology CRO-HWTR	TOC Elev: 102.47' (relative to YVHwy fire hydrant)	

CRO - TOXICS CLEANUP PROGRAM Washington Department of Ecology			Soil Boring/Monitoring Well Log	
			Site Name:	Buena LUST
			TCP ID:	C-39-2055-000
Depth (feet)	Sample Type	Soil Boring Description of Materials (Based on return cuttings)	Monitoring Well Construction Details	
0		Fill <5/8" Crushed rock		
		Saturated silt, w/sand (ML) Med Gry		
5		Silt, w/sand (ML) Med Gry Saturated		
	GS			
10		Silt, w/sand (ML) Med Gry		
		Silt Lt Brn Gry (Color change just above the gravel) Gravel Hard drilling, No returns		
15		Gravel, No returns T.D.	Total Depth of Well: 14.77' (TOC) Length of Screen: 10' Stabilized Water Level: 3.37' (TOC) (measured on): June 18, 1997	
		GS: Grab sample off auger flights ▾ Observed ground water level at time of drilling Total Borehole Depth: 15 feet		
Drilling Method:		Hollow-stem Auger, 4" ID, 8" OD	MW No: MW-8	
Drilling Contractor:		Holt Drilling, Clyde Moore	Street: On Buena Rd ROW, W of Burr Road	
Installed:		June 12, 1997	Location: NW1/4NW1/4Sec22T11NR20E	
Developed:		June 17, 1996	Lat/Long: 46°25'47"N, 120°18'50"W	
Hydrogeologist:		Tom Mackie, Ecology CRO-HWTR	TOC Elev: 102.78' (relative to YVHwy fire hydrant)	

CRO - TOXICS CLEANUP PROGRAM Washington Department of Ecology			Soil Boring/Monitoring Well Log	
			Site Name: Buena LUST	
			TCP ID: C-39-2055-000	
Depth (feet)	Sample Type	Soil Boring Description of Materials (Based on return cuttings)	Monitoring Well Construction Details	
0		Asphalt Portland Cement Concrete Fill, Road base, crushed rock		
		Gravel, w/silt (GM) Moist		
		Silt, w/gravel Blue Grn (OH) Moist		
5		Dk Blue Blk Silt, w/sand some gravel		
	GS	Sewer contaminated soil (?) Saturated		
		Silt, w/sand & gravel Dk Blue Blk sewer smell Saturated		
10		DK Blue BLK silt, w/sand V moist Gravel, w/sand & silt		
		T.D.		
15				
		GS: Grab sample off auger flights ▼ Observed ground water level at time of drilling Total Borehole Depth: 13 feet		
Drilling Method: Hollow-stem Auger, 4" ID, 8" OD Drilling Contractor: Holt Drilling, Clyde Moore Installed: June 12, 1997 Developed: June 17, 1996 Hydrogeologist: Tom Mackie, Ecology CRO-HWTR			MW No: MW-9 Street: At end of Burr Road, N of YV Hwy Location: SW1/4NW1/4Sec22T11NR20E Lat/Long: 46°25'41"N, 120°18'52"W TOC Elev: 98.66' (relative to YVHwy fire hydrant)	

CRO - TOXICS CLEANUP PROGRAM Washington Department of Ecology			Soil Boring/Monitoring Well Log	
			Site Name: Buena LUST	
			TCP ID: C-39-2055-000	
Depth (feet)	Sample Type	Soil Boring Description of Materials (Based on return cuttings)	Monitoring Well Construction Details	
0		Fill, gravel (GM) Light Brn dry	TOC @ 0.49' bgs	
		Fill Native gravel, w/sand & silt (GM) Dk Brn Blk, moist		
5		<2" Gravel, w/silt & sand (GM) Dk Brn/Blk Looks contaminated		
	GS	Gravel <3" Harder drilling, less silt & gravel Saturated		
10		Gravel, <3" Some sand & silts (GM)		
15		T.D.		
		Gravel, w/sand & silt (GM) Dk Blue Blk (Hole allowed to cave back to 15 feet)		
		Drilled to 17.5 feet		
		GS: Grab sample off auger flights	Total Depth of Well: 14.72' (TOC)	
		Observed ground water level at time of drilling	Length of Screen: 10'	
		Total Borehole Depth: 13 feet	Stabilized Water Level: 2.76' (TOC) (measured on): June 18, 1997	
Drilling Method: Hollow-stem Auger, 4" ID, 8" OD Drilling Contractor: Holt Drilling, Clyde Moore Installed: June 11, 1997 Developed: June 18, 1996 Hydrogeologist: Tom Mackie, Ecology CRO-HWTR			MW No: MW-10 Street: On Buena Rd ROW, W of Buena Ext Rd Location: SW1/4NW1/4Sec22T11NR20E Lat/Long: 46°25'46"N, 120°18'43"W TOC Elev: 97.45' (relative to YVHwy fire hydrant)	

CRO - TOXICS CLEANUP PROGRAM Washington Department of Ecology			Soil Boring/Monitoring Well Log	
			Site Name: Buena LUST	TCP ID: C-39-2055-000
Depth (feet)	Sample Type	Soil Boring Description of Materials (Based on return cuttings)	Monitoring Well Construction Details	
0		Gravel, w/sand & silt (GM) Moist (Fill)		
5		Water first encountered Gravel, w/sand & silt, moist (GM)  Silt, w/gravel (SM), saturated		
	GS	Water level dropped to 7.8 feet		
		Gravel, w/silt sand (GM)		
10		Gravel, 2-3"		
		T.D.		
15				
		GS: Grab sample off auger flights ▼ Observed ground water level at time of drilling Total Borehole Depth: 13 feet	Total Depth of Well: 12.34' (TOC) Length of Screen: 7' Stabilized Water Level: 3.85' (TOC) (measured on): June 18, 1997	
Drilling Method: Hollow-stem Auger, 4" ID, 8" OD Drilling Contractor: Holt Drilling, Clyde Moore Installed: June 11, 1997 Developed: June 17, 1996 Hydrogeologist: Tom Mackie, Ecology CRO-HWTR			MW No: MW-11 Street: On Buena Rd ROW, W of Buena Ext Rd Location: SW1/4NW1/4Sec22T11NR20E Lat/Long: 46°25'39"N, 120°18'47"W TOC Elev: 98.80' (relative to YVHwy fire hydrant)	

CRO - TOXICS CLEANUP PROGRAM Washington Department of Ecology			Soil Boring/Monitoring Well Log	
			Site Name:	Buena LUST
			TCP ID:	C-39-2055-000
Depth (feet)	Sample Type	Soil Boring Description of Materials (Based on return cuttings)	Monitoring Well Construction Details	
0		Fill Gravel <2', w sand & silt (GM) Dry		
5		Sandy silt (brown)  Gravel, (fill) to ~ 5' Gravel, w/silt & sand (native) Loose 60% gravel, 40% silt sand (GM)		
10	GS	Gravel <2', w/silt 90% gravel, 10% sand/silt, tight (GW)	TOC @ 0.27' bgs 2" Sch 40 PVC riser 2" Sch 40 PVC screen 0.020-inch slots PVC threaded cap	
15		Gravel <2', w/sand, clean tight (GW) Saturated Some gasoline smell	Total Depth of Well: 19.56' (TOC) Length of Screen: 13' Stabilized Water Level: 5.77' (TOC) (measured on): June 18, 1997	
20		T.D.		
		GS: Grab sample off auger flights ▽ Observed ground water level at time of drilling Total Borehole Depth: 20 feet		
Drilling Method: Hollow-stem Auger, 4" ID, 8" OD Drilling Contractor: Holt Drilling, Clyde Moore Installed: June 11, 1997 Developed: June 17, 1996 Hydrogeologist: Tom Mackle, Ecology CRO-HWTR			MW No: MW-12 Street: Yakima Valley Hwy ROW, S of Buena Rd Location: SW1/4NW1/4Sec22T11NR20E Lat/Long: 46°25'36"N, 120°18'48"W TOC Elev: 100.23' (relative to YVHwy fire hydrant)	

# Buena Petroleum Plume

## *Site File*

Date: November 25, 2008  
 Site Manager: Brianne Plath  
 Activity: Monitoring well sampling

The Department of Ecology completed sampling of ten monitoring wells located within the community of Buena. Twelve monitoring wells were installed in 1997, but one could not be located (MW-12), and the other contained silt within the casing (MW-5). The remaining ten wells were found in good structural condition, and a few were covered with gravel and/or debris. The following table presents well conditions, depth to ground water measurements and other observations, if necessary.

Table 1: Buena Petroleum Plume Monitoring Well Physical Data

Monitoring well	Date Sampled	Well Location and Condition	Depth to Ground water (ft)	Other
MW-1	10/28/08	Located beneath gravel (marked) - good condition	3.2	<ul style="list-style-type: none"> <li>• Water within monument - removed prior to sampling</li> <li>• Water initially dark becoming clear - no odor - few suspended particulates</li> </ul>
MW-2	10/28/08	Located beneath gravel - good condition	4.6	<ul style="list-style-type: none"> <li>• Clear water - no odor - few suspended particulates</li> </ul>
MW-3	10/30/08	Located at ground surface (visible) - good condition	3.6	<ul style="list-style-type: none"> <li>• Clear water - strong petroleum odor and sheen</li> </ul>
MW-4	10/30/08	Located beneath gravel (marked) - good condition	3.6	<ul style="list-style-type: none"> <li>• Clear water - strong petroleum odor and sheen</li> </ul>
MW-5		Located at ground surface (visible) - well monument not sealed	3.4	<ul style="list-style-type: none"> <li>• Well monument filled with clayey mud</li> <li>• Water very dirty - slight petroleum odor</li> <li>• Well casing filled with ~5-ft. of silt (8-ft. to 13-ft.)</li> </ul>
MW-6	10/29/08	Located beneath gravel - good condition	3.5	<ul style="list-style-type: none"> <li>• Clear water - slight petroleum odor</li> </ul>
MW-7	10/29/08	Located at ground surface (visible) - good condition	4.02	<ul style="list-style-type: none"> <li>• Clear water - no odor</li> </ul>
MW-8	10/28/08	Located beneath gravel - good condition	3.3	<ul style="list-style-type: none"> <li>• Clear water - no odor - many suspended particulates</li> </ul>
MW-9	10/28/08	Located ~6-inches above ground surface (visible) - good condition	2.9	<ul style="list-style-type: none"> <li>• Clear water with black suspended particulates - no odor</li> </ul>
MW-10	10/28/08	Located beneath dirt - good condition	3.4	<ul style="list-style-type: none"> <li>• Clear water - no odor</li> </ul>



MW-11	10/28/08	Located beneath dirt and debris – good condition	4.1	• Clear water – no odor
MW-12	-	Well not located during sampling activities	-	• Found possible monument – not attached to well casing

Depth to ground water measurements were collected at each well (except MW-12) prior to introducing the sampling pump to the well casing. All samples were collected using a low-flow Grunfos pump and non-dedicated tubing. Sampling equipment and tubing were decontaminated with Alconox wash and rinsed with distilled water between wells.

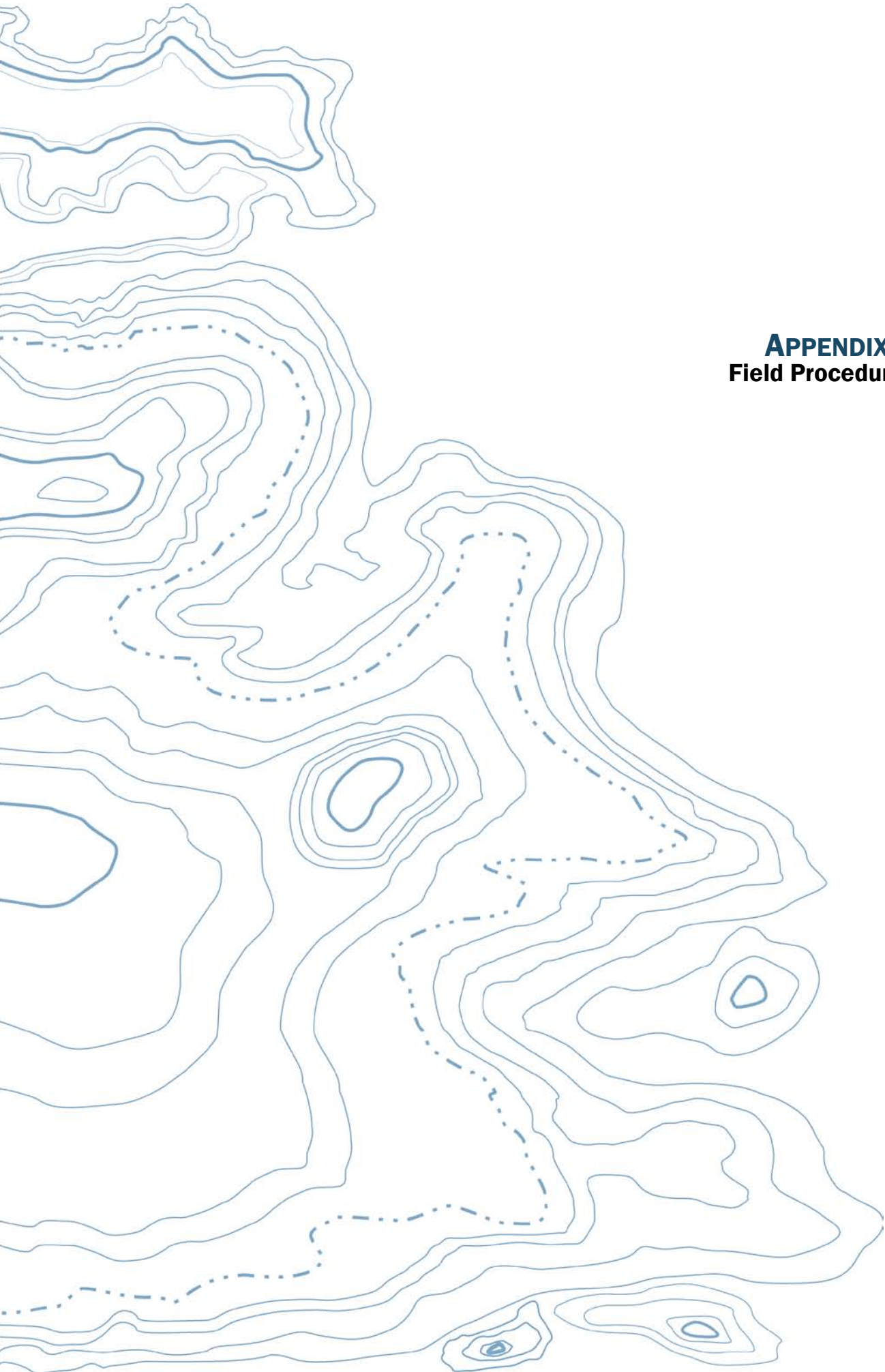
Samples were collected into the appropriate container, placed on ice, and shipped to the laboratory for analysis. The following table summarizes laboratory results of specific analytes detected above or near MTCA Method A ground water cleanup levels.

Location	Analyte (µg/L)			
	Gasoline	#2 Diesel	Motor oil	Lead
MW-1	-	-	-	-
MW-2	-	-	-	-
MW-3	<b>450</b>	<b>2200</b>	<b>480</b>	<b>1.4</b>
MW-4	<b>3500</b>	<b>400</b>	<b>260</b>	<b>0.87</b>
MW-6	-	-	-	0.77
MW-7	-	-	-	-
MW-8	-	-	-	-
MW-9	-	-	-	-
MW-10	-	-	-	-
MW-11	-	-	-	-
MTCA Method A CUL	<del>3500</del> 1000 1,000	500	500	15

- Indicates the analyte was not detected.  
Results in bold indicate levels above the applicable cleanup level

As shown by the tables, the ground water sampling activity identified at least two wells in Buena that contain contaminants above applicable cleanup levels. Two of the wells were not sampled, and one of them contained contaminants during previous sampling events.

An application for an EPA Brownfield's Assessment Grant was submitted and will hopefully provide funds for additional monitoring wells in addition to future sampling events.



**APPENDIX C**  
**Field Procedures**

## APPENDIX C FIELD PROCEDURES

### Field Explorations

Prior to completion of the explorations, GeoEngineers contacted the One-Call Utility Notification Center in accordance with Washington State law. In addition, GeoEngineers subcontracted Applied Professional Services Inc. (APS), an underground utility location subcontractor.

Following clearance of utilities, subsurface conditions at the Site were explored from July 8, 2010 through July 26, 2010 by:

- Re-developed and sampled eight existing monitoring wells;
- Advanced eight direct-push borings and collected soil and groundwater samples;
- Installed six new monitoring wells from which soil and groundwater samples were collected; and
- Conducted slug tests in 12 monitoring wells..

The approximate exploration locations are shown in Figure 2.

### Soil Sampling from Borings

Soil borings were completed using hollow-stem auger (HSA) or direct-push drilling techniques by a licensed driller. For HSA drilling methods, subsurface soil samples were obtained at 5-foot intervals beginning about 3 feet below ground surface (bgs) using standard penetration test (SPT) and modified Dames & Moore samplers. The direct-push drilling samples were obtained continuously using 4-foot-long, 1-inch-diameter acrylic sleeves.

Each boring was continuously monitored by a geologist from our firm who observed and classified the soil encountered, and prepared a detailed log of each boring. Soil encountered in the borings was classified in the field in general accordance with ASTM International (ASTM) D-2488, the Standard Practice for Classification of Soils, Visual-Manual Procedure, which is summarized in Figure A-1. Logs of the direct-push borings are provided in Figures A-2 through A-9. Preservation of VOC samples was completed in accordance with Ecology Memo 5, document number 04-09-087. Sample containers were labeled and placed into an ice chest containing ice/ice packs. Soil samples for VOCs analyses were obtained consistent with EPA Method 5035A. Chain-of-custody procedures were followed during transport of the soil samples.

Sampling equipment was decontaminated between each sampling attempt for either drilling method. Samples were obtained using either a decontaminated soil knife or new, clean nitrile glove and placed into 4-ounce glass sample jars with Teflon lids.

Samples were placed in a cooler with ice and delivered to the analytical laboratory; standard chain-of-custody procedures were observed during transport of the samples to the laboratory.

## Field Screening Methods

A GeoEngineers field geologist performed field screening tests on selected soil samples from the explorations. Field screening results were used to aid in the selection of soil samples for chemical analysis. Screening methods included (1) visual examination, (2) water sheen screening, and (3) headspace vapor screening using a photo-ionization detector (PID).

## Monitoring Well Construction, Development, and Surveying

Monitoring wells MW-13 through MW-18 were constructed in accordance with WAC 173-160, Section 400, Washington State Resource Protection Well Construction Standards. Monitoring well installation was observed by a GeoEngineers field geologist, who maintained a detailed log of the materials and depths of the well. Well construction details, including the depths of the well screen and filter packs are shown on Logs of Monitoring Wells, Figures A-10 and A-15.

The six monitoring wells were constructed using 2-inch-diameter polyvinyl chloride (PVC) well casing. The annular space in each well was sealed between the top of the filter pack and the ground surface with bentonite to prevent infiltration of groundwater into the well bore from shallower zones. A lockable compression-type cap was installed in the top of the PVC well casing. A flush-mount above-grade monument equipped with a watertight cover was installed to protect the PVC well casing. A concrete surface seal was placed around the monument at the ground surface to divert surface water away from the well location.

Monitoring wells MW-13 through MW-18 were developed on July 22, 2010 to remove water introduced into the well during drilling, stabilize the filter pack and formation materials surrounding the well screen, and restore the hydraulic connection between the well screen and the surrounding soil. Each well screen was gently surged and pumped with a submersible pump several times during the development process.

The elevation of the top of each monitoring well casing and the ground surface of each well was surveyed by Gray and Osborne Inc., on July 22, 2010 and July 26, 2010. A survey reference notch was established on the north side of each monitoring well casing. Horizontal locations of wells are referenced to the NAD 83 datum. Elevations are referenced to NAVD88 datum.

## Groundwater Sampling

The wells were allowed to equilibrate after well development and subsequently sampled on July 26, 2010. Each groundwater sample was obtained using low-flow purging methods. The groundwater samples were transferred in the field to laboratory-prepared sample containers and kept cool during transport to the testing laboratory. The sample containers were filled completely to eliminate headspace in the container. Chain-of-custody procedures were observed from the time of sample collection to delivery to the testing laboratory.

## Slug Tests

Slug tests were completed in monitoring wells MW-1 through MW-7, MW-9, MW-10, MW-16, MW-17 and MW-18 on July 26, 2010 to estimate the saturated horizontal hydraulic conductivity of the aquifer.

A slug (weighted 5-foot length of sealed PVC casing) of known volume was lowered into each well and the groundwater level was monitored until it returned (fell) to the approximate initial water level. The slug was then rapidly removed and the groundwater level was monitored until it returned (rose) to the approximate initial water level. Groundwater levels were measured with a pressure sensor (with built-in data logger) and manual electronic water level meter before, during and after each slug test.

Data from the rising head tests (data obtained after removing the slug) were used to calculate hydraulic conductivity at all wells except MW-5. Data obtained during the rising head tests generally do not disturb the pressure sensor as much as during the falling head tests. Data from the falling head test (data obtained after insertion of the slug) was used to calculate hydraulic conductivity at MW-5 because the relatively low permeability did not allow sufficient time to perform a rising head test.

The Bouwer-Rice method for unconfined aquifers (as presented in Dawson and Istok, 1991) was used to calculate the hydraulic conductivity. Graphs showing the data and fitted line used for the calculations are shown in Figures C-1 through C-6.

### **Decontamination Procedures**

The objective of the decontamination procedure is to minimize the potential for cross-contamination between sample locations.

A designated decontamination area was established for decontamination of drilling equipment and reusable sampling equipment. Drilling equipment was cleaned using high-pressure/low-volume cleaning equipment.

Sampling and slug test equipment were decontaminated in accordance with the following procedures before each sampling attempt or measurement.

1. Brush equipment with a nylon brush to remove large particulate matter.
2. Rinse with potable tap water.
3. Wash with non-phosphate detergent solution (Liquinox® and potable tap water).
4. Rinse with potable tap water.
5. Rinse with distilled water.

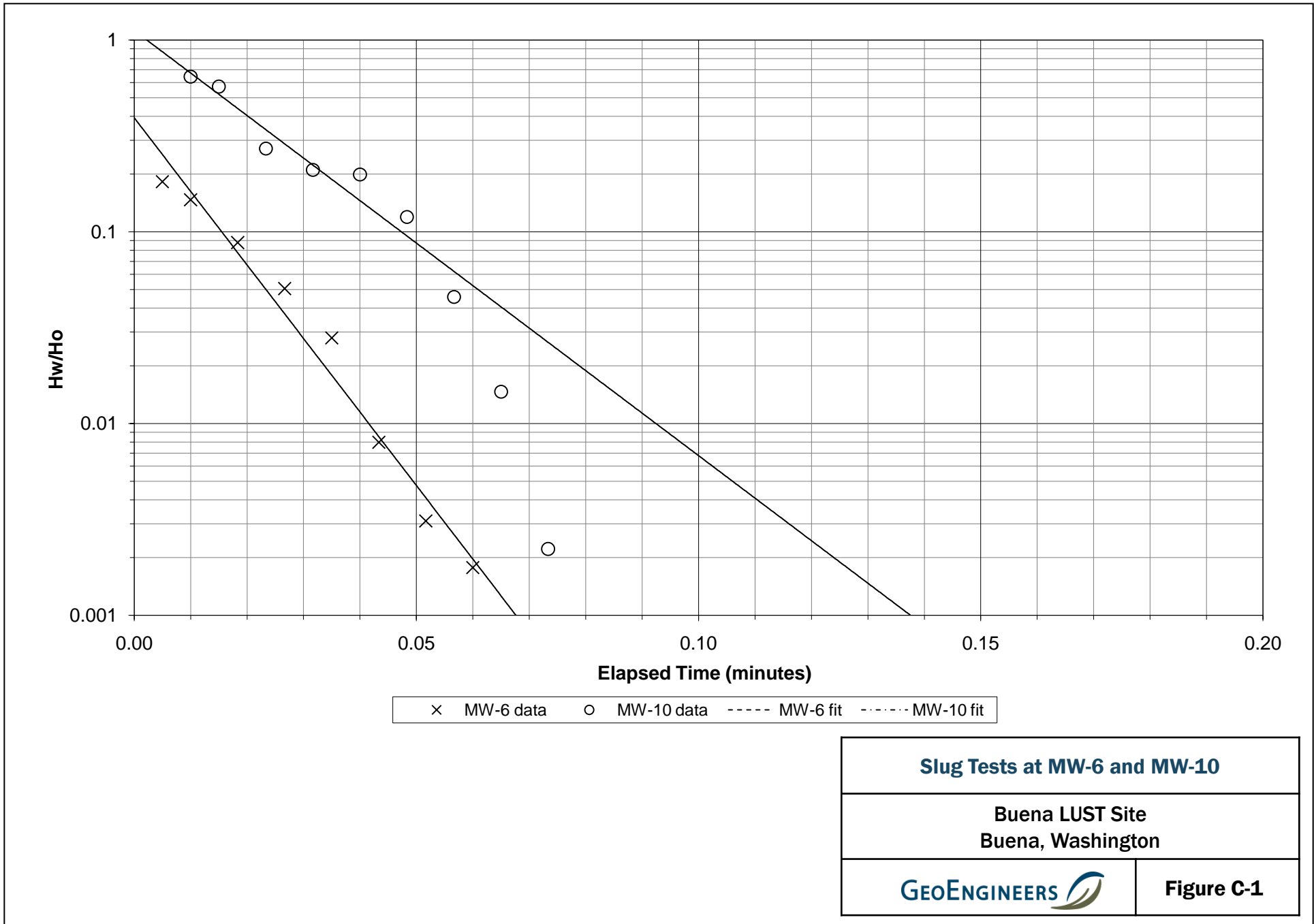
### **Handling of Investigation-Derived Waste**

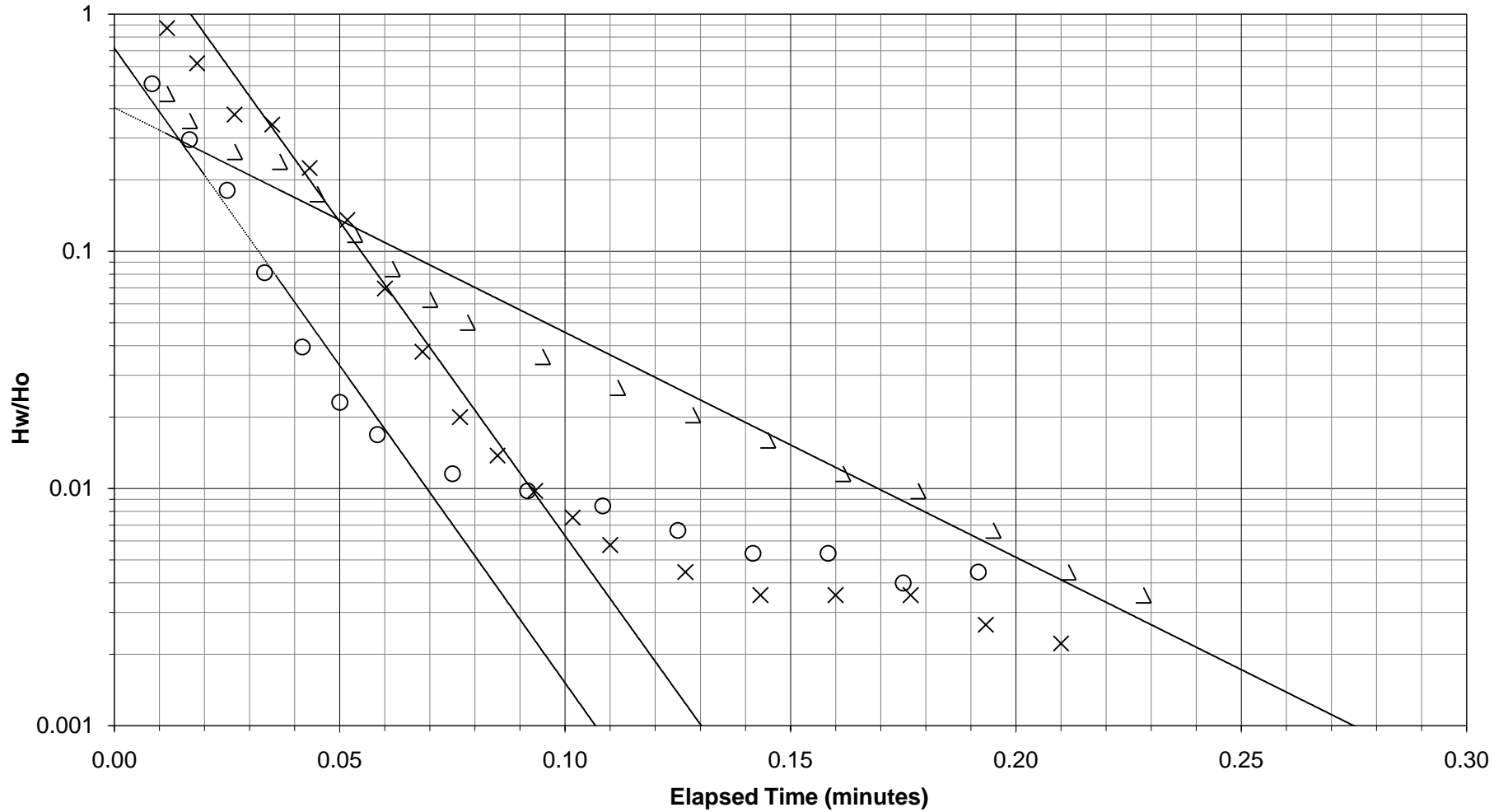
Investigation Derived Waste (IDW), which consists of mainly drill cuttings and decontamination/purge water, typically was placed in DOT-approved 55-gallon drums. Each drum was labeled with the project name, exploration number, general contents, and date. The drummed IDW was stored onsite pending analysis and disposal.

Disposable items, such as sample tubing, disposable bailers, bailer line, gloves and protective overalls, paper towels, etc., were placed in plastic bags after use and deposited in trash receptacles for disposal.

## REFERENCE

Dawson, K.J. and J.D. Istok, 1991. *Aquifer Testing: Design and Analysis of Pumping and Slug Tests*. Lewis Publishers, Inc., Chelsea, Michigan.





× MW-3 data    o MW-4 data    Δ MW-7 data    — MW-3 fit    - - - MW-4 fit    ····· MW-7 fit

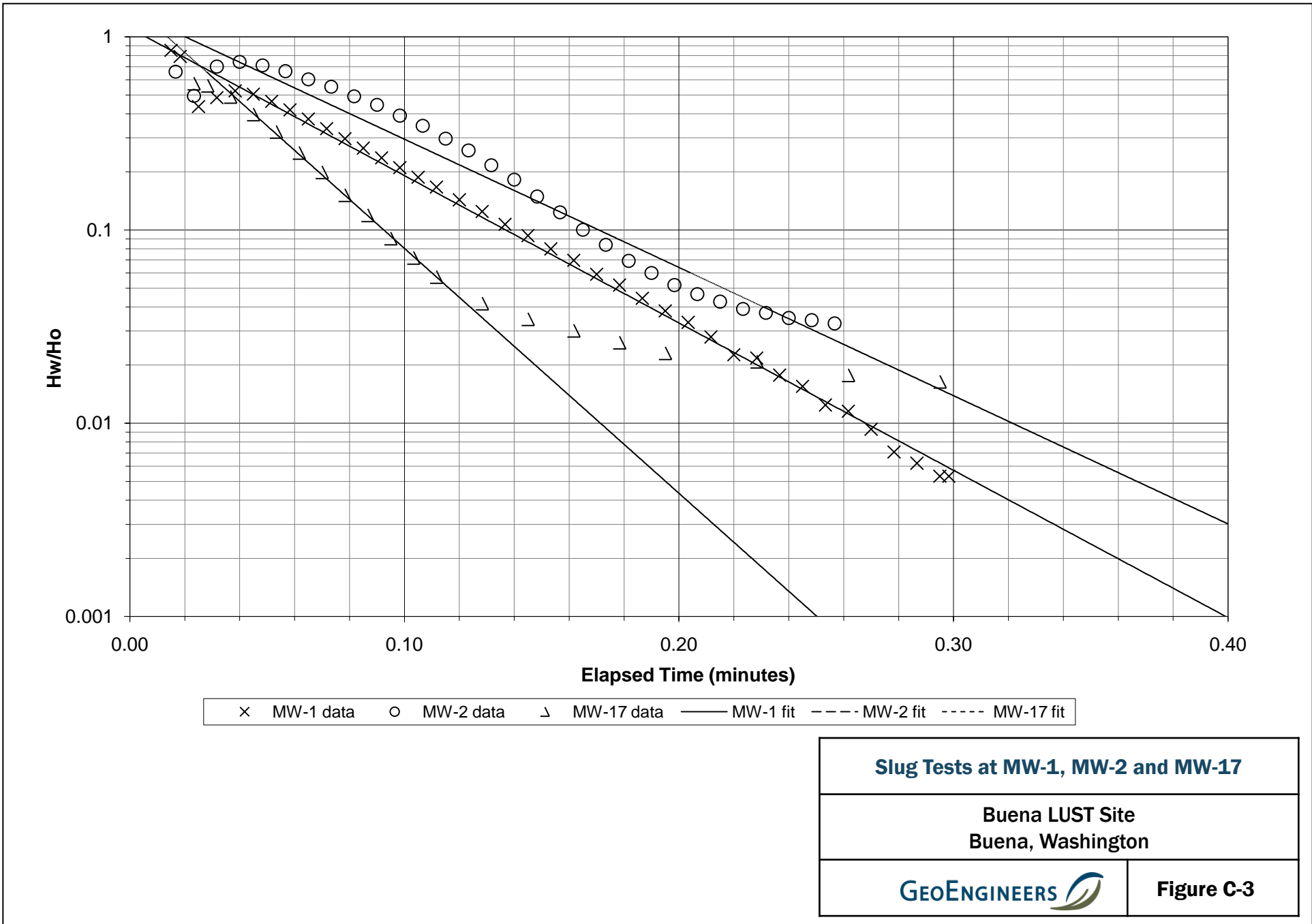
**Slug Tests at MW-3, MW-4 and MW-7**

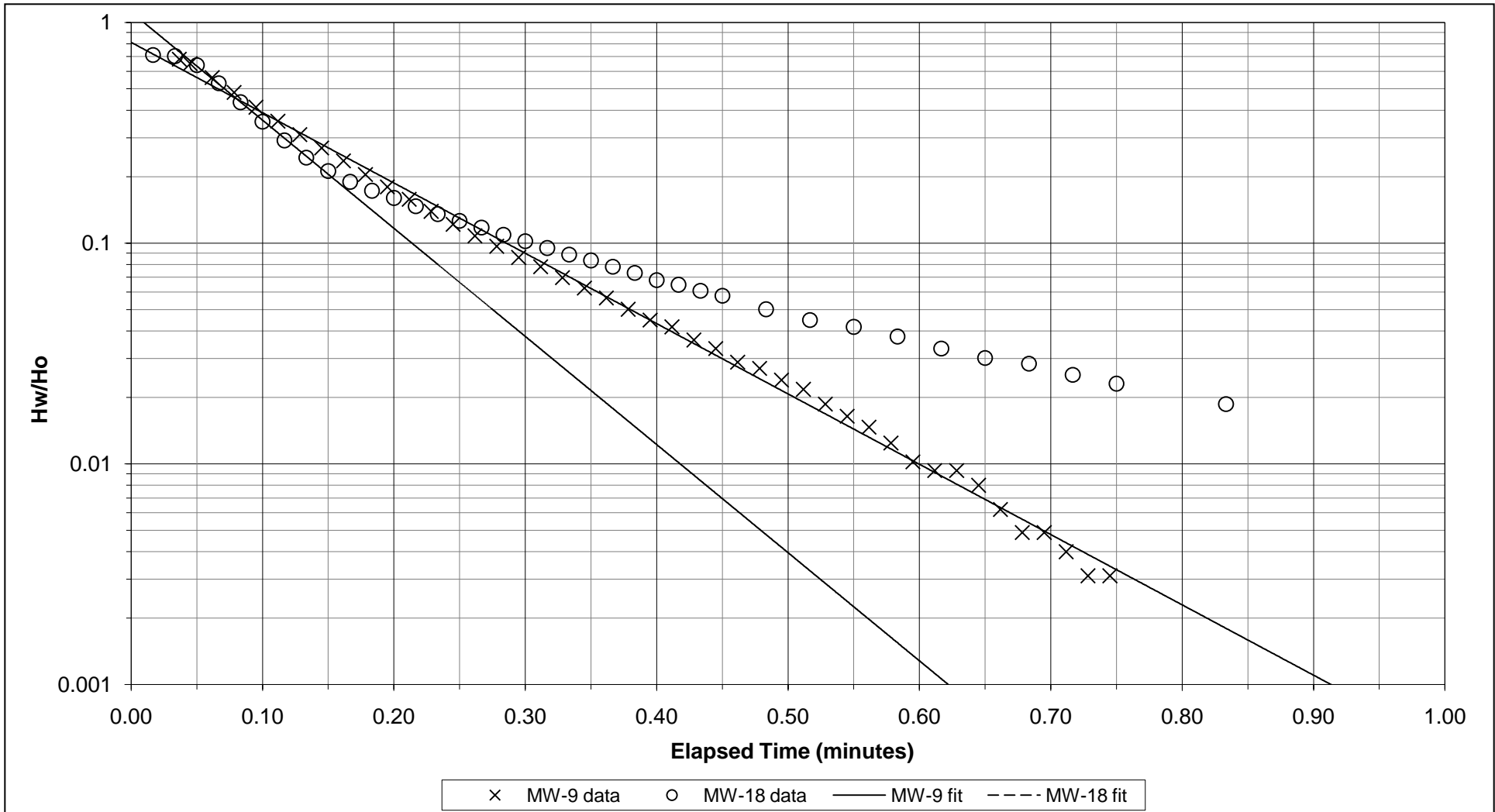
Buena LUST Site  
Buena, Washington



**Figure C-2**





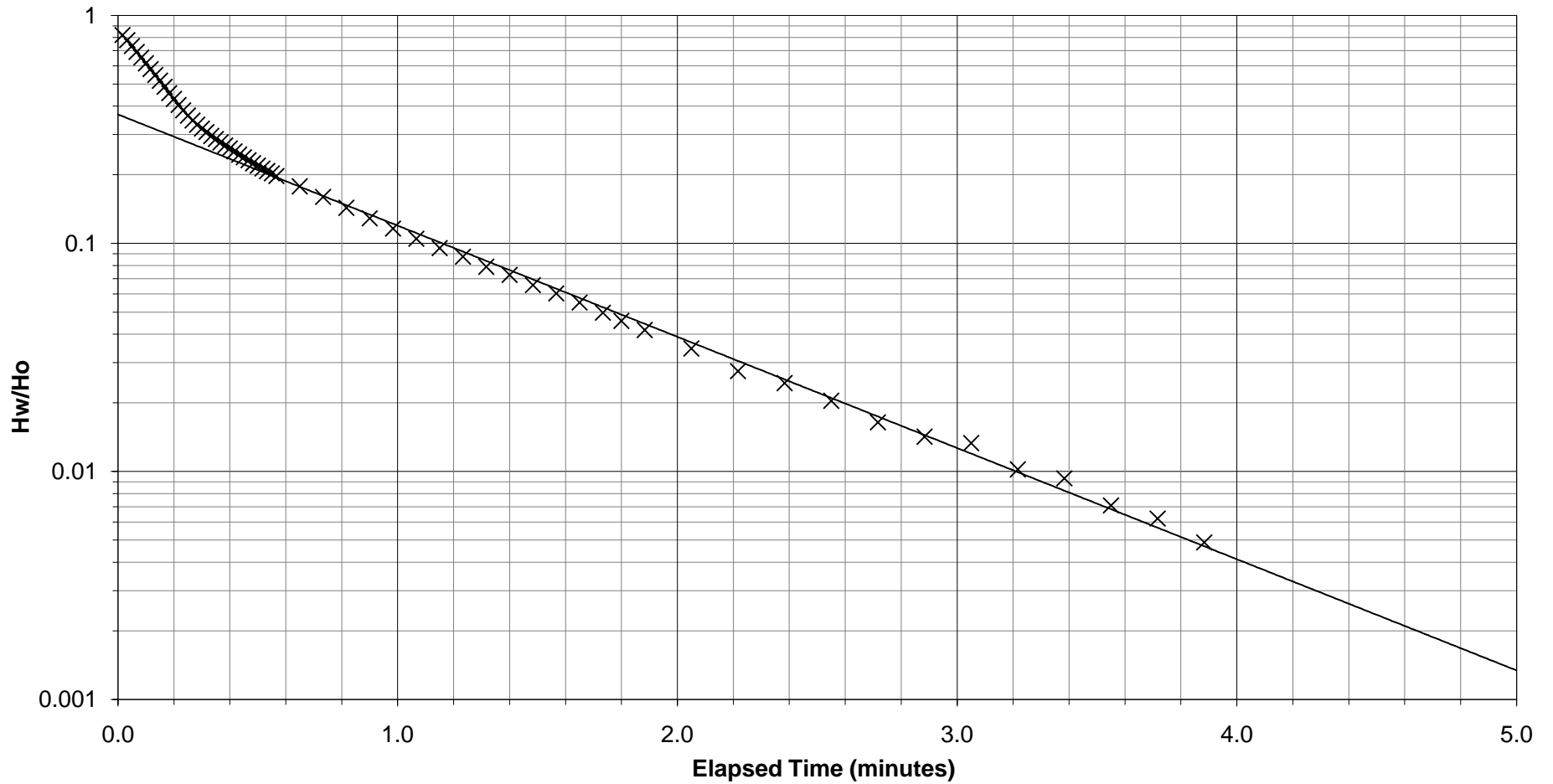


**Slug Tests at MW-9 and MW-18**


Buena LUST Site  
Buena, Washington

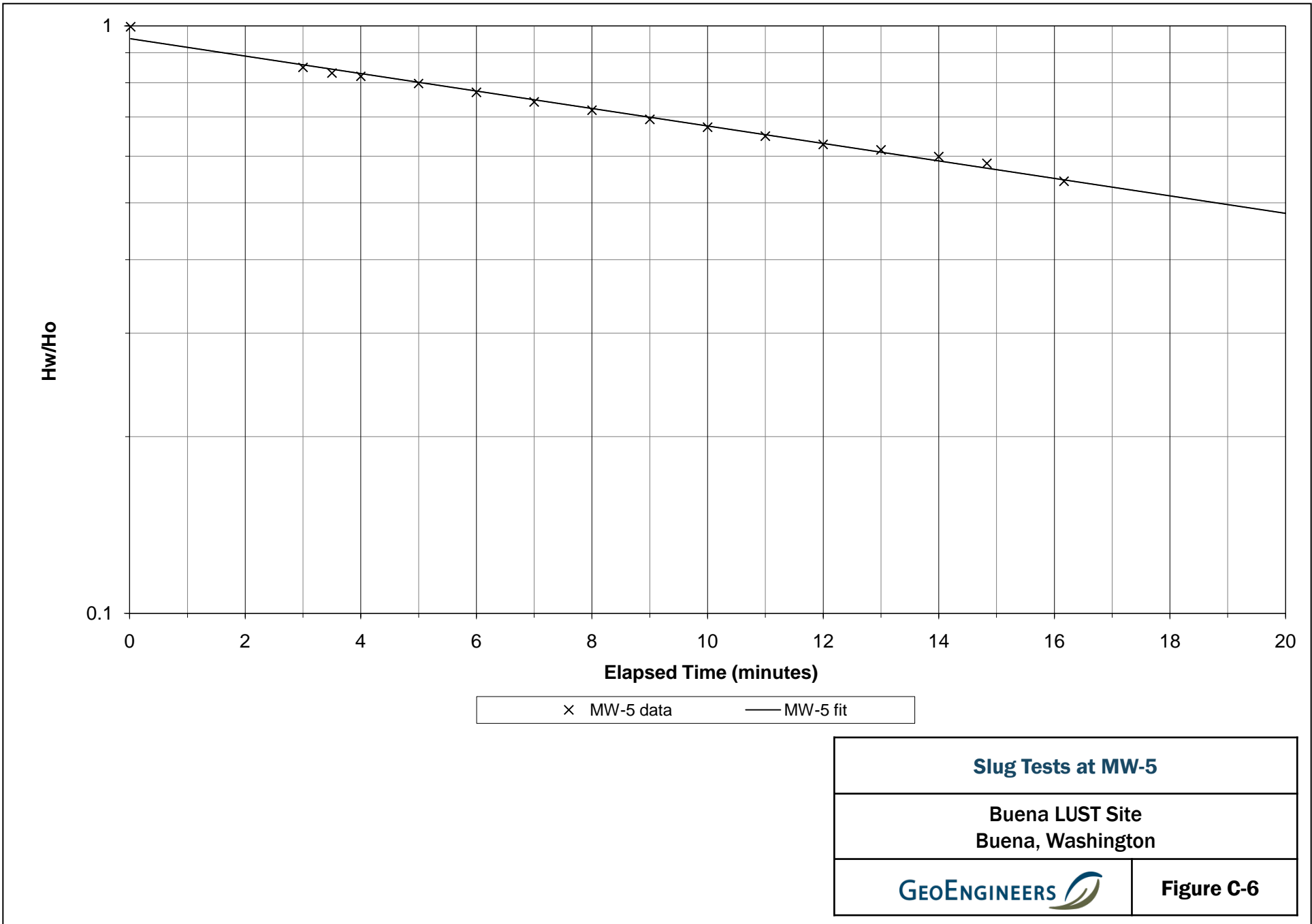


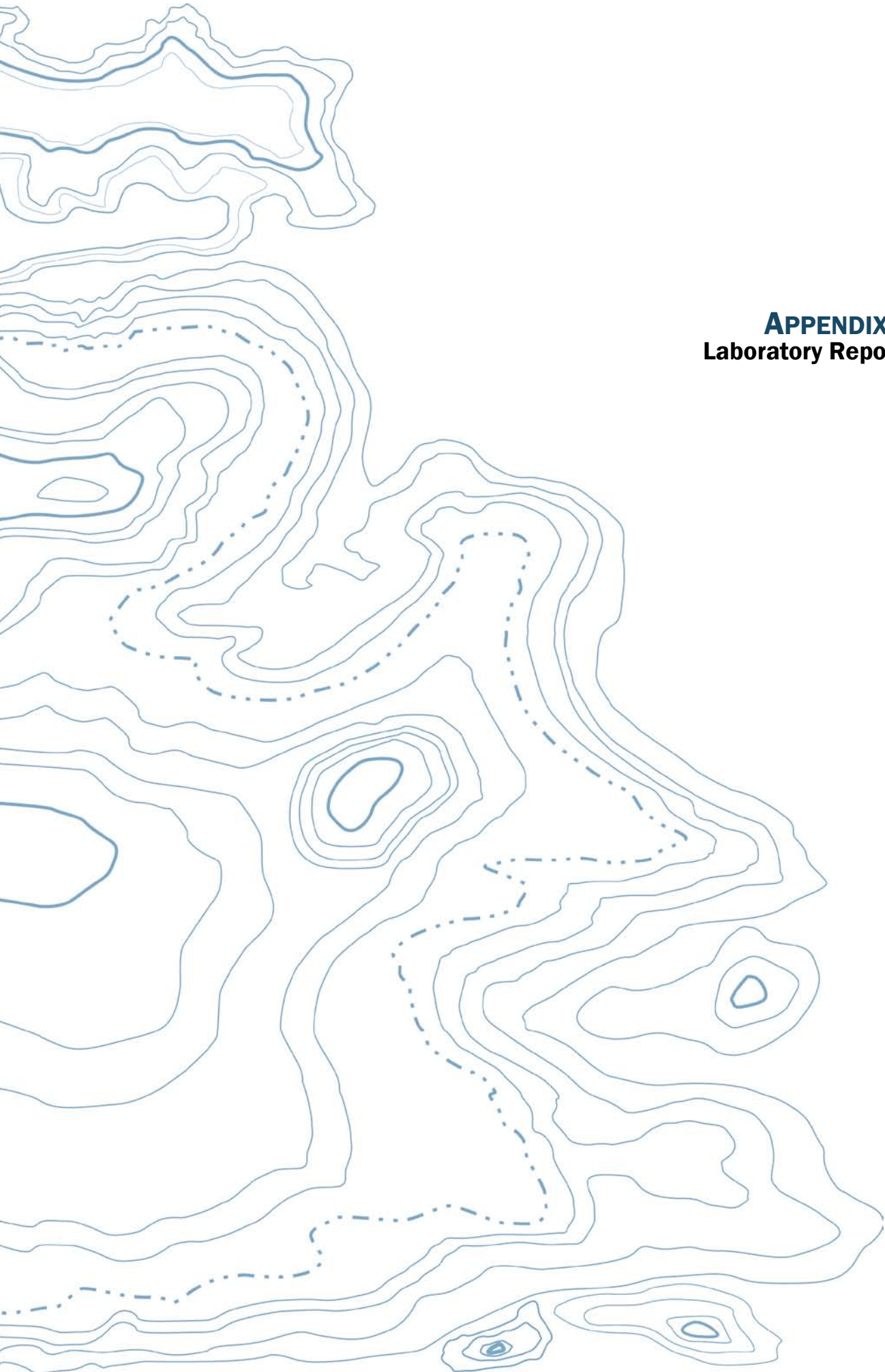
**Figure C-4**



× MW-16 data — MW-16 fit

<b>Slug Tests at MW-16</b>	
Buena LUST Site Buena, Washington	
	<b>Figure C-5</b>





**APPENDIX D**  
**Laboratory Reports**

## **APPENDIX D LABORATORY REPORTS**

### **Chemical Analytical Data**

Chain-of-custody procedures were followed during the transport of the field samples to the accredited analytical laboratory. The samples were held in cold storage pending extraction and/or analysis. The analytical results and quality control records are included in this appendix.

### **Analytical Data Review**

The laboratory maintains an internal quality assurance program as documented in its laboratory quality assurance manual. The laboratory uses a combination of method blanks, trip blanks, lab control samples, surrogate recoveries, duplicates, matrix spike recoveries, matrix spike duplicate recoveries, blank spike recoveries and blank spike duplicate recoveries to evaluate the analytical results. The laboratory also uses data quality goals for individual chemicals or groups of chemicals based on the long-term performance of the test methods. The data quality goals were included in the laboratory reports. The laboratory compared each group of samples with the existing data quality goals and noted any exceptions in the laboratory report. Data quality exceptions documented by the accredited laboratory were reviewed by GeoEngineers and are addressed in the data quality exception section of this appendix.

### **Data Quality Exception Summary**

According to the laboratory, no data exceptions were identified in the laboratory report. However, several samples were received at temperatures exceeding the optimal 4°C. This is attributed to the short timeframe between sample collection and sample receipt at the laboratory when temperatures exceeded 100°F. The laboratory noted sufficient ice was present in the cooler upon receipt. It is our opinion that the analytical data are of acceptable quality for their intended use.

## CASE NARRATIVE

July 27, 2010

**Lab Name:** Anatek Labs, Inc.

**Project Tracking No.:** Buena LUST 0504-060-00

**Anatek Batch:** 100712007

**Project Summary:** Eight water samples and one trip blank were received and analyzed for NWTPH-Dx, sulfate, nitrate, soluble iron, soluble manganese, NWTPH-G, BTEX, Naphthalene, MTBE, Methane and alkalinity.

### QA/QC Checks

<u>Parameters</u>	<u>Yes / No</u>	<u>Exceptions / Deviations</u>
Sample Holding Time Valid?	Y	NA
Surrogate Recoveries Valid?	Y	NA
QC Sample(s) Recoveries Valid?	Y	NA
Method Blank(s) Valid?	Y	NA
Tune(s) Valid?	Y	NA
Internal Standard Responses Valid?	Y	NA
Initial Calibration Curve(s) Valid?	Y	NA
Continuing Calibration(s) Valid?	Y	NA
Comments	Y	NA

#### 1. Temperature Requirements

Two coolers were received and delivered by hand by an employee of Geo Engineers. The temperatures of both coolers were 2.2°C. There were bags of ice still frozen in the cooler.

#### 2. Holding Time Requirements

Initial analysis of all samples performed within holding time requirements. No problems encountered.

#### 3. GC/MS Tune Requirements

No problems encountered.

#### 4. Calibration Requirements

No problems encountered.

#### 5. Surrogate Recovery Requirements

No problems encountered.

**6. QC Sample (LCS/MS/MSD) Recovery Requirements**

No problems were encountered.

**7. Method Blank Requirements**

The method blanks were non-detect for all analytes. No problems encountered.

**8. Internal Standard(s) Response Requirements**

No problems encountered.

**9. Comments**

**I certify that this data package is in compliance with the terms and conditions of the contract. Release of the data contained in this data package has been authorized by the Laboratory Manager or his designee.**

Approved by : Kathleen A. Sattler



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**Client:** GEO ENGINEERS  
**Address:** 523 E 2ND  
SPOKANE, WA 99202  
**Attn:** BRUCE WILLIAMS

**Batch #:** 100712007  
**Project Name:** BUENA LUST 0504-060-00

## Analytical Results Report

Sample Number	100712007-001	Sampling Date	7/9/2010	Date/Time Received	7/12/2010 8:45 AM		
<b>Client Sample ID</b>	MW-1-070910	<b>Sampling Time</b>	11:42 AM	<b>Extraction Date</b>			
<b>Matrix</b>	Water	<b>Sample Location</b>					
<b>Comments</b>							
Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
Alkalinity	265	mg/L	10	7/14/2010	APM	SM2320B	
Dissolved Iron	0.259	mg/L	0.01	7/14/2010	KEA	EPA 200.8	
Dissolved Manganese	0.156	mg/L	0.001	7/14/2010	KEA	EPA 200.8	
NO3/N	10.0	mg/L	0.1	7/12/2010	JLU	EPA 300.0	
Sulfate	29.5	mg/L	0.2	7/13/2010	JLU	EPA 300.0	

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Sample Number	100712007-002	Sampling Date	7/9/2010	Date/Time Received	7/12/2010 8:45 AM		
<b>Client Sample ID</b>	MW-2-070910	<b>Sampling Time</b>	10:15 AM	<b>Extraction Date</b>			
<b>Matrix</b>	Water	<b>Sample Location</b>					
<b>Comments</b>							
Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
Alkalinity	279	mg/L	10	7/14/2010	APM	SM2320B	
Dissolved Iron	0.0542	mg/L	0.01	7/14/2010	KEA	EPA 200.8	
Dissolved Manganese	0.0301	mg/L	0.001	7/14/2010	KEA	EPA 200.8	
NO3/N	6.31	mg/L	0.1	7/12/2010	JLU	EPA 300.0	
Sulfate	24.6	mg/L	0.1	7/12/2010	JLU	EPA 300.0	

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Sample Number	100712007-003	Sampling Date	7/9/2010	Date/Time Received	7/12/2010 8:45 AM		
<b>Client Sample ID</b>	MW-3-070910	<b>Sampling Time</b>	11:10 AM	<b>Extraction Date</b>			
<b>Matrix</b>	Water	<b>Sample Location</b>					
<b>Comments</b>							
Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
Alkalinity	285	mg/L	10	7/14/2010	APM	SM2320B	
Dissolved Iron	0.407	mg/L	0.01	7/14/2010	KEA	EPA 200.8	
Dissolved Manganese	0.107	mg/L	0.001	7/14/2010	KEA	EPA 200.8	
NO3/N	8.36	mg/L	0.1	7/12/2010	JLU	EPA 300.0	
Sulfate	24.5	mg/L	0.1	7/12/2010	JLU	EPA 300.0	

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**Batch #:** 100712007  
**Project Name:** BUENA LUST 0504-060-00

## Analytical Results Report

Sample Number	100712007-004	Sampling Date	7/9/2010	Date/Time Received	7/12/2010 8:45 AM		
Client Sample ID	MW-4-070910	Sampling Time	12:25 PM	Extraction Date			
Matrix	Water	Sample Location					
Comments							
Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
Alkalinity	306	mg/L	10	7/14/2010	APM	SM2320B	
Dissolved Iron	3.50	mg/L	0.01	7/14/2010	KEA	EPA 200.8	
Dissolved Manganese	0.828	mg/L	0.001	7/14/2010	KEA	EPA 200.8	
NO3/N	2.19	mg/L	0.1	7/12/2010	JLU	EPA 300.0	
Sulfate	18.6	mg/L	0.1	7/12/2010	JLU	EPA 300.0	

Sample Number	100712007-005	Sampling Date	7/9/2010	Date/Time Received	7/12/2010 8:45 AM		
Client Sample ID	MW-6-070910	Sampling Time	9:27 AM	Extraction Date			
Matrix	Water	Sample Location					
Comments							
Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
Alkalinity	323	mg/L	10	7/14/2010	APM	SM2320B	
Dissolved Iron	0.0704	mg/L	0.01	7/14/2010	KEA	EPA 200.8	
Dissolved Manganese	0.909	mg/L	0.001	7/14/2010	KEA	EPA 200.8	
NO3/N	0.740	mg/L	0.1	7/12/2010	JLU	EPA 300.0	
Sulfate	29.9	mg/L	0.1	7/12/2010	JLU	EPA 300.0	

Sample Number	100712007-006	Sampling Date	7/9/2010	Date/Time Received	7/12/2010 8:45 AM		
Client Sample ID	MW-7-070910	Sampling Time	8:53 AM	Extraction Date			
Matrix	Water	Sample Location					
Comments							
Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
Alkalinity	304	mg/L	10	7/14/2010	APM	SM2320B	
Dissolved Iron	3.86	mg/L	0.01	7/14/2010	KEA	EPA 200.8	
Dissolved Manganese	1.43	mg/L	0.01	7/14/2010	KEA	EPA 200.8	
NO3/N	ND	mg/L	0.1	7/12/2010	JLU	EPA 300.0	
Sulfate	29.6	mg/L	0.2	7/13/2010	JLU	EPA 300.0	

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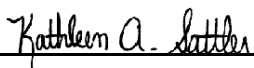
**Batch #:** 100712007  
**Project Name:** BUENA LUST 0504-060-00

## Analytical Results Report

<b>Sample Number</b>	100712007-007	<b>Sampling Date</b>	7/9/2010	<b>Date/Time Received</b>	7/12/2010 8:45 AM		
<b>Client Sample ID</b>	MW-9-070910	<b>Sampling Time</b>	8:20 AM	<b>Extraction Date</b>			
<b>Matrix</b>	Water	<b>Sample Location</b>					
<b>Comments</b>							
<b>Parameter</b>	<b>Result</b>	<b>Units</b>	<b>PQL</b>	<b>Analysis Date</b>	<b>Analyst</b>	<b>Method</b>	<b>Qualifier</b>
Alkalinity	274	mg/L	10	7/14/2010	APM	SM2320B	
Dissolved Iron	0.115	mg/L	0.01	7/14/2010	KEA	EPA 200.8	
Dissolved Manganese	0.427	mg/L	0.001	7/14/2010	KEA	EPA 200.8	
NO3/N	2.34	mg/L	0.1	7/12/2010	JLU	EPA 300.0	
Sulfate	52.7	mg/L	0.2	7/13/2010	JLU	EPA 300.0	

<b>Sample Number</b>	100712007-008	<b>Sampling Date</b>	7/9/2010	<b>Date/Time Received</b>	7/12/2010 8:45 AM		
<b>Client Sample ID</b>	MW-10-070910	<b>Sampling Time</b>	7:40 AM	<b>Extraction Date</b>			
<b>Matrix</b>	Water	<b>Sample Location</b>					
<b>Comments</b>							
<b>Parameter</b>	<b>Result</b>	<b>Units</b>	<b>PQL</b>	<b>Analysis Date</b>	<b>Analyst</b>	<b>Method</b>	<b>Qualifier</b>
Alkalinity	234	mg/L	10	7/14/2010	APM	SM2320B	
Dissolved Iron	0.113	mg/L	0.01	7/14/2010	KEA	EPA 200.8	
Dissolved Manganese	1.05	mg/L	0.01	7/14/2010	KEA	EPA 200.8	
NO3/N	1.55	mg/L	0.1	7/12/2010	JLU	EPA 300.0	
Sulfate	28.5	mg/L	0.1	7/12/2010	JLU	EPA 300.0	

Authorized Signature

  
Kathy Sattler, Lab Manager

MCL EPA's Maximum Contaminant Level  
ND Not Detected  
PQL Practical Quantitation Limit

This report shall not be reproduced except in full, without the written approval of the laboratory.  
The results reported relate only to the samples indicated.  
Soil/solid results are reported on a dry-weight basis unless otherwise noted.

Certifications held by Anatek Labs ID: EPA:ID00013; AZ:0701; CO:ID00013; FL(NELAP):E87893; ID:ID00013; IN:C-ID-01; KY:90142; MT:CERT0028; NM: ID00013; OR:ID200001-002; WA:C595  
Certifications held by Anatek Labs WA: EPA:WA00169; CA:Cert2632; ID:WA00169; WA:C585; MT:Cert0095

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**Batch #:** 100712007  
**Project Name:** BUENA LUST 0504-060-00

## Analytical Results Report

<b>Sample Number</b>	100712007-001	<b>Sampling Date</b>	7/9/2010	<b>Date/Time Received</b>	7/12/2010 8:45 AM
<b>Client Sample ID</b>	MW-1-070910	<b>Sampling Time</b>	11:42 AM	<b>Extraction Date</b>	
<b>Matrix</b>	Water	<b>Sample Location</b>			
<b>Comments</b>					

Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
Benzene	ND	ug/L	0.5	7/13/2010	WOZ	EPA 8260B	
Ethylbenzene	ND	ug/L	0.5	7/13/2010	WOZ	EPA 8260B	
m+p-Xylene	ND	ug/L	1	7/13/2010	WOZ	EPA 8260B	
methyl-t-butyl ether (MTBE)	ND	ug/L	0.5	7/13/2010	WOZ	EPA 8260B	
Naphthalene	ND	ug/L	0.5	7/13/2010	WOZ	EPA 8260B	
o-Xylene	ND	ug/L	0.5	7/13/2010	WOZ	EPA 8260B	
Toluene	ND	ug/L	0.5	7/13/2010	WOZ	EPA 8260B	
Diesel	ND	mg/L	0.1	7/13/2010	MJL	NWTPHDX	
Lube Oil	ND	mg/L	0.5	7/13/2010	MJL	NWTPHDX	
Gasoline	ND	mg/L	0.1	7/13/2010	WOZ	NWTPHG	

## Surrogate Data

<b>Sample Number</b>	100712007-001		
<b>Surrogate Standard</b>	<b>Method</b>	<b>Percent Recovery</b>	<b>Control Limits</b>
1,2-Dichlorobenzene-d4	EPA 8260B	100.4	70-130
4-Bromofluorobenzene	EPA 8260B	95.6	70-130
Toluene-d8	EPA 8260B	100.4	70-130
hexacosane	NWTPHDX	101.4	50-150
4-Bromofluorobenzene	NWTPHG	97.1	70-130

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**Batch #:** 100712007  
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## Analytical Results Report

<b>Sample Number</b>	100712007-002	<b>Sampling Date</b>	7/9/2010	<b>Date/Time Received</b>	7/12/2010 8:45 AM		
<b>Client Sample ID</b>	MW-2-070910	<b>Sampling Time</b>	10:15 AM	<b>Extraction Date</b>			
<b>Matrix</b>	Water	<b>Sample Location</b>					
<b>Comments</b>							
Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
Benzene	ND	ug/L	0.5	7/13/2010	WOZ	EPA 8260B	
Ethylbenzene	ND	ug/L	0.5	7/13/2010	WOZ	EPA 8260B	
m+p-Xylene	ND	ug/L	1	7/13/2010	WOZ	EPA 8260B	
methyl-t-butyl ether (MTBE)	ND	ug/L	0.5	7/13/2010	WOZ	EPA 8260B	
Naphthalene	ND	ug/L	0.5	7/13/2010	WOZ	EPA 8260B	
o-Xylene	ND	ug/L	0.5	7/13/2010	WOZ	EPA 8260B	
Toluene	ND	ug/L	0.5	7/13/2010	WOZ	EPA 8260B	
Diesel	ND	mg/L	0.1	7/13/2010	MJL	NWTPHDX	
Lube Oil	ND	mg/L	0.5	7/13/2010	MJL	NWTPHDX	
Gasoline	ND	mg/L	0.1	7/13/2010	WOZ	NWTPHG	

## Surrogate Data

<b>Sample Number</b>	100712007-002		
Surrogate Standard	Method	Percent Recovery	Control Limits
1,2-Dichlorobenzene-d4	EPA 8260B	106.4	70-130
4-Bromofluorobenzene	EPA 8260B	97.2	70-130
Toluene-d8	EPA 8260B	102.0	70-130
hexacosane	NWTPHDX	96.0	50-150
4-Bromofluorobenzene	NWTPHG	97.8	70-130

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## Analytical Results Report

<b>Sample Number</b>	100712007-003	<b>Sampling Date</b>	7/9/2010	<b>Date/Time Received</b>	7/12/2010 8:45 AM		
<b>Client Sample ID</b>	MW-3-070910	<b>Sampling Time</b>	11:10 AM	<b>Extraction Date</b>			
<b>Matrix</b>	Water	<b>Sample Location</b>					
<b>Comments</b>							
Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
Benzene	ND	ug/L	0.5	7/13/2010	WOZ	EPA 8260B	
Ethylbenzene	6.99	ug/L	0.5	7/13/2010	WOZ	EPA 8260B	
m+p-Xylene	18.6	ug/L	2	7/13/2010	WOZ	EPA 8260B	
methyl-t-butyl ether (MTBE)	ND	ug/L	0.5	7/13/2010	WOZ	EPA 8260B	
Naphthalene	2.94	ug/L	0.5	7/13/2010	WOZ	EPA 8260B	
o-Xylene	11.4	ug/L	1	7/13/2010	WOZ	EPA 8260B	
Toluene	ND	ug/L	0.5	7/13/2010	WOZ	EPA 8260B	
Diesel	ND	mg/L	0.1	7/13/2010	MJL	NWTPHDX	
Lube Oil	ND	mg/L	0.5	7/13/2010	MJL	NWTPHDX	
Gasoline	0.675	mg/L	0.1	7/13/2010	WOZ	NWTPHG	

## Surrogate Data

<b>Sample Number</b>	100712007-003		
Surrogate Standard	Method	Percent Recovery	Control Limits
1,2-Dichlorobenzene-d4	EPA 8260B	99.6	70-130
4-Bromofluorobenzene	EPA 8260B	101.6	70-130
Toluene-d8	EPA 8260B	108.4	70-130
hexacosane	NWTPHDX	88.4	50-150
4-Bromofluorobenzene	NWTPHG	101.2	70-130

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## Analytical Results Report

<b>Sample Number</b>	100712007-004	<b>Sampling Date</b>	7/9/2010	<b>Date/Time Received</b>	7/12/2010 8:45 AM		
<b>Client Sample ID</b>	MW-4-070910	<b>Sampling Time</b>	12:25 PM	<b>Extraction Date</b>			
<b>Matrix</b>	Water	<b>Sample Location</b>					
<b>Comments</b>							
Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
Benzene	ND	ug/L	0.5	7/13/2010	WOZ	EPA 8260B	
Ethylbenzene	ND	ug/L	0.5	7/13/2010	WOZ	EPA 8260B	
m+p-Xylene	ND	ug/L	1	7/13/2010	WOZ	EPA 8260B	
methyl-t-butyl ether (MTBE)	ND	ug/L	0.5	7/13/2010	WOZ	EPA 8260B	
Naphthalene	ND	ug/L	0.5	7/13/2010	WOZ	EPA 8260B	
o-Xylene	ND	ug/L	0.5	7/13/2010	WOZ	EPA 8260B	
Toluene	ND	ug/L	0.5	7/13/2010	WOZ	EPA 8260B	
Diesel	ND	mg/L	0.1	7/13/2010	MJL	NWTPHDX	
Lube Oil	ND	mg/L	0.5	7/13/2010	MJL	NWTPHDX	
Gasoline	0.619	mg/L	0.1	7/13/2010	WOZ	NWTPHG	

## Surrogate Data

<b>Sample Number</b>	100712007-004			
Surrogate Standard	Method	Percent Recovery	Control Limits	
1,2-Dichlorobenzene-d4	EPA 8260B	100.8	70-130	
4-Bromofluorobenzene	EPA 8260B	98.4	70-130	
Toluene-d8	EPA 8260B	108.4	70-130	
hexacosane	NWTPHDX	92.0	50-150	
4-Bromofluorobenzene	NWTPHG	104.7	70-130	

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## Analytical Results Report

<b>Sample Number</b>	100712007-005	<b>Sampling Date</b>	7/9/2010	<b>Date/Time Received</b>	7/12/2010 8:45 AM		
<b>Client Sample ID</b>	MW-6-070910	<b>Sampling Time</b>	9:27 AM	<b>Extraction Date</b>			
<b>Matrix</b>	Water	<b>Sample Location</b>					
<b>Comments</b>							
Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
Benzene	ND	ug/L	0.5	7/13/2010	WOZ	EPA 8260B	
Ethylbenzene	ND	ug/L	0.5	7/13/2010	WOZ	EPA 8260B	
m+p-Xylene	ND	ug/L	1	7/13/2010	WOZ	EPA 8260B	
methyl-t-butyl ether (MTBE)	ND	ug/L	0.5	7/13/2010	WOZ	EPA 8260B	
Naphthalene	ND	ug/L	0.5	7/13/2010	WOZ	EPA 8260B	
o-Xylene	ND	ug/L	0.5	7/13/2010	WOZ	EPA 8260B	
Toluene	ND	ug/L	0.5	7/13/2010	WOZ	EPA 8260B	
Diesel	ND	mg/L	0.1	7/13/2010	MJL	NWTPHDX	
Lube Oil	ND	mg/L	0.5	7/13/2010	MJL	NWTPHDX	
Gasoline	ND	mg/L	0.1	7/13/2010	WOZ	NWTPHG	

## Surrogate Data

<b>Sample Number</b>	100712007-005		
Surrogate Standard	Method	Percent Recovery	Control Limits
1,2-Dichlorobenzene-d4	EPA 8260B	101.6	70-130
4-Bromofluorobenzene	EPA 8260B	95.6	70-130
Toluene-d8	EPA 8260B	101.6	70-130
hexacosane	NWTPHDX	97.4	50-150
4-Bromofluorobenzene	NWTPHG	98.6	70-130



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**Client:** GEO ENGINEERS  
**Address:** 523 E 2ND  
SPOKANE, WA 99202  
**Attn:** BRUCE WILLIAMS

**Batch #:** 100712007  
**Project Name:** BUENA LUST 0504-060-00

## Analytical Results Report

<b>Sample Number</b>	100712007-006	<b>Sampling Date</b>	7/9/2010	<b>Date/Time Received</b>	7/12/2010 8:45 AM		
<b>Client Sample ID</b>	MW-7-070910	<b>Sampling Time</b>	8:53 AM	<b>Extraction Date</b>			
<b>Matrix</b>	Water	<b>Sample Location</b>					
<b>Comments</b>							
Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
Benzene	ND	ug/L	0.5	7/13/2010	WOZ	EPA 8260B	
Ethylbenzene	ND	ug/L	0.5	7/13/2010	WOZ	EPA 8260B	
m+p-Xylene	ND	ug/L	1	7/13/2010	WOZ	EPA 8260B	
methyl-t-butyl ether (MTBE)	ND	ug/L	0.5	7/13/2010	WOZ	EPA 8260B	
Naphthalene	ND	ug/L	0.5	7/13/2010	WOZ	EPA 8260B	
o-Xylene	ND	ug/L	0.5	7/13/2010	WOZ	EPA 8260B	
Toluene	ND	ug/L	0.5	7/13/2010	WOZ	EPA 8260B	
Diesel	ND	mg/L	0.1	7/13/2010	MJL	NWTPHDX	
Lube Oil	ND	mg/L	0.5	7/13/2010	MJL	NWTPHDX	
Gasoline	ND	mg/L	0.1	7/13/2010	WOZ	NWTPHG	

## Surrogate Data

<b>Sample Number</b>	100712007-006			
Surrogate Standard	Method	Percent Recovery	Control Limits	
1,2-Dichlorobenzene-d4	EPA 8260B	102.0	70-130	
4-Bromofluorobenzene	EPA 8260B	96.0	70-130	
Toluene-d8	EPA 8260B	100.4	70-130	
hexacosane	NWTPHDX	92.4	50-150	
4-Bromofluorobenzene	NWTPHG	100.4	70-130	

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**Batch #:** 100712007  
**Project Name:** BUENA LUST 0504-060-00

## Analytical Results Report

<b>Sample Number</b>	100712007-007	<b>Sampling Date</b>	7/9/2010	<b>Date/Time Received</b>	7/12/2010 8:45 AM		
<b>Client Sample ID</b>	MW-9-070910	<b>Sampling Time</b>	8:20 AM	<b>Extraction Date</b>			
<b>Matrix</b>	Water	<b>Sample Location</b>					
<b>Comments</b>							
Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
Benzene	ND	ug/L	0.5	7/13/2010	WOZ	EPA 8260B	
Ethylbenzene	ND	ug/L	0.5	7/13/2010	WOZ	EPA 8260B	
m+p-Xylene	ND	ug/L	1	7/13/2010	WOZ	EPA 8260B	
methyl-t-butyl ether (MTBE)	ND	ug/L	0.5	7/13/2010	WOZ	EPA 8260B	
Naphthalene	ND	ug/L	0.5	7/13/2010	WOZ	EPA 8260B	
o-Xylene	ND	ug/L	0.5	7/13/2010	WOZ	EPA 8260B	
Toluene	ND	ug/L	0.5	7/13/2010	WOZ	EPA 8260B	
Diesel	ND	mg/L	0.1	7/13/2010	MJL	NWTPHDX	
Lube Oil	ND	mg/L	0.5	7/13/2010	MJL	NWTPHDX	
Gasoline	ND	mg/L	0.1	7/13/2010	WOZ	NWTPHG	

## Surrogate Data

<b>Sample Number</b>	100712007-007		
Surrogate Standard	Method	Percent Recovery	Control Limits
1,2-Dichlorobenzene-d4	EPA 8260B	101.6	70-130
4-Bromofluorobenzene	EPA 8260B	96.8	70-130
Toluene-d8	EPA 8260B	102.8	70-130
hexacosane	NWTPHDX	100.0	50-150
4-Bromofluorobenzene	NWTPHG	95.9	70-130

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**Batch #:** 100712007  
**Project Name:** BUENA LUST 0504-060-00

## Analytical Results Report

<b>Sample Number</b>	100712007-008	<b>Sampling Date</b>	7/9/2010	<b>Date/Time Received</b>	7/12/2010 8:45 AM		
<b>Client Sample ID</b>	MW-10-070910	<b>Sampling Time</b>	7:40 AM	<b>Extraction Date</b>			
<b>Matrix</b>	Water	<b>Sample Location</b>					
<b>Comments</b>							
Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
Benzene	ND	ug/L	0.5	7/13/2010	WOZ	EPA 8260B	
Ethylbenzene	ND	ug/L	0.5	7/13/2010	WOZ	EPA 8260B	
m+p-Xylene	ND	ug/L	1	7/13/2010	WOZ	EPA 8260B	
methyl-t-butyl ether (MTBE)	ND	ug/L	0.5	7/13/2010	WOZ	EPA 8260B	
Naphthalene	ND	ug/L	0.5	7/13/2010	WOZ	EPA 8260B	
o-Xylene	ND	ug/L	0.5	7/13/2010	WOZ	EPA 8260B	
Toluene	0.69	ug/L	0.5	7/13/2010	WOZ	EPA 8260B	
Diesel	ND	mg/L	0.1	7/14/2010	MJL	NWTPHDX	
Lube Oil	ND	mg/L	0.5	7/14/2010	MJL	NWTPHDX	
Gasoline	ND	mg/L	0.1	7/13/2010	WOZ	NWTPHG	

## Surrogate Data

<b>Sample Number</b>	100712007-008			
Surrogate Standard	Method	Percent Recovery	Control Limits	
1,2-Dichlorobenzene-d4	EPA 8260B	101.2	70-130	
4-Bromofluorobenzene	EPA 8260B	95.6	70-130	
Toluene-d8	EPA 8260B	103.6	70-130	
hexacosane	NWTPHDX	90.6	50-150	
4-Bromofluorobenzene	NWTPHG	97.0	70-130	

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**Batch #:** 100712007  
**Project Name:** BUENA LUST 0504-060-00

## Analytical Results Report

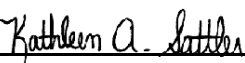
<b>Sample Number</b>	100712007-009	<b>Sampling Date</b>	7/9/2010	<b>Date/Time Received</b>	7/12/2010 8:45 AM
<b>Client Sample ID</b>	TRIP BLANK	<b>Sampling Time</b>		<b>Extraction Date</b>	
<b>Matrix</b>	Water	<b>Sample Location</b>			
<b>Comments</b>					

Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
Benzene	ND	ug/L	0.5	7/13/2010	WOZ	EPA 8260B	
Ethylbenzene	ND	ug/L	0.5	7/13/2010	WOZ	EPA 8260B	
m+p-Xylene	ND	ug/L	1	7/13/2010	WOZ	EPA 8260B	
methyl-t-butyl ether (MTBE)	ND	ug/L	0.5	7/13/2010	WOZ	EPA 8260B	
Naphthalene	ND	ug/L	0.5	7/13/2010	WOZ	EPA 8260B	
o-Xylene	ND	ug/L	0.5	7/13/2010	WOZ	EPA 8260B	
Toluene	ND	ug/L	0.5	7/13/2010	WOZ	EPA 8260B	

## Surrogate Data

<b>Sample Number</b>	100712007-009			
<b>Surrogate Standard</b>		<b>Method</b>	<b>Percent Recovery</b>	<b>Control Limits</b>
1,2-Dichlorobenzene-d4		EPA 8260B	100.0	70-130
4-Bromofluorobenzene		EPA 8260B	96.0	70-130
Toluene-d8		EPA 8260B	102.0	70-130

Authorized Signature

  
Kathy Sattler, Lab Manager

MCL EPA's Maximum Contaminant Level  
ND Not Detected  
PQL Practical Quantitation Limit

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**Batch #:** 100712007  
**Project Name:** BUENA LUST 0504-060-00

## Analytical Results Report

<b>Sample Number</b>	100712007-001	<b>Sampling Date</b>	7/9/2010	<b>Date/Time Received</b>	7/12/2010 8:45 AM		
<b>Client Sample ID</b>	MW-1-070910	<b>Sampling Time</b>	11:42 AM	<b>Extraction Date</b>			
<b>Matrix</b>	Water	<b>Sample Location</b>					
<b>Comments</b>							
Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
Methane	ND	mg/L	0.0008	7/13/2010	SUB	RSK175	

<b>Sample Number</b>	100712007-002	<b>Sampling Date</b>	7/9/2010	<b>Date/Time Received</b>	7/12/2010 8:45 AM		
<b>Client Sample ID</b>	MW-2-070910	<b>Sampling Time</b>	10:15 AM	<b>Extraction Date</b>			
<b>Matrix</b>	Water	<b>Sample Location</b>					
<b>Comments</b>							
Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
Methane	ND	mg/L	0.0008	7/13/2010	SUB	RSK175	

<b>Sample Number</b>	100712007-003	<b>Sampling Date</b>	7/9/2010	<b>Date/Time Received</b>	7/12/2010 8:45 AM		
<b>Client Sample ID</b>	MW-3-070910	<b>Sampling Time</b>	11:10 AM	<b>Extraction Date</b>			
<b>Matrix</b>	Water	<b>Sample Location</b>					
<b>Comments</b>							
Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
Methane	0.232	mg/L	0.0008	7/13/2010	SUB	RSK175	

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**Batch #:** 100712007  
**Project Name:** BUENA LUST 0504-060-00

## Analytical Results Report

<b>Sample Number</b>	100712007-004	<b>Sampling Date</b>	7/9/2010	<b>Date/Time Received</b>	7/12/2010 8:45 AM
<b>Client Sample ID</b>	MW-4-070910	<b>Sampling Time</b>	12:25 PM	<b>Extraction Date</b>	
<b>Matrix</b>	Water	<b>Sample Location</b>			
<b>Comments</b>					

Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
Methane	0.141	mg/L	0.0008	7/13/2010	SUB	RSK175	

<b>Sample Number</b>	100712007-005	<b>Sampling Date</b>	7/9/2010	<b>Date/Time Received</b>	7/12/2010 8:45 AM
<b>Client Sample ID</b>	MW-6-070910	<b>Sampling Time</b>	9:27 AM	<b>Extraction Date</b>	
<b>Matrix</b>	Water	<b>Sample Location</b>			
<b>Comments</b>					

Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
Methane	0.00858	mg/L	0.0008	7/13/2010	SUB	RSK175	

<b>Sample Number</b>	100712007-006	<b>Sampling Date</b>	7/9/2010	<b>Date/Time Received</b>	7/12/2010 8:45 AM
<b>Client Sample ID</b>	MW-7-070910	<b>Sampling Time</b>	8:53 AM	<b>Extraction Date</b>	
<b>Matrix</b>	Water	<b>Sample Location</b>			
<b>Comments</b>					

Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
Methane	0.0140	mg/L	0.0008	7/13/2010	SUB	RSK175	

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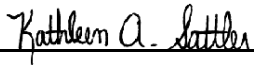
**Batch #:** 100712007  
**Project Name:** BUENA LUST 0504-060-00

## Analytical Results Report

<b>Sample Number</b>	100712007-007	<b>Sampling Date</b>	7/9/2010	<b>Date/Time Received</b>	7/12/2010 8:45 AM		
<b>Client Sample ID</b>	MW-9-070910	<b>Sampling Time</b>	8:20 AM	<b>Extraction Date</b>			
<b>Matrix</b>	Water	<b>Sample Location</b>					
<b>Comments</b>							
<b>Parameter</b>	<b>Result</b>	<b>Units</b>	<b>PQL</b>	<b>Analysis Date</b>	<b>Analyst</b>	<b>Method</b>	<b>Qualifier</b>
Methane	0.0011	mg/L	0.0008	7/13/2010	SUB	RSK175	

<b>Sample Number</b>	100712007-008	<b>Sampling Date</b>	7/9/2010	<b>Date/Time Received</b>	7/12/2010 8:45 AM		
<b>Client Sample ID</b>	MW-10-070910	<b>Sampling Time</b>	7:40 AM	<b>Extraction Date</b>			
<b>Matrix</b>	Water	<b>Sample Location</b>					
<b>Comments</b>							
<b>Parameter</b>	<b>Result</b>	<b>Units</b>	<b>PQL</b>	<b>Analysis Date</b>	<b>Analyst</b>	<b>Method</b>	<b>Qualifier</b>
Methane	0.0142	mg/L	0.0008	7/13/2010	SUB	RSK175	

Authorized Signature

  
Kathy Sattler, Lab Manager

MCL EPA's Maximum Contaminant Level  
ND Not Detected  
PQL Practical Quantitation Limit

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**Batch #:** 100712007  
**Project Name:** BUENA LUST 0504-060-00

## Analytical Results Report Quality Control Data

### Lab Control Sample

Parameter	LCS Result	Units	LCS Spike	%Rec	AR %Rec	Prep Date	Analysis Date
Gasoline	1.06	mg/L	1.1	96.4	70-130	7/13/2010	7/13/2010
Diesel	0.589	mg/L	1	58.9	50-150	7/13/2010	7/13/2010

### Matrix Spike

Sample Number	Parameter	Sample Result	MS Result	Units	MS Spike	%Rec	AR %Rec	Prep Date	Analysis Date
100712007-008	Gasoline	ND	0.888	mg/L	1.1	80.7	70-130	7/13/2010	7/13/2010
100712007-006	Diesel	ND	0.705	mg/L	1	70.5	50-150	7/13/2010	7/13/2010

### Matrix Spike Duplicate

Parameter	MSD Result	Units	MSD Spike	%Rec	%RPD	AR %RPD	Prep Date	Analysis Date
Gasoline	0.980	mg/L	1.1	89.1	9.9	0-20	7/13/2010	7/13/2010
Diesel	0.603	mg/L	1	60.3	15.6	0-50	7/13/2010	7/13/2010

### Method Blank

Parameter	Result	Units	PQL	Prep Date	Analysis Date
Diesel	ND	mg/L	0.1	7/13/2010	7/13/2010
Gasoline	ND	mg/L	0.1	7/13/2010	7/13/2010
Lube Oil	ND	mg/L	0.5	7/13/2010	7/13/2010

AR Acceptable Range  
ND Not Detected  
PQL Practical Quantitation Limit  
RPD Relative Percentage Difference

**Comments:** METHANE SUB TO ACCUTEST MOUNTAIN STATES LAB

Certifications held by Anatek Labs ID: EPA:ID00013; AZ:0701; CO:ID00013; FL(NELAP):E87893; ID:ID00013; IN:C-ID-01; KY:90142; MT:CERT0028; NM: ID00013; OR:ID200001-002; WA:C595  
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**Batch #:** 100712007  
**Project Name:** BUENA LUST 0504-060-00

## Analytical Results Report Quality Control Data

### Lab Control Sample

Parameter	LCS Result	Units	LCS Spike	%Rec	AR %Rec	Prep Date	Analysis Date
Dissolved Manganese	0.0525	mg/L	0.05	105.0	85-115	7/14/2010	7/14/2010
Dissolved Iron	0.109	mg/L	0.1	109.0	85-115	7/14/2010	7/14/2010
Alkalinity	97	mg/L	100	97.0	90-110	7/14/2010	7/14/2010
Sulfate	5.04	mg/L	5	100.8	90-110	7/13/2010	7/13/2010
Sulfate	4.63	mg/L	5	92.6	90-110	7/12/2010	7/12/2010
NO3/N	4.70	mg/L	5	94.0	90-110	7/12/2010	7/12/2010
Sulfate	4.91	mg/L	5	98.2	90-110	7/12/2010	7/12/2010
NO3/N	4.62	mg/L	5	92.4	80-120	7/12/2010	7/12/2010

### Matrix Spike

Sample Number	Parameter	Sample Result	MS Result	Units	MS Spike	%Rec	AR %Rec	Prep Date	Analysis Date
100713001-001A	Sulfate	63.1	67.7	mg/L	5	92.0	90-110	7/13/2010	7/13/2010
100712007-005	Sulfate	29.9	34.8	mg/L	5	98.0	80-120	7/12/2010	7/12/2010
100712007-005	NO3/N	0.740	5.62	mg/L	5	97.6	80-120	7/12/2010	7/12/2010
100712007-002	Dissolved Manganese	0.0301	0.0808	mg/L	0.05	101.4	70-130	7/14/2010	7/14/2010
100712007-002	Dissolved Iron	0.0542	0.166	mg/L	0.1	111.8	70-130	7/14/2010	7/14/2010
100708059-001A	Sulfate	14.1	19.2	mg/L	5	102.0	90-110	7/12/2010	7/12/2010
100708059-001A	NO3/N	0.167	4.87	mg/L	5	94.1	80-120	7/12/2010	7/12/2010
100706018-007	Alkalinity	52	148	mg/L	100	96.0	80-120	7/14/2010	7/14/2010

### Matrix Spike Duplicate

Parameter	MSD Result	Units	MSD Spike	%Rec	%RPD	AR %RPD	Prep Date	Analysis Date
Sulfate	67.9	mg/L	5	96.0	0.3	0-20	7/13/2010	7/13/2010
Sulfate	34.6	mg/L	5	94.0	0.6	0-20	7/12/2010	7/12/2010
NO3/N	5.71	mg/L	5	99.4	1.6	0-20	7/12/2010	7/12/2010
Dissolved Manganese	0.0814	mg/L	0.05	102.6	0.7	0-20	7/14/2010	7/14/2010
Dissolved Iron	0.176	mg/L	0.1	121.8	5.8	0-20	7/14/2010	7/14/2010
Sulfate	19.3	mg/L	5	104.0	0.5	0-20	7/12/2010	7/12/2010
NO3/N	4.86	mg/L	5	93.9	0.2	0-20	7/12/2010	7/12/2010
Alkalinity	151	mg/L	100	99.0	2.0	0-20	7/14/2010	7/14/2010

### Method Blank

**Comments:** METHANE SUB TO ACCUTEST MOUNTAIN STATES LAB

Certifications held by Anatek Labs ID: EPA:ID00013; AZ:0701; CO:ID00013; FL(NELAP):E87893; ID:ID00013; IN:C-ID-01; KY:90142; MT:CERT0028; NM: ID00013; OR:ID200001-002; WA:C595  
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**Address:** 523 E 2ND  
SPOKANE, WA 99202  
**Attn:** BRUCE WILLIAMS

**Batch #:** 100712007  
**Project Name:** BUENA LUST 0504-060-00

## Analytical Results Report Quality Control Data

Parameter	Result	Units	PQL	Prep Date	Analysis Date
Alkalinity	ND	mg/L	10	7/14/2010	7/14/2010
Dissolved Iron	ND	mg/L	0.001	7/14/2010	7/14/2010
Dissolved Manganese	ND	mg/L	0.001	7/14/2010	7/14/2010
NO3/N	ND	mg/L	0.1	7/12/2010	7/12/2010
NO3/N	ND	mg/L	0.1	7/12/2010	7/12/2010
Sulfate	ND	mg/L	0.1	7/13/2010	7/13/2010
Sulfate	ND	mg/L	0.1	7/12/2010	7/12/2010
Sulfate	ND	mg/L	0.1	7/12/2010	7/12/2010

### Duplicate

Sample Number	Parameter	Sample Result	Duplicate Result	Units	%RPD	AR %RPD	Prep Date	Analysis Date
100712007-005	Dissolved Manganese	0.909	0.903	mg/L	0.7	0-20	7/14/2010	7/14/2010
100712007-005	Dissolved Iron	0.0704	0.0676	mg/L	4.1	0-20	7/14/2010	7/14/2010

AR Acceptable Range  
ND Not Detected  
PQL Practical Quantitation Limit  
RPD Relative Percentage Difference

**Comments:** METHANE SUB TO ACCUTEST MOUNTAIN STATES LAB

Certifications held by Anatek Labs ID: EPA:ID00013; AZ:0701; CO:ID00013; FL(NELAP):E87893; ID:ID00013; IN:C-ID-01; KY:90142; MT:CERT0028; NM: ID00013; OR:ID200001-002; WA:C595  
Certifications held by Anatek Labs WA: EPA:WA00169; CA:Cert2632; ID:WA00169; WA:C585; MT:Cert0095

# Anatek Labs, Inc.

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504 E Sprague Ste. D • Spokane WA 99202 • (509) 838-3999 • Fax (509) 838-4433 • email spokane@anateklabs.com

**Client:** GEO ENGINEERS  
**Address:** 523 E 2ND  
SPOKANE, WA 99202  
**Attn:** BRUCE WILLIAMS

**Batch #:** 100712007  
**Project Name:** BUENA LUST 0504-060-00

## Analytical Results Report Quality Control Data

### Lab Control Sample

Parameter	LCS Result	Units	LCS Spike	%Rec	AR %Rec	Prep Date	Analysis Date
Methane	0.598	mg/L	0.5094	117.4	70-130	7/13/2010	7/13/2010

### Matrix Spike

Sample Number	Parameter	Sample Result	MS Result	Units	MS Spike	%Rec	AR %Rec	Prep Date	Analysis Date
100712007-010	Methane	0.0235	0.523	mg/L	0.509	98.1	70-130	7/13/2010	7/13/2010

### Matrix Spike Duplicate

Parameter	MSD Result	Units	MSD Spike	%Rec	%RPD	AR %RPD	Prep Date	Analysis Date
Methane	0.529	mg/L	0.5094	99.2	1.1	0-30	7/13/2010	7/13/2010

### Method Blank

Parameter	Result	Units	PQL	Prep Date	Analysis Date
Methane	ND	mg/L	0.001	7/13/2010	7/13/2010

AR Acceptable Range  
ND Not Detected  
PQL Practical Quantitation Limit  
RPD Relative Percentage Difference

**Comments:** METHANE SUB TO ACCUTEST MOUNTAIN STATES LAB

Certifications held by Anatek Labs ID: EPA:ID00013; AZ:0701; CO:ID00013; FL(NELAP):E87893; ID:ID00013; IN:C-ID-01; KY:90142; MT:CERT0028; NM: ID00013; OR:ID200001-002; WA:C595  
Certifications held by Anatek Labs WA: EPA:WA00169; CA:Cert2632; ID:WA00169; WA:C585; MT:Cert0095

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504 E Sprague Ste. D • Spokane WA 99202 • (509) 838-3999 • Fax (509) 838-4433 • email spokane@anateklabs.com

## Login Report

**Customer Name:** GEO ENGINEERS

523 E 2ND

SPOKANE

WA

99202

**Order ID:** 100712007

**Order Date:** 7/12/2010

**Contact Name:** BRUCE WILLIAMS

**Project Name:** BUENA LUST 0504-060-00

**Comment:** METHANE SUB TO ACCUTEST MOUNTAIN STATES LAB

---

**Sample #:** 100712007-001 **Customer Sample #:** MW-1-070910

**Recv'd:**

**Collector:** KATHERINE CASSIDY

**Date Collected:** 7/9/2010

**Quantity:** 1

**Matrix:** Water

**Date Received:** 7/12/2010 8:45:00 A

**Comment:**

Test	Method	Due Date	Priority
ALKALINITY	SM2320B	7/14/2010	<u>2 Days</u>
DISSOLVED GASES	GC/FID	7/14/2010	<u>2 Days</u>
DISSOLVED IRON	EPA 200.8	7/14/2010	<u>2 Days</u>
DISSOLVED MANGANESE	EPA 200.8	7/14/2010	<u>2 Days</u>
NITRATE/N	EPA 300.0	7/11/2010	<u>2 Days</u>
RBCA COCS FOR GAS	EPA 8260B	7/14/2010	<u>2 Days</u>
SULFATE	EPA 300.0	7/14/2010	<u>2 Days</u>
TPHDX-NW	NWTPHDX	7/14/2010	<u>2 Days</u>
TPHG-NW-SPO	NWTPHG	7/14/2010	<u>2 Days</u>

---

**Sample #:** 100712007-002 **Customer Sample #:** MW-2-070910

**Recv'd:**

**Collector:** KATHERINE CASSIDY

**Date Collected:** 7/9/2010

**Quantity:** 1

**Matrix:** Water

**Date Received:** 7/12/2010 8:45:00 A

**Comment:**

Test	Method	Due Date	Priority
ALKALINITY	SM2320B	7/14/2010	<u>2 Days</u>
DISSOLVED GASES	GC/FID	7/14/2010	<u>2 Days</u>
DISSOLVED IRON	EPA 200.8	7/14/2010	<u>2 Days</u>
DISSOLVED MANGANESE	EPA 200.8	7/14/2010	<u>2 Days</u>
NITRATE/N	EPA 300.0	7/11/2010	<u>2 Days</u>
RBCA COCS FOR GAS	EPA 8260B	7/14/2010	<u>2 Days</u>
SULFATE	EPA 300.0	7/14/2010	<u>2 Days</u>

**Customer Name:** GEO ENGINEERS  
523 E 2ND  
SPOKANE WA 99202

**Order ID:** 100712007  
**Order Date:** 7/12/2010

**Contact Name:** BRUCE WILLIAMS

**Project Name:** BUENA LUST 0504-060-00

**Comment:** METHANE SUB TO ACCUTEST MOUNTAIN STATES LAB

TPHDX-NW NWTPHDX 7/14/2010 **2 Days**  
TPHG-NW-SPO NWTPHG 7/14/2010 **2 Days**

**Sample #:** 100712007-003 **Customer Sample #:** MW-3-070910

**Recv'd:**  **Collector:** KATHERINE CASSIDY **Date Collected:** 7/9/2010  
**Quantity:** 1 **Matrix:** Water **Date Received:** 7/12/2010 8:45:00 A

**Comment:**

Test	Method	Due Date	Priority
ALKALINITY	SM2320B	7/14/2010	<b><u>2 Days</u></b>
DISSOLVED GASES	GC/FID	7/14/2010	<b><u>2 Days</u></b>
DISSOLVED IRON	EPA 200.8	7/14/2010	<b><u>2 Days</u></b>
DISSOLVED MANGANESE	EPA 200.8	7/14/2010	<b><u>2 Days</u></b>
NITRATE/N	EPA 300.0	7/11/2010	<b><u>2 Days</u></b>
RBCA COCS FOR GAS	EPA 8260B	7/14/2010	<b><u>2 Days</u></b>
SULFATE	EPA 300.0	7/14/2010	<b><u>2 Days</u></b>
TPHDX-NW	NWTPHDX	7/14/2010	<b><u>2 Days</u></b>
TPHG-NW-SPO	NWTPHG	7/14/2010	<b><u>2 Days</u></b>

**Sample #:** 100712007-004 **Customer Sample #:** MW-4-070910

**Recv'd:**  **Collector:** KATHERINE CASSIDY **Date Collected:** 7/9/2010  
**Quantity:** 1 **Matrix:** Water **Date Received:** 7/12/2010 8:45:00 A

**Comment:**

Test	Method	Due Date	Priority
ALKALINITY	SM2320B	7/14/2010	<b><u>2 Days</u></b>
DISSOLVED GASES	GC/FID	7/14/2010	<b><u>2 Days</u></b>
DISSOLVED IRON	EPA 200.8	7/14/2010	<b><u>2 Days</u></b>
DISSOLVED MANGANESE	EPA 200.8	7/14/2010	<b><u>2 Days</u></b>
NITRATE/N	EPA 300.0	7/11/2010	<b><u>2 Days</u></b>
RBCA COCS FOR GAS	EPA 8260B	7/14/2010	<b><u>2 Days</u></b>
SULFATE	EPA 300.0	7/14/2010	<b><u>2 Days</u></b>
TPHDX-NW	NWTPHDX	7/14/2010	<b><u>2 Days</u></b>
TPHG-NW-SPO	NWTPHG	7/14/2010	<b><u>2 Days</u></b>

**Customer Name:** GEO ENGINEERS  
523 E 2ND  
SPOKANE WA 99202

**Order ID:** 100712007  
**Order Date:** 7/12/2010

**Contact Name:** BRUCE WILLIAMS

**Project Name:** BUENA LUST 0504-060-00

**Comment:** METHANE SUB TO ACCUTEST MOUNTAIN STATES LAB

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**Sample #:** 100712007-005 **Customer Sample #:** MW-6-070910

**Recv'd:**  **Collector:** KATHERINE CASSIDY **Date Collected:** 7/9/2010  
**Quantity:** 1 **Matrix:** Water **Date Received:** 7/12/2010 8:45:00 A

**Comment:**

Test	Method	Due Date	Priority
ALKALINITY	SM2320B	7/14/2010	<u>2 Days</u>
DISSOLVED GASES	GC/FID	7/14/2010	<u>2 Days</u>
DISSOLVED IRON	EPA 200.8	7/14/2010	<u>2 Days</u>
DISSOLVED MANGANESE	EPA 200.8	7/14/2010	<u>2 Days</u>
NITRATE/N	EPA 300.0	7/11/2010	<u>2 Days</u>
RBCA COCS FOR GAS	EPA 8260B	7/14/2010	<u>2 Days</u>
SULFATE	EPA 300.0	7/14/2010	<u>2 Days</u>
TPHDX-NW	NWTPHDX	7/14/2010	<u>2 Days</u>
TPHG-NW-SPO	NWTPHG	7/14/2010	<u>2 Days</u>

---

**Sample #:** 100712007-006 **Customer Sample #:** MW-7-070910

**Recv'd:**  **Collector:** KATHERINE CASSIDY **Date Collected:** 7/9/2010  
**Quantity:** 1 **Matrix:** Water **Date Received:** 7/12/2010 8:45:00 A

**Comment:**

Test	Method	Due Date	Priority
ALKALINITY	SM2320B	7/14/2010	<u>2 Days</u>
DISSOLVED GASES	GC/FID	7/14/2010	<u>2 Days</u>
DISSOLVED IRON	EPA 200.8	7/14/2010	<u>2 Days</u>
DISSOLVED MANGANESE	EPA 200.8	7/14/2010	<u>2 Days</u>
NITRATE/N	EPA 300.0	7/11/2010	<u>2 Days</u>
RBCA COCS FOR GAS	EPA 8260B	7/14/2010	<u>2 Days</u>
SULFATE	EPA 300.0	7/14/2010	<u>2 Days</u>
TPHDX-NW	NWTPHDX	7/14/2010	<u>2 Days</u>
TPHG-NW-SPO	NWTPHG	7/14/2010	<u>2 Days</u>

**Customer Name:** GEO ENGINEERS  
523 E 2ND  
SPOKANE WA 99202

**Order ID:** 100712007  
**Order Date:** 7/12/2010

**Contact Name:** BRUCE WILLIAMS

**Project Name:** BUENA LUST 0504-060-00

**Comment:** METHANE SUB TO ACCUTEST MOUNTAIN STATES LAB

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**Sample #:** 100712007-007 **Customer Sample #:** MW-9-070910

**Recv'd:**  **Collector:** KATHERINE CASSIDY **Date Collected:** 7/9/2010  
**Quantity:** 1 **Matrix:** Water **Date Received:** 7/12/2010 8:45:00 A

**Comment:**

Test	Method	Due Date	Priority
ALKALINITY	SM2320B	7/14/2010	<u>2 Days</u>
DISSOLVED GASES	GC/FID	7/14/2010	<u>2 Days</u>
DISSOLVED IRON	EPA 200.8	7/14/2010	<u>2 Days</u>
DISSOLVED MANGANESE	EPA 200.8	7/14/2010	<u>2 Days</u>
NITRATE/N	EPA 300.0	7/11/2010	<u>2 Days</u>
RBCA COCS FOR GAS	EPA 8260B	7/14/2010	<u>2 Days</u>
SULFATE	EPA 300.0	7/14/2010	<u>2 Days</u>
TPHDX-NW	NWTPHDX	7/14/2010	<u>2 Days</u>
TPHG-NW-SPO	NWTPHG	7/14/2010	<u>2 Days</u>

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**Sample #:** 100712007-008 **Customer Sample #:** MW-10-070910

**Recv'd:**  **Collector:** KATHERINE CASSIDY **Date Collected:** 7/9/2010  
**Quantity:** 1 **Matrix:** Water **Date Received:** 7/12/2010 8:45:00 A

**Comment:**

Test	Method	Due Date	Priority
ALKALINITY	SM2320B	7/14/2010	<u>2 Days</u>
DISSOLVED GASES	GC/FID	7/14/2010	<u>2 Days</u>
DISSOLVED IRON	EPA 200.8	7/14/2010	<u>2 Days</u>
DISSOLVED MANGANESE	EPA 200.8	7/14/2010	<u>2 Days</u>
NITRATE/N	EPA 300.0	7/11/2010	<u>2 Days</u>
RBCA COCS FOR GAS	EPA 8260B	7/14/2010	<u>2 Days</u>
SULFATE	EPA 300.0	7/14/2010	<u>2 Days</u>
TPHDX-NW	NWTPHDX	7/14/2010	<u>2 Days</u>
TPHG-NW-SPO	NWTPHG	7/14/2010	<u>2 Days</u>

**Customer Name:** GEO ENGINEERS  
523 E 2ND  
SPOKANE

WA 99202

**Order ID:** 100712007  
**Order Date:** 7/12/2010

**Contact Name:** BRUCE WILLIAMS

**Project Name:** BUENA LUST 0504-060-00

**Comment:** METHANE SUB TO ACCUTEST MOUNTAIN STATES LAB

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**Sample #:** 100712007-009    **Customer Sample #:** TRIP BLANK

**Recv'd:**     **Collector:** KATHERINE CASSIDY    **Date Collected:** 7/9/2010  
**Quantity:** 1    **Matrix:** Water    **Date Received:** 7/12/2010 8:45:00 A

**Comment:**

Test	Method	Due Date	Priority
RBCA COCS FOR GAS	EPA 8260B	7/14/2010	<u>2 Days</u>
TPHG-NW-SPO	NWTPHG	7/14/2010	<u>2 Days</u>

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### SAMPLE CONDITION RECORD

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Samples received in a cooler?	Yes
Samples received intact?	Yes
What is the temperature inside the cooler?	2.2
Samples received with a COC?	Yes
Samples received within holding time?	Yes
Are all sample bottles properly preserved?	Yes
Are VOC samples free of headspace?	Yes
Is there a trip blank to accompany VOC samples?	Yes
Labels and chain agree?	Yes



100712 007 **GEOE** Last Due 7/14/2010  
 1st SAMP 7/9/2010 1st RCVD 7/12/2010  
 BUENA LUST 0504-060-00

**Chain of Custody Record**



1282 Alturas Drive, Moscow ID 83843 (208) 883-2839 FAX 882-9246  
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Turn Around Time & Reporting  
 Please refer to our normal turn around times at  
 http://www.anateklabs.com/services/guidelines/reporting.asp  
 \_\_\_ Normal \_\_\_ All rush order \_\_\_ Phone \_\_\_  
 \_\_\_ Next Day\* \_\_\_ requests must be \_\_\_ Mail \_\_\_  
 \_\_\_ 2nd Day\* \_\_\_ prior approved. \_\_\_ Fax \_\_\_  
 \_\_\_ Other\* \_\_\_

Project Name: Geo Engineers  
 Project Name & #: BUENA LUST 0504-060-00  
 Email Address: GeoEng@anatek.com  
 Purchase Order #: 99201  
 Project Manager: Bruce Williams  
 Sampler Name & phone: Walter Cassidy 795 766110

**Provide Sample Description**

Lab ID	Sample Identification	Sampling Date/Time	Matrix	# of Containers	Sample Volume	Preservative	HCU	GC/BTEX, HTBE	GC/BTEX, HTBE	GC/BTEX, HTBE	GC/BTEX, HTBE	GC/BTEX, HTBE	GC/BTEX, HTBE	GC/BTEX, HTBE	GC/BTEX, HTBE	GC/BTEX, HTBE	GC/BTEX, HTBE	GC/BTEX, HTBE
1	MW-1-070910	7-9-10 1142	W	10	100ml	None	1	1	1	1	1	1	1	1	1	1	1	1
2	MW-2-070910	7-9-10 1015	W	10	100ml	None	1	1	1	1	1	1	1	1	1	1	1	1
3	MW-3-070910	7-9-10 1110	W	10	100ml	None	1	1	1	1	1	1	1	1	1	1	1	1
4	MW-4-070910	7-9-10 1225	W	10	100ml	None	1	1	1	1	1	1	1	1	1	1	1	1
5	MW-6-070910	7-9-10 927	W	10	100ml	None	1	1	1	1	1	1	1	1	1	1	1	1
6	MW-7-070910	7-9-10 853	W	10	100ml	None	1	1	1	1	1	1	1	1	1	1	1	1
7	MW-9-070910	7-9-10 820	W	10	100ml	None	1	1	1	1	1	1	1	1	1	1	1	1
8	MW-10-070910	7-9-10 740	W	10	100ml	None	1	1	1	1	1	1	1	1	1	1	1	1

Relinquished by	Printed Name	Signature	Company	Date	Time
Relinquished by	Kevin Bonds	<i>Kevin Bonds</i>	GeoEngineers	7/12/10	0845
Received by	<i>[Signature]</i>	<i>[Signature]</i>	Anatek	7/12	0845
Relinquished by					
Received by					
Relinquished by					
Received by					

Note Special Instructions/Comments  
 \* 2 day TAT  
 Please e-mail results to Dave  
 trauder.  
 SNBS  
**RUSH**  
 Methane to: Accutest  
 Inspection Checklist  
 Received Intact?  Y  N  
 Labels & Chains Agree?  Y  N  
 Containers Sealed?  Y  N  
 VOC Head Space?  Y  N  
 hand del/2 Coolers  
 Temperature (°C): 2.2°C  
 Preservative: HCL  
 Date & Time: 7-12-10 8:00  
 Inspected By: Mervis

## CASE NARRATIVE

July 27, 2010

**Lab Name:** Anatek Labs, Inc.

**Project Tracking No.:** Buena 0504-060-00

**Anatek Batch:** 100722012

**Project Summary:** Eight water samples and one trip blank were received and analyzed for NWTPH-Dx, sulfate, nitrate, soluble iron, soluble manganese, NWTPH-G, BTEX, Naphthalene, Methane and alkalinity. Eight soil samples were received and analyzed for NWTPH-Dx, NWTPH-G, BTEX, Naphthalene, and MTBE. The soil samples submitted for NWTPH-G, BTEX, Naphthalene, and MTBE were collected by EPA Method 5035.

### QA/QC Checks

<u>Parameters</u>	<u>Yes / No</u>	<u>Exceptions / Deviations</u>
Sample Holding Time Valid?	Y	NA
Surrogate Recoveries Valid?	Y	NA
QC Sample(s) Recoveries Valid?	Y	NA
Method Blank(s) Valid?	Y	NA
Tune(s) Valid?	Y	NA
Internal Standard Responses Valid?	Y	NA
Initial Calibration Curve(s) Valid?	Y	NA
Continuing Calibration(s) Valid?	Y	NA
Comments	Y	NA

#### 1. Temperature Requirements

Three coolers were received and delivered by FEDEX. The temperatures of the coolers were 6.9°C, 8.4°C, 13.9°C. The samples were wrapped in bubble wrap and then placed in plastic bags. The cubed ice was triple bagged and placed in the coolers with the samples. There were bags of ice still frozen in the coolers.

#### 2. Holding Time Requirements

Initial analysis of all samples performed within holding time requirements. No problems encountered.

#### 3. GC/MS Tune Requirements

No problems encountered.

#### 4. Calibration Requirements

No problems encountered.

**5. Surrogate Recovery Requirements**

No problems encountered.

**6. QC Sample (LCS/MS/MSD) Recovery Requirements**

No problems were encountered.

**7. Method Blank Requirements**

The method blanks were non-detect for all analytes. No problems encountered.

**8. Internal Standard(s) Response Requirements**

No problems encountered.

**9. Comments**

**I certify that this data package is in compliance with the terms and conditions of the contract.  
Release of the data contained in this data package has been authorized by the Laboratory Manager  
or his designee.**

Approved by : Kathleen A. Sattler

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**Client:** GEO ENGINEERS  
**Address:** 523 E 2ND  
SPOKANE, WA 99202  
**Attn:** DAVE LAUDER

**Batch #:** 100722012  
**Project Name:** BUENA 0504-060-00

## Analytical Results Report

<b>Sample Number</b>	100722012-001	<b>Sampling Date</b>	7/20/2010	<b>Date/Time Received</b>	7/22/2010 10:15 AM		
<b>Client Sample ID</b>	DP-1-2.5-072010	<b>Sampling Time</b>	8:55 AM	<b>Extraction Date</b>			
<b>Matrix</b>	Soil	<b>Sample Location</b>					
<b>Comments</b>							
Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
Ethylbenzene	0.481	mg/Kg	0.0625	7/24/2010	WOZ	EPA 8021	
methyl-t-butyl ether (MTBE)	ND	mg/kg	0.0625	7/24/2010	WOZ	EPA 8021	
Toluene	0.116	mg/Kg	0.0625	7/24/2010	WOZ	EPA 8021	
Total Xylene	1.12	mg/Kg	0.125	7/24/2010	WOZ	EPA 8021	
Benzene	ND	mg/Kg	0.03	7/29/2010	WOZ	EPA 8260B	
Naphthalene	ND	mg/kg	0.312	7/24/2010	WOZ	EPA 8021	
Diesel	ND	mg/kg	25	7/22/2010	MJL	NWTPHDX	
Lube Oil	ND	mg/kg	100	7/22/2010	MJL	NWTPHDX	
Gasoline	102	mg/kg	6.25	7/24/2010	WOZ	NWTPHG	
%moisture	24.4	Percent		7/22/2010	MJL	%moisture	

## Surrogate Data

<b>Sample Number</b>	100722012-001		
Surrogate Standard	Method	Percent Recovery	Control Limits
4-Bromofluorobenzene	EPA 8021	106.9	70-130
1,2-Dichlorobenzene-d4	EPA 8260B	98.4	70-130
4-Bromofluorobenzene	EPA 8260B	96.4	70-130
Toluene-d8	EPA 8260B	107.6	70-130
hexacosane	NWTPHDX	127.0	50-150

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**Client:** GEO ENGINEERS  
**Address:** 523 E 2ND  
SPOKANE, WA 99202  
**Attn:** DAVE LAUDER

**Batch #:** 100722012  
**Project Name:** BUENA 0504-060-00

## Analytical Results Report

<b>Sample Number</b>	100722012-003	<b>Sampling Date</b>	7/20/2010	<b>Date/Time Received</b>	7/22/2010 10:15 AM
<b>Client Sample ID</b>	DP-2-4.0-072010	<b>Sampling Time</b>	10:10 AM	<b>Extraction Date</b>	
<b>Matrix</b>	Soil	<b>Sample Location</b>			
<b>Comments</b>					

Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
Ethylbenzene	ND	mg/Kg	0.049	7/24/2010	WOZ	EPA 8021	
methyl-t-butyl ether (MTBE)	ND	mg/kg	0.049	7/24/2010	WOZ	EPA 8021	
Toluene	ND	mg/Kg	0.049	7/24/2010	WOZ	EPA 8021	
Total Xylene	ND	mg/Kg	0.098	7/24/2010	WOZ	EPA 8021	
Benzene	ND	mg/Kg	0.03	7/28/2010	WOZ	EPA 8260B	
Naphthalene	ND	mg/kg	0.245	7/24/2010	WOZ	EPA 8021	
Diesel	ND	mg/kg	25	7/22/2010	MJL	NWTPHDX	
Lube Oil	577	mg/kg	100	7/22/2010	MJL	NWTPHDX	
Gasoline	ND	mg/kg	4.9	7/24/2010	WOZ	NWTPHG	
%moisture	10.5	Percent		7/22/2010	MJL	%moisture	

## Surrogate Data

<b>Sample Number</b>	100722012-003		
<b>Surrogate Standard</b>	<b>Method</b>	<b>Percent Recovery</b>	<b>Control Limits</b>
4-Bromofluorobenzene	EPA 8021	98.1	70-130
1,2-Dichlorobenzene-d4	EPA 8260B	98.0	70-130
4-Bromofluorobenzene	EPA 8260B	88.0	70-130
Toluene-d8	EPA 8260B	92.0	70-130
hexacosane	NWTPHDX	85.6	50-150

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**Attn:** DAVE LAUDER

**Batch #:** 100722012  
**Project Name:** BUENA 0504-060-00

## Analytical Results Report

<b>Sample Number</b>	100722012-005	<b>Sampling Date</b>	7/20/2010	<b>Date/Time Received</b>	7/22/2010 10:15 AM
<b>Client Sample ID</b>	DP-3-5.0-072010	<b>Sampling Time</b>	11:20 AM	<b>Extraction Date</b>	
<b>Matrix</b>	Soil	<b>Sample Location</b>			
<b>Comments</b>					

Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
Ethylbenzene	ND	mg/Kg	0.055	7/24/2010	WOZ	EPA 8021	
methyl-t-butyl ether (MTBE)	ND	mg/kg	0.055	7/24/2010	WOZ	EPA 8021	
Toluene	ND	mg/Kg	0.055	7/24/2010	WOZ	EPA 8021	
Total Xylene	ND	mg/Kg	0.11	7/24/2010	WOZ	EPA 8021	
Benzene	ND	mg/Kg	0.03	7/28/2010	WOZ	EPA 8260B	
Naphthalene	ND	mg/kg	0.275	7/24/2010	WOZ	EPA 8021	
Diesel	ND	mg/kg	25	7/22/2010	MJL	NWTPHDX	
Lube Oil	ND	mg/kg	100	7/22/2010	MJL	NWTPHDX	
Gasoline	ND	mg/kg	5.5	7/24/2010	WOZ	NWTPHG	
%moisture	5	Percent		7/22/2010	MJL	%moisture	

## Surrogate Data

<b>Sample Number</b>	100722012-005		
<b>Surrogate Standard</b>	<b>Method</b>	<b>Percent Recovery</b>	<b>Control Limits</b>
4-Bromofluorobenzene	EPA 8021	98.3	70-130
1,2-Dichlorobenzene-d4	EPA 8260B	99.6	70-130
4-Bromofluorobenzene	EPA 8260B	89.2	70-130
Toluene-d8	EPA 8260B	90.0	70-130
hexacosane	NWTPHDX	86.8	50-150

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## Analytical Results Report

<b>Sample Number</b>	100722012-007	<b>Sampling Date</b>	7/20/2010	<b>Date/Time Received</b>	7/22/2010 10:15 AM		
<b>Client Sample ID</b>	DP-4-4..5-072010	<b>Sampling Time</b>	12:15 PM	<b>Extraction Date</b>			
<b>Matrix</b>	Soil	<b>Sample Location</b>					
<b>Comments</b>							
Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
Ethylbenzene	ND	mg/Kg	0.04875	7/24/2010	WOZ	EPA 8021	
methyl-t-butyl ether (MTBE)	ND	mg/kg	0.04875	7/24/2010	WOZ	EPA 8021	
Toluene	ND	mg/Kg	0.04875	7/24/2010	WOZ	EPA 8021	
Total Xylene	ND	mg/Kg	0.0975	7/24/2010	WOZ	EPA 8021	
Benzene	ND	mg/Kg	0.03	7/28/2010	WOZ	EPA 8260B	
Naphthalene	ND	mg/kg	0.2435	7/24/2010	WOZ	EPA 8021	
Diesel	ND	mg/kg	25	7/22/2010	MJL	NWTPHDX	
Lube Oil	ND	mg/kg	100	7/22/2010	MJL	NWTPHDX	
Gasoline	ND	mg/kg	4.875	7/24/2010	WOZ	NWTPHG	
%moisture	7.7	Percent		7/22/2010	MJL	%moisture	

## Surrogate Data

<b>Sample Number</b>	100722012-007		
Surrogate Standard	Method	Percent Recovery	Control Limits
4-Bromofluorobenzene	EPA 8021	98.6	70-130
1,2-Dichlorobenzene-d4	EPA 8260B	98.4	70-130
4-Bromofluorobenzene	EPA 8260B	86.8	70-130
Toluene-d8	EPA 8260B	90.8	70-130
hexacosane	NWTPHDX	86.6	50-150

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## Analytical Results Report

<b>Sample Number</b>	100722012-009	<b>Sampling Date</b>	7/20/2010	<b>Date/Time Received</b>	7/22/2010 10:15 AM
<b>Client Sample ID</b>	DP-5-4.5-072010	<b>Sampling Time</b>	1:40 PM	<b>Extraction Date</b>	
<b>Matrix</b>	Soil	<b>Sample Location</b>			
<b>Comments</b>					

Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
Ethylbenzene	ND	mg/Kg	0.0555	7/24/2010	WOZ	EPA 8021	
methyl-t-butyl ether (MTBE)	ND	mg/kg	0.0555	7/24/2010	WOZ	EPA 8021	
Toluene	ND	mg/Kg	0.0555	7/24/2010	WOZ	EPA 8021	
Total Xylene	ND	mg/Kg	0.111	7/24/2010	WOZ	EPA 8021	
Benzene	ND	mg/Kg	0.03	7/28/2010	WOZ	EPA 8260B	
Naphthalene	ND	mg/kg	0.278	7/24/2010	WOZ	EPA 8021	
Diesel	ND	mg/kg	25	7/23/2010	MJL	NWTPHDX	
Lube Oil	ND	mg/kg	100	7/23/2010	MJL	NWTPHDX	
Gasoline	ND	mg/kg	5.575	7/24/2010	WOZ	NWTPHG	
%moisture	11	Percent		7/22/2010	MJL	%moisture	

## Surrogate Data

<b>Sample Number</b>	100722012-009		
<b>Surrogate Standard</b>	<b>Method</b>	<b>Percent Recovery</b>	<b>Control Limits</b>
4-Bromofluorobenzene	EPA 8021	98.6	70-130
1,2-Dichlorobenzene-d4	EPA 8260B	98.0	70-130
4-Bromofluorobenzene	EPA 8260B	88.0	70-130
Toluene-d8	EPA 8260B	92.0	70-130
hexacosane	NWTPHDX	89.6	50-150



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## Analytical Results Report

<b>Sample Number</b>	100722012-011	<b>Sampling Date</b>	7/20/2010	<b>Date/Time Received</b>	7/22/2010 10:15 AM		
<b>Client Sample ID</b>	DP-6-5.0-072010	<b>Sampling Time</b>	2:50 PM	<b>Extraction Date</b>			
<b>Matrix</b>	Soil	<b>Sample Location</b>					
<b>Comments</b>							
Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
Ethylbenzene	ND	mg/Kg	0.06625	7/24/2010	WOZ	EPA 8021	
methyl-t-butyl ether (MTBE)	ND	mg/kg	0.06625	7/24/2010	WOZ	EPA 8021	
Toluene	ND	mg/Kg	0.06625	7/24/2010	WOZ	EPA 8021	
Total Xylene	ND	mg/Kg	0.1325	7/24/2010	WOZ	EPA 8021	
Benzene	ND	mg/Kg	0.03	7/29/2010	WOZ	EPA 8260B	
Naphthalene	ND	mg/kg	0.3315	7/24/2010	WOZ	EPA 8021	
Diesel	ND	mg/kg	25	7/23/2010	MJL	NWTPHDX	
Lube Oil	300	mg/kg	100	7/23/2010	MJL	NWTPHDX	
Gasoline	ND	mg/kg	6.65	7/24/2010	WOZ	NWTPHG	
%moisture	16.7	Percent		7/22/2010	MJL	%moisture	

## Surrogate Data

<b>Sample Number</b>	100722012-011		
Surrogate Standard	Method	Percent Recovery	Control Limits
4-Bromofluorobenzene	EPA 8021	100.4	70-130
1,2-Dichlorobenzene-d4	EPA 8260B	98.0	70-130
4-Bromofluorobenzene	EPA 8260B	99.6	70-130
Toluene-d8	EPA 8260B	104.8	70-130
hexacosane	NWTPHDX	87.6	50-150

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## Analytical Results Report

<b>Sample Number</b>	100722012-013	<b>Sampling Date</b>	7/20/2010	<b>Date/Time Received</b>	7/22/2010 10:15 AM		
<b>Client Sample ID</b>	DP-7-2.0-072010	<b>Sampling Time</b>	3:45 PM	<b>Extraction Date</b>			
<b>Matrix</b>	Soil	<b>Sample Location</b>					
<b>Comments</b>							
Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
Ethylbenzene	ND	mg/Kg	0.06875	7/24/2010	WOZ	EPA 8021	
methyl-t-butyl ether (MTBE)	ND	mg/kg	0.06875	7/24/2010	WOZ	EPA 8021	
Toluene	ND	mg/Kg	0.06875	7/24/2010	WOZ	EPA 8021	
Total Xylene	ND	mg/Kg	0.1375	7/24/2010	WOZ	EPA 8021	
Benzene	ND	mg/Kg	0.03	7/29/2010	WOZ	EPA 8260B	
Naphthalene	ND	mg/kg	0.3435	7/24/2010	WOZ	EPA 8021	
Diesel	ND	mg/kg	25	7/23/2010	MJL	NWTPHDX	
Lube Oil	141	mg/kg	100	7/23/2010	MJL	NWTPHDX	
Gasoline	ND	mg/kg	6.875	7/24/2010	WOZ	NWTPHG	
%moisture	9.5	Percent		7/22/2010	MJL	%moisture	

## Surrogate Data

<b>Sample Number</b>	100722012-013		
Surrogate Standard	Method	Percent Recovery	Control Limits
4-Bromofluorobenzene	EPA 8021	100.4	70-130
1,2-Dichlorobenzene-d4	EPA 8260B	101.2	70-130
4-Bromofluorobenzene	EPA 8260B	94.8	70-130
Toluene-d8	EPA 8260B	104.4	70-130
hexacosane	NWTPHDX	79.2	50-150

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**Batch #:** 100722012  
**Project Name:** BUENA 0504-060-00

## Analytical Results Report

<b>Sample Number</b>	100722012-015	<b>Sampling Date</b>	7/20/2010	<b>Date/Time Received</b>	7/22/2010 10:15 AM		
<b>Client Sample ID</b>	DP-8-2.5-072010	<b>Sampling Time</b>	4:45 PM	<b>Extraction Date</b>			
<b>Matrix</b>	Soil	<b>Sample Location</b>					
<b>Comments</b>							
Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
Ethylbenzene	ND	mg/Kg	0.0895	7/24/2010	WOZ	EPA 8021	
methyl-t-butyl ether (MTBE)	ND	mg/kg	0.0895	7/24/2010	WOZ	EPA 8021	
Toluene	ND	mg/Kg	0.0895	7/24/2010	WOZ	EPA 8021	
Total Xylene	ND	mg/Kg	0.179	7/24/2010	WOZ	EPA 8021	
Benzene	ND	mg/Kg	0.03	7/29/2010	WOZ	EPA 8260B	
Naphthalene	ND	mg/kg	0.447	7/24/2010	WOZ	EPA 8021	
Diesel	ND	mg/kg	25	7/23/2010	MJL	NWTPHDX	
Lube Oil	ND	mg/kg	100	7/23/2010	MJL	NWTPHDX	
Gasoline	ND	mg/kg	8.95	7/24/2010	WOZ	NWTPHG	
%moisture	8.6	Percent		7/22/2010	MJL	%moisture	

## Surrogate Data

<b>Sample Number</b>	100722012-015		
Surrogate Standard	Method	Percent Recovery	Control Limits
4-Bromofluorobenzene	EPA 8021	102.1	70-130
1,2-Dichlorobenzene-d4	EPA 8260B	99.2	70-130
4-Bromofluorobenzene	EPA 8260B	94.0	70-130
Toluene-d8	EPA 8260B	104.0	70-130
hexacosane	NWTPHDX	83.8	50-150

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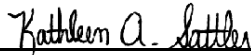
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**Batch #:** 100722012  
**Project Name:** BUENA 0504-060-00

## Analytical Results Report

Authorized Signature



Kathy Sattler, Lab Manager

MCL EPA's Maximum Contaminant Level  
ND Not Detected  
PQL Practical Quantitation Limit

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The results reported relate only to the samples indicated.  
Soil/solid results are reported on a dry-weight basis unless otherwise noted.

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## Analytical Results Report

<b>Sample Number</b>	100722012-002	<b>Sampling Date</b>	7/20/2010	<b>Date/Time Received</b>	7/22/2010 10:15 AM
<b>Client Sample ID</b>	DP-1-072010	<b>Sampling Time</b>	9:45 AM	<b>Extraction Date</b>	
<b>Matrix</b>	Water	<b>Sample Location</b>			
<b>Comments</b>					

Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
Benzene	ND	ug/L	1	7/23/2010	WOZ	EPA 8021	
Ethylbenzene	2.92	ug/L	1	7/23/2010	WOZ	EPA 8021	
m+p-Xylene	ND	ug/L	2	7/23/2010	WOZ	EPA 8021	
methyl-t-butyl ether (MTBE)	ND	ug/L	1	7/23/2010	WOZ	EPA 8021	
o-Xylene	2.05	ug/L	1	7/23/2010	WOZ	EPA 8021	
Toluene	ND	ug/L	1	7/23/2010	WOZ	EPA 8021	
Naphthalene	ND	ug/L	5	7/23/2010	WOZ	EPA 8021	
Diesel	ND	mg/L	0.1	7/23/2010	MJL	NWTPHDX	
Lube Oil	ND	mg/L	0.5	7/23/2010	MJL	NWTPHDX	
Gasoline	0.422	mg/L	0.1	7/23/2010	WOZ	NWTPHG	

## Surrogate Data

<b>Sample Number</b>	100722012-002		
<b>Surrogate Standard</b>	<b>Method</b>	<b>Percent Recovery</b>	<b>Control Limits</b>
4-Bromofluorobenzene	EPA 8021	100.6	70-130
hexacosane	NWTPHDX	86.8	50-150
4-Bromofluorobenzene	NWTPHG	108.0	70-130

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**Batch #:** 100722012  
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## Analytical Results Report

<b>Sample Number</b>	100722012-004	<b>Sampling Date</b>	7/20/2010	<b>Date/Time Received</b>	7/22/2010 10:15 AM		
<b>Client Sample ID</b>	DP-2-072010	<b>Sampling Time</b>	10:50 AM	<b>Extraction Date</b>			
<b>Matrix</b>	Water	<b>Sample Location</b>					
<b>Comments</b>							
Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
Benzene	ND	ug/L	1	7/23/2010	WOZ	EPA 8021	
Ethylbenzene	ND	ug/L	1	7/23/2010	WOZ	EPA 8021	
m+p-Xylene	ND	ug/L	2	7/23/2010	WOZ	EPA 8021	
methyl-t-butyl ether (MTBE)	ND	ug/L	1	7/23/2010	WOZ	EPA 8021	
o-Xylene	ND	ug/L	1	7/23/2010	WOZ	EPA 8021	
Toluene	ND	ug/L	1	7/23/2010	WOZ	EPA 8021	
Naphthalene	ND	ug/L	5	7/23/2010	WOZ	EPA 8021	
Diesel	ND	mg/L	0.1	7/23/2010	MJL	NWTPHDX	
Lube Oil	ND	mg/L	0.5	7/23/2010	MJL	NWTPHDX	
Gasoline	ND	mg/L	0.1	7/23/2010	WOZ	NWTPHG	

## Surrogate Data

<b>Sample Number</b>	100722012-004		
Surrogate Standard	Method	Percent Recovery	Control Limits
4-Bromofluorobenzene	EPA 8021	98.4	70-130
hexacosane	NWTPHDX	94.4	50-150
4-Bromofluorobenzene	NWTPHG	107.6	70-130

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**Project Name:** BUENA 0504-060-00

## Analytical Results Report

<b>Sample Number</b>	100722012-006	<b>Sampling Date</b>	7/20/2010	<b>Date/Time Received</b>	7/22/2010 10:15 AM
<b>Client Sample ID</b>	DP-3-072010	<b>Sampling Time</b>	12:00 PM	<b>Extraction Date</b>	
<b>Matrix</b>	Water	<b>Sample Location</b>			
<b>Comments</b>					

Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
Benzene	ND	ug/L	1	7/23/2010	WOZ	EPA 8021	
Ethylbenzene	ND	ug/L	1	7/23/2010	WOZ	EPA 8021	
m+p-Xylene	ND	ug/L	2	7/23/2010	WOZ	EPA 8021	
methyl-t-butyl ether (MTBE)	ND	ug/L	1	7/23/2010	WOZ	EPA 8021	
o-Xylene	ND	ug/L	1	7/23/2010	WOZ	EPA 8021	
Toluene	ND	ug/L	1	7/23/2010	WOZ	EPA 8021	
Naphthalene	ND	ug/L	5	7/23/2010	WOZ	EPA 8021	
Diesel	ND	mg/L	0.1	7/23/2010	MJL	NWTPHDX	
Lube Oil	ND	mg/L	0.5	7/23/2010	MJL	NWTPHDX	
Gasoline	ND	mg/L	0.1	7/23/2010	WOZ	NWTPHG	

## Surrogate Data

<b>Sample Number</b>	100722012-006		
<b>Surrogate Standard</b>	<b>Method</b>	<b>Percent Recovery</b>	<b>Control Limits</b>
4-Bromofluorobenzene	EPA 8021	100.8	70-130
hexacosane	NWTPHDX	94.4	50-150
4-Bromofluorobenzene	NWTPHG	110.9	70-130

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**Project Name:** BUENA 0504-060-00

## Analytical Results Report

<b>Sample Number</b>	100722012-008	<b>Sampling Date</b>	7/20/2010	<b>Date/Time Received</b>	7/22/2010 10:15 AM
<b>Client Sample ID</b>	DP-4-072010	<b>Sampling Time</b>	1:00 PM	<b>Extraction Date</b>	
<b>Matrix</b>	Water	<b>Sample Location</b>			
<b>Comments</b>					

Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
Benzene	ND	ug/L	1	7/23/2010	WOZ	EPA 8021	
Ethylbenzene	ND	ug/L	1	7/23/2010	WOZ	EPA 8021	
m+p-Xylene	ND	ug/L	2	7/23/2010	WOZ	EPA 8021	
methyl-t-butyl ether (MTBE)	ND	ug/L	1	7/23/2010	WOZ	EPA 8021	
o-Xylene	ND	ug/L	1	7/23/2010	WOZ	EPA 8021	
Toluene	ND	ug/L	1	7/23/2010	WOZ	EPA 8021	
Naphthalene	ND	ug/L	5	7/23/2010	WOZ	EPA 8021	
Diesel	ND	mg/L	0.1	7/23/2010	MJL	NWTPHDX	
Lube Oil	ND	mg/L	0.5	7/23/2010	MJL	NWTPHDX	
Gasoline	ND	mg/L	0.1	7/23/2010	WOZ	NWTPHG	

## Surrogate Data

<b>Sample Number</b>	100722012-008			
<b>Surrogate Standard</b>	<b>Method</b>	<b>Percent Recovery</b>	<b>Control Limits</b>	
4-Bromofluorobenzene	EPA 8021	99.8	70-130	
hexacosane	NWTPHDX	94.0	50-150	
4-Bromofluorobenzene	NWTPHG	109.3	70-130	



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**Client:** GEO ENGINEERS  
**Address:** 523 E 2ND  
SPOKANE, WA 99202  
**Attn:** DAVE LAUDER

**Batch #:** 100722012  
**Project Name:** BUENA 0504-060-00

## Analytical Results Report

<b>Sample Number</b>	100722012-010	<b>Sampling Date</b>	7/20/2010	<b>Date/Time Received</b>	7/22/2010 10:15 AM		
<b>Client Sample ID</b>	DP-5-072010	<b>Sampling Time</b>	2:30 PM	<b>Extraction Date</b>			
<b>Matrix</b>	Water	<b>Sample Location</b>					
<b>Comments</b>							
Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
Benzene	ND	ug/L	1	7/23/2010	WOZ	EPA 8021	
Ethylbenzene	ND	ug/L	1	7/23/2010	WOZ	EPA 8021	
m+p-Xylene	ND	ug/L	2	7/23/2010	WOZ	EPA 8021	
methyl-t-butyl ether (MTBE)	ND	ug/L	1	7/23/2010	WOZ	EPA 8021	
o-Xylene	ND	ug/L	1	7/23/2010	WOZ	EPA 8021	
Toluene	ND	ug/L	1	7/23/2010	WOZ	EPA 8021	
Naphthalene	ND	ug/L	5	7/23/2010	WOZ	EPA 8021	
Diesel	ND	mg/L	0.1	7/23/2010	MJL	NWTPHDX	
Lube Oil	ND	mg/L	0.5	7/23/2010	MJL	NWTPHDX	
Gasoline	ND	mg/L	0.1	7/23/2010	WOZ	NWTPHG	

## Surrogate Data

<b>Sample Number</b>	100722012-010		
Surrogate Standard	Method	Percent Recovery	Control Limits
4-Bromofluorobenzene	EPA 8021	100.7	70-130
hexacosane	NWTPHDX	93.2	50-150
4-Bromofluorobenzene	NWTPHG	110.5	70-130

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## Analytical Results Report

<b>Sample Number</b>	100722012-012	<b>Sampling Date</b>	7/20/2010	<b>Date/Time Received</b>	7/22/2010 10:15 AM		
<b>Client Sample ID</b>	DP-6-072010	<b>Sampling Time</b>	3:20 PM	<b>Extraction Date</b>			
<b>Matrix</b>	Water	<b>Sample Location</b>					
<b>Comments</b>							
Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
Benzene	ND	ug/L	1	7/23/2010	WOZ	EPA 8021	
Ethylbenzene	ND	ug/L	1	7/23/2010	WOZ	EPA 8021	
m+p-Xylene	ND	ug/L	2	7/23/2010	WOZ	EPA 8021	
methyl-t-butyl ether (MTBE)	ND	ug/L	1	7/23/2010	WOZ	EPA 8021	
o-Xylene	ND	ug/L	1	7/23/2010	WOZ	EPA 8021	
Toluene	ND	ug/L	1	7/23/2010	WOZ	EPA 8021	
Naphthalene	ND	ug/L	5	7/23/2010	WOZ	EPA 8021	
Diesel	ND	mg/L	0.1	7/23/2010	MJL	NWTPHDX	
Lube Oil	ND	mg/L	0.5	7/23/2010	MJL	NWTPHDX	
Gasoline	ND	mg/L	0.1	7/23/2010	WOZ	NWTPHG	

## Surrogate Data

<b>Sample Number</b>	100722012-012		
Surrogate Standard	Method	Percent Recovery	Control Limits
4-Bromofluorobenzene	EPA 8021	99.7	70-130
hexacosane	NWTPHDX	92.4	50-150
4-Bromofluorobenzene	NWTPHG	109.4	70-130

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## Analytical Results Report

<b>Sample Number</b>	100722012-014	<b>Sampling Date</b>	7/20/2010	<b>Date/Time Received</b>	7/22/2010 10:15 AM		
<b>Client Sample ID</b>	DP-7-072010	<b>Sampling Time</b>	4:25 PM	<b>Extraction Date</b>			
<b>Matrix</b>	Water	<b>Sample Location</b>					
<b>Comments</b>							
Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
Benzene	ND	ug/L	1	7/23/2010	WOZ	EPA 8021	
Ethylbenzene	ND	ug/L	1	7/23/2010	WOZ	EPA 8021	
m+p-Xylene	ND	ug/L	2	7/23/2010	WOZ	EPA 8021	
methyl-t-butyl ether (MTBE)	ND	ug/L	1	7/23/2010	WOZ	EPA 8021	
o-Xylene	ND	ug/L	1	7/23/2010	WOZ	EPA 8021	
Toluene	ND	ug/L	1	7/23/2010	WOZ	EPA 8021	
Naphthalene	ND	ug/L	5	7/23/2010	WOZ	EPA 8021	
Diesel	ND	mg/L	0.1	7/23/2010	MJL	NWTPHDX	
Lube Oil	ND	mg/L	0.5	7/23/2010	MJL	NWTPHDX	
Gasoline	ND	mg/L	0.1	7/23/2010	WOZ	NWTPHG	

## Surrogate Data

<b>Sample Number</b>	100722012-014		
Surrogate Standard	Method	Percent Recovery	Control Limits
4-Bromofluorobenzene	EPA 8021	101.3	70-130
hexacosane	NWTPHDX	92.6	50-150
4-Bromofluorobenzene	NWTPHG	110.9	70-130

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**Project Name:** BUENA 0504-060-00

## Analytical Results Report

<b>Sample Number</b>	100722012-016	<b>Sampling Date</b>	7/20/2010	<b>Date/Time Received</b>	7/22/2010 10:15 AM
<b>Client Sample ID</b>	DP-8-072010	<b>Sampling Time</b>	5:30 PM	<b>Extraction Date</b>	
<b>Matrix</b>	Water	<b>Sample Location</b>			
<b>Comments</b>					

Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
Benzene	ND	ug/L	1	7/23/2010	WOZ	EPA 8021	
Ethylbenzene	ND	ug/L	1	7/23/2010	WOZ	EPA 8021	
m+p-Xylene	ND	ug/L	2	7/23/2010	WOZ	EPA 8021	
methyl-t-butyl ether (MTBE)	ND	ug/L	1	7/23/2010	WOZ	EPA 8021	
o-Xylene	ND	ug/L	1	7/23/2010	WOZ	EPA 8021	
Toluene	ND	ug/L	1	7/23/2010	WOZ	EPA 8021	
Naphthalene	ND	ug/L	5	7/23/2010	WOZ	EPA 8021	
Diesel	ND	mg/L	0.1	7/23/2010	MJL	NWTPHDX	
Lube Oil	ND	mg/L	0.5	7/23/2010	MJL	NWTPHDX	
Gasoline	ND	mg/L	0.1	7/23/2010	WOZ	NWTPHG	

## Surrogate Data

<b>Sample Number</b>	100722012-016		
<b>Surrogate Standard</b>	<b>Method</b>	<b>Percent Recovery</b>	<b>Control Limits</b>
4-Bromofluorobenzene	EPA 8021	101.6	70-130
hexacosane	NWTPHDX	95.6	50-150
4-Bromofluorobenzene	NWTPHG	111.1	70-130

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## Analytical Results Report

<b>Sample Number</b>	100722012-017	<b>Sampling Date</b>	7/20/2010	<b>Date/Time Received</b>	7/22/2010 10:53 AM
<b>Client Sample ID</b>	TRIP BLANK	<b>Sampling Time</b>		<b>Extraction Date</b>	
<b>Matrix</b>	Water	<b>Sample Location</b>			
<b>Comments</b>					

Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
Benzene	ND	mg/Kg	0.025	7/24/2010	WOZ	EPA 8021	
Ethylbenzene	ND	mg/Kg	0.025	7/24/2010	WOZ	EPA 8021	
methyl-t-butyl ether (MTBE)	ND	mg/kg	0.025	7/24/2010	WOZ	EPA 8021	
Toluene	ND	mg/Kg	0.025	7/24/2010	WOZ	EPA 8021	
Naphthalene	ND	mg/kg	0.125	7/24/2010	WOZ	EPA 8021	
Gasoline	ND	mg/kg	2.5	7/24/2010	WOZ	NWTPHG	

## Surrogate Data

<b>Sample Number</b>	100722012-017			
<b>Surrogate Standard</b>		<b>Method</b>	<b>Percent Recovery</b>	<b>Control Limits</b>
4-Bromofluorobenzene		EPA 8021	97.3	70-130
4-Bromofluorobenzene		NWTPHG	106.3	70-130

Authorized Signature

  
Kathy Sattler, Lab Manager

MCL EPA's Maximum Contaminant Level  
ND Not Detected  
PQL Practical Quantitation Limit

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## Analytical Results Report

<b>Sample Number</b>	100722012-002	<b>Sampling Date</b>	7/20/2010	<b>Date/Time Received</b>	7/22/2010 10:15 AM		
<b>Client Sample ID</b>	DP-1-072010	<b>Sampling Time</b>	9:45 AM	<b>Extraction Date</b>			
<b>Matrix</b>	Water	<b>Sample Location</b>					
<b>Comments</b>							
Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
Alkalinity	294	mg/L	10	7/23/2010	APM	SM2320B	
Methane	0.0014	mg/L	0.0008	7/23/2010	SUB	RSK 175 MOD	
Dissolved Iron	2.75	mg/L	0.01	7/26/2010	KEA	EPA 200.8	
Dissolved Manganese	0.509	mg/L	0.001	7/26/2010	KEA	EPA 200.8	
NO3/N	4.03	mg/L	0.1	7/22/2010	JLU	EPA 300.0	
Sulfate	22.9	mg/L	0.1	7/22/2010	JLU	EPA 300.0	

<b>Sample Number</b>	100722012-004	<b>Sampling Date</b>	7/20/2010	<b>Date/Time Received</b>	7/22/2010 10:15 AM		
<b>Client Sample ID</b>	DP-2-072010	<b>Sampling Time</b>	10:50 AM	<b>Extraction Date</b>			
<b>Matrix</b>	Water	<b>Sample Location</b>					
<b>Comments</b>							
Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
Alkalinity	289	mg/L	10	7/23/2010	APM	SM2320B	
Methane	ND	mg/L	0.0008	7/23/2010	SUB	RSK 175 MOD	
Dissolved Iron	36.7	mg/L	1	7/26/2010	KEA	EPA 200.8	
Dissolved Manganese	2.87	mg/L	0.1	7/26/2010	KEA	EPA 200.8	
NO3/N	6.58	mg/L	0.1	7/22/2010	JLU	EPA 300.0	
Sulfate	28.8	mg/L	0.1	7/22/2010	JLU	EPA 300.0	

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**Batch #:** 100722012  
**Project Name:** BUENA 0504-060-00

## Analytical Results Report

<b>Sample Number</b>	100722012-006	<b>Sampling Date</b>	7/20/2010	<b>Date/Time Received</b>	7/22/2010 10:15 AM		
<b>Client Sample ID</b>	DP-3-072010	<b>Sampling Time</b>	12:00 PM	<b>Extraction Date</b>			
<b>Matrix</b>	Water	<b>Sample Location</b>					
<b>Comments</b>							
<b>Parameter</b>	<b>Result</b>	<b>Units</b>	<b>PQL</b>	<b>Analysis Date</b>	<b>Analyst</b>	<b>Method</b>	<b>Qualifier</b>
Alkalinity	321	mg/L	10	7/23/2010	APM	SM2320B	
Methane	0.00096	mg/L	0.0008	7/23/2010	SUB	RSK 175 MOD	
Dissolved Iron	3.32	mg/L	0.01	7/26/2010	KEA	EPA 200.8	
Dissolved Manganese	0.145	mg/L	0.001	7/26/2010	KEA	EPA 200.8	
NO3/N	9.00	mg/L	0.1	7/22/2010	JLU	EPA 300.0	
Sulfate	29.2	mg/L	0.1	7/22/2010	JLU	EPA 300.0	

<b>Sample Number</b>	100722012-008	<b>Sampling Date</b>	7/20/2010	<b>Date/Time Received</b>	7/22/2010 10:15 AM		
<b>Client Sample ID</b>	DP-4-072010	<b>Sampling Time</b>	1:00 PM	<b>Extraction Date</b>			
<b>Matrix</b>	Water	<b>Sample Location</b>					
<b>Comments</b>							
<b>Parameter</b>	<b>Result</b>	<b>Units</b>	<b>PQL</b>	<b>Analysis Date</b>	<b>Analyst</b>	<b>Method</b>	<b>Qualifier</b>
Alkalinity	144	mg/L	10	7/23/2010	APM	SM2320B	
Methane	0.00082	mg/L	0.0008	7/23/2010	SUB	RSK 175 MOD	
Dissolved Iron	4.25	mg/L	0.01	7/26/2010	KEA	EPA 200.8	
Dissolved Manganese	0.199	mg/L	0.001	7/26/2010	KEA	EPA 200.8	
NO3/N	3.63	mg/L	0.1	7/22/2010	JLU	EPA 300.0	
Sulfate	21.4	mg/L	0.1	7/22/2010	JLU	EPA 300.0	

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**Batch #:** 100722012  
**Project Name:** BUENA 0504-060-00

## Analytical Results Report

<b>Sample Number</b>	100722012-010	<b>Sampling Date</b>	7/20/2010	<b>Date/Time Received</b>	7/22/2010 10:15 AM		
<b>Client Sample ID</b>	DP-5-072010	<b>Sampling Time</b>	2:30 PM	<b>Extraction Date</b>			
<b>Matrix</b>	Water	<b>Sample Location</b>					
<b>Comments</b>							
<b>Parameter</b>	<b>Result</b>	<b>Units</b>	<b>PQL</b>	<b>Analysis Date</b>	<b>Analyst</b>	<b>Method</b>	<b>Qualifier</b>
Alkalinity	330	mg/L	10	7/23/2010	APM	SM2320B	
Methane	ND	mg/L	0.0008	7/23/2010	SUB	RSK 175 MOD	
Dissolved Iron	38.0	mg/L	1	7/26/2010	KEA	EPA 200.8	
Dissolved Manganese	2.37	mg/L	0.1	7/26/2010	KEA	EPA 200.8	
NO3/N	2.88	mg/L	0.1	7/22/2010	JLU	EPA 300.0	
Sulfate	42.2	mg/L	0.5	7/23/2010	JLU	EPA 300.0	

<b>Sample Number</b>	100722012-012	<b>Sampling Date</b>	7/20/2010	<b>Date/Time Received</b>	7/22/2010 10:15 AM		
<b>Client Sample ID</b>	DP-6-072010	<b>Sampling Time</b>	3:20 PM	<b>Extraction Date</b>			
<b>Matrix</b>	Water	<b>Sample Location</b>					
<b>Comments</b>							
<b>Parameter</b>	<b>Result</b>	<b>Units</b>	<b>PQL</b>	<b>Analysis Date</b>	<b>Analyst</b>	<b>Method</b>	<b>Qualifier</b>
Alkalinity	218	mg/L	10	7/23/2010	APM	SM2320B	
Methane	0.0013	mg/L	0.0008	7/23/2010	SUB	RSK 175 MOD	
Dissolved Iron	4.47	mg/L	0.01	7/26/2010	KEA	EPA 200.8	
Dissolved Manganese	1.07	mg/L	0.001	7/26/2010	KEA	EPA 200.8	
NO3/N	2.48	mg/L	0.1	7/22/2010	JLU	EPA 300.0	
Sulfate	32.4	mg/L	0.2	7/23/2010	JLU	EPA 300.0	



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## Analytical Results Report

<b>Sample Number</b>	100722012-014	<b>Sampling Date</b>	7/20/2010	<b>Date/Time Received</b>	7/22/2010 10:15 AM		
<b>Client Sample ID</b>	DP-7-072010	<b>Sampling Time</b>	4:25 PM	<b>Extraction Date</b>			
<b>Matrix</b>	Water	<b>Sample Location</b>					
<b>Comments</b>							
Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
Alkalinity	254	mg/L	10	7/23/2010	APM	SM2320B	
Methane	ND	mg/L	0.0008	7/23/2010	SUB	RSK 175 MOD	
Dissolved Iron	146	mg/L	1	7/26/2010	KEA	EPA 200.8	
Dissolved Manganese	5.80	mg/L	0.1	7/26/2010	KEA	EPA 200.8	
NO3/N	2.44	mg/L	0.1	7/22/2010	JLU	EPA 300.0	
Sulfate	46.3	mg/L	0.5	7/23/2010	JLU	EPA 300.0	

<b>Sample Number</b>	100722012-016	<b>Sampling Date</b>	7/20/2010	<b>Date/Time Received</b>	7/22/2010 10:15 AM		
<b>Client Sample ID</b>	DP-8-072010	<b>Sampling Time</b>	5:30 PM	<b>Extraction Date</b>			
<b>Matrix</b>	Water	<b>Sample Location</b>					
<b>Comments</b>							
Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
Alkalinity	254	mg/L	10	7/23/2010	APM	SM2320B	
Methane	0.0177	mg/L	0.0008	7/23/2010	SUB	RSK 175 MOD	
Dissolved Iron	136	mg/L	1	7/26/2010	KEA	EPA 200.8	
Dissolved Manganese	2.61	mg/L	0.1	7/26/2010	KEA	EPA 200.8	
NO3/N	ND	mg/L	0.1	7/22/2010	JLU	EPA 300.0	
Sulfate	40.6	mg/L	0.5	7/23/2010	JLU	EPA 300.0	

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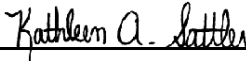
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## Analytical Results Report

Authorized Signature

  
\_\_\_\_\_  
Kathy Sattler, Lab Manager

MCL EPA's Maximum Contaminant Level  
ND Not Detected  
PQL Practical Quantitation Limit

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Soil/solid results are reported on a dry-weight basis unless otherwise noted.

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1282 Alturas Drive • Moscow, ID 83843 • (208) 883-2839 • Fax (208) 882-9246 • email moscow@anateklabs.com  
504 E Sprague Ste. D • Spokane WA 99202 • (509) 838-3999 • Fax (509) 838-4433 • email spokane@anateklabs.com

**Client:** GEO ENGINEERS  
**Address:** 523 E 2ND  
SPOKANE, WA 99202  
**Attn:** DAVE LAUDER

**Batch #:** 100722012  
**Project Name:** BUENA 0504-060-00

## Analytical Results Report Quality Control Data

### Lab Control Sample

Parameter	LCS Result	Units	LCS Spike	%Rec	AR %Rec	Prep Date	Analysis Date
Total Xylene	2.79	mg/kg	2.9	96.2	70-130	7/24/2010	7/24/2010
Toluene	2.52	mg/kg	2.58	97.7	70-130	7/24/2010	7/24/2010
Ethylbenzene	0.563	mg/kg	0.575	97.9	70-130	7/24/2010	7/24/2010
Benzene	0.350	mg/kg	0.34	102.9	70-130	7/24/2010	7/24/2010
Diesel	151	mg/kg	199	75.9	50-150	7/22/2010	7/22/2010

### Matrix Spike

Sample Number	Parameter	Sample Result	MS Result	Units	MS Spike	%Rec	AR %Rec	Prep Date	Analysis Date
100722012-015	Diesel	ND	138	mg/kg	189	73.0	50-150	7/22/2010	7/22/2010
100722012-001	Toluene	0.116	6.94	mg/kg	6.43	106.1	70-130	7/24/2010	7/24/2010
100722012-001	Ethylbenzene	0.481	2.05	mg/kg	1.44	109.0	70-130	7/24/2010	7/24/2010
100722012-001	Benzene	ND	0.980	mg/kg	0.85	115.4	70-130	7/24/2010	7/24/2010
100722012-001	Total Xylene	1.12	8.80	mg/kg	7.24	106.1	70-130	7/24/2010	7/24/2010

### Matrix Spike Duplicate

Parameter	MSD Result	Units	MSD Spike	%Rec	%RPD	AR %RPD	Prep Date	Analysis Date
Diesel	143	mg/kg	193	74.1	3.6	0-50	7/22/2010	7/22/2010
Toluene	6.84	mg/kg	6.43	104.6	1.5	0-20	7/24/2010	7/24/2010
Ethylbenzene	2.00	mg/kg	1.44	105.5	2.5	0-20	7/24/2010	7/24/2010
Benzene	0.974	mg/kg	0.849	114.7	0.6	0-20	7/24/2010	7/24/2010
Total Xylene	8.53	mg/kg	7.24	102.3	3.1	0-20	7/24/2010	7/24/2010

### Method Blank

Parameter	Result	Units	PQL	Prep Date	Analysis Date
Benzene	ND	mg/Kg	0.025	7/24/2010	7/24/2010
Diesel	ND	mg/kg	25	7/22/2010	7/22/2010
Ethylbenzene	ND	mg/Kg	0.025	7/24/2010	7/24/2010
Gasoline	ND	mg/kg	2.5	7/24/2010	7/24/2010
Lube Oil	ND	mg/kg	100	7/22/2010	7/22/2010
methyl-t-butyl ether (MTBE)	ND	mg/kg	0.025	7/24/2010	7/24/2010
Toluene	ND	mg/Kg	0.025	7/24/2010	7/24/2010

**Comments:** SUB METHANE TO ACCUTEST

Certifications held by Anatek Labs ID: EPA:ID00013; AZ:0701; CO:ID00013; FL(NELAP):E87893; ID:ID00013; IN:C-ID-01; KY:90142; MT:CERT0028; NM: ID00013; OR:ID200001-002; WA:C595  
Certifications held by Anatek Labs WA: EPA:WA00169; CA:Cert2632; ID:WA00169; WA:C585; MT:Cert0095

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**Address:** 523 E 2ND  
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**Attn:** DAVE LAUDER

**Batch #:** 100722012  
**Project Name:** BUENA 0504-060-00

## Analytical Results Report Quality Control Data

### Method Blank

Parameter	Result	Units	PQL	Prep Date	Analysis Date
Total Xylene	ND	mg/Kg	0.05	7/24/2010	7/24/2010

AR Acceptable Range  
ND Not Detected  
PQL Practical Quantitation Limit  
RPD Relative Percentage Difference

**Comments:** SUB METHANE TO ACCUTEST

Certifications held by Anatek Labs ID: EPA:ID00013; AZ:0701; CO:ID00013; FL(NELAP):E87893; ID:ID00013; IN:C-ID-01; KY:90142; MT:CERT0028; NM: ID00013; OR:ID200001-002; WA:C595  
Certifications held by Anatek Labs WA: EPA:WA00169; CA:Cert2632; ID:WA00169; WA:C585; MT:Cert0095

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**Address:** 523 E 2ND  
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**Attn:** DAVE LAUDER

**Batch #:** 100722012  
**Project Name:** BUENA 0504-060-00

## Analytical Results Report Quality Control Data

### Lab Control Sample

Parameter	LCS Result	Units	LCS Spike	%Rec	AR %Rec	Prep Date	Analysis Date
Benzene	0.0220	mg/kg	0.025	88.0	69-122	7/29/2010	7/29/2010

### Method Blank

Parameter	Result	Units	PQL	Prep Date	Analysis Date
Benzene	ND	mg/Kg	0.005	7/29/2010	7/29/2010

AR Acceptable Range  
ND Not Detected  
PQL Practical Quantitation Limit  
RPD Relative Percentage Difference

**Comments:** SUB METHANE TO ACCUTEST

Certifications held by Anatek Labs ID: EPA:ID00013; AZ:0701; CO:ID00013; FL(NELAP):E87893; ID:ID00013; IN:C-ID-01; KY:90142; MT:CERT0028; NM: ID00013; OR:ID200001-002; WA:C595  
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**Client:** GEO ENGINEERS  
**Address:** 523 E 2ND  
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**Attn:** DAVE LAUDER

**Batch #:** 100722012  
**Project Name:** BUENA 0504-060-00

## Analytical Results Report Quality Control Data

### Lab Control Sample

Parameter	LCS Result	Units	LCS Spike	%Rec	AR %Rec	Prep Date	Analysis Date
Dissolved Manganese	0.0483	mg/L	0.05	96.6	85-115	7/26/2010	7/26/2010
Dissolved Iron	0.102	mg/L	0.1	102.0	85-115	7/26/2010	7/26/2010
Methane	0.583	mg/L	0.5	116.6	70-130	7/23/2010	7/23/2010
Alkalinity	99	mg/L	100	99.0	90-110	7/23/2010	7/23/2010
Sulfate	4.96	mg/L	5	99.2	90-110	7/23/2010	7/23/2010
NO3/N	4.88	mg/L	5	97.6	80-120	7/23/2010	7/23/2010

### Matrix Spike

Sample Number	Parameter	Sample Result	MS Result	Units	MS Spike	%Rec	AR %Rec	Prep Date	Analysis Date
100722016-001	Sulfate	11.3	16.2	mg/L	5	98.0	90-110	7/23/2010	7/23/2010
100722016-001	NO3/N	3.95	9.31	mg/L	5	107.2	80-120	7/23/2010	7/23/2010
100722012-018	Methane	ND	0.572	mg/L	0.5	114.4	70-130	7/23/2010	7/23/2010
100722012-002	Dissolved Manganese	0.509	0.555	mg/L	0.05	92.0	70-130	7/26/2010	7/26/2010
100722012-002	Dissolved Iron	2.75	2.83	mg/L	0.1	80.0	70-130	7/26/2010	7/26/2010
100721062-001	Alkalinity	178	280	mg/L	100	102.0	80-120	7/23/2010	7/23/2010

### Matrix Spike Duplicate

Parameter	MSD Result	Units	MSD Spike	%Rec	%RPD	AR %RPD	Prep Date	Analysis Date
Sulfate	15.7	mg/L	5	88.0	3.1	0-20	7/23/2010	7/23/2010
NO3/N	9.33	mg/L	5	107.6	0.2	0-20	7/23/2010	7/23/2010
Methane	0.566	mg/L	0.5	113.2	1.1	0-30	7/23/2010	7/23/2010
Methane	0.566	mg/L	0.5	113.2	1.1	0-30	7/23/2010	7/23/2010
Dissolved Manganese	0.567	mg/L	0.05	116.0	2.1	0-20	7/26/2010	7/26/2010
Dissolved Iron	2.84	mg/L	0.1	90.0	0.4	0-20	7/26/2010	7/26/2010
Alkalinity	284	mg/L	100	106.0	1.4	0-20	7/23/2010	7/23/2010

### Method Blank

Parameter	Result	Units	PQL	Prep Date	Analysis Date
Alkalinity	ND	mg/L	10	7/23/2010	7/23/2010
Dissolved Iron	ND	mg/L	0.001	7/26/2010	7/26/2010
Dissolved Manganese	ND	mg/L	0.001	7/26/2010	7/26/2010

**Comments:** SUB METHANE TO ACCUTEST

Certifications held by Anatek Labs ID: EPA:ID00013; AZ:0701; CO:ID00013; FL(NELAP):E87893; ID:ID00013; IN:C-ID-01; KY:90142; MT:CERT0028; NM: ID00013; OR:ID200001-002; WA:C595  
Certifications held by Anatek Labs WA: EPA:WA00169; CA:Cert2632; ID:WA00169; WA:C585; MT:Cert0095

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**Client:** GEO ENGINEERS  
**Address:** 523 E 2ND  
SPOKANE, WA 99202  
**Attn:** DAVE LAUDER

**Batch #:** 100722012  
**Project Name:** BUENA 0504-060-00

## Analytical Results Report Quality Control Data

### Method Blank

Parameter	Result	Units	PQL	Prep Date	Analysis Date
Methane	ND	mg/L		7/23/2010	7/23/2010
NO3/N	ND	mg/L	0.1	7/23/2010	7/23/2010
Sulfate	ND	mg/L	0.1	7/23/2010	7/23/2010

### Duplicate

Sample Number	Parameter	Sample Result	Duplicate Result	Units	%RPD	AR %RPD	Prep Date	Analysis Date
100722012-006	Dissolved Manganese	0.145	0.144	mg/L	0.7	0-20	7/26/2010	7/26/2010
100722012-006	Dissolved Iron	3.32	3.33	mg/L	0.3	0-20	7/26/2010	7/26/2010

AR Acceptable Range  
ND Not Detected  
PQL Practical Quantitation Limit  
RPD Relative Percentage Difference

**Comments:** SUB METHANE TO ACCUTEST

Certifications held by Anatek Labs ID: EPA:ID00013; AZ:0701; CO:ID00013; FL(NELAP):E87893; ID:ID00013; IN:C-ID-01; KY:90142; MT:CERT0028; NM: ID00013; OR:ID200001-002; WA:C595  
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## Login Report

**Customer Name:** GEO ENGINEERS

523 E 2ND

SPOKANE

WA

99202

**Order ID:** 100722012

**Order Date:** 7/22/2010

**Contact Name:** DAVE LAUDER

**Project Name:** BUENA 0504-060-00

**Comment:** SUB METHANE TO ACCUTEST

---

**Sample #:** 100722012-001    **Customer Sample #:** DP-1-2.5-072010

**Recv'd:**

**Collector:** ROBERT MIYAHIRA

**Date Collected:** 7/20/2010

**Quantity:** 1

**Matrix:** Soil

**Date Received:** 7/22/2010 10:15:00 A

**Comment:**

Test	Method	Due Date	Priority
%Moisture	%moisture	7/20/2010	<b><u>2 Days</u></b>
BTEX 8021	EPA 8021	7/26/2010	<b><u>2 Days</u></b>
BTEX 8260	EPA 8260B	7/26/2010	<b><u>2 Days</u></b>
NAPHTHALENE 8021	EPA 8021	7/20/2010	<b><u>2 Days</u></b>
TPHDX-NW	NWTPHDX	7/26/2010	<b><u>2 Days</u></b>
TPHG-NW-SPO	NWTPHG	7/26/2010	<b><u>2 Days</u></b>

---

**Sample #:** 100722012-002    **Customer Sample #:** DP-1-072010

**Recv'd:**

**Collector:** ROBERT MIYAHIRA

**Date Collected:** 7/20/2010

**Quantity:** 1

**Matrix:** Water

**Date Received:** 7/22/2010 10:15:00 A

**Comment:**

Test	Method	Due Date	Priority
ALKALINITY	SM2320B	7/22/2010	<b><u>2 Days</u></b>
BTEX 8021	EPA 8021	7/26/2010	<b><u>2 Days</u></b>
DISSOLVED GASES	RSK 175 MOD	7/26/2010	<b><u>2 Days</u></b>
DISSOLVED IRON	EPA 200.8	7/26/2010	<b><u>2 Days</u></b>
DISSOLVED MANGANESE	EPA 200.8	7/26/2010	<b><u>2 Days</u></b>
NAPHTHALENE 8021	EPA 8021	7/20/2010	<b><u>2 Days</u></b>
NITRATE/N	EPA 300.0	7/22/2010	<b><u>2 Days</u></b>
SULFATE	EPA 300.0	7/26/2010	<b><u>2 Days</u></b>
TPHDX-NW	NWTPHDX	7/26/2010	<b><u>2 Days</u></b>
TPHG-NW-SPO	NWTPHG	7/26/2010	<b><u>2 Days</u></b>



**Customer Name:** GEO ENGINEERS  
523 E 2ND  
SPOKANE WA 99202

**Order ID:** 100722012  
**Order Date:** 7/22/2010

**Contact Name:** DAVE LAUDER

**Project Name:** BUENA 0504-060-00

**Comment:** SUB METHANE TO ACCUTEST

---

**Sample #:** 100722012-003 **Customer Sample #:** DP-2-4.0-072010

**Recv'd:**  **Collector:** ROBERT MIYAHIRA **Date Collected:** 7/20/2010  
**Quantity:** 1 **Matrix:** Soil **Date Received:** 7/22/2010 10:15:00 A

**Comment:**

Test	Method	Due Date	Priority
%Moisture	%moisture	7/20/2010	<u>2 Days</u>
BTEX 8021	EPA 8021	7/26/2010	<u>2 Days</u>
BTEX 8260	EPA 8260B	7/26/2010	<u>2 Days</u>
NAPHTHALENE 8021	EPA 8021	7/20/2010	<u>2 Days</u>
TPHDX-NW	NWTPHDX	7/26/2010	<u>2 Days</u>
TPHG-NW-SPO	NWTPHG	7/26/2010	<u>2 Days</u>

---

**Sample #:** 100722012-004 **Customer Sample #:** DP-2-072010

**Recv'd:**  **Collector:** ROBERT MIYAHIRA **Date Collected:** 7/20/2010  
**Quantity:** 1 **Matrix:** Water **Date Received:** 7/22/2010 10:15:00 A

**Comment:**

Test	Method	Due Date	Priority
ALKALINITY	SM2320B	7/22/2010	<u>2 Days</u>
BTEX 8021	EPA 8021	7/26/2010	<u>2 Days</u>
DISSOLVED GASES	RSK 175 MOD	7/26/2010	<u>2 Days</u>
DISSOLVED IRON	EPA 200.8	7/26/2010	<u>2 Days</u>
DISSOLVED MANGANESE	EPA 200.8	7/26/2010	<u>2 Days</u>
NAPHTHALENE 8021	EPA 8021	7/20/2010	<u>2 Days</u>
NITRATE/N	EPA 300.0	7/22/2010	<u>2 Days</u>
SULFATE	EPA 300.0	7/26/2010	<u>2 Days</u>
TPHDX-NW	NWTPHDX	7/26/2010	<u>2 Days</u>
TPHG-NW-SPO	NWTPHG	7/26/2010	<u>2 Days</u>

---

**Sample #:** 100722012-005 **Customer Sample #:** DP-3-5.0-072010

**Recv'd:**  **Collector:** ROBERT MIYAHIRA **Date Collected:** 7/20/2010  
**Quantity:** 1 **Matrix:** Soil **Date Received:** 7/22/2010 10:15:00 A

**Comment:**

Test	Method	Due Date	Priority
%Moisture	%moisture	7/20/2010	<u>2 Days</u>

**Customer Name:** GEO ENGINEERS  
523 E 2ND  
SPOKANE WA 99202

**Order ID:** 100722012  
**Order Date:** 7/22/2010

**Contact Name:** DAVE LAUDER

**Project Name:** BUENA 0504-060-00

**Comment:** SUB METHANE TO ACCUTEST

BTEX 8021	EPA 8021	7/26/2010	<b><u>2 Days</u></b>
BTEX 8260	EPA 8260B	7/26/2010	<b><u>2 Days</u></b>
NAPHTHALENE 8021	EPA 8021	7/20/2010	<b><u>2 Days</u></b>
TPHDX-NW	NWTPHDX	7/26/2010	<b><u>2 Days</u></b>
TPHG-NW-SPO	NWTPHG	7/26/2010	<b><u>2 Days</u></b>

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**Sample #:** 100722012-006 **Customer Sample #:** DP-3-072010

**Recv'd:**  **Collector:** ROBERT MIYAHIRA **Date Collected:** 7/20/2010  
**Quantity:** 1 **Matrix:** Water **Date Received:** 7/22/2010 10:15:00 A

**Comment:**

<b>Test</b>	<b>Method</b>	<b>Due Date</b>	<b>Priority</b>
ALKALINITY	SM2320B	7/22/2010	<b><u>2 Days</u></b>
BTEX 8021	EPA 8021	7/26/2010	<b><u>2 Days</u></b>
DISSOLVED GASES	RSK 175 MOD	7/26/2010	<b><u>2 Days</u></b>
DISSOLVED IRON	EPA 200.8	7/26/2010	<b><u>2 Days</u></b>
DISSOLVED MANGANESE	EPA 200.8	7/26/2010	<b><u>2 Days</u></b>
NAPHTHALENE 8021	EPA 8021	7/20/2010	<b><u>2 Days</u></b>
NITRATE/N	EPA 300.0	7/22/2010	<b><u>2 Days</u></b>
SULFATE	EPA 300.0	7/26/2010	<b><u>2 Days</u></b>
TPHDX-NW	NWTPHDX	7/26/2010	<b><u>2 Days</u></b>
TPHG-NW-SPO	NWTPHG	7/26/2010	<b><u>2 Days</u></b>

---

**Sample #:** 100722012-007 **Customer Sample #:** DP-4-4..5-072010

**Recv'd:**  **Collector:** ROBERT MIYAHIRA **Date Collected:** 7/20/2010  
**Quantity:** 1 **Matrix:** Soil **Date Received:** 7/22/2010 10:15:00 A

**Comment:**

<b>Test</b>	<b>Method</b>	<b>Due Date</b>	<b>Priority</b>
%Moisture	%moisture	7/20/2010	<b><u>2 Days</u></b>
BTEX 8021	EPA 8021	7/26/2010	<b><u>2 Days</u></b>
BTEX 8260	EPA 8260B	7/26/2010	<b><u>2 Days</u></b>
NAPHTHALENE 8021	EPA 8021	7/20/2010	<b><u>2 Days</u></b>
TPHDX-NW	NWTPHDX	7/26/2010	<b><u>2 Days</u></b>
TPHG-NW-SPO	NWTPHG	7/26/2010	<b><u>2 Days</u></b>

**Customer Name:** GEO ENGINEERS  
523 E 2ND  
SPOKANE WA 99202

**Order ID:** 100722012  
**Order Date:** 7/22/2010

**Contact Name:** DAVE LAUDER

**Project Name:** BUENA 0504-060-00

**Comment:** SUB METHANE TO ACCUTEST

---

**Sample #:** 100722012-008 **Customer Sample #:** DP-4-072010

**Recv'd:**  **Collector:** ROBERT MIYAHIRA **Date Collected:** 7/20/2010  
**Quantity:** 1 **Matrix:** Water **Date Received:** 7/22/2010 10:15:00 A

**Comment:**

Test	Method	Due Date	Priority
ALKALINITY	SM2320B	7/22/2010	<u>2 Days</u>
BTEX 8021	EPA 8021	7/26/2010	<u>2 Days</u>
DISSOLVED GASES	RSK 175 MOD	7/26/2010	<u>2 Days</u>
DISSOLVED IRON	EPA 200.8	7/26/2010	<u>2 Days</u>
DISSOLVED MANGANESE	EPA 200.8	7/26/2010	<u>2 Days</u>
NAPHTHALENE 8021	EPA 8021	7/20/2010	<u>2 Days</u>
NITRATE/N	EPA 300.0	7/22/2010	<u>2 Days</u>
SULFATE	EPA 300.0	7/26/2010	<u>2 Days</u>
TPHDX-NW	NWTPHDX	7/26/2010	<u>2 Days</u>
TPHG-NW-SPO	NWTPHG	7/26/2010	<u>2 Days</u>

---

**Sample #:** 100722012-009 **Customer Sample #:** DP-5-4.5-072010

**Recv'd:**  **Collector:** ROBERT MIYAHIRA **Date Collected:** 7/20/2010  
**Quantity:** 1 **Matrix:** Soil **Date Received:** 7/22/2010 10:15:00 A

**Comment:**

Test	Method	Due Date	Priority
%Moisture	%moisture	7/20/2010	<u>2 Days</u>
BTEX 8021	EPA 8021	7/26/2010	<u>2 Days</u>
BTEX 8260	EPA 8260B	7/26/2010	<u>2 Days</u>
NAPHTHALENE 8021	EPA 8021	7/20/2010	<u>2 Days</u>
TPHDX-NW	NWTPHDX	7/26/2010	<u>2 Days</u>
TPHG-NW-SPO	NWTPHG	7/26/2010	<u>2 Days</u>

---

**Sample #:** 100722012-010 **Customer Sample #:** DP-5-072010

**Recv'd:**  **Collector:** ROBERT MIYAHIRA **Date Collected:** 7/20/2010  
**Quantity:** 1 **Matrix:** Water **Date Received:** 7/22/2010 10:15:00 A

**Comment:**

Test	Method	Due Date	Priority
ALKALINITY	SM2320B	7/22/2010	<u>2 Days</u>

**Customer Name:** GEO ENGINEERS  
523 E 2ND  
SPOKANE WA 99202

**Order ID:** 100722012  
**Order Date:** 7/22/2010

**Contact Name:** DAVE LAUDER

**Project Name:** BUENA 0504-060-00

**Comment:** SUB METHANE TO ACCUTEST

BTEX 8021	EPA 8021	7/26/2010	<b><u>2 Days</u></b>
DISSOLVED GASES	RSK 175 MOD	7/26/2010	<b><u>2 Days</u></b>
DISSOLVED IRON	EPA 200.8	7/26/2010	<b><u>2 Days</u></b>
DISSOLVED MANGANESE	EPA 200.8	7/26/2010	<b><u>2 Days</u></b>
NAPHTHALENE 8021	EPA 8021	7/20/2010	<b><u>2 Days</u></b>
NITRATE/N	EPA 300.0	7/22/2010	<b><u>2 Days</u></b>
SULFATE	EPA 300.0	7/26/2010	<b><u>2 Days</u></b>
TPHDX-NW	NWTPHDX	7/26/2010	<b><u>2 Days</u></b>
TPHG-NW-SPO	NWTPHG	7/26/2010	<b><u>2 Days</u></b>

---

**Sample #:** 100722012-011 **Customer Sample #:** DP-6-5.0-072010

**Recv'd:**  **Collector:** ROBERT MIYAHIRA **Date Collected:** 7/20/2010  
**Quantity:** 1 **Matrix:** Soil **Date Received:** 7/22/2010 10:15:00 A

**Comment:**

<b>Test</b>	<b>Method</b>	<b>Due Date</b>	<b>Priority</b>
%Moisture	%moisture	7/20/2010	<b><u>2 Days</u></b>
BTEX 8021	EPA 8021	7/26/2010	<b><u>2 Days</u></b>
BTEX 8260	EPA 8260B	7/26/2010	<b><u>2 Days</u></b>
NAPHTHALENE 8021	EPA 8021	7/20/2010	<b><u>2 Days</u></b>
TPHDX-NW	NWTPHDX	7/26/2010	<b><u>2 Days</u></b>
TPHG-NW-SPO	NWTPHG	7/26/2010	<b><u>2 Days</u></b>

---

**Sample #:** 100722012-012 **Customer Sample #:** DP-6-072010

**Recv'd:**  **Collector:** ROBERT MIYAHIRA **Date Collected:** 7/20/2010  
**Quantity:** 1 **Matrix:** Water **Date Received:** 7/22/2010 10:15:00 A

**Comment:**

<b>Test</b>	<b>Method</b>	<b>Due Date</b>	<b>Priority</b>
ALKALINITY	SM2320B	7/22/2010	<b><u>2 Days</u></b>
BTEX 8021	EPA 8021	7/26/2010	<b><u>2 Days</u></b>
DISSOLVED GASES	RSK 175 MOD	7/26/2010	<b><u>2 Days</u></b>
DISSOLVED IRON	EPA 200.8	7/26/2010	<b><u>2 Days</u></b>
DISSOLVED MANGANESE	EPA 200.8	7/26/2010	<b><u>2 Days</u></b>
NAPHTHALENE 8021	EPA 8021	7/20/2010	<b><u>2 Days</u></b>
NITRATE/N	EPA 300.0	7/22/2010	<b><u>2 Days</u></b>
SULFATE	EPA 300.0	7/26/2010	<b><u>2 Days</u></b>

**Customer Name:** GEO ENGINEERS  
523 E 2ND  
SPOKANE WA 99202

**Order ID:** 100722012  
**Order Date:** 7/22/2010

**Contact Name:** DAVE LAUDER

**Project Name:** BUENA 0504-060-00

**Comment:** SUB METHANE TO ACCUTEST

TPHDX-NW NWTPHDX 7/26/2010 **2 Days**  
TPHG-NW-SPO NWTPHG 7/26/2010 **2 Days**

---

**Sample #:** 100722012-013 **Customer Sample #:** DP-7-2.0-072010

**Recv'd:**  **Collector:** ROBERT MIYAHIRA **Date Collected:** 7/20/2010  
**Quantity:** 1 **Matrix:** Soil **Date Received:** 7/22/2010 10:15:00 A

**Comment:**

Test	Method	Due Date	Priority
%Moisture	%moisture	7/20/2010	<b><u>2 Days</u></b>
BTEX 8021	EPA 8021	7/26/2010	<b><u>2 Days</u></b>
BTEX 8260	EPA 8260B	7/26/2010	<b><u>2 Days</u></b>
NAPHTHALENE 8021	EPA 8021	7/20/2010	<b><u>2 Days</u></b>
TPHDX-NW	NWTPHDX	7/26/2010	<b><u>2 Days</u></b>
TPHG-NW-SPO	NWTPHG	7/26/2010	<b><u>2 Days</u></b>

---

**Sample #:** 100722012-014 **Customer Sample #:** DP-7-072010

**Recv'd:**  **Collector:** ROBERT MIYAHIRA **Date Collected:** 7/20/2010  
**Quantity:** 1 **Matrix:** Water **Date Received:** 7/22/2010 10:15:00 A

**Comment:**

Test	Method	Due Date	Priority
ALKALINITY	SM2320B	7/22/2010	<b><u>2 Days</u></b>
BTEX 8021	EPA 8021	7/26/2010	<b><u>2 Days</u></b>
DISSOLVED GASES	RSK 175 MOD	7/26/2010	<b><u>2 Days</u></b>
DISSOLVED IRON	EPA 200.8	7/26/2010	<b><u>2 Days</u></b>
DISSOLVED MANGANESE	EPA 200.8	7/26/2010	<b><u>2 Days</u></b>
NAPHTHALENE 8021	EPA 8021	7/20/2010	<b><u>2 Days</u></b>
NITRATE/N	EPA 300.0	7/22/2010	<b><u>2 Days</u></b>
SULFATE	EPA 300.0	7/26/2010	<b><u>2 Days</u></b>
TPHDX-NW	NWTPHDX	7/26/2010	<b><u>2 Days</u></b>
TPHG-NW-SPO	NWTPHG	7/26/2010	<b><u>2 Days</u></b>

**Customer Name:** GEO ENGINEERS  
523 E 2ND  
SPOKANE WA 99202

**Order ID:** 100722012  
**Order Date:** 7/22/2010

**Contact Name:** DAVE LAUDER

**Project Name:** BUENA 0504-060-00

**Comment:** SUB METHANE TO ACCUTEST

---

**Sample #:** 100722012-015 **Customer Sample #:** DP-8-2.5-072010

**Recv'd:**  **Collector:** ROBERT MIYAHIRA **Date Collected:** 7/20/2010  
**Quantity:** 1 **Matrix:** Soil **Date Received:** 7/22/2010 10:15:00 A

**Comment:**

Test	Method	Due Date	Priority
%Moisture	%moisture	7/20/2010	<u>2 Days</u>
BTEX 8021	EPA 8021	7/26/2010	<u>2 Days</u>
BTEX 8260	EPA 8260B	7/26/2010	<u>2 Days</u>
NAPHTHALENE 8021	EPA 8021	7/20/2010	<u>2 Days</u>
TPHDX-NW	NWTPHDX	7/26/2010	<u>2 Days</u>
TPHG-NW-SPO	NWTPHG	7/26/2010	<u>2 Days</u>

---

**Sample #:** 100722012-016 **Customer Sample #:** DP-8-072010

**Recv'd:**  **Collector:** ROBERT MIYAHIRA **Date Collected:** 7/20/2010  
**Quantity:** 1 **Matrix:** Water **Date Received:** 7/22/2010 10:15:00 A

**Comment:**

Test	Method	Due Date	Priority
ALKALINITY	SM2320B	7/22/2010	<u>2 Days</u>
BTEX 8021	EPA 8021	7/26/2010	<u>2 Days</u>
DISSOLVED GASES	RSK 175 MOD	7/26/2010	<u>2 Days</u>
DISSOLVED IRON	EPA 200.8	7/26/2010	<u>2 Days</u>
DISSOLVED MANGANESE	EPA 200.8	7/26/2010	<u>2 Days</u>
NAPHTHALENE 8021	EPA 8021	7/20/2010	<u>2 Days</u>
NITRATE/N	EPA 300.0	7/22/2010	<u>2 Days</u>
SULFATE	EPA 300.0	7/26/2010	<u>2 Days</u>
TPHDX-NW	NWTPHDX	7/26/2010	<u>2 Days</u>
TPHG-NW-SPO	NWTPHG	7/26/2010	<u>2 Days</u>

---

**Sample #:** 100722012-017 **Customer Sample #:** TRIP BLANK

**Recv'd:**  **Collector:** ROBERT MIYAHIRA **Date Collected:** 7/20/2010  
**Quantity:** 1 **Matrix:** Soil **Date Received:** 7/22/2010 10:53:06 A

**Comment:**

Test	Method	Due Date	Priority
%Moisture	%moisture	7/20/2010	<u>2 Days</u>

**Customer Name:** GEO ENGINEERS  
523 E 2ND  
SPOKANE WA 99202

**Order ID:** 100722012  
**Order Date:** 7/22/2010

**Contact Name:** DAVE LAUDER

**Project Name:** BUENA 0504-060-00

**Comment:** SUB METHANE TO ACCUTEST

BTEX 8021	EPA 8021	7/26/2010	<u>2 Days</u>
NAPHTHALENE 8021	EPA 8021	7/20/2010	<u>2 Days</u>
TPHG-NW-SPO	NWTPHG	7/26/2010	<u>2 Days</u>

---

**Sample #:** 100722012-018 **Customer Sample #:** FOR METHANE QC ONLY

**Recv'd:**  **Collector:** **Date Collected:** 7/22/2010  
**Quantity:** 1 **Matrix:** Water **Date Received:** 7/22/2010 10:53:06 A

**Comment:**

Test	Method	Due Date	Priority
DISSOLVED GASES	RSK 175 MOD	7/26/2010	<u>2 Days</u>
NAPHTHALENE 8021	EPA 8021		<u>2 Days</u>

---

### SAMPLE CONDITION RECORD

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Samples received in a cooler?	YES-3
Samples received intact?	Yes
What is the temperature inside the cooler?	6.9 8.4 13
Samples received with a COC?	Yes
Samples received within holding time?	Yes
Are all sample bottles properly preserved?	Yes
Are VOC samples free of headspace?	Yes
Is there a trip blank to accompany VOC samples?	Yes
Labels and chain agree?	Yes



**Chain of Custody Record**

100722 012 **GEOE** Last Due **7/26/2010**  
 1st SAMP 7/20/2010 1st RCVD 7/22/2010  
 BUENA 0504-060-00

1282 Alturas Drive, Moscow ID 83843 (208) 883-2839 FAX 882-9246  
 504 E Sprague Ste D, Spokane WA 99202 (509) 838-3999 FAX 838-4433

Company Name: **Geo Engineers, Inc.** Project Manager: **Dave Lauder**  
 Address: **523 East Second Avenue** Project Name & #: **Buena 0504-060-00**  
 City: **Spokane** State: **WA** Zip: **99202** Email Address: **dlauder@geoengineers.com**  
 Phone: **509-363-3125** Purchase Order #: \_\_\_\_\_  
 Sampler Name & phone: **Robert Miyahira 425-941-2055**

Please refer to our normal turn around times at  
 http://www.anateklabs.com/services/guidelines/reporting.asp  
 Normal  Phone  
 Next Day\*  Mail  
 2nd Day\*  Fax  
 Other\*  EMail

Provide Sample Description			List Analyses Requested									
Lab ID	Sample Identification	Sampling Date/Time	Matrix	Sample Volume	Preservative	oil + heavy oil NMPH-DL	gasoline, GREX, RTBE, NMPH-GX	PPA, XOLIB, NMPH-GX	EPA 300.0, Sulfate + nitrate	alkalinity SM 2320	Sulfate Form EPA 200.8	Methane RSK 175M
1	DP-1-2.5-072010	07/20/10 0855	soil	2		X	X	X	X	X	X	
2	DP-1-072010	0945	water	10								X
3	DP-2-4.0-072010	1010	soil	2								X
4	DP-2-072010	1050	water	10								X
5	DP-3-5.0-072010	1120	soil	2								X
6	DP-3-072010	1200	water	10								X
7	DP-4-4.5-072010	1215	soil	2								X
8	DP-4-072010	1300	water	10								X
9	DP-5-4.5-072010	1340	soil	2								X
10	DP-5-072010	1430	water	10								X
11	DP-6-5.0-072010	1450	soil	2								X
12	DP-6-072010	1520	water	10								X
13	DP-7-2.0-072010	1545	soil	2								X

Relinquished by	Printed Name	Signature	Company	Date	Time
Relinquished by	Robert Miyahira	<i>Robert Miyahira</i>	Geo Engineers, Inc.	07/20/10	2200
Received by	<i>K Smith</i>	<i>K Smith</i>	<i>Anatek</i>	7/22	10:15
Relinquished by					
Received by					
Relinquished by					
Received by					

Note Special Instructions/Comments  
**RUSH**  
 SNBS  
 sub-methane  
 Not-5

Inspection Checklist  
 Received Intact?  Y  N  
 Labels & Chains Agree?  Y  N  
 Containers Sealed?  Y  N  
 VOC Head Space?  Y  N

Temperature (°C): **6.9 / 8.4 / 13.9**  
 Preservative: **HCl / ice / methanol**  
 Date & Time: **7/22/10**  
 Inspected By: **fedex**

DP-7-2.0-072010  
 RM





**Chain of Custody Record**

100722 012 **GEOE** Last Due 7/26/2010  
 1st SAMP 7/20/2010 1st RCVD 7/22/2010  
 BUENA 0504-060-00

1282 Alturas Drive, Moscow ID 83843 (208) 883-2839 FAX 882-9246  
 504 E Sprague Ste D, Spokane WA 99202 (509) 838-3999 FAX 838-4433

Company Name: **GeoEngineers, Inc.**  
 Address: **523 East Second Avenue**  
 City: **Spokane** State: **WA** Zip: **99202**  
 Phone: **509-363-3125**  
 Fax: \_\_\_\_\_

Project Manager: **Dave Lauder**  
 Project Name & #: **Buena 0504-060-00**  
 Email Address: **dlauder@geoengineers.com**  
 Purchase Order #: \_\_\_\_\_

Sampler Name & phone: **Robert Miyahira 425-941-2055**

Please refer to our normal turn around times at:  
<http://www.anateklabs.com/services/guidelines/reporting.asp>

Normal \_\_\_\_\_ Phone \_\_\_\_\_  
 Next Day\* \_\_\_\_\_ Mail \_\_\_\_\_  
 X 2nd Day\* \_\_\_\_\_ Fax \_\_\_\_\_  
 Other\* \_\_\_\_\_ X Email \_\_\_\_\_

\*All rush order requests must be prior approved.

**Note Special Instructions/Comments**

**RUSH**

**List Analyses Requested**

Lab ID	Sample Identification	Sampling Date/Time	Matrix	Preservative													
				Sample Volume	Sample Containers	diesel+heavy oil	WTRH-DX	gasoline-BTEX	TPH	TPH-DX	Sulfate + nitrate	EPA 350.0 alkalinity	SM 2320	Soluble TSS	EPA 200.8	MSK 175M	
14	DP-7-072010	07/20/10 1625	water	10		X	X	X	X	X	X	X	X	X	X	X	X
15	DP-8-2.5-072010	1645	soil	2		X	X	X	X	X	X	X	X	X	X	X	X
16	DP-8-072010	1730	water	10		X	X	X	X	X	X	X	X	X	X	X	X

**Provide Sample Description**

Printed Name	Signature	Date	Time	Company
Robert Miyahira	<i>Robert Miyahira</i>	07/20/10	2200	Geo Engineers, Inc.
Received by	<i>[Signature]</i>	7/22	1015	Anatek
Relinquished by				
Received by				
Relinquished by				
Received by				

**Inspection Checklist**

Received intact?  Y  N  
 Labels & Chains Agree?  Y  N  
 Containers Sealed?  Y  N  
 VOC Head Space?  Y  N

3 coolers  
 Temperature (°C) 6.9 / 8.4 / 13.9°  
 Preservative: HCl / ice / methanol

Date & Time: 7-22-10  
 Inspected By: KES

fedex

## CASE NARRATIVE

July 27, 2010

**Lab Name:** Anatek Labs, Inc.

**Project Tracking No.:** Buena 0504-060-00

**Anatek Batch:** 100723006

**Project Summary:** Six soil samples were received and analyzed for NWTPH-Dx, NWTPH-G, BTEX, Naphthalene, and MTBE. The soil samples submitted for NWTPH-G, BTEX, Naphthalene, and MTBE were collected by EPA Method 5035.

### QA/QC Checks

<u>Parameters</u>	<u>Yes / No</u>	<u>Exceptions / Deviations</u>
Sample Holding Time Valid?	Y	NA
Surrogate Recoveries Valid?	Y	NA
QC Sample(s) Recoveries Valid?	Y	NA
Method Blank(s) Valid?	Y	NA
Tune(s) Valid?	Y	NA
Internal Standard Responses Valid?	Y	NA
Initial Calibration Curve(s) Valid?	Y	NA
Continuing Calibration(s) Valid?	Y	NA
Comments	Y	NA

#### 1. Temperature Requirements

One cooler was received and delivered by FEDEX. The temperatures of the cooler was 11.5°C. The samples were wrapped in bubble wrap and then placed in plastic bags. The cubed ice was triple bagged and placed in the coolers with the samples. There were bags of ice still frozen in the coolers.

#### 2. Holding Time Requirements

Initial analysis of all samples performed within holding time requirements. No problems encountered.

#### 3. GC/MS Tune Requirements

No problems encountered.

#### 4. Calibration Requirements

No problems encountered.

**5. Surrogate Recovery Requirements**

No problems encountered.

**6. QC Sample (LCS/MS/MSD) Recovery Requirements**

No problems were encountered.

**7. Method Blank Requirements**

The method blanks were non-detect for all analytes. No problems encountered.

**8. Internal Standard(s) Response Requirements**

No problems encountered.

**9. Comments**

**I certify that this data package is in compliance with the terms and conditions of the contract.  
Release of the data contained in this data package has been authorized by the Laboratory Manager  
or his designee.**

Approved by : Kathleen A. Sattler

# Anatek Labs, Inc.

1282 Alturas Drive • Moscow, ID 83843 • (208) 883-2839 • Fax (208) 882-9246 • email moscow@anateklabs.com  
504 E Sprague Ste. D • Spokane WA 99202 • (509) 838-3999 • Fax (509) 838-4433 • email spokane@anateklabs.com

**Client:** GEO ENGINEERS  
**Address:** 523 E 2ND  
SPOKANE, WA 99202  
**Attn:** DAVE LAUDER

**Batch #:** 100723006  
**Project Name:** BUENA 0504-060-00

## Analytical Results Report

<b>Sample Number</b>	100723006-001	<b>Sampling Date</b>	7/21/2010	<b>Date/Time Received</b>	7/23/2010 10:05 AM		
<b>Client Sample ID</b>	MW-13-4.0-072110	<b>Sampling Time</b>	4:20 PM	<b>Extraction Date</b>			
<b>Matrix</b>	Soil	<b>Sample Location</b>					
<b>Comments</b>							
Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
Ethylbenzene	ND	mg/Kg	0.062	7/24/2010	WOZ	EPA 8021	
methyl-t-butyl ether (MTBE)	ND	mg/kg	0.062	7/24/2010	WOZ	EPA 8021	
Toluene	ND	mg/Kg	0.062	7/24/2010	WOZ	EPA 8021	
Total Xylene	ND	mg/Kg	0.124	7/24/2010	WOZ	EPA 8021	
Benzene	ND	mg/Kg	0.03	7/29/2010	WOZ	EPA 8260B	
Naphthalene	ND	mg/kg	0.31	7/24/2010	WOZ	EPA 8021	
Diesel	ND	mg/kg	25	7/24/2010	MJL	NWTPHDX	
Lube Oil	ND	mg/kg	100	7/24/2010	MJL	NWTPHDX	
Gasoline	ND	mg/kg	6.2	7/24/2010	WOZ	NWTPHG	
%moisture	13.5	Percent		7/23/2010	MJL	%moisture	

## Surrogate Data

<b>Sample Number</b>	100723006-001		
Surrogate Standard	Method	Percent Recovery	Control Limits
4-Bromofluorobenzene	EPA 8021	99.3	70-130
1,2-Dichlorobenzene-d4	EPA 8260B	99.6	70-130
4-Bromofluorobenzene	EPA 8260B	93.2	70-130
Toluene-d8	EPA 8260B	102.8	70-130
hexacosane	NWTPHDX	92.4	50-150

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**Client:** GEO ENGINEERS  
**Address:** 523 E 2ND  
SPOKANE, WA 99202  
**Attn:** DAVE LAUDER

**Batch #:** 100723006  
**Project Name:** BUENA 0504-060-00

## Analytical Results Report

<b>Sample Number</b>	100723006-002	<b>Sampling Date</b>	7/21/2010	<b>Date/Time Received</b>	7/23/2010 10:05 AM		
<b>Client Sample ID</b>	MW-14-3.5-072110	<b>Sampling Time</b>	10:35 AM	<b>Extraction Date</b>			
<b>Matrix</b>	Soil	<b>Sample Location</b>					
<b>Comments</b>							
Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
Ethylbenzene	ND	mg/Kg	0.05625	7/24/2010	WOZ	EPA 8021	
methyl-t-butyl ether (MTBE)	ND	mg/kg	0.05625	7/24/2010	WOZ	EPA 8021	
Toluene	ND	mg/Kg	0.05625	7/24/2010	WOZ	EPA 8021	
Total Xylene	0.252	mg/Kg	0.1125	7/24/2010	WOZ	EPA 8021	
Benzene	ND	mg/Kg	0.03	7/28/2010	WOZ	EPA 8260B	
Naphthalene	ND	mg/kg	0.281	7/24/2010	WOZ	EPA 8021	
Diesel	ND	mg/kg	25	7/24/2010	MJL	NWTPHDX	
Lube Oil	293	mg/kg	100	7/24/2010	MJL	NWTPHDX	
Gasoline	53.2	mg/kg	5.625	7/24/2010	WOZ	NWTPHG	
%moisture	9.8	Percent		7/23/2010	MJL	%moisture	

## Surrogate Data

<b>Sample Number</b>	100723006-002		
Surrogate Standard	Method	Percent Recovery	Control Limits
4-Bromofluorobenzene	EPA 8021	105.9	70-130
1,2-Dichlorobenzene-d4	EPA 8260B	100.0	70-130
4-Bromofluorobenzene	EPA 8260B	92.0	70-130
Toluene-d8	EPA 8260B	93.6	70-130
hexacosane	NWTPHDX	92.8	50-150

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**Client:** GEO ENGINEERS  
**Address:** 523 E 2ND  
SPOKANE, WA 99202  
**Attn:** DAVE LAUDER

**Batch #:** 100723006  
**Project Name:** BUENA 0504-060-00

## Analytical Results Report

<b>Sample Number</b>	100723006-003	<b>Sampling Date</b>	7/21/2010	<b>Date/Time Received</b>	7/23/2010 10:05 AM		
<b>Client Sample ID</b>	MW-15-3.5-072110	<b>Sampling Time</b>	7:55 AM	<b>Extraction Date</b>			
<b>Matrix</b>	Soil	<b>Sample Location</b>					
<b>Comments</b>							
Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
Ethylbenzene	ND	mg/Kg	0.04775	7/24/2010	WOZ	EPA 8021	
methyl-t-butyl ether (MTBE)	ND	mg/kg	0.04775	7/24/2010	WOZ	EPA 8021	
Toluene	ND	mg/Kg	0.04775	7/24/2010	WOZ	EPA 8021	
Total Xylene	ND	mg/Kg	0.0955	7/24/2010	WOZ	EPA 8021	
Benzene	ND	mg/Kg	0.03	7/28/2010	WOZ	EPA 8260B	
Naphthalene	ND	mg/kg	0.2385	7/24/2010	WOZ	EPA 8021	
Diesel	ND	mg/kg	25	7/24/2010	MJL	NWTPHDX	
Lube Oil	ND	mg/kg	100	7/24/2010	MJL	NWTPHDX	
Gasoline	ND	mg/kg	4.775	7/24/2010	WOZ	NWTPHG	
%moisture	15.5	Percent		7/23/2010	MJL	%moisture	

## Surrogate Data

<b>Sample Number</b>	100723006-003			
Surrogate Standard	Method	Percent Recovery	Control Limits	
4-Bromofluorobenzene	EPA 8021	99.1	70-130	
1,2-Dichlorobenzene-d4	EPA 8260B	100.0	70-130	
4-Bromofluorobenzene	EPA 8260B	103.6	70-130	
Toluene-d8	EPA 8260B	89.6	70-130	
hexacosane	NWTPHDX	98.4	50-150	

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**Client:** GEO ENGINEERS  
**Address:** 523 E 2ND  
SPOKANE, WA 99202  
**Attn:** DAVE LAUDER

**Batch #:** 100723006  
**Project Name:** BUENA 0504-060-00

## Analytical Results Report

<b>Sample Number</b>	100723006-004	<b>Sampling Date</b>	7/21/2010	<b>Date/Time Received</b>	7/23/2010 10:05 AM		
<b>Client Sample ID</b>	MW-16-3.5-072110	<b>Sampling Time</b>	2:20 PM	<b>Extraction Date</b>			
<b>Matrix</b>	Soil	<b>Sample Location</b>					
<b>Comments</b>							
Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
Ethylbenzene	ND	mg/Kg	0.06725	7/24/2010	WOZ	EPA 8021	
methyl-t-butyl ether (MTBE)	ND	mg/kg	0.06725	7/24/2010	WOZ	EPA 8021	
Toluene	ND	mg/Kg	0.06725	7/24/2010	WOZ	EPA 8021	
Total Xylene	ND	mg/Kg	0.1345	7/24/2010	WOZ	EPA 8021	
Benzene	ND	mg/Kg	0.03	7/29/2010	WOZ	EPA 8260B	
Naphthalene	ND	mg/kg	0.3365	7/24/2010	WOZ	EPA 8021	
Diesel	ND	mg/kg	25	7/24/2010	MJL	NWTPHDX	
Lube Oil	ND	mg/kg	100	7/24/2010	MJL	NWTPHDX	
Gasoline	ND	mg/kg	6.725	7/24/2010	WOZ	NWTPHG	
%moisture	24.3	Percent		7/23/2010	MJL	%moisture	

## Surrogate Data

<b>Sample Number</b>	100723006-004		
Surrogate Standard	Method	Percent Recovery	Control Limits
4-Bromofluorobenzene	EPA 8021	99.1	70-130
1,2-Dichlorobenzene-d4	EPA 8260B	99.6	70-130
4-Bromofluorobenzene	EPA 8260B	92.4	70-130
Toluene-d8	EPA 8260B	104.0	70-130
hexacosane	NWTPHDX	91.6	50-150

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**Client:** GEO ENGINEERS  
**Address:** 523 E 2ND  
SPOKANE, WA 99202  
**Attn:** DAVE LAUDER

**Batch #:** 100723006  
**Project Name:** BUENA 0504-060-00

## Analytical Results Report

<b>Sample Number</b>	100723006-005	<b>Sampling Date</b>	7/22/2010	<b>Date/Time Received</b>	7/23/2010 10:05 AM		
<b>Client Sample ID</b>	MW-17-4.0-072210	<b>Sampling Time</b>	7:55 AM	<b>Extraction Date</b>			
<b>Matrix</b>	Soil	<b>Sample Location</b>					
<b>Comments</b>							
Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
Ethylbenzene	ND	mg/Kg	0.0725	7/24/2010	WOZ	EPA 8021	
methyl-t-butyl ether (MTBE)	ND	mg/kg	0.0725	7/24/2010	WOZ	EPA 8021	
Toluene	ND	mg/Kg	0.0725	7/24/2010	WOZ	EPA 8021	
Total Xylene	ND	mg/Kg	0.145	7/24/2010	WOZ	EPA 8021	
Benzene	ND	mg/Kg	0.03	7/29/2010	WOZ	EPA 8260B	
Naphthalene	ND	mg/kg	0.362	7/24/2010	WOZ	EPA 8021	
Diesel	ND	mg/kg	25	7/24/2010	MJL	NWTPHDX	
Lube Oil	ND	mg/kg	100	7/24/2010	MJL	NWTPHDX	
Gasoline	ND	mg/kg	7.25	7/24/2010	WOZ	NWTPHG	
%moisture	18.7	Percent		7/23/2010	MJL	%moisture	

## Surrogate Data

<b>Sample Number</b>	100723006-005		
Surrogate Standard	Method	Percent Recovery	Control Limits
4-Bromofluorobenzene	EPA 8021	98.5	70-130
1,2-Dichlorobenzene-d4	EPA 8260B	100.4	70-130
4-Bromofluorobenzene	EPA 8260B	96.0	70-130
Toluene-d8	EPA 8260B	106.8	70-130
hexacosane	NWTPHDX	95.8	50-150



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SPOKANE, WA 99202  
**Attn:** DAVE LAUDER

**Batch #:** 100723006  
**Project Name:** BUENA 0504-060-00

## Analytical Results Report

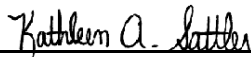
<b>Sample Number</b>	100723006-006	<b>Sampling Date</b>	7/21/2010	<b>Date/Time Received</b>	7/23/2010 10:05 AM
<b>Client Sample ID</b>	MW-18-3.5-072110	<b>Sampling Time</b>	12:35 PM	<b>Extraction Date</b>	
<b>Matrix</b>	Soil	<b>Sample Location</b>			
<b>Comments</b>					

Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
Ethylbenzene	ND	mg/Kg	0.0535	7/25/2010	WOZ	EPA 8021	
methyl-t-butyl ether (MTBE)	ND	mg/kg	0.0535	7/25/2010	WOZ	EPA 8021	
Toluene	ND	mg/Kg	0.0535	7/25/2010	WOZ	EPA 8021	
Total Xylene	ND	mg/Kg	0.107	7/25/2010	WOZ	EPA 8021	
Benzene	ND	mg/Kg	0.03	7/28/2010	WOZ	EPA 8260B	
Naphthalene	ND	mg/kg	0.267	7/25/2010	WOZ	EPA 8021	
Diesel	ND	mg/kg	25	7/24/2010	MJL	NWTPHDX	
Lube Oil	ND	mg/kg	100	7/24/2010	MJL	NWTPHDX	
Gasoline	ND	mg/kg	5.35	7/25/2010	WOZ	NWTPHG	
%moisture	3.6	Percent		7/23/2010	MJL	%moisture	

## Surrogate Data

<b>Sample Number</b>	100723006-006		
<b>Surrogate Standard</b>	<b>Method</b>	<b>Percent Recovery</b>	<b>Control Limits</b>
4-Bromofluorobenzene	EPA 8021	102.8	70-130
1,2-Dichlorobenzene-d4	EPA 8260B	101.2	70-130
4-Bromofluorobenzene	EPA 8260B	90.4	70-130
Toluene-d8	EPA 8260B	91.2	70-130
hexacosane	NWTPHDX	93.4	50-150

Authorized Signature



Kathy Sattler, Lab Manager

MCL EPA's Maximum Contaminant Level  
ND Not Detected  
PQL Practical Quantitation Limit

This report shall not be reproduced except in full, without the written approval of the laboratory.  
The results reported relate only to the samples indicated.  
Soil/solid results are reported on a dry-weight basis unless otherwise noted.

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**Client:** GEO ENGINEERS  
**Address:** 523 E 2ND  
SPOKANE, WA 99202  
**Attn:** DAVE LAUDER

**Batch #:** 100723006  
**Project Name:** BUENA 0504-060-00

## Analytical Results Report Quality Control Data

### Lab Control Sample

Parameter	LCS Result	Units	LCS Spike	%Rec	AR %Rec	Prep Date	Analysis Date
Benzene	0.0220	mg/kg	0.025	88.0	69-122	7/29/2010	7/29/2010
Benzene	0.239	mg/kg	0.25	95.6	69-122	7/28/2010	7/28/2010
Total Xylene	2.79	mg/kg	2.9	96.2	70-130	7/24/2010	7/24/2010
Toluene	2.52	mg/kg	2.58	97.7	70-130	7/24/2010	7/24/2010
Ethylbenzene	0.563	mg/kg	0.575	97.9	70-130	7/24/2010	7/24/2010
Diesel	126	mg/kg	193	65.3	50-150	7/24/2010	7/24/2010

### Matrix Spike

Sample Number	Parameter	Sample Result	MS Result	Units	MS Spike	%Rec	AR %Rec	Prep Date	Analysis Date
100723006-005	Diesel	ND	155	mg/kg	196	79.1	50-150	7/24/2010	7/24/2010
100722012-001	Total Xylene	1.12	8.80	mg/kg	7.24	106.1	70-130	7/24/2010	7/24/2010
100722012-001	Toluene	0.116	6.94	mg/kg	6.43	106.1	70-130	7/24/2010	7/24/2010
100722012-001	Ethylbenzene	0.481	2.05	mg/kg	1.44	109.0	70-130	7/24/2010	7/24/2010

### Matrix Spike Duplicate

Parameter	MSD Result	Units	MSD Spike	%Rec	%RPD	AR %RPD	Prep Date	Analysis Date
Diesel	158	mg/kg	188	84.0	1.9	0-50	7/24/2010	7/24/2010
Total Xylene	8.53	mg/kg	7.24	102.3	3.1	0-20	7/24/2010	7/24/2010
Toluene	6.84	mg/kg	6.43	104.6	1.5	0-20	7/24/2010	7/24/2010
Ethylbenzene	2.00	mg/kg	1.44	105.5	2.5	0-20	7/24/2010	7/24/2010

### Method Blank

Parameter	Result	Units	PQL	Prep Date	Analysis Date
Benzene	ND	mg/Kg	0.005	7/29/2010	7/29/2010
Benzene	ND	mg/Kg	0.005	7/28/2010	7/28/2010
Diesel	ND	mg/kg	25	7/24/2010	7/24/2010
Ethylbenzene	ND	mg/Kg	0.025	7/24/2010	7/24/2010
Gasoline	ND	mg/kg	2.5	7/24/2010	7/24/2010
Lube Oil	ND	mg/kg	100	7/24/2010	7/24/2010
methyl-t-butyl ether (MTBE)	ND	mg/kg	0.025	7/24/2010	7/24/2010
Naphthalene	ND	mg/kg	0.125	7/24/2010	7/24/2010

### Comments:

Certifications held by Anatek Labs ID: EPA:ID00013; AZ:0701; CO:ID00013; FL(NELAP):E87893; ID:ID00013; IN:C-ID-01; KY:90142; MT:CERT0028; NM: ID00013; OR:ID200001-002; WA:C595  
Certifications held by Anatek Labs WA: EPA:WA00169; CA:Cert2632; ID:WA00169; WA:C585; MT:Cert0095

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**Client:** GEO ENGINEERS  
**Address:** 523 E 2ND  
SPOKANE, WA 99202  
**Attn:** DAVE LAUDER

**Batch #:** 100723006  
**Project Name:** BUENA 0504-060-00

## Analytical Results Report Quality Control Data

### Method Blank

Parameter	Result	Units	PQL	Prep Date	Analysis Date
Toluene	ND	mg/Kg	0.025	7/24/2010	7/24/2010
Total Xylene	ND	mg/Kg	0.05	7/24/2010	7/24/2010

AR Acceptable Range  
ND Not Detected  
PQL Practical Quantitation Limit  
RPD Relative Percentage Difference

### Comments:

Certifications held by Anatek Labs ID: EPA:ID00013; AZ:0701; CO:ID00013; FL(NELAP):E87893; ID:ID00013; IN:C-ID-01; KY:90142; MT:CERT0028; NM: ID00013; OR:ID200001-002; WA:C595  
Certifications held by Anatek Labs WA: EPA:WA00169; CA:Cert2632; ID:WA00169; WA:C585; MT:Cert0095

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## Login Report

**Customer Name:** GEO ENGINEERS

523 E 2ND

SPOKANE

WA

99202

**Order ID:** 100723006

**Order Date:** 7/23/2010

**Contact Name:** DAVE LAUDER

**Project Name:** BUENA 0504-060-00

**Comment:**

---

**Sample #:** 100723006-001    **Customer Sample #:** MW-13-4.0-072110

**Recv'd:**

**Collector:** ROBERT MIYAHIRA

**Date Collected:** 7/21/2010

**Quantity:** 1

**Matrix:** Soil

**Date Received:** 7/23/2010 10:05:00 A

**Comment:**

Test	Method	Due Date	Priority
%Moisture	%moisture	7/21/2010	<u>2 Days</u>
BTEX 8021	EPA 8021	7/27/2010	<u>2 Days</u>
BTEX 8260	EPA 8260B	7/23/2010	<u>2 Days</u>
NAPHTHALENE 8021	EPA 8021	7/21/2010	<u>2 Days</u>
TPHDX-NW	NWTPHDX	7/27/2010	<u>2 Days</u>
TPHG-NW-SPO	NWTPHG	7/27/2010	<u>2 Days</u>

---

**Sample #:** 100723006-002    **Customer Sample #:** MW-14-3.5-072110

**Recv'd:**

**Collector:** ROBERT MIYAHIRA

**Date Collected:** 7/21/2010

**Quantity:** 1

**Matrix:** Soil

**Date Received:** 7/23/2010 10:05:00 A

**Comment:**

Test	Method	Due Date	Priority
%Moisture	%moisture	7/21/2010	<u>2 Days</u>
BTEX 8021	EPA 8021	7/27/2010	<u>2 Days</u>
BTEX 8260	EPA 8260B	7/23/2010	<u>2 Days</u>
NAPHTHALENE 8021	EPA 8021	7/21/2010	<u>2 Days</u>
TPHDX-NW	NWTPHDX	7/27/2010	<u>2 Days</u>
TPHG-NW-SPO	NWTPHG	7/27/2010	<u>2 Days</u>

**Customer Name:** GEO ENGINEERS  
523 E 2ND  
SPOKANE WA 99202

**Order ID:** 100723006  
**Order Date:** 7/23/2010

**Contact Name:** DAVE LAUDER

**Project Name:** BUENA 0504-060-00

**Comment:**

---

**Sample #:** 100723006-003 **Customer Sample #:** MW-15-3.5-072110

**Recv'd:**  **Collector:** ROBERT MIYAHIRA **Date Collected:** 7/21/2010  
**Quantity:** 1 **Matrix:** Soil **Date Received:** 7/23/2010 10:05:00 A

**Comment:**

Test	Method	Due Date	Priority
%Moisture	%moisture	7/21/2010	<u>2 Days</u>
BTEX 8021	EPA 8021	7/27/2010	<u>2 Days</u>
BTEX 8260	EPA 8260B	7/23/2010	<u>2 Days</u>
NAPHTHALENE 8021	EPA 8021	7/21/2010	<u>2 Days</u>
TPHDX-NW	NWTPHDX	7/27/2010	<u>2 Days</u>
TPHG-NW-SPO	NWTPHG	7/27/2010	<u>2 Days</u>

---

**Sample #:** 100723006-004 **Customer Sample #:** MW-16-3.5-072110

**Recv'd:**  **Collector:** ROBERT MIYAHIRA **Date Collected:** 7/21/2010  
**Quantity:** 1 **Matrix:** Soil **Date Received:** 7/23/2010 10:05:00 A

**Comment:**

Test	Method	Due Date	Priority
%Moisture	%moisture	7/21/2010	<u>2 Days</u>
BTEX 8021	EPA 8021	7/27/2010	<u>2 Days</u>
BTEX 8260	EPA 8260B	7/23/2010	<u>2 Days</u>
NAPHTHALENE 8021	EPA 8021	7/21/2010	<u>2 Days</u>
TPHDX-NW	NWTPHDX	7/27/2010	<u>2 Days</u>
TPHG-NW-SPO	NWTPHG	7/27/2010	<u>2 Days</u>

---

**Sample #:** 100723006-005 **Customer Sample #:** MW-17-4.0-072210

**Recv'd:**  **Collector:** ROBERT MIYAHIRA **Date Collected:** 7/22/2010  
**Quantity:** 1 **Matrix:** Soil **Date Received:** 7/23/2010 10:05:00 A

**Comment:**

Test	Method	Due Date	Priority
%Moisture	%moisture	7/22/2010	<u>2 Days</u>
BTEX 8021	EPA 8021	7/27/2010	<u>2 Days</u>
BTEX 8260	EPA 8260B	7/23/2010	<u>2 Days</u>
NAPHTHALENE 8021	EPA 8021	7/22/2010	<u>2 Days</u>
TPHDX-NW	NWTPHDX	7/27/2010	<u>2 Days</u>

**Customer Name:** GEO ENGINEERS  
523 E 2ND  
SPOKANE WA 99202

**Order ID:** 100723006  
**Order Date:** 7/23/2010

**Contact Name:** DAVE LAUDER

**Project Name:** BUENA 0504-060-00

**Comment:**

TPHG-NW-SPO NWTPHG 7/27/2010 **2 Days**

**Sample #:** 100723006-006 **Customer Sample #:** MW-18-3.5-072110

**Recv'd:**  **Collector:** ROBERT MIYAHIRA **Date Collected:** 7/21/2010  
**Quantity:** 1 **Matrix:** Soil **Date Received:** 7/23/2010 10:05:00 A

**Comment:**

Test	Method	Due Date	Priority
%Moisture	%moisture	7/21/2010	<b><u>2 Days</u></b>
BTEX 8021	EPA 8021	7/27/2010	<b><u>2 Days</u></b>
BTEX 8260	EPA 8260B	7/23/2010	<b><u>2 Days</u></b>
NAPHTHALENE 8021	EPA 8021	7/21/2010	<b><u>2 Days</u></b>
TPHDX-NW	NWTPHDX	7/27/2010	<b><u>2 Days</u></b>
TPHG-NW-SPO	NWTPHG	7/27/2010	<b><u>2 Days</u></b>

### SAMPLE CONDITION RECORD

Samples received in a cooler?	Yes
Samples received intact?	Yes
What is the temperature inside the cooler?	11.5
Samples received with a COC?	Yes
Samples received within holding time?	Yes
Are all sample bottles properly preserved?	Yes
Are VOC samples free of headspace?	N/A
Is there a trip blank to accompany VOC samples?	N/A
Labels and chain agree?	Yes

100723 006 **GEOE** Last Due 7/27/2010

1st SAMP 7/21/2010 1st RCVD 7/23/2010

BUENA 0504-060-00

**Chain of Custody Record**

**Anatek Labs, Inc.**

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 504 E Sprague Ste D, Spokane WA 99202 (509) 838-3999 FAX 838-4433

Project Manager: Dave Lauder  
 Project Name & #: Buena 0504-060-00  
 Email Address: d.lauder@geoengineers.com  
 Purchase Order #:  
 Sampler Name & phone: Robert N. Miyahira 425-941-2055

Company Name: GeoEngineers, Inc.  
 Address: 523 East Second Avenue  
 City: Spokane State: WA Zip: 99202  
 Phone: 509-363-3125  
 Fax:

Please refer to our normal turn around times at:  
<http://www.anateklabs.com/services/guidelines/reporting.asp>  
 \*All rush order requests must be prior approved.  
 Normal \_\_\_\_\_ Phone \_\_\_\_\_  
 Next Day\* \_\_\_\_\_ Mail \_\_\_\_\_  
 2nd Day\* \_\_\_\_\_ Fax \_\_\_\_\_  
 Other\* \_\_\_\_\_ Email \_\_\_\_\_

Provide Sample Description			List Analyses Requested			Date	Time
Lab ID	Sample Identification	Sampling Date/Time	Matrix	Sample Volume	Preservative		
1	MW13-4.0-072110	07-21-10 1620	Soil	X	X	07-22-10	1100
2	MW14-3.5-072110	1035	↓ ↓ ↓ ↓ ↓ ↓	X	X	7-23-10	10:05
3	MW15-3.5-072110	0755		X	X		
4	MW16-3.5-072110	1420		X	X		
5	MW17-4.0-072210	07-22-10 0755		X	X		
6	MW18-3.5-072110	07-21-10 1235		X	X		

Note Special Instructions/Comments  
**RUSH**  
 5035 extraction sampling  
 SWBS  
 all sp

Relinquished by	Printed Name	Signature	Company
Received by	Robert Miyahira	<i>Robert Miyahira</i>	GeoEngineers, Inc.
Relinquished by	Kathy Scuttler	<i>Kathy Scuttler</i>	Anatek Labs
Received by			
Relinquished by			
Received by			

Inspection Checklist  
 Received Intact?  Y  N  
 Labels & Chains Agree?  Y  N  
 Containers Sealed?  Y  N  
 VOC Head Space?  Y  N  
 FedEx sealed  
 Cooler Ice  
 Temperature (°C): 11.5  
 Preservative: MeOH  
 Date & Time: 7-23-10 1006  
 Inspected By: KAS  
 12 containers

## CASE NARRATIVE

July 27, 2010

**Lab Name:** Anatek Labs, Inc.

**Project Tracking No.:** Buena 0504-060-00

**Anatek Batch:** 100727016

**Project Summary:** Seven water samples were received and analyzed for NWTPH-Dx, sulfate, nitrate, soluble iron, soluble manganese, NWTPH-G, BTEX, Naphthalene, Methane and alkalinity.

### QA/QC Checks

<u>Parameters</u>	<u>Yes / No</u>	<u>Exceptions / Deviations</u>
Sample Holding Time Valid?	Y	NA
Surrogate Recoveries Valid?	Y	NA
QC Sample(s) Recoveries Valid?	Y	NA
Method Blank(s) Valid?	Y	NA
Tune(s) Valid?	Y	NA
Internal Standard Responses Valid?	Y	NA
Initial Calibration Curve(s) Valid?	Y	NA
Continuing Calibration(s) Valid?	Y	NA
Comments	Y	NA

#### 1. Temperature Requirements

Two coolers were received and delivered by FEDEX. The temperatures of the coolers were 10.4°C and 13.8 °C. The samples were wrapped in bubble wrap and then placed in plastic bags. The cubed ice was triple bagged and place in the coolers with the samples. There were bags of ice still frozen in the coolers.

#### 2. Holding Time Requirements

Initial analysis of all samples performed within holding time requirements. No problems encountered.

#### 3. GC/MS Tune Requirements

No problems encountered.

#### 4. Calibration Requirements

No problems encountered.

#### 5. Surrogate Recovery Requirements



No problems encountered.

**6. QC Sample (LCS/MS/MSD) Recovery Requirements**

No problems were encountered.

**7. Method Blank Requirements**

The method blanks were non-detect for all analytes. No problems encountered.

**8. Internal Standard(s) Response Requirements**

No problems encountered.

**9. Comments**

**I certify that this data package is in compliance with the terms and conditions of the contract.  
Release of the data contained in this data package has been authorized by the Laboratory Manager  
or his designee.**

Approved by : Kathleen A. Sattler

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**Client:** GEO ENGINEERS  
**Address:** 523 E 2ND  
SPOKANE, WA 99202  
**Attn:** DAVE LAUDER

**Batch #:** 100727016  
**Project Name:** BUENA 0504-060-00

## Analytical Results Report

<b>Sample Number</b>	100727016-001	<b>Sampling Date</b>	7/25/2010	<b>Date/Time Received</b>	7/27/2010 10:30 AM		
<b>Client Sample ID</b>	MW13-072510	<b>Sampling Time</b>	12:00 PM	<b>Extraction Date</b>			
<b>Matrix</b>	Water	<b>Sample Location</b>					
<b>Comments</b>							
Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
Alkalinity	219	mg/L	10	7/27/2010	APM	SM2320B	
Dissolved Iron	1.10	mg/L	0.01	7/27/2010	KEA	EPA 200.8	
Dissolved Manganese	0.312	mg/L	0.001	7/27/2010	KEA	EPA 200.8	
NO3/N	5.60	mg/L	0.1	7/27/2010	JLU	EPA 300.0	
Sulfate	23.3	mg/L	0.1	7/27/2010	JLU	EPA 300.0	

<b>Sample Number</b>	100727016-002	<b>Sampling Date</b>	7/25/2010	<b>Date/Time Received</b>	7/27/2010 10:30 AM		
<b>Client Sample ID</b>	MW14-072510	<b>Sampling Time</b>	2:15 PM	<b>Extraction Date</b>			
<b>Matrix</b>	Water	<b>Sample Location</b>					
<b>Comments</b>							
Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
Alkalinity	301	mg/L	10	7/27/2010	APM	SM2320B	
Dissolved Iron	0.108	mg/L	0.01	7/27/2010	KEA	EPA 200.8	
Dissolved Manganese	1.14	mg/L	0.001	7/27/2010	KEA	EPA 200.8	
NO3/N	3.11	mg/L	0.1	7/27/2010	JLU	EPA 300.0	
Sulfate	23.5	mg/L	0.1	7/27/2010	JLU	EPA 300.0	

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**Client:** GEO ENGINEERS  
**Address:** 523 E 2ND  
SPOKANE, WA 99202  
**Attn:** DAVE LAUDER

**Batch #:** 100727016  
**Project Name:** BUENA 0504-060-00

## Analytical Results Report

<b>Sample Number</b>	100727016-003	<b>Sampling Date</b>	7/25/2010	<b>Date/Time Received</b>	7/27/2010 10:30 AM		
<b>Client Sample ID</b>	MW14D-072510	<b>Sampling Time</b>	2:20 PM	<b>Extraction Date</b>			
<b>Matrix</b>	Water	<b>Sample Location</b>					
<b>Comments</b>							
Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
Alkalinity	304	mg/L	10	7/27/2010	APM	SM2320B	
Dissolved Iron	0.162	mg/L	0.01	7/27/2010	KEA	EPA 200.8	
Dissolved Manganese	1.18	mg/L	0.01	7/27/2010	KEA	EPA 200.8	
NO3/N	3.13	mg/L	0.1	7/27/2010	JLU	EPA 300.0	
Sulfate	23.5	mg/L	0.1	7/27/2010	JLU	EPA 300.0	

<b>Sample Number</b>	100727016-004	<b>Sampling Date</b>	7/25/2010	<b>Date/Time Received</b>	7/27/2010 10:30 AM		
<b>Client Sample ID</b>	MW15-072510	<b>Sampling Time</b>	1:05 PM	<b>Extraction Date</b>			
<b>Matrix</b>	Water	<b>Sample Location</b>					
<b>Comments</b>							
Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
Alkalinity	353	mg/L	10	7/27/2010	APM	SM2320B	
Dissolved Iron	0.515	mg/L	0.01	7/27/2010	KEA	EPA 200.8	
Dissolved Manganese	0.939	mg/L	0.001	7/27/2010	KEA	EPA 200.8	
NO3/N	ND	mg/L	0.1	7/27/2010	JLU	EPA 300.0	
Sulfate	30.7	mg/L	0.2	7/27/2010	JLU	EPA 300.0	

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**Batch #:** 100727016  
**Project Name:** BUENA 0504-060-00

## Analytical Results Report

<b>Sample Number</b>	100727016-005	<b>Sampling Date</b>	7/25/2010	<b>Date/Time Received</b>	7/27/2010 10:30 AM		
<b>Client Sample ID</b>	MW16-072510	<b>Sampling Time</b>	9:35 AM	<b>Extraction Date</b>			
<b>Matrix</b>	Water	<b>Sample Location</b>					
<b>Comments</b>							
Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
Alkalinity	266	mg/L	10	7/27/2010	APM	SM2320B	
Dissolved Iron	0.116	mg/L	0.01	7/27/2010	KEA	EPA 200.8	
Dissolved Manganese	0.325	mg/L	0.001	7/27/2010	KEA	EPA 200.8	
NO3/N	2.53	mg/L	0.1	7/27/2010	JLU	EPA 300.0	
Sulfate	46.7	mg/L	0.5	7/27/2010	JLU	EPA 300.0	

<b>Sample Number</b>	100727016-006	<b>Sampling Date</b>	7/25/2010	<b>Date/Time Received</b>	7/27/2010 10:30 AM		
<b>Client Sample ID</b>	MW17-072510	<b>Sampling Time</b>	3:35 PM	<b>Extraction Date</b>			
<b>Matrix</b>	Water	<b>Sample Location</b>					
<b>Comments</b>							
Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
Alkalinity	280	mg/L	10	7/27/2010	APM	SM2320B	
Dissolved Iron	0.722	mg/L	0.01	7/27/2010	KEA	EPA 200.8	
Dissolved Manganese	0.411	mg/L	0.001	7/27/2010	KEA	EPA 200.8	
NO3/N	0.250	mg/L	0.1	7/27/2010	JLU	EPA 300.0	
Sulfate	48.0	mg/L	0.5	7/27/2010	JLU	EPA 300.0	

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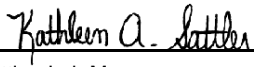
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**Batch #:** 100727016  
**Project Name:** BUENA 0504-060-00

## Analytical Results Report

<b>Sample Number</b>	100727016-007	<b>Sampling Date</b>	7/25/2010	<b>Date/Time Received</b>	7/27/2010 10:30 AM		
<b>Client Sample ID</b>	MW18-072510	<b>Sampling Time</b>	10:50 AM	<b>Extraction Date</b>			
<b>Matrix</b>	Water	<b>Sample Location</b>					
<b>Comments</b>							
Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
Alkalinity	250	mg/L	10	7/27/2010	APM	SM2320B	
Dissolved Iron	0.0170	mg/L	0.01	7/27/2010	KEA	EPA 200.8	
Dissolved Manganese	0.804	mg/L	0.001	7/27/2010	KEA	EPA 200.8	
NO3/N	1.45	mg/L	0.1	7/27/2010	JLU	EPA 300.0	
Sulfate	32.2	mg/L	0.2	7/27/2010	JLU	EPA 300.0	

Authorized Signature

  
Kathy Sattler, Lab Manager

MCL EPA's Maximum Contaminant Level  
ND Not Detected  
PQL Practical Quantitation Limit

This report shall not be reproduced except in full, without the written approval of the laboratory.  
The results reported relate only to the samples indicated.  
Soil/solid results are reported on a dry-weight basis unless otherwise noted.

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## Analytical Results Report

<b>Sample Number</b>	100727016-001	<b>Sampling Date</b>	7/25/2010	<b>Date/Time Received</b>	7/27/2010 10:30 AM
<b>Client Sample ID</b>	MW13-072510	<b>Sampling Time</b>	12:00 PM	<b>Extraction Date</b>	
<b>Matrix</b>	Water	<b>Sample Location</b>			
<b>Comments</b>					

Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
Benzene	ND	ug/L	0.5	7/27/2010	WOZ	EPA 8260B	
Ethylbenzene	ND	ug/L	0.5	7/27/2010	WOZ	EPA 8260B	
m+p-Xylene	ND	ug/L	1.0	7/27/2010	WOZ	EPA 8260B	
methyl-t-butyl ether (MTBE)	ND	ug/L	0.5	7/27/2010	WOZ	EPA 8260B	
Naphthalene	ND	ug/L	0.5	7/27/2010	WOZ	EPA 8260B	
o-Xylene	ND	ug/L	0.5	7/27/2010	WOZ	EPA 8260B	
Toluene	ND	ug/L	0.5	7/27/2010	WOZ	EPA 8260B	
Diesel	0.103	mg/L	0.1	7/27/2010	MJL	NWTPHDX	
Lube Oil	ND	mg/L	0.5	7/27/2010	MJL	NWTPHDX	
Gasoline	ND	mg/L	0.1	7/27/2010	WOZ	NWTPHG	

## Surrogate Data

<b>Sample Number</b>	100727016-001		
<b>Surrogate Standard</b>	<b>Method</b>	<b>Percent Recovery</b>	<b>Control Limits</b>
1,2-Dichlorobenzene-d4	EPA 8260B	98.8	70-130
4-Bromofluorobenzene	EPA 8260B	91.6	70-130
Toluene-d8	EPA 8260B	98.0	70-130
hexacosane	NWTPHDX	87.2	50-150
4-Bromofluorobenzene	NWTPHG	107.1	70-130

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**Project Name:** BUENA 0504-060-00

## Analytical Results Report

<b>Sample Number</b>	100727016-002	<b>Sampling Date</b>	7/25/2010	<b>Date/Time Received</b>	7/27/2010 10:30 AM		
<b>Client Sample ID</b>	MW14-072510	<b>Sampling Time</b>	2:15 PM	<b>Extraction Date</b>			
<b>Matrix</b>	Water	<b>Sample Location</b>					
<b>Comments</b>							
Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
Benzene	ND	ug/L	0.5	7/27/2010	WOZ	EPA 8260B	
Ethylbenzene	20.5	ug/L	0.5	7/27/2010	WOZ	EPA 8260B	
m+p-Xylene	2.16	ug/L	1.0	7/27/2010	WOZ	EPA 8260B	
methyl-t-butyl ether (MTBE)	ND	ug/L	0.5	7/27/2010	WOZ	EPA 8260B	
Naphthalene	32.5	ug/L	0.5	7/27/2010	WOZ	EPA 8260B	
o-Xylene	0.84	ug/L	0.5	7/27/2010	WOZ	EPA 8260B	
Toluene	ND	ug/L	0.5	7/27/2010	WOZ	EPA 8260B	
Diesel	ND	mg/L	0.1	7/27/2010	MJL	NWTPHDX	
Lube Oil	ND	mg/L	0.5	7/27/2010	MJL	NWTPHDX	
Gasoline	3.36	mg/L	0.1	7/27/2010	WOZ	NWTPHG	

## Surrogate Data

<b>Sample Number</b>	100727016-002		
Surrogate Standard	Method	Percent Recovery	Control Limits
1,2-Dichlorobenzene-d4	EPA 8260B	94.0	70-130
4-Bromofluorobenzene	EPA 8260B	70.8	70-130
Toluene-d8	EPA 8260B	109.6	70-130
hexacosane	NWTPHDX	78.6	50-150
4-Bromofluorobenzene	NWTPHG	113.1	70-130

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## Analytical Results Report

<b>Sample Number</b>	100727016-003	<b>Sampling Date</b>	7/25/2010	<b>Date/Time Received</b>	7/27/2010 10:30 AM		
<b>Client Sample ID</b>	MW14D-072510	<b>Sampling Time</b>	2:20 PM	<b>Extraction Date</b>			
<b>Matrix</b>	Water	<b>Sample Location</b>					
<b>Comments</b>							
Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
Benzene	ND	ug/L	0.5	7/27/2010	WOZ	EPA 8260B	
Ethylbenzene	20.4	ug/L	0.5	7/27/2010	WOZ	EPA 8260B	
m+p-Xylene	2.16	ug/L	1.0	7/27/2010	WOZ	EPA 8260B	
methyl-t-butyl ether (MTBE)	ND	ug/L	0.5	7/27/2010	WOZ	EPA 8260B	
Naphthalene	32.9	ug/L	0.5	7/27/2010	WOZ	EPA 8260B	
o-Xylene	0.83	ug/L	0.5	7/27/2010	WOZ	EPA 8260B	
Toluene	ND	ug/L	0.5	7/27/2010	WOZ	EPA 8260B	
Diesel	ND	mg/L	0.1	7/27/2010	MJL	NWTPHDX	
Lube Oil	ND	mg/L	0.5	7/27/2010	MJL	NWTPHDX	
Gasoline	3.21	mg/L	0.1	7/27/2010	WOZ	NWTPHG	

## Surrogate Data

<b>Sample Number</b>	100727016-003		
Surrogate Standard	Method	Percent Recovery	Control Limits
1,2-Dichlorobenzene-d4	EPA 8260B	94.4	70-130
4-Bromofluorobenzene	EPA 8260B	71.2	70-130
Toluene-d8	EPA 8260B	103.6	70-130
hexacosane	NWTPHDX	94.4	50-150
4-Bromofluorobenzene	NWTPHG	113.0	70-130



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## Analytical Results Report

<b>Sample Number</b>	100727016-004	<b>Sampling Date</b>	7/25/2010	<b>Date/Time Received</b>	7/27/2010 10:30 AM		
<b>Client Sample ID</b>	MW15-072510	<b>Sampling Time</b>	1:05 PM	<b>Extraction Date</b>			
<b>Matrix</b>	Water	<b>Sample Location</b>					
<b>Comments</b>							
Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
Benzene	ND	ug/L	0.5	7/27/2010	WOZ	EPA 8260B	
Ethylbenzene	ND	ug/L	0.5	7/27/2010	WOZ	EPA 8260B	
m+p-Xylene	ND	ug/L	1.0	7/27/2010	WOZ	EPA 8260B	
methyl-t-butyl ether (MTBE)	ND	ug/L	0.5	7/27/2010	WOZ	EPA 8260B	
Naphthalene	ND	ug/L	0.5	7/27/2010	WOZ	EPA 8260B	
o-Xylene	0.54	ug/L	0.5	7/27/2010	WOZ	EPA 8260B	
Toluene	ND	ug/L	0.5	7/27/2010	WOZ	EPA 8260B	
Diesel	2.08	mg/L	0.1	7/28/2010	MJL	NWTPHDX	
Lube Oil	ND	mg/L	0.5	7/28/2010	MJL	NWTPHDX	
Gasoline	ND	mg/L	0.1	7/27/2010	WOZ	NWTPHG	

## Surrogate Data

<b>Sample Number</b>	100727016-004		
Surrogate Standard	Method	Percent Recovery	Control Limits
1,2-Dichlorobenzene-d4	EPA 8260B	98.8	70-130
4-Bromofluorobenzene	EPA 8260B	107.2	70-130
Toluene-d8	EPA 8260B	100.0	70-130
hexacosane	NWTPHDX	79.6	50-150
4-Bromofluorobenzene	NWTPHG	113.2	70-130

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## Analytical Results Report

<b>Sample Number</b>	100727016-005	<b>Sampling Date</b>	7/25/2010	<b>Date/Time Received</b>	7/27/2010 10:30 AM		
<b>Client Sample ID</b>	MW16-072510	<b>Sampling Time</b>	9:35 AM	<b>Extraction Date</b>			
<b>Matrix</b>	Water	<b>Sample Location</b>					
<b>Comments</b>							
Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
Benzene	ND	ug/L	0.5	7/27/2010	WOZ	EPA 8260B	
Ethylbenzene	ND	ug/L	0.5	7/27/2010	WOZ	EPA 8260B	
m+p-Xylene	ND	ug/L	1.0	7/27/2010	WOZ	EPA 8260B	
methyl-t-butyl ether (MTBE)	ND	ug/L	0.5	7/27/2010	WOZ	EPA 8260B	
Naphthalene	ND	ug/L	0.5	7/27/2010	WOZ	EPA 8260B	
o-Xylene	ND	ug/L	0.5	7/27/2010	WOZ	EPA 8260B	
Toluene	ND	ug/L	0.5	7/27/2010	WOZ	EPA 8260B	
Diesel	ND	mg/L	0.1	7/28/2010	MJL	NWTPHDX	
Lube Oil	ND	mg/L	0.5	7/28/2010	MJL	NWTPHDX	
Gasoline	ND	mg/L	0.1	7/27/2010	WOZ	NWTPHG	

## Surrogate Data

<b>Sample Number</b>	100727016-005		
Surrogate Standard	Method	Percent Recovery	Control Limits
1,2-Dichlorobenzene-d4	EPA 8260B	97.6	70-130
4-Bromofluorobenzene	EPA 8260B	105.6	70-130
Toluene-d8	EPA 8260B	98.0	70-130
hexacosane	NWTPHDX	90.0	50-150
4-Bromofluorobenzene	NWTPHG	111.2	70-130

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**Project Name:** BUENA 0504-060-00

## Analytical Results Report

<b>Sample Number</b>	100727016-006	<b>Sampling Date</b>	7/25/2010	<b>Date/Time Received</b>	7/27/2010 10:30 AM		
<b>Client Sample ID</b>	MW17-072510	<b>Sampling Time</b>	3:35 PM	<b>Extraction Date</b>			
<b>Matrix</b>	Water	<b>Sample Location</b>					
<b>Comments</b>							
Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
Benzene	62.0	ug/L	25	7/27/2010	WOZ	EPA 8260B	
Ethylbenzene	125	ug/L	25	7/27/2010	WOZ	EPA 8260B	
m+p-Xylene	613	ug/L	50	7/27/2010	WOZ	EPA 8260B	
methyl-t-butyl ether (MTBE)	9.78	ug/L	0.5	7/27/2010	WOZ	EPA 8260B	
Naphthalene	39.9	ug/L	0.5	7/27/2010	WOZ	EPA 8260B	
o-Xylene	210	ug/L	25	7/27/2010	WOZ	EPA 8260B	
Toluene	289	ug/L	25	7/27/2010	WOZ	EPA 8260B	
Diesel	ND	mg/L	0.1	7/28/2010	MJL	NWTPHDX	
Lube Oil	ND	mg/L	0.5	7/28/2010	MJL	NWTPHDX	
Gasoline	4.93	mg/L	0.1	7/27/2010	WOZ	NWTPHG	

## Surrogate Data

<b>Sample Number</b>	100727016-006		
Surrogate Standard	Method	Percent Recovery	Control Limits
1,2-Dichlorobenzene-d4	EPA 8260B	97.2	70-130
4-Bromofluorobenzene	EPA 8260B	104.0	70-130
Toluene-d8	EPA 8260B	102.4	70-130
hexacosane	NWTPHDX	93.8	50-150
4-Bromofluorobenzene	NWTPHG	110.4	70-130

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## Analytical Results Report

<b>Sample Number</b>	100727016-007	<b>Sampling Date</b>	7/25/2010	<b>Date/Time Received</b>	7/27/2010 10:30 AM		
<b>Client Sample ID</b>	MW18-072510	<b>Sampling Time</b>	10:50 AM	<b>Extraction Date</b>			
<b>Matrix</b>	Water	<b>Sample Location</b>					
<b>Comments</b>							
Parameter	Result	Units	PQL	Analysis Date	Analyst	Method	Qualifier
Benzene	ND	ug/L	0.5	7/27/2010	WOZ	EPA 8260B	
Ethylbenzene	ND	ug/L	0.5	7/27/2010	WOZ	EPA 8260B	
m+p-Xylene	ND	ug/L	1.0	7/27/2010	WOZ	EPA 8260B	
methyl-t-butyl ether (MTBE)	ND	ug/L	0.5	7/27/2010	WOZ	EPA 8260B	
Naphthalene	ND	ug/L	0.5	7/27/2010	WOZ	EPA 8260B	
o-Xylene	ND	ug/L	0.5	7/27/2010	WOZ	EPA 8260B	
Toluene	ND	ug/L	0.5	7/27/2010	WOZ	EPA 8260B	
Diesel	ND	mg/L	0.1	7/28/2010	MJL	NWTPHDX	
Lube Oil	ND	mg/L	0.5	7/28/2010	MJL	NWTPHDX	
Gasoline	ND	mg/L	0.1	7/27/2010	WOZ	NWTPHG	

## Surrogate Data

<b>Sample Number</b>	100727016-007		
Surrogate Standard	Method	Percent Recovery	Control Limits
1,2-Dichlorobenzene-d4	EPA 8260B	97.2	70-130
4-Bromofluorobenzene	EPA 8260B	103.6	70-130
Toluene-d8	EPA 8260B	99.2	70-130
hexacosane	NWTPHDX	94.4	50-150
4-Bromofluorobenzene	NWTPHG	117.7	70-130

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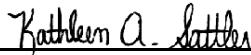
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**Attn:** DAVE LAUDER

**Batch #:** 100727016  
**Project Name:** BUENA 0504-060-00

## Analytical Results Report

Authorized Signature



Kathy Sattler, Lab Manager

MCL EPA's Maximum Contaminant Level  
ND Not Detected  
PQL Practical Quantitation Limit

This report shall not be reproduced except in full, without the written approval of the laboratory.  
The results reported relate only to the samples indicated.  
Soil/solid results are reported on a dry-weight basis unless otherwise noted.

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504 E Sprague Ste. D • Spokane WA 99202 • (509) 838-3999 • Fax (509) 838-4433 • email spokane@anateklabs.com

**Client:** GEO ENGINEERS  
**Address:** 523 E 2ND  
SPOKANE, WA 99202  
**Attn:** DAVE LAUDER

**Batch #:** 100727016  
**Project Name:** BUENA 0504-060-00

## Analytical Results Report

<b>Sample Number</b>	100727016-001	<b>Sampling Date</b>	7/25/2010	<b>Date/Time Received</b>	7/27/2010 10:30 AM		
<b>Client Sample ID</b>	MW13-072510	<b>Sampling Time</b>	12:00 PM	<b>Extraction Date</b>			
<b>Matrix</b>	Water	<b>Sample Location</b>					
<b>Comments</b>							
<b>Parameter</b>	<b>Result</b>	<b>Units</b>	<b>PQL</b>	<b>Analysis Date</b>	<b>Analyst</b>	<b>Method</b>	<b>Qualifier</b>
Methane	0.00389	mg/L	0.0008	7/28/2010	SUB	RSK 175 MOD	

<b>Sample Number</b>	100727016-002	<b>Sampling Date</b>	7/25/2010	<b>Date/Time Received</b>	7/27/2010 10:30 AM		
<b>Client Sample ID</b>	MW14-072510	<b>Sampling Time</b>	2:15 PM	<b>Extraction Date</b>			
<b>Matrix</b>	Water	<b>Sample Location</b>					
<b>Comments</b>							
<b>Parameter</b>	<b>Result</b>	<b>Units</b>	<b>PQL</b>	<b>Analysis Date</b>	<b>Analyst</b>	<b>Method</b>	<b>Qualifier</b>
Methane	0.00459	mg/L	0.0008	7/28/2010	SUB	RSK 175 MOD	

<b>Sample Number</b>	100727016-003	<b>Sampling Date</b>	7/25/2010	<b>Date/Time Received</b>	7/27/2010 10:30 AM		
<b>Client Sample ID</b>	MW14D-072510	<b>Sampling Time</b>	2:20 PM	<b>Extraction Date</b>			
<b>Matrix</b>	Water	<b>Sample Location</b>					
<b>Comments</b>							
<b>Parameter</b>	<b>Result</b>	<b>Units</b>	<b>PQL</b>	<b>Analysis Date</b>	<b>Analyst</b>	<b>Method</b>	<b>Qualifier</b>
Methane	0.00401	mg/L	0.0008	7/28/2010	SUB	RSK 175 MOD	

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**Client:** GEO ENGINEERS  
**Address:** 523 E 2ND  
SPOKANE, WA 99202  
**Attn:** DAVE LAUDER

**Batch #:** 100727016  
**Project Name:** BUENA 0504-060-00

## Analytical Results Report

<b>Sample Number</b>	100727016-004	<b>Sampling Date</b>	7/25/2010	<b>Date/Time Received</b>	7/27/2010	10:30 AM	
<b>Client Sample ID</b>	MW15-072510	<b>Sampling Time</b>	1:05 PM	<b>Extraction Date</b>			
<b>Matrix</b>	Water	<b>Sample Location</b>					
<b>Comments</b>							
<b>Parameter</b>	<b>Result</b>	<b>Units</b>	<b>PQL</b>	<b>Analysis Date</b>	<b>Analyst</b>	<b>Method</b>	<b>Qualifier</b>
Methane	0.158	mg/L	0.0008	7/28/2010	SUB	RSK 175 MOD	

<b>Sample Number</b>	100727016-005	<b>Sampling Date</b>	7/25/2010	<b>Date/Time Received</b>	7/27/2010	10:30 AM	
<b>Client Sample ID</b>	MW16-072510	<b>Sampling Time</b>	9:35 AM	<b>Extraction Date</b>			
<b>Matrix</b>	Water	<b>Sample Location</b>					
<b>Comments</b>							
<b>Parameter</b>	<b>Result</b>	<b>Units</b>	<b>PQL</b>	<b>Analysis Date</b>	<b>Analyst</b>	<b>Method</b>	<b>Qualifier</b>
Methane	0.00191	mg/L	0.0008	7/28/2010	SUB	RSK 175 MOD	

<b>Sample Number</b>	100727016-006	<b>Sampling Date</b>	7/25/2010	<b>Date/Time Received</b>	7/27/2010	10:30 AM	
<b>Client Sample ID</b>	MW17-072510	<b>Sampling Time</b>	3:35 PM	<b>Extraction Date</b>			
<b>Matrix</b>	Water	<b>Sample Location</b>					
<b>Comments</b>							
<b>Parameter</b>	<b>Result</b>	<b>Units</b>	<b>PQL</b>	<b>Analysis Date</b>	<b>Analyst</b>	<b>Method</b>	<b>Qualifier</b>
Methane	0.0919	mg/L	0.0008	7/28/2010	SUB	RSK 175 MOD	





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**Client:** GEO ENGINEERS  
**Address:** 523 E 2ND  
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**Attn:** DAVE LAUDER

**Batch #:** 100727016  
**Project Name:** BUENA 0504-060-00

## Analytical Results Report Quality Control Data

### Lab Control Sample

Parameter	LCS Result	Units	LCS Spike	%Rec	AR %Rec	Prep Date	Analysis Date
Methane	0.564	mg/L	0.5	112.8	70-130	7/28/2010	7/28/2010

### Matrix Spike

Sample Number	Parameter	Sample Result	MS Result	Units	MS Spike	%Rec	AR %Rec	Prep Date	Analysis Date
100727016-008	Methane	0.00191	0.497	mg/L	0.5	99.0	70-130	7/28/2010	7/28/2010

### Matrix Spike Duplicate

Parameter	MSD Result	Units	MSD Spike	%Rec	%RPD	AR %RPD	Prep Date	Analysis Date
Methane	0.517	mg/L	0.5	103.0	3.9	0-30	7/28/2010	7/28/2010
Methane	0.517	mg/L	0.5	103.0	3.9	0-30	7/28/2010	7/28/2010

### Method Blank

Parameter	Result	Units	PQL	Prep Date	Analysis Date
Methane	ND	mg/L	0.0008	7/28/2010	7/28/2010

AR Acceptable Range  
ND Not Detected  
PQL Practical Quantitation Limit  
RPD Relative Percentage Difference

### Comments:

Certifications held by Anatek Labs ID: EPA:ID00013; AZ:0701; CO:ID00013; FL(NELAP):E87893; ID:ID00013; IN:C-ID-01; KY:90142; MT:CERT0028; NM: ID00013; OR:ID200001-002; WA:C595  
Certifications held by Anatek Labs WA: EPA:WA00169; CA:Cert2632; ID:WA00169; WA:C585; MT:Cert0095

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**Attn:** DAVE LAUDER

**Batch #:** 100727016  
**Project Name:** BUENA 0504-060-00

## Analytical Results Report Quality Control Data

### Lab Control Sample

Parameter	LCS Result	Units	LCS Spike	%Rec	AR %Rec	Prep Date	Analysis Date
Gasoline	1.15	mg/L	1.1	104.5	70-130	7/27/2010	7/27/2010
Diesel	0.550	mg/L	1	55.0	50-150	7/27/2010	7/27/2010
Toluene	10.6	ug/L	10	106.0	72-127	7/27/2010	7/27/2010
o-Xylene	10.5	ug/L	10	105.0	84-115	7/27/2010	7/27/2010
Ethylbenzene	10.3	ug/L	10	103.0	85-116	7/27/2010	7/27/2010
Benzene	11.0	ug/L	10	110.0	72-125	7/27/2010	7/27/2010

### Matrix Spike

Sample Number	Parameter	Sample Result	MS Result	Units	MS Spike	%Rec	AR %Rec	Prep Date	Analysis Date
100727016-002	Diesel	ND	1.05	mg/L	1	105.0	50-150	7/27/2010	7/27/2010
100727016-001	Gasoline	ND	1.02	mg/L	1.1	92.7	70-130	7/27/2010	7/27/2010

### Matrix Spike Duplicate

Parameter	MSD Result	Units	MSD Spike	%Rec	%RPD	AR %RPD	Prep Date	Analysis Date
Diesel	1.22	mg/L	1	122.0	15.0	0-50	7/27/2010	7/27/2010
Gasoline	1.04	mg/L	1.1	94.5	1.9	0-20	7/27/2010	7/27/2010

### Method Blank

Parameter	Result	Units	PQL	Prep Date	Analysis Date
Benzene	ND	ug/L	0.5	7/27/2010	7/27/2010
Diesel	ND	mg/L	0.1	7/27/2010	7/27/2010
Ethylbenzene	ND	ug/L	0.5	7/27/2010	7/27/2010
Gasoline	ND	mg/L	0.1	7/27/2010	7/27/2010
Lube Oil	ND	mg/L	0.5	7/27/2010	7/27/2010
m+p-Xylene	ND	ug/L	1	7/27/2010	7/27/2010
methyl-t-butyl ether (MTBE)	ND	ug/L	0.5	7/27/2010	7/27/2010
Naphthalene	ND	ug/L	0.5	7/27/2010	7/27/2010
o-Xylene	ND	ug/L	0.5	7/27/2010	7/27/2010
Toluene	ND	ug/L	0.5	7/27/2010	7/27/2010

### Comments:

Certifications held by Anatek Labs ID: EPA:ID00013; AZ:0701; CO:ID00013; FL(NELAP):E87893; ID:ID00013; IN:C-ID-01; KY:90142; MT:CERT0028; NM: ID00013; OR:ID200001-002; WA:C595  
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**Address:** 523 E 2ND  
SPOKANE, WA 99202  
**Attn:** DAVE LAUDER

**Batch #:** 100727016  
**Project Name:** BUENA 0504-060-00

## **Analytical Results Report** **Quality Control Data**

AR Acceptable Range  
ND Not Detected  
PQL Practical Quantitation Limit  
RPD Relative Percentage Difference

### **Comments:**

---

Certifications held by Anatek Labs ID: EPA:ID00013; AZ:0701; CO:ID00013; FL(NELAP):E87893; ID:ID00013; IN:C-ID-01; KY:90142; MT:CERT0028; NM: ID00013; OR:ID200001-002; WA:C595  
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**Batch #:** 100727016  
**Project Name:** BUENA 0504-060-00

## Analytical Results Report Quality Control Data

### Lab Control Sample

Parameter	LCS Result	Units	LCS Spike	%Rec	AR %Rec	Prep Date	Analysis Date
Sulfate	4.97	mg/L	5	99.4	90-110	7/27/2010	7/27/2010
Sulfate	4.85	mg/L	5	97.0	90-110	7/27/2010	7/27/2010
NO3/N	4.85	mg/L	5	97.0	80-120	7/27/2010	7/27/2010
Dissolved Manganese	0.0535	mg/L	0.05	107.0	85-115	7/27/2010	7/27/2010
Dissolved Iron	0.105	mg/L	0.1	105.0	85-115	7/27/2010	7/27/2010
Alkalinity	100	mg/L	100	100.0	90-110	7/27/2010	7/27/2010

### Matrix Spike

Sample Number	Parameter	Sample Result	MS Result	Units	MS Spike	%Rec	AR %Rec	Prep Date	Analysis Date
100727016-004	Dissolved Manganese	0.939	0.994	mg/L	0.05	110.0	70-130	7/27/2010	7/27/2010
100727016-004	Dissolved Iron	0.515	0.616	mg/L	0.1	101.0	70-130	7/27/2010	7/27/2010
100727002-001A	Sulfate	10.9	15.9	mg/L	5	100.0	90-110	7/27/2010	7/27/2010
100726028-001	Sulfate	9.28	14.5	mg/L	5	104.4	90-110	7/27/2010	7/27/2010
100726028-001	NO3/N	0.445	5.46	mg/L	5	100.3	80-120	7/27/2010	7/27/2010
100722024-009	Alkalinity	48	147	mg/L	100	99.0	80-120	7/27/2010	7/27/2010

### Matrix Spike Duplicate

Parameter	MSD Result	Units	MSD Spike	%Rec	%RPD	AR %RPD	Prep Date	Analysis Date
Dissolved Manganese	0.974	mg/L	0.05	70.0	2.0	0-20	7/27/2010	7/27/2010
Dissolved Iron	0.588	mg/L	0.1	73.0	4.7	0-20	7/27/2010	7/27/2010
Sulfate	16.0	mg/L	5	102.0	0.6	0-20	7/27/2010	7/27/2010
Sulfate	14.7	mg/L	5	108.4	1.4	0-20	7/27/2010	7/27/2010
NO3/N	5.52	mg/L	5	101.5	1.1	0-20	7/27/2010	7/27/2010
Alkalinity	149	mg/L	100	101.0	1.4	0-20	7/27/2010	7/27/2010

### Method Blank

Parameter	Result	Units	PQL	Prep Date	Analysis Date
Alkalinity	ND	mg/L	10	7/27/2010	7/27/2010
Dissolved Iron	ND	mg/L	0.001	7/27/2010	7/27/2010
Dissolved Manganese	ND	mg/L	0.001	7/27/2010	7/27/2010
NO3/N	ND	mg/L	0.1	7/27/2010	7/27/2010

### Comments:

Certifications held by Anatek Labs ID: EPA:ID00013; AZ:0701; CO:ID00013; FL(NELAP):E87893; ID:ID00013; IN:C-ID-01; KY:90142; MT:CERT0028; NM: ID00013; OR:ID200001-002; WA:C595  
Certifications held by Anatek Labs WA: EPA:WA00169; CA:Cert2632; ID:WA00169; WA:C585; MT:Cert0095

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**Attn:** DAVE LAUDER

**Batch #:** 100727016  
**Project Name:** BUENA 0504-060-00

## Analytical Results Report Quality Control Data

### Method Blank

Parameter	Result	Units	PQL	Prep Date	Analysis Date
Sulfate	ND	mg/L	0.1	7/27/2010	7/27/2010
Sulfate	ND	mg/L	0.1	7/27/2010	7/27/2010

### Duplicate

Sample Number	Parameter	Sample Result	Duplicate Result	Units	%RPD	AR %RPD	Prep Date	Analysis Date
100727016-007	Dissolved Manganese	0.804	0.823	mg/L	2.3	0-20	7/27/2010	7/27/2010
100727016-007	Dissolved Iron	0.0170	0.0152	mg/L	11.2	0-20	7/27/2010	7/27/2010

AR Acceptable Range  
ND Not Detected  
PQL Practical Quantitation Limit  
RPD Relative Percentage Difference

### Comments:

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## Login Report

**Customer Name:** GEO ENGINEERS

523 E 2ND

SPOKANE

WA

99202

**Order ID:** 100727016

**Order Date:** 7/27/2010

**Contact Name:** DAVE LAUDER

**Project Name:** BUENA 0504-060-00

**Comment:**

---

**Sample #:** 100727016-001    **Customer Sample #:** MW13-072510

**Recv'd:**

**Collector:** ROBERT MIYAHIRA

**Date Collected:** 7/25/2010

**Quantity:** 1

**Matrix:** Water

**Date Received:** 7/27/2010 10:30:00 A

**Comment:**

Test	Method	Due Date	Priority
ALKALINITY	SM2320B	7/27/2010	<u>1 Day</u>
BTEX 8260	EPA 8260B	7/28/2010	<u>1 Day</u>
DISSOLVED GASES	RSK 175 MOD	7/28/2010	<u>1 Day</u>
DISSOLVED IRON	EPA 200.8	7/28/2010	<u>1 Day</u>
DISSOLVED MANGANESE	EPA 200.8	7/28/2010	<u>1 Day</u>
NITRATE/N	EPA 300.0	7/27/2010	<u>1 Day</u>
SULFATE	EPA 300.0	7/28/2010	<u>1 Day</u>
TPHDX-NW	NWTPHDX	7/28/2010	<u>1 Day</u>
TPHG-NW-SPO	NWTPHG	7/28/2010	<u>1 Day</u>

---

**Sample #:** 100727016-002    **Customer Sample #:** MW14-072510

**Recv'd:**

**Collector:** ROBERT MIYAHIRA

**Date Collected:** 7/25/2010

**Quantity:** 1

**Matrix:** Water

**Date Received:** 7/27/2010 10:30:00 A

**Comment:**

Test	Method	Due Date	Priority
ALKALINITY	SM2320B	7/27/2010	<u>1 Day</u>
BTEX 8260	EPA 8260B	7/27/2010	<u>1 Day</u>
DISSOLVED GASES	RSK 175 MOD	7/28/2010	<u>1 Day</u>
DISSOLVED IRON	EPA 200.8	7/28/2010	<u>1 Day</u>
DISSOLVED MANGANESE	EPA 200.8	7/28/2010	<u>1 Day</u>
NITRATE/N	EPA 300.0	7/27/2010	<u>1 Day</u>
SULFATE	EPA 300.0	7/28/2010	<u>1 Day</u>

**Customer Name:** GEO ENGINEERS  
523 E 2ND  
SPOKANE WA 99202

**Order ID:** 100727016  
**Order Date:** 7/27/2010

**Contact Name:** DAVE LAUDER

**Project Name:** BUENA 0504-060-00

**Comment:**

TPHDX-NW NWTPHDX 7/28/2010 1 Day  
TPHG-NW-SPO NWTPHG 7/28/2010 1 Day

---

**Sample #:** 100727016-003 **Customer Sample #:** MW14D-072510

**Recv'd:**  **Collector:** ROBERT MIYAHIRA **Date Collected:** 7/25/2010  
**Quantity:** 1 **Matrix:** Water **Date Received:** 7/27/2010 10:30:00 A

**Comment:**

Test	Method	Due Date	Priority
ALKALINITY	SM2320B	7/27/2010	<u>1 Day</u>
BTEX 8260	EPA 8260B	7/27/2010	<u>1 Day</u>
DISSOLVED GASES	RSK 175 MOD	7/28/2010	<u>1 Day</u>
DISSOLVED IRON	EPA 200.8	7/28/2010	<u>1 Day</u>
DISSOLVED MANGANESE	EPA 200.8	7/28/2010	<u>1 Day</u>
NITRATE/N	EPA 300.0	7/27/2010	<u>1 Day</u>
SULFATE	EPA 300.0	7/28/2010	<u>1 Day</u>
TPHDX-NW	NWTPHDX	7/28/2010	<u>1 Day</u>
TPHG-NW-SPO	NWTPHG	7/28/2010	<u>1 Day</u>

---

**Sample #:** 100727016-004 **Customer Sample #:** MW15-072510

**Recv'd:**  **Collector:** ROBERT MIYAHIRA **Date Collected:** 7/25/2010  
**Quantity:** 1 **Matrix:** Water **Date Received:** 7/27/2010 10:30:00 A

**Comment:**

Test	Method	Due Date	Priority
ALKALINITY	SM2320B	7/27/2010	<u>1 Day</u>
BTEX 8260	EPA 8260B	7/27/2010	<u>1 Day</u>
DISSOLVED GASES	RSK 175 MOD	7/28/2010	<u>1 Day</u>
DISSOLVED IRON	EPA 200.8	7/28/2010	<u>1 Day</u>
DISSOLVED MANGANESE	EPA 200.8	7/28/2010	<u>1 Day</u>
NITRATE/N	EPA 300.0	7/27/2010	<u>1 Day</u>
SULFATE	EPA 300.0	7/28/2010	<u>1 Day</u>
TPHDX-NW	NWTPHDX	7/28/2010	<u>1 Day</u>
TPHG-NW-SPO	NWTPHG	7/28/2010	<u>1 Day</u>

**Customer Name:** GEO ENGINEERS  
523 E 2ND  
SPOKANE WA 99202

**Order ID:** 100727016  
**Order Date:** 7/27/2010

**Contact Name:** DAVE LAUDER

**Project Name:** BUENA 0504-060-00

**Comment:**

---

**Sample #:** 100727016-005 **Customer Sample #:** MW16-072510

**Recv'd:**  **Collector:** ROBERT MIYAHIRA **Date Collected:** 7/25/2010  
**Quantity:** 1 **Matrix:** Water **Date Received:** 7/27/2010 10:30:00 A

**Comment:**

Test	Method	Due Date	Priority
ALKALINITY	SM2320B	7/27/2010	<u>1 Day</u>
BTEX 8260	EPA 8260B	7/27/2010	<u>1 Day</u>
DISSOLVED GASES	RSK 175 MOD	7/28/2010	<u>1 Day</u>
DISSOLVED IRON	EPA 200.8	7/28/2010	<u>1 Day</u>
DISSOLVED MANGANESE	EPA 200.8	7/28/2010	<u>1 Day</u>
NITRATE/N	EPA 300.0	7/27/2010	<u>1 Day</u>
SULFATE	EPA 300.0	7/28/2010	<u>1 Day</u>
TPHDX-NW	NWTPHDX	7/28/2010	<u>1 Day</u>
TPHG-NW-SPO	NWTPHG	7/28/2010	<u>1 Day</u>

---

**Sample #:** 100727016-006 **Customer Sample #:** MW17-072510

**Recv'd:**  **Collector:** ROBERT MIYAHIRA **Date Collected:** 7/25/2010  
**Quantity:** 1 **Matrix:** Water **Date Received:** 7/27/2010 10:30:00 A

**Comment:**

Test	Method	Due Date	Priority
ALKALINITY	SM2320B	7/27/2010	<u>1 Day</u>
BTEX 8260	EPA 8260B	7/27/2010	<u>1 Day</u>
DISSOLVED GASES	RSK 175 MOD	7/28/2010	<u>1 Day</u>
DISSOLVED IRON	EPA 200.8	7/28/2010	<u>1 Day</u>
DISSOLVED MANGANESE	EPA 200.8	7/28/2010	<u>1 Day</u>
NITRATE/N	EPA 300.0	7/27/2010	<u>1 Day</u>
SULFATE	EPA 300.0	7/28/2010	<u>1 Day</u>
TPHDX-NW	NWTPHDX	7/28/2010	<u>1 Day</u>
TPHG-NW-SPO	NWTPHG	7/28/2010	<u>1 Day</u>



**Customer Name:** GEO ENGINEERS  
523 E 2ND  
SPOKANE WA 99202

**Order ID:** 100727016  
**Order Date:** 7/27/2010

**Contact Name:** DAVE LAUDER

**Project Name:** BUENA 0504-060-00

**Comment:**

---

**Sample #:** 100727016-007 **Customer Sample #:** MW18-072510

**Recv'd:**  **Collector:** ROBERT MIYAHIRA **Date Collected:** 7/25/2010  
**Quantity:** 1 **Matrix:** Water **Date Received:** 7/27/2010 10:30:00 A

**Comment:**

Test	Method	Due Date	Priority
ALKALINITY	SM2320B	7/27/2010	<u>1 Day</u>
BTEX 8260	EPA 8260B	7/27/2010	<u>1 Day</u>
DISSOLVED GASES	RSK 175 MOD	7/28/2010	<u>1 Day</u>
DISSOLVED IRON	EPA 200.8	7/28/2010	<u>1 Day</u>
DISSOLVED MANGANESE	EPA 200.8	7/28/2010	<u>1 Day</u>
NITRATE/N	EPA 300.0	7/27/2010	<u>1 Day</u>
SULFATE	EPA 300.0	7/28/2010	<u>1 Day</u>
TPHDX-NW	NWTPHDX	7/28/2010	<u>1 Day</u>
TPHG-NW-SPO	NWTPHG	7/28/2010	<u>1 Day</u>

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**Sample #:** 100727016-008 **Customer Sample #:** FOR METHANE QC ONLY

**Recv'd:**  **Collector:** ROBERT MIYAHIRA **Date Collected:** 7/25/2010  
**Quantity:** 1 **Matrix:** Water **Date Received:** 7/27/2010 10:30:00 A

**Comment:**

Test	Method	Due Date	Priority
DISSOLVED GASES	RSK 175 MOD	7/28/2010	<u>1 Day</u>

### SAMPLE CONDITION RECORD

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Samples received in a cooler?	Y- 2
Samples received intact?	Yes
What is the temperature inside the cooler?	13.8/10.4
Samples received with a COC?	Yes
Samples received within holding time?	Yes
Are all sample bottles properly preserved?	Yes
Are VOC samples free of headspace?	Yes
Is there a trip blank to accompany VOC samples?	Yes
Labels and chain agree?	Yes



**Chain of Custody Record**

1282 Alturas Drive, Moscow ID 83843 (208) 883-2839 FAX 882-9246  
 504 E Sprague Ste D, Spokane WA 99202 (509) 838-3999 FAX 838-4433

Company Name: GeoEngineers, Inc.

Address: 523 East Second Avenue

City: Spokane State: WA Zip: 99202

Phone: 509-363-3125

Fax:

Project Manager: Dave Lauder

Project Name & #: Buena 0504-060-00

Email Address: d.lauder@geoengineers.com

Purchase Order #:

Sampler Name & phone: Robert N. Mykhym 425-941-2055

Please refer to our normal turn around times at  
 http://www.anateklabs.com/services/guidelines/reporting.asp

Normal: \_\_\_\_\_ Phone \_\_\_\_\_  
 \*All rush order requests must be prior approved.  
 Next Day\* \_\_\_\_\_ Mail \_\_\_\_\_  
 2nd Day\* \_\_\_\_\_ Fax \_\_\_\_\_  
 Other\* \_\_\_\_\_ Email \_\_\_\_\_

**RUSH**

Note Special Instructions/Comments

SWBS  
 methane to sub  
 rest - 5

Handle returned.

List Analyses Requested

Sample Volume	diethyl ether	oil-NMPH-DX	gasoline, GTEX	ATBE-KWTH-EX	EPA302B	substance in trans	EPA300.0	alkalinity	SM2320	skatole FTM	EPA 200.8	Methane	RSK 175M
	X	X	X	X	X	X	X	X	X	X	X	X	X

Provide Sample Description

Lab ID	Sample Identification	Sampling Date/Time	Matrix
1	MW13-072510	07-25-10 0935	water
2	MW14-072510	1415	
3	MW14D-072510	1420	
4	MW15-072510	1305	
5	MW16-072510	0935	
6	MW17-072510	1535	
7	MW18-072510	1050	

(1200 MM)

Inspection Checklist

Received Intact?  Y  N  
 Labels & Chains Agree?  Y  N  
 Containers Sealed?  Y  N  
 VOC Head Space?  Y  N

fedex / 2 coolers  
 Temperature (C): 13.8 / 10.4  
 Preservative: H<sub>2</sub>O Ice

Date & Time: 7-27-10 1030

Inspected By: KJB

Company

Date

Time

GeoEngineers  
 Anatek

Signature

Printed Name

Robert Mykhym  
 KJB

Robert Mykhym  
 KJB

Relinquished by

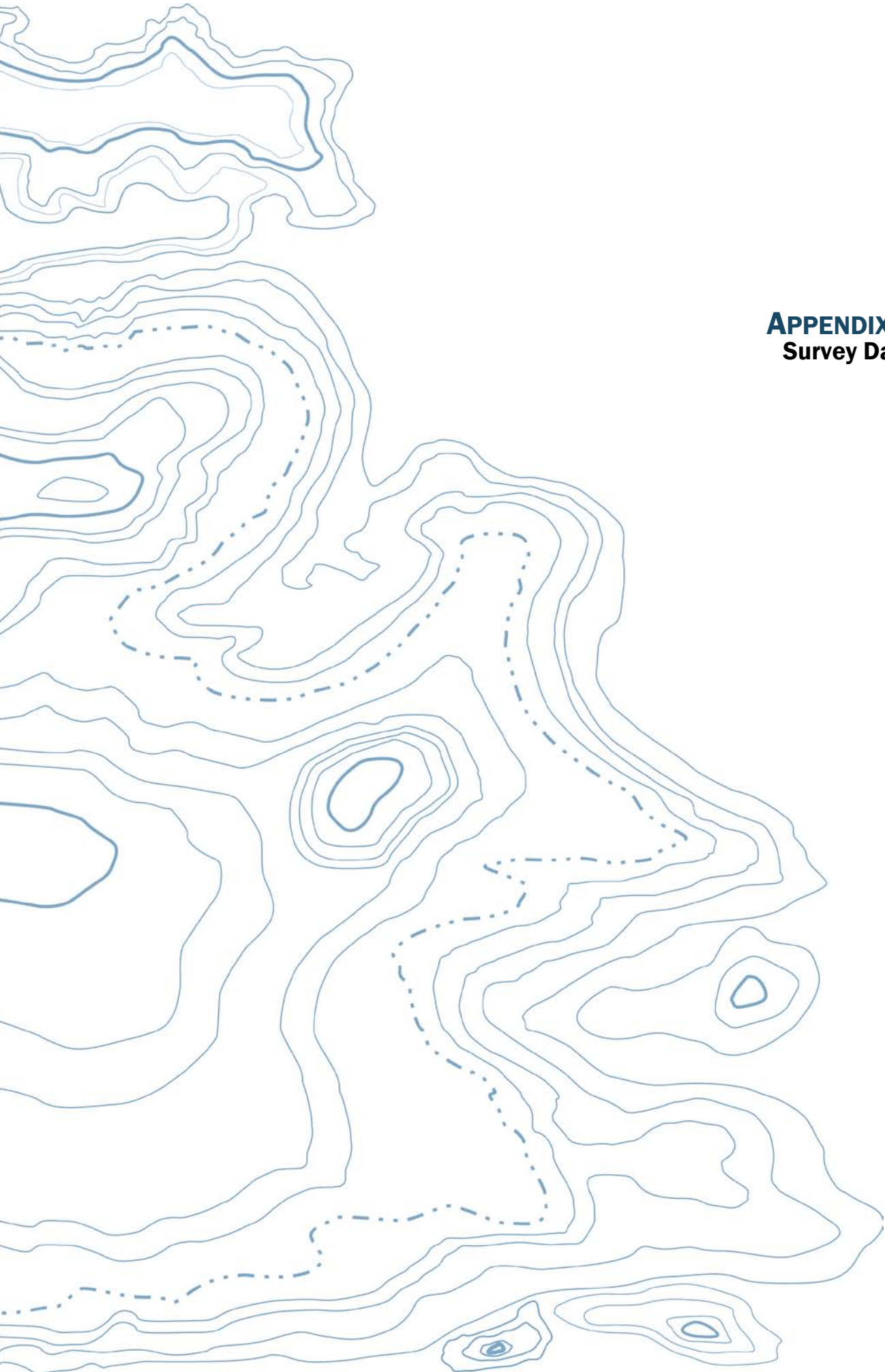
Received by

Relinquished by

Received by

Relinquished by

Received by



**APPENDIX E**  
**Survey Data**

# BUENA MONITORING WELL SURVEY FOR GEOENGINEERS (G&O #10045)

DATUM REFERENCE "TOPPENISH" NAD 83-96 CORS NGVD 88-09

POINT	NORTHING	EASTING	ELEVATION	DESCRIPTION
TOPPENISH	385,157.73	1,683,785.54	774.41	NGS BRASS CAP "TOPPENISH 1941"
1000	400132.098	1686936.136	794.740	FGS*DP4
1001	400120.706	1687112.187	794.377	FGS*DP2
1002	400293.212	1687054.616	794.519	FGS*DP3
1003	400127.439	1687048.833	794.073	FGS*DP1
1004	398870.157	1687428.393	789.255	FGS*DP5
1005	398842.063	1687463.394	787.474	FGS*DP7
1006	398766.615	1687523.551	787.280	FGS*DP8
1007	398679.198	1687506.990	789.324	FGS*DP6
1008	399064.920	1687274.067	789.730	WMW*9
1009	398676.893	1687507.012	789.350	WMW*18
1010	398866.170	1687525.541	790.680	WMW*17
1011	398898.073	1687463.120	789.070	WMW*16
1012	399013.330	1687767.506	788.470	WMW*10
1013	399677.856	1687260.444	792.660	WMW*15
1014	399923.369	1687248.221	794.180	(WMW*6)
1015	399993.933	1687193.317	794.190	WMW*5
1016	400132.204	1687054.375	794.380	WMW*14
1017	400166.658	1687008.160	794.250	WMW*4
1018	400221.463	1687048.124	794.120	WMW*3
1019	400300.920	1687126.039	795.340	WMW*2
1020	400279.655	1686940.752	793.440	WMW*1
1022	400338.233	1686873.665	794.410	WMW*13
1024	399787.549	1687221.394	793.520	WMW*7

NOTE MW 8, 11, & 12 NOT FOUND (REF: GEOENGINEERS)  
(WMW\*6) MISLABELED WMW\*7 IN DRAFT SUBMITTAL  
FGS=GROUND SURFACE ELEVATION  
WMW\*=ELEVATION AT TOP OF 2" PVC CASING

TBM

G&O #2	398885.390	1687387.135	790.77	NAIL & SHINER
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**APPENDIX F**  
**Report Limitations and Guidelines for Use**

## **APPENDIX F REPORT LIMITATIONS AND GUIDELINES FOR USE<sup>1</sup>**

This appendix provides information to help you manage your risks with respect to the use of this report.

### **Environmental Services Are Performed for Specific Purposes, Persons and Projects**

GeoEngineers has performed this Site Characterization of the Buena LUST site located in Buena, Washington in general accordance with the scope of our scope of services, dated July 26, 2010. This report has been prepared for the exclusive use of Science Applications International Corporation, Washington Department of Ecology, their authorized agents and regulatory agencies. This report is not intended for use by others, and the information contained herein is not applicable to other properties.

GeoEngineers structures our services to meet the specific needs of our clients. For example, an ESA study conducted for a property owner may not fulfill the needs of a prospective purchaser of the same property. Because each environmental study is unique, each environmental report is unique, prepared solely for the specific client and property. No one except Science Applications International Corporation, Washington State Department of Ecology should rely on this environmental report without first conferring with GeoEngineers. Use of this report is not recommended for any purpose or project except the one originally contemplated.

### **This Environmental Report is Based on a Unique Set of Project-Specific Factors**

This report has been prepared for the Buena LUST site located in Buena, Washington. GeoEngineers considered a number of unique, project-specific factors when establishing the scope of services for this project and report. Unless GeoEngineers specifically indicates otherwise, it is important not to rely on this report if it was:

- not prepared for you,
- not prepared for your project,
- not prepared for the specific site explored, or
- completed before important project changes were made.

If important changes are made to the project or property after the date of this report, we recommend that GeoEngineers be given the opportunity to review our interpretations and recommendations. Based on that review, we can provide written modifications or confirmation, as appropriate.

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<sup>1</sup> Developed based on material provided by ASFE, Professional Firms Practicing in the Geosciences; [www.asfe.org](http://www.asfe.org).

### **Reliance Conditions for Third Parties**

Our report was prepared for the exclusive use of our Client. No other party may rely on the product of our services unless we agree to such reliance in advance and in writing. This is to provide our firm with reasonable protection against open-ended liability claims by third parties with whom there would otherwise be no contractual limits to their actions. Within the limitations of scope, schedule and budget, our services have been executed in accordance with our Agreement with the Client and generally accepted environmental practices in this area at the time this report was prepared.

### **Environmental Regulations Are Always Evolving**

Some substances may be present in the vicinity of the subject property in quantities or under conditions that may have led, or may lead, to contamination of the subject property, but are not included in current local, state or federal regulatory definitions of hazardous substances or do not otherwise present current potential liability. GeoEngineers cannot be responsible if the standards for appropriate inquiry, or regulatory definitions of hazardous substances, change or if more stringent environmental standards are developed in the future.

### **Uncertainty May Remain Even After This Phase II ESA is Completed**

Performance of a Phase II ESA is intended to reduce uncertainty regarding the potential for contamination in connection with a property, but no ESA can wholly eliminate that uncertainty. Our interpretation of subsurface conditions in this study is based on field observations and chemical analytical data from widely spaced sampling locations. It is always possible that contamination exists in areas that were not explored, sampled or analyzed.

### **Subsurface Conditions Can Change**

This environmental report is based on conditions that existed at the time the study was performed. The findings and conclusions of this report may be affected by the passage of time, by man-made events such as construction on or adjacent to the subject property, by new releases of hazardous substances, or by natural events such as floods, earthquakes, slope instability or groundwater fluctuations. Please contact GeoEngineers before applying this report for its intended purpose so that GeoEngineers may evaluate whether changed conditions affect the continued applicability of the report.

### **Soil and Groundwater End Use**

The cleanup levels referenced in this report are site- and situation-specific. The cleanup levels may not be applicable for other properties or for other on-site uses of the affected soil and/or groundwater. Note that hazardous substances may be present in some of the on-site soil and/or groundwater at detectable concentrations that are less than the referenced cleanup levels. GeoEngineers should be contacted prior to the export of soil or groundwater from the subject property or reuse of the affected soil or groundwater on-site to evaluate the potential for associated environmental liabilities. We are unable to assume responsibility for potential environmental liability arising out of the transfer of soil and/or groundwater from the subject property to another location or its reuse on-site in instances that we did not know or could not control.

### **Most Environmental Findings Are Professional Opinions**

Our interpretations of subsurface conditions are based on field observations and chemical analytical data from widely spaced sampling locations at the subject property. Site exploration identifies subsurface conditions only at those points where subsurface tests are conducted or samples are taken. GeoEngineers reviewed field and laboratory data and then applied our professional judgment to render an informed opinion about subsurface conditions throughout the property. Actual subsurface conditions may differ, sometimes significantly, from those indicated in this report. Our report, conclusions and interpretations should not be construed as a warranty of the subsurface conditions.

### **Do Not Redraw the Exploration Logs**

Environmental scientists prepare final boring and testing logs based upon their interpretation of field logs and laboratory data. To prevent errors or omissions, the logs included in an environmental report should never be redrawn for inclusion in other design drawings. Only photographic or electronic reproduction is acceptable, but separating logs from the report can create a risk of misinterpretation.

### **Read These Provisions Closely**

It is important to recognize that the geoscience practices (geotechnical engineering, geology and environmental science) are less exact than other engineering and natural science disciplines. Without this understanding, there may be expectations that could lead to disappointments, claims and disputes. GeoEngineers includes these explanatory “limitations” provisions in our reports to help reduce such risks. Please confer with GeoEngineers if you need to know more about how these “Report Limitations and Guidelines for Use” apply to your project or property.

### **Biological Pollutants**

GeoEngineers’ Scope of Work specifically excludes the investigation, detection, prevention or assessment of the presence of Biological Pollutants. Accordingly, this report does not include any interpretations, recommendations, findings or conclusions regarding the detecting, assessing, preventing or abating of Biological Pollutants, and no conclusions or inferences should be drawn regarding Biological Pollutants as they may relate to this project. The term “Biological Pollutants” includes, but is not limited to, molds, fungi, spores, bacteria and viruses, and/or any of their byproducts.

A Client that desires these specialized services is advised to obtain them from a consultant who offers services in this specialized field.



Have we delivered World Class Client Service?

Please let us know by visiting [www. geoengineers.com/feedback](http://www.geoengineers.com/feedback).

