

**Block 21 Environmental
Construction Contingency Plan
Soil and Groundwater Management**

Rufus 2.0 Development
Block 21 Denny Triangle
Seattle, Washington 98101

for

Acorn Development, LLC

October 3, 2017



GEOENGINEERS 
Earth Science + Technology

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Block 21, Denny Triangle
Seattle, Washington 98101**

File No. 20434-001-30

October 3, 2017

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1.0 INTRODUCTION

This report presents the Environmental Construction Contingency Plan and soil and groundwater handling recommendations to be utilized during construction activities of the Block 21 redevelopment project in the Denny Triangle Neighborhood of downtown Seattle, Washington.

Block 21 is comprised of six adjoining tax parcels (066000-0325, 0335, 0340, 0345, 0355 and 0375) and is bounded by Bell Street to the north, 8th Avenue to the east (referred to as Project North), Blanchard Street to the south and 7th Avenue to the west. The Block 21 redevelopment project is one phase of a multi-office-tower redevelopment project that will span five contiguous city blocks. The redevelopment project is known as the Rufus 2.0 redevelopment. Development activities for the five blocks consist of demolition of the existing buildings, vacation of utilities located in the alleys, and construction of a multi-building office complex with five high-rise towers and underground parking beneath each block. Hazardous building materials studies have been completed by Pacific Rim Environmental, a subconsultant to GeoEngineers. The hazardous building materials surveys and abatement specifications are reported separately. Within Block 21, excavation to depths of approximately 70 feet below the ground surface will be completed to construct five levels of underground parking. Subsurface environmental studies, including shallow and deep borings and shallow test pits, have been completed to evaluate soil and groundwater conditions prior to starting excavation and redevelopment activities. Chemical analytical test results from the studies are summarized in Tables 1 through 3, the complete analytical reports are included in Appendix C. The soil and groundwater testing results form the basis for this Environmental Construction Contingency Plan and are being used to coordinate the management of “contaminated” and “impacted” soil (as defined and described in Sections 4.0 and 5.0 of this document).

This block is referred to herein as the “Subject Property.” The Subject Property and the other four blocks of the Rufus 2.0 redevelopment are shown relative to surrounding physical features on the Vicinity Map, Figure 1. The Block 21 layout, including exploration locations, is shown on Figures 2 through 4.

2.0 BACKGROUND

Several environmental studies were completed on Block 21 to evaluate potential sources of contamination and to characterize soil and groundwater beneath the subject property. Historic uses of the property are summarized in our Phase I Environmental Site Assessment (ESA) report dated June 7, 2012 and the 2012 Phase II ESA soil and groundwater sampling activities are summarized in our Phase II ESA report dated November 21, 2012 and are shown on Figure 2, Historical Sources of Potential Contamination. The Phase I ESA identified the possibility of the presence of petroleum hydrocarbons and metals in soil related to historic site use and fill from an unknown source. Preconstruction test pits were completed in August and September 2017 at the Subject Property to characterize the shallow fill soil for end use and disposal purposes.

We understand based on historic research that in the early 1900s, soil was placed onto the Subject Property from what was formerly Denny Hill during the Denny Hill Cut and Regrade activities. Additionally, it is likely that imported soil from an unknown source was also placed on portions of Block 21.

3.0 SOIL CATEGORIES AND DEFINITIONS

3.1. Contaminated Soil

For the purposes of soil handling for the Rufus 2.0 Block 21 construction activities, soils are considered “contaminated” and not acceptable for unrestricted end-use if:

- Contaminant concentrations for any analyte that exceed the Washington State Department of Ecology (Ecology) Model Toxics Control Act (MTCA) cleanup levels.
- Metals are detected above natural background levels for the Puget Sound region (Ecology, 1994). In the cases of barium, selenium and silver where no natural background level has been established for the Puget Sound, soil is considered “contaminated” if the detected concentrations are greater than the MTCA Method A or B Cleanup Level for Unrestricted Land Use.
- Physical evidence of contamination (sheen, odor, staining) is observed.

No contaminated soil was identified during the Phase II ESA explorations and 2017 test pit investigation.

3.2. Impacted Soil

Soils are considered “impacted” and should be transported to a controlled and permitted landfill, or owner-approved fill location if:

- Contaminant concentrations for any analyte that exceed laboratory detection limits but are less than state cleanup levels (MTCA).
- Metals are detected above natural background levels for the Puget Sound region (Ecology, 1994). In the cases of barium, selenium and silver where no natural background level has been established for the Puget Sound, soil is considered “contaminated” if the detected concentrations are greater than the MTCA Method A or B Cleanup Level for Unrestricted Land Use.
- Physical evidence of contamination (sheen, odor, staining) is observed.

Impacted soil was identified in shallow fill and native soil during the 2017 test pit explorations (locations of impacted soil are depicted in yellow on Figure 4).

3.3. Non-Regulated Soil

Soil is considered “non-regulated” and acceptable for unrestricted end-use if:

- Contaminant concentrations are not detected for any analyte other than metals.
- Metals are detected equal-to or less than the natural background levels for the Puget Sound region (Ecology, 1994). In the cases of barium, selenium and silver where no natural background level has been established for the Puget Sound, soil is considered “non-regulated” if the detected concentrations are equal-to or less than the MTCA Method A or B Cleanup Level for Unrestricted Land Use.
- Physical evidence of contamination (sheen, odor, staining, etc.) is not observed.

Based on the results of the Phase II ESA and the 2017 test pit investigation, locations of non-regulated soil were identified (green shading shown on Figure 4).

Definitions of contaminant, contaminated soil and natural background concentrations are provided in Washington Administrative Code (WAC) 173-350-100 for solid waste purposes.

4.0 SOIL EXCAVATION AND HANDLING RECOMMENDATIONS

Based on the results of the subsurface investigations completed at the Subject Property, contaminants of potential concern were not detected or were detected at concentrations that represent background conditions across the majority of the site. Isolated areas of impacted soil were identified in shallow fill soil in three locations during the 2017 test pit explorations. Based on this, soil on Block 21 was categorized as Impacted and Non-Regulated soil (as shown on Figure 3) and the specific special handling or end-use requirements for this soil categories are identified in this document.

5.0 DISCOVERY OF UNEXPECTED POTENTIALLY CONTAMINATED/IMPACTED SOIL OR USTS

Although contaminants of concern were not identified greater than cleanup levels during the Phase II ESA and test pit explorations completed on Block 21, it is possible that additional potentially impacted/contaminated soil may be encountered during construction activities at the site at locations that were not previously tested. GeoEngineers environmental representative will not be on site to field screen soil during mass excavation on Block 21. Therefore, it is the Contractor's responsibility to identify potentially contaminated/impacted soil as described below. Excavated soil from any location will be considered to be petroleum-contaminated/impacted if it exhibits one or more of the following physical characteristics:

- Staining;
- Petroleum hydrocarbon odors;
- A moderate or heavy sheen when placed in contact with water; and/or,
- Significant concentrations of organic vapors detected using headspace field screening methods.

If soil exhibits one or more of the above characteristics or if an undocumented underground storage tank (UST) is discovered, the Contractor should notify GeoEngineers, Seneca and/or GLY immediately for characterization prior to removal and/or disposal. Upon discovery of potentially contaminated/impacted soil, the Contractor should refer to this guide for contact information of people to notify as well as information regarding the location, type and actions taken to address the potentially contaminated soil. Below are the categories for unexpected potentially contaminated/impacted soil.

5.1. Impacted Soil

Impacted soil removed during construction in the locations presented in yellow on Figure 4 (contaminants of potential concern detected at concentrations less than the MTCA Method A or B cleanup levels), will require special handling and end use considerations. The special handling and disposal should include the following:

- **Soil Excavation and Segregation:** As impacted soil is excavated, the Contractor should segregate this soil from soil excavated from the non-regulated (green) category to prevent co-mingling of the contaminant impacted soil and the non-regulated soil (that is not contaminated). Attention to soil

segregation vertically is also important. Overlying fill soil should be segregated from underlying native soil. GeoEngineers will be on site to assist in soil segregation activities.

- **Temporary Stockpiling of Impacted Soil:** Impacted soil can either be loaded directly into trucks for off-site permitted disposal, or can be stockpiled on the Subject Property pending end use/disposal. If the soil is to be temporarily stockpiled, the impacted soil must be placed on and covered with plastic sheeting at all times.
- **Loading and Transportation:** The Contractor should load the segregated impacted material into trucks and transport the material to the selected treatment/disposal facility. A tracking procedure must be developed and approved by GeoEngineers prior to starting excavation activities.
- **Disposal/Recycling Facilities:** Excavated impacted soil can be transported to the selected disposal facility after approval is granted by the facility. Potential disposal/recycling facilities include the following:
 - Cadman in Everett, Washington.
 - Waste Management's Columbia Ridge Landfill in Arlington, Oregon. Two transfer stations for this landfill are located in Seattle, Washington.

GeoEngineers is available to discuss the costs and benefits of each of these disposal facilities. GeoEngineers has provided soil profile applications to the Cadman and Waste Management disposal facilities.

- **Off-Site Reuse Alternative to Disposal/Recycling:** Excavated fill soil can be transported to a receiving facility that is prequalified by the owner (Acorn Development, LLC) and has been provided with the chemical analytical results and agrees (in writing) to accept the fill soil as-is with an acknowledgement that the soil may contain contaminants at low concentrations, less than MTCA cleanup levels.
- **Confirmation Soil Sampling:** It is possible that confirmation soil sampling will be necessary to confirm the successful removal of the impacted soil.

5.2. Contaminated Soil

If contaminated soil is identified during construction through supplemental testing (contaminants of concern detected at concentrations greater than the MTCA cleanup levels), special handling and end use considerations are needed for soil to be excavated. The special handling and disposal should include the following:

- **USTs:** Based on the results of our Phase I ESA, three USTs are may exist within Block 21. Two of the three possible USTs have been located by GLY Construction. Each of the two USTs contained approximately 450 to 500 gallons of diesel heating oil, which was pumped out by the contractor. Any known or unexpected USTs discovered must be removed in accordance with the "Underground Storage Tank Regulations" (WAC 173-360) and the Washington State Department of Ecology (Ecology) "Guidance for Site Checks and Site Assessments for Underground Storage Tanks" dated April 2003. A Washington State Site Assessment certified representative of GeoEngineers must be present on the subject property during the removal of the USTs.
- **Soil Excavation and Segregation:** If contaminated soil or USTs are encountered, a representative of GeoEngineers will need to be called to the site during the excavation of soil to field screen soil and obtain confirmation soil samples. Field screening methods are described in Appendix A. As

contaminated soil is excavated, the Contractor should segregate this soil from soil excavated from the remaining categories to prevent mingling of the contaminated soil and the non-regulated soil (that is not contaminated).

- **Temporary Stockpiling of Contaminated Soil:** Contaminated soil can either be loaded directly into trucks for off-site permitted disposal, or can be stockpiled on the Subject Property pending end use/disposal. If the soil is to be temporarily stockpiled, the contaminated soil must be placed on and covered with plastic sheeting at all times.
- **Loading and Transportation:** The Contractor should load the segregated impacted material into trucks and transport the material in covered trucks (to prevent contaminated dust from leaving the trucks) to the selected treatment/disposal facility. A tracking procedure must be developed and approved by GeoEngineers prior to starting excavation activities.
- **Disposal/Recycling Facilities:** Excavated soil can be transported to the selected disposal facility after approval is granted by the facility. Potential disposal/recycling facilities include the following:
 - Waste Management's Columbia Ridge Landfill in Arlington, Oregon. Two transfer stations for this landfill are located in Seattle, Washington.

GeoEngineers has provided soil profile applications to the Waste Management disposal facility.

- **Confirmation Soil Sampling:** Confirmation soil samples will need to be obtained following the removal of contaminated soil. Confirmation soil samples will be submitted for chemical analysis for contaminants of concern on a rush (2-day) turnaround.

6.0 CONSTRUCTION DEWATERING EFFLUENT HANDLING

Static groundwater is present beneath the Subject Property at approximately 65 to 85 feet below the ground surface and discontinuous zones of shallow perched water are likely present in isolated locations beneath Block 21.

It is important for the contractor to prepare a groundwater handling plan with appropriate containment, testing and treatment methodologies. The contractor also is responsible for obtaining necessary discharge authorizations from local agencies. GeoEngineers can assist in providing information related to groundwater sampling and testing completed on the subject properties and/or support the contractor in the sampling and testing of groundwater for the presence of hazardous chemicals in order to comply with discharge permits.

7.0 DISCOVERY OF UNEXPECTED CONTAMINATED/IMPACTED GROUNDWATER

GeoEngineers will not be on site to evaluate groundwater conditions during excavation activities. Therefore, it is the Contractor's responsibility to identify potentially contaminated/impacted groundwater with the characteristics described below:

- Petroleum hydrocarbon odors;
- A moderate or heavy sheen when placed in contact with water; and/or,
- Turbidity that may result in a discharge exceedance.

8.0 CONTACT INFORMATION

If unexpected potentially contaminated soil is discovered during construction activities, the Contractor should notify Seneca Real Estate Group and GeoEngineers as soon as possible. The table below presents those contacts as well as other relevant project contacts who may be contacted as back up.

RELEVANT PROJECT CONTACTS

Name	Title	Cell Phone	Office Phone	Email
Seneca Group				
Ian Kell	Development Manager	206.390.2783	206.808.7879	iank@senecagroup.com
Matt Blakeney	Development Manager	206.450.9779	206.628.3150	mattb@senecagroup.com
GeoEngineers				
Tony Orme	Environmental Associate	425.922.2223	425.861.6076	torme@geoengineers.com
Matt Smith	Geotechnical Principal	206.963.0862	425.861.6072	msmith@geoengineers.com
Chris Brown	Environmental Project Manager	206.427.7706	206.239.3251	cbrown@geoengineers.com
Lindsay Flangas	Geotechnical Project Manager	206.251.6441	425.861.6058	lflangas@geoengineers.com
GLY Construction Company				
Scott Tallquist	Senior Project Engineer	425.765.6923	--	scott.tallquist@gly.com
Tess Wakasugi-Don	Senior Project Manager	425.577.1150	--	tess.wakasugi-don@gly.com

9.0 LIMITATIONS

We have prepared this report for the exclusive use of the Acorn Development, LLC and their authorized agents. 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. No warranty or other conditions, express or implied, should be understood.

Any electronic form, facsimile or hard copy of the original document (email, text, table, and/or figure), if provided, and any attachments are only a copy of the original document. The original document is stored by GeoEngineers, Inc. and will serve as the official document of record.

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

Table 1

Soil Field Screening and Chemical Analytical Data (Petroleum Hydrocarbons, Metals, PAHs and VOCs)

Project Rufus 2.0
Block 21, Denny Triangle
Seattle, Washington

Exploration Location ¹	Sample ID	Depth (feet bgs)	Location of Sample Relative to Fill/Native Soil and Groundwater	Field Screening ²		Petroleum Hydrocarbons (mg/kg)			RCRA 8 Metals ³ (mg/kg)								PAHs (mg/kg)		VOCs ⁴ (mg/kg)
				Sheen	Headspace (ppm)	Gasoline Range ⁵	Diesel Range ⁶	Heavy Oil Range ⁶	Arsenic	Barium	Cadmium	Chromium	Lead	Selenium	Silver	Mercury	Non-Carcinogenic ⁷	Carcinogenic ⁸	
Block 21																			
Hollow-Stem Auger Borings Completed October 4 through 11, 2012																			
MW21-1	MW21-1-5.0	5	Native	ns	<1	<6.72	<18.4	<46.1	0.891	43	<0.180	31.9	1.32	<0.450	<0.0900	<0.264	nd	nd	nd
	MW21-1-17.5	17.5	Native	ns	<1	<8.68	<20.2	<50.6	3.97	125	<0.186	73.3	4.79	<0.465	<0.0930	<0.242	nd	nd	nd
MW21-2	MW21-2-7.5	7.5	Fill	ns	<1	<4.22	<21.2	<53.1	3.09	95.4	<0.159	52	3.41	<0.396	<0.0793	<0.292	nd	nd	nd
	MW21-2-20.0	20	Native	ns	<1	<5.62	<21.2	<53.1	2.01	80.1	<0.161	29.8	1.68	<0.401	<0.0803	<0.255	--	--	nd
MW21-3	MW21-3-2.5	2.5	Native	ns	<1	<7.79	<23.8	<59.4	5.11	175	<0.184	63.3	8.17	<0.459	<0.0918	<0.270	nd	nd	nd
	MW21-3-25.0	25	Native	ns	<1	<4.90	<19.9	<49.8	1.34	28.5	<0.155	28	1.31	<0.387	<0.0775	<0.242	--	--	nd
B21-1	B21-1-7.5	7.5	Fill	ns	<1	<4.36	<19.6	<49.1	2.84	75.8	<0.172	42.8	2.64	<0.430	<0.0859	<0.264	nd	nd	nd
	B21-1-25.0	25	Native	ns	<1	<5.49	<19.7	<49.3	0.836	38	<0.156	27.0	1.27	<0.391	<0.0782	<0.232	--	--	nd
B21-2	B21-2-5.0	5	Fill	ns	<1	<5.88	<25.2	<63.0	6.37	126	<0.204	59.3	4.76	<0.509	<0.102	<0.309	nd	nd	nd
	B21-2-20.0	20	Native	ns	<1	<5.56	<17.6	<44.1	2.12	33.2	<0.163	24.5	1.36	<0.406	<0.0813	<0.229	--	--	nd
Direct-Push Borings Completed October 5 through 8, 2012																			
B21-3	B21-3-7.5	7.5	Native	ns	<1	<5.92	<25.7	<64.2	5.04	160	<0.208	74.4	5.41	<0.521	<0.0104	<0.327	nd	nd	nd
B21-4	B21-4-5.0	5	Native	ns	<1	<5.02	<22.4	<55.9	7.24	106	<0.154	49.8	3.46	<0.285	<0.0769	<0.290	nd	nd	nd
B21-5	B21-5-7.5	7.5	Native	ns	<1	<5.31	<23.6	<59.0	6.54	138	<0.193	50.7	4.39	<0.483	<0.0966	<0.302	nd	nd	nd
B21-6	B21-6-7.5	7.5	Fill	ns	<1	<5.95	<24.0	<60.0	4.24	138	<0.189	66	5.4	<0.472	<0.0945	<0.311	nd	nd	nd
	B21-6-12.5	12.5	Native	ns	<1	<4.98	<22.8	<57.1	4.23	117	<0.169	62.9	4.3	<0.423	<0.0846	<0.278	--	--	nd
B21-7	B21-7-5.0	5	Fill	ns	<1	<5.60	<25.2	<63.1	9.65	145	<0.170	79.7	5.84	<0.425	<0.0850	<0.287	nd	nd	nd
	B21-7-12.5	12.5	Native	ns	<1	<5.07	<21.9	<54.7	6.87	122	<0.162	54.9	4.35	<0.405	<0.0809	<0.282	--	--	nd
B21-8	B21-8-5.0	5	Fill	ns	<1	<5.94	<24.6	<61.6	5.47	159	<0.193	76.5	5.6	<0.483	<0.0965	<0.302	nd	nd	nd
B21-9	B21-9-2.5	2.5	Fill	ns	<1	<4.65	<22.1	<55.2	8.14	122	<0.148	47.4	3.71	<0.371	1.07	<0.251	nd	nd	nd
	B21-9-10.0	10	Native	ns	<1	<5.21	<22.8	<56.9	3.78	88.7	<0.164	44.4	3.22	<0.409	0.105	<0.291	--	--	nd
B21-10	B21-10-2.5	2.5	Fill	ns	<1	<5.25	<23.0	<57.5	4.54	130	<0.157	57.9	16.6	<0.392	0.109	<0.250	nd	nd	nd
	B21-10-17.5	17.5	Native	ns	<1	<7.30	<18.6	<46.5	3.46	21	<0.134	17.2	1.25	<0.335	<0.0669	<0.240	--	--	nd
B21-11	B21-11-2.5	2.5	Fill	ns	<1	<4.82	<21.9	<54.8	4.82	118	<0.155	52.7	16.2	<0.387	<0.0775	<0.271	nd	nd	nd
	B21-11-10.0	10	Native	ns	<1	<6.21	<27.8	<69.4	4.29	180	<0.193	92.7	5.77	<0.482	<0.0965	<0.341	nd	nd	nd
B21-12	B21-12-5.0	5	Fill	ns	<1	<5.65	<23.4	<58.4	5.48	119	<0.170	49.6	4.42	<0.426	<0.0851	<0.315	nd	nd	nd
	B21-12-17.5	17.5	Native	ns	<1	<4.80	<20.2	<50.4	1.45	39	<0.155	26.6	1.63	<0.387	<0.0774	<0.229	nd	nd	nd
B21-13	B21-13-2.5	2.5	Fill	ns	<1	<5.29	<24.6	<61.5	10.1	113	0.205	60.8	10.7	<0.469	<0.0938	<0.276	nd	nd	nd
	B21-13-15.0	15	Native	ns	<1	<6.10	<19.1	<47.7	2.14	21.5	<0.137	20.7	1.05	<0.342	<0.0683	<0.225	--	--	nd

Table 2
Shallow Soil Field Screening and Chemical Analytical Data (Petroleum Hydrocarbons, Metals, PAHs and VOCs)
Project Rufus 2.0
Block 21, Denny Triangle
Seattle, Washington

Exploration Location ¹	Sample ID	Depth (feet bgs)	Location of Sample Relative to Fill/Native Soil and Groundwater	Field Screening ²		Petroleum Hydrocarbons (mg/kg)			RCRA 8 Metals ³ (mg/kg)								PAHs (mg/kg)		VOCs ⁴ (mg/kg)
				Sheen	Headspace (ppm)	Gasoline Range ⁵	Diesel Range ⁶	Heavy Oil Range ⁶	Arsenic	Barium	Cadmium	Chromium	Lead	Selenium	Silver	Mercury	Non-Carcinogenic ⁷	Carcinogenic ⁸	
Block 21																			
Test Pits Completed August 18 through September 27, 2017																			
TP21-1	TP21-1-5.0	5.0	Native	ns	<1	<5.35	<18.7	<46.7	2.64	49.4	<0.178	34.5	2.31	1.06	<0.0889	<0.272	nd	nd	nd
TP21-2	TP21-2-2.5	2.5	Native	ns	<1	<5.04	<22.2	<55.5	4.42	72.4	<0.179	41.7	4.26	1.36	<0.0897	<0.255	nd	nd	nd
TP21-3	TP21-3-7.5	7.5	Native	ss	<1	<4.89	<20.8	<52.1	3.49	77.7	<0.187	37.2	7.67	1.07	<0.0937	<0.294	nd	nd	nd
TP21-4	TP21-4-5.0	5.0	Native	ss	<1	<6.11	<22.1	<55.2	3.16	73.4	<0.180	44.9	5.25	1.12	<0.0898	<0.296	Phenanthrene= 49.8 Fluoranthrene= 76.4 Pyrene= 97.8	nd	nd
TP21-5	TP21-5-2.5	2.5	Native	ms	<1	<5.54	<21.5	<53.8	4.33	65.6	<0.175	40.2	4.73	1.16	<0.0873	<0.296	nd	nd	nd
TP21-6	TP21-6-2.5	Fill	Fill	ns	<1	<5.00	<20.6	171	3.39	56.2	<0.163	26.9	5.93	0.711	<0.0813	<0.268	nd	nd	nd
	TP21-6-6.0	Native	Native	ns	<1	<3.70	<21.5	<53.7	2.00	44.1	<0.181	26.9	3.22	0.931	<0.0904	<0.274	Pyrene= 62.7	nd	nd
TP21-7	TP21-7-2.5	2.5	Fill	ns	<1	<6.78	<25.1	<62.7	5.99	143	<0.208	59.7 ¹¹	20.2	1.78	<0.104	<0.314	nd	nd	nd
	TP21-7-5.5	5.5	Native	ns	<1	<10.7	<29.2	<72.9	8.05	259	<0.242	91.4 ¹¹	8.11	2.42	<0.121	<0.364	nd	nd	nd
TP21-8	TP21-8-2.5	2.5	Native	ns	<1	<5.98	<23.7	<59.2	5.97	104	<0.175	78.5	6.16	2.18	<0.103	<0.306	nd	nd	nd
TP21-9	TP21-9-2.5	2.5	Fill	ns	<1	<5.14	<22.4	<56.0	5.95	125	0.208	48.9	73.7	1.58	<0.0972	<0.306	Phenanthrene= 86.3 Fluoranthrene= 146 Pyrene= 125	74.731	nd
TP21-10	TP21-10-3.0	3.0	Fill	ns	<1	<5.23	<18.8	<47.1	5.85	74.0	<0.177	40.7	5.84	0.955	<0.0885	<0.271	nd	nd	nd
MTCA Method A or B Cleanup Level for Unrestricted Land Use						30/100 ⁹	2,000	2,000	20	16,000	2	2,000 ¹⁰	250	400	400	2	varies	100	varies

Notes:

¹Approximate exploration locations shown on the attached figure. Chemical analytical testing by Fremont Analytical in Seattle, Washington. Samples were obtained between August 18, 2017 and September 27, 2017.

²Field screening methods are described in Appendix A.

³Total metals analyzed by EPA 6010B/7471A.

⁴Volatile organic compounds (VOCs) and benzene (B), ethylbenzene (E), toluene (T) and total xylenes (X) analyzed by EPA Method 8260B. For VOCs, only detected compounds are presented in the table. See the laboratory report for the full list of compounds analyzed and detection limits.

⁵Gasoline-range hydrocarbons analyzed by Northwest Method NWTPH-Gx.

⁶Diesel- and heavy oil-range hydrocarbons analyzed by Northwest Method NWTPH-Dx.

⁷Polycyclic aromatic hydrocarbons (PAHs) analyzed by EPA Method 8270D/SIM. See the laboratory report for the full list of compounds analyzed.

⁸Carcinogenic Polycyclic Aromatic Hydrocarbons (cPAHs) analyzed by EPA Method 8270D/SIM. Total cPAHs calculated using the toxicity equivalency (TEQ) methodology specified in WAC 173-340-780(8). cPAHs that were not detected were assigned half the value of the detection limit for these calculations.

⁹When benzene is present, the gasoline range cleanup level is 30 mg/kg. When benzene is not present the gasoline range cleanup level is 100 mg/kg.

¹⁰Cleanup level for Chromium III. The published Background Soil Metals Concentration for Chromium is 42 mg/kg.

¹¹Hexavalent Chromium was analyzed by EPA Method 7196. Hexavalent Chromium was not detected.

mg/kg = milligrams per kilogram bgs = below ground surface

mg/kg = micrograms per kilogram -- = not tested

ns = no sheen, ss = slight sheen, ms = moderate sheen nd = not detected

Bolding indicates analyte was detected.

Table 3
Groundwater Chemical Analytical Data (Petroleum Hydrocarbons and Metals)

Project Rufus 2.0
Block 21, Denny Triangle
Seattle, Washington

Monitoring Well and Sample ID ¹	Sample Date	Well Screen Depth (feet bgs)	Petroleum Hydrocarbons (µg/L)			VOCs ⁴ (µg/L)	RCRA 8 Metals ⁵ (µg/L)							
			Gasoline Range ²	Diesel Range ³	Heavy Oil Range ³		Arsenic	Barium	Cadmium	Chromium	Lead	Selenium	Silver	Mercury
Block 21														
MW21-1	10/15/2012	75.0 - 94.8	<50.0	<50.0	<100	nd	<1.00	28.3	<0.200	<0.500	<1.00	1.30	0.444	<0.100
MW21-2	10/15/2012	90.0 - 109.8	<50.0	<50.0	<100	nd	1.06	29.3	<0.200	<0.500	<1.00	1.19	0.426	0.306
MW21-3	10/15/2012	80.0 - 99.8	<50.0	<50.0	<100	nd	<1.00	32.4	<0.200	<0.500	<1.00	2.09	<0.200	0.349
MTCA Method A or B Cleanup Level for Unrestricted Land Use			800/1000 ⁶	500	500	varies	5	3,200	5	50	15	80	80	2

Notes:

¹Approximate exploration locations shown on the attached figures. Chemical analytical testing by Fremont Analytical in Seattle, Washington.

²Gasoline-range hydrocarbons analyzed by petroleum hydrocarbon identification using Northwest Method NWTPH-HCID.

³Diesel- and heavy oil-range hydrocarbons analyzed by Northwest Method NWTPH-Dx Extended with a silica gel cleanup or petroleum hydrocarbon identification using Northwest Method NWTPH-HCID.

⁴Volatile organic compounds (VOCs) and benzene (B), ethylbenzene (E), toluene (T) and total xylenes (X) analyzed by EPA Method 8260B. For VOCs, only detected compounds are presented in the table. See the laboratory report for the full list of compounds analyzed and detection limits.

⁵Total metals analyzed by EPA 6010B/7471A.

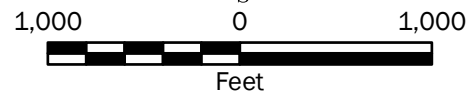
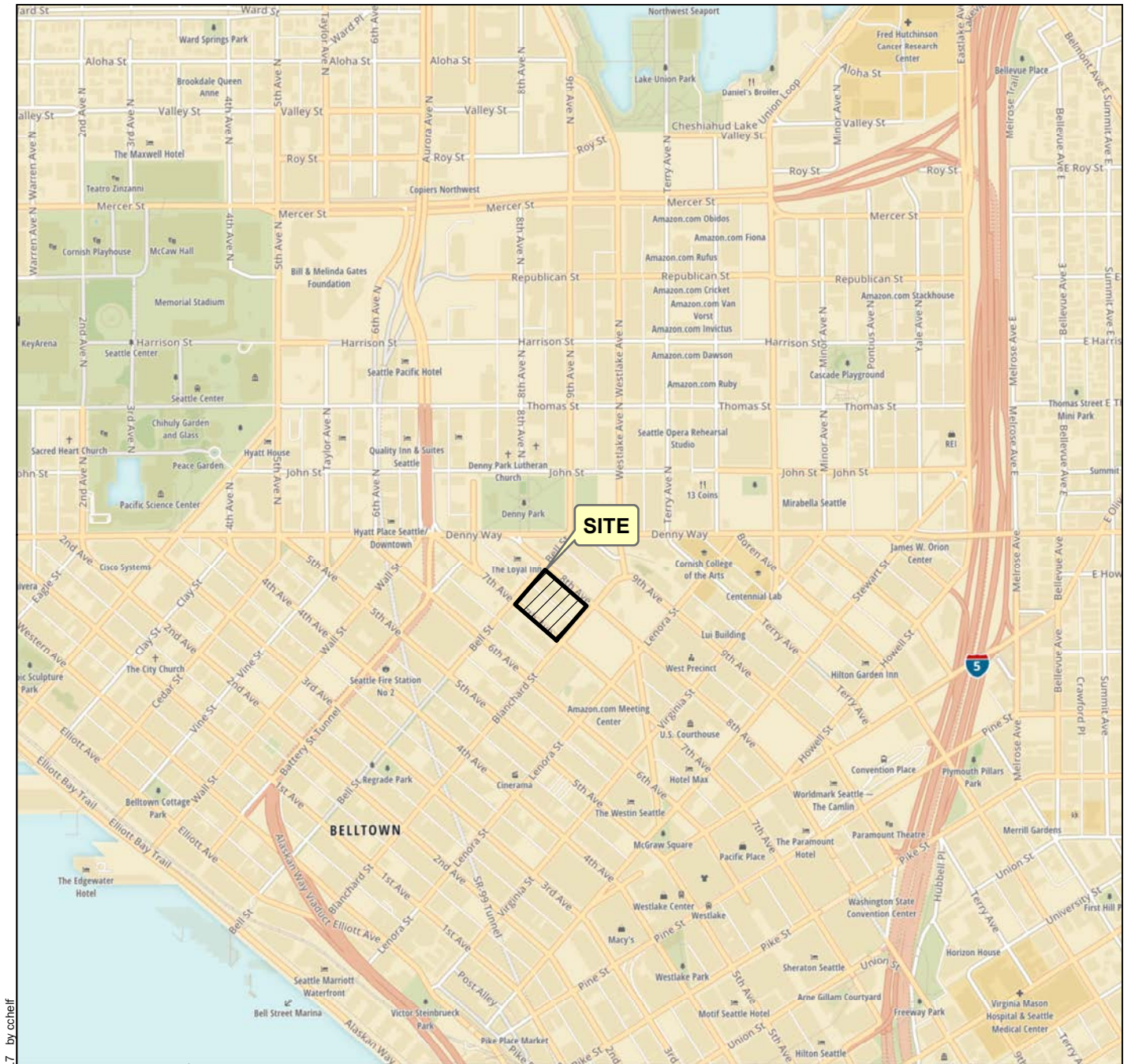
⁶When benzene is present, the gasoline range cleanup level is 800 µg/L. When benzene is not present the gasoline range cleanup level is 1000 µg/L.

nd = not detected

bgs = below ground surface

mg/L = micrograms per liter

Bolding indicates analyte was detected.



Vicinity Map

Rufus 2.0 Development - Block 21
Seattle, Washington



Figure 1

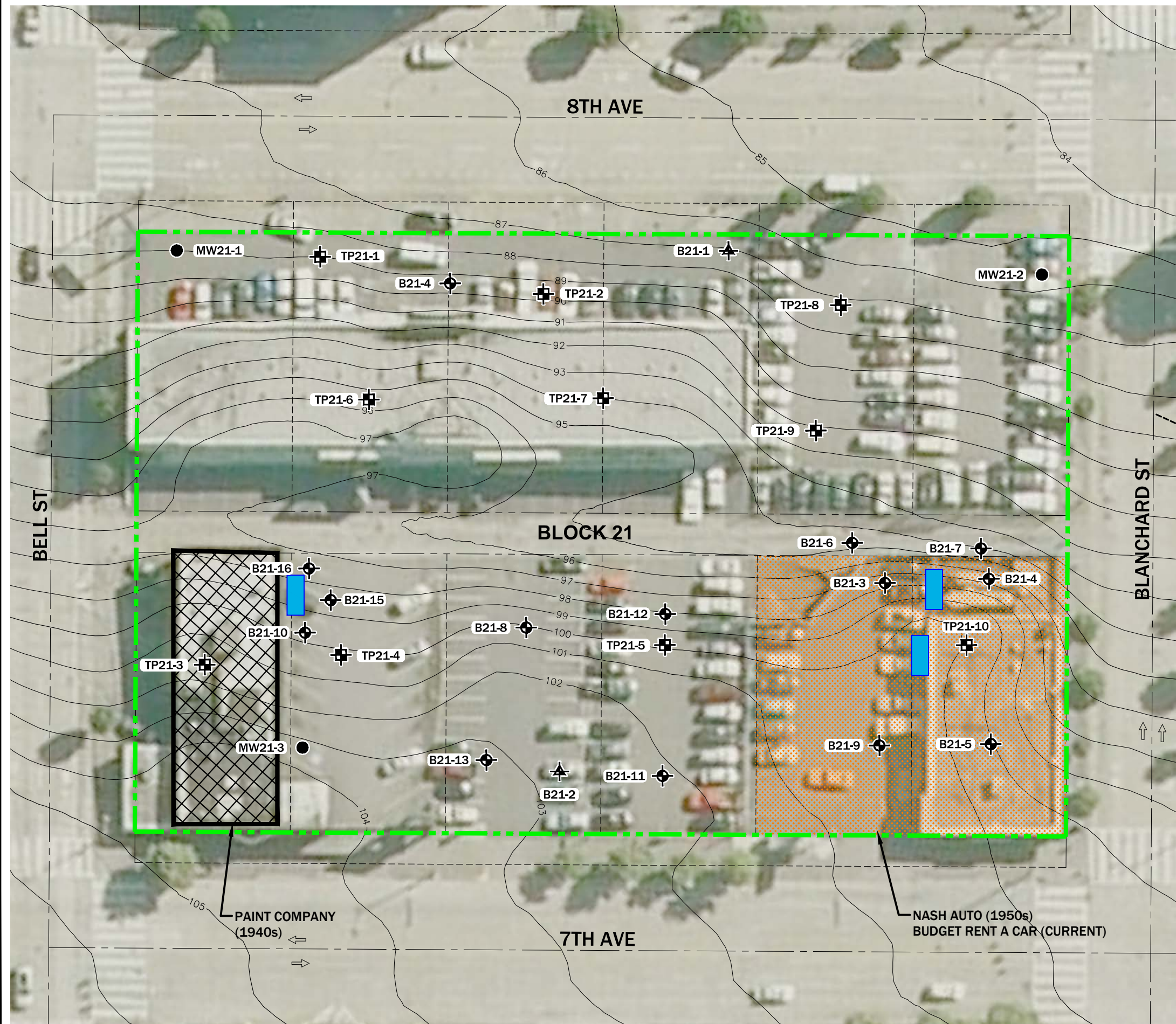
Notes:

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.

Data Source: Mapbox Open Street Map, 2016

Projection: NAD 1983 UTM Zone 10N

P:\20\20434001\CAD\30\Environmental\Task 1000 Block 21\2043400130_F02 Site Plan.dwg TAB:11x17 Landscape Date Exported: 10/03/17 - 8:27 by ttnchaud



Legend

- B21-1  Boring Completed for this Study
- MW21-1  Monitoring Well Completed for this Study
- B21-1  Deep Hollow-Stem Auger Boring Completed for this Study
- TP21-1  Test Pit Completed for this Study
-  Subject Property Boundary
-  Historical Auto Repair Building Footprint
-  Possible or Known Former UST Area
-  Other Use of Potential Concern as Indicated

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.

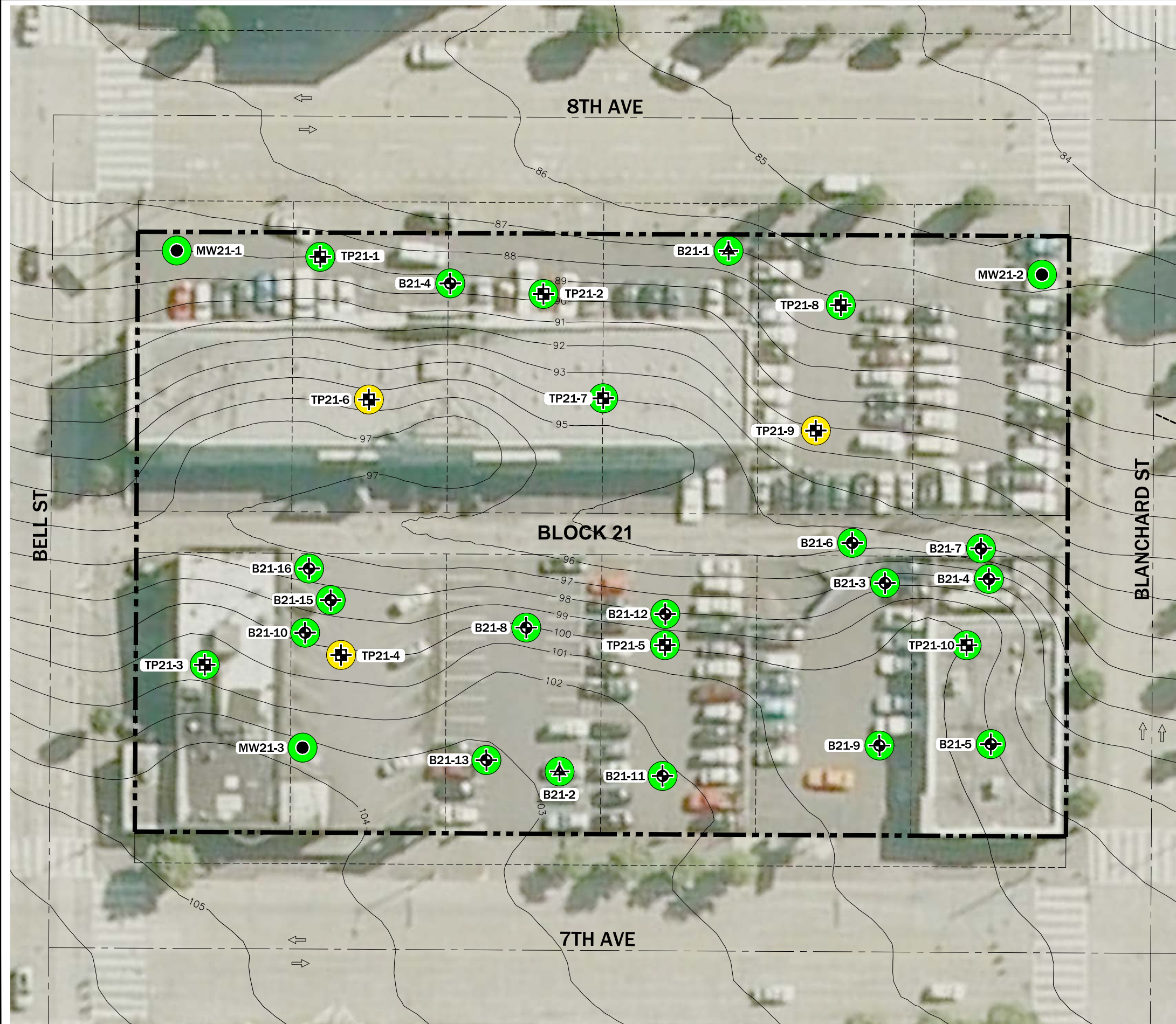
Data Source: Site survey CAD file "XS-SUR.dwg" provided by Bush, Roed & Hitchings, Inc., dated March 2012. Aerial photo from Aerial Express, 2009. Contour data from Puget Sound LIDAR Consortium, 2000.

Projection: NAD83 WA State Planes, N Zone, US Foot



Overview Site Plan and Historical Sources of Potential Contamination	
Rufus 2.0 Block 21 Seattle, Washington	
	Figure 2

P:\20\20434001\CAD\30\Environmental\Task 1000 Block 21\2043400130_F03 Soil Chemical Analytical Results.dwg TAB:11x17 Landscape Date Exported: 10/03/17 - 13:09 by hmara



Legend

B21-1

MW21-1

B21-1

TP21-1

Boring Completed for this Study

Monitoring Well Completed for this Study

Deep Hollow-Stem Auger Boring Completed for this Study

Test Pit Completed for this Study

Subject Property Boundary

Contaminants of concern detected at concentrations less than the corresponding MTCA cleanup levels

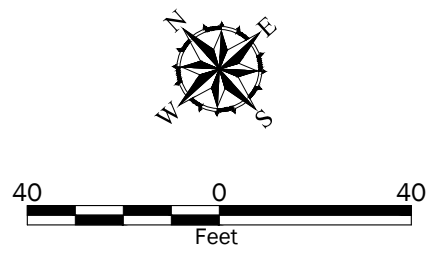
Contaminants of concern were not detected. Metals were detected at concentrations similar to natural background concentrations.

Notes:

- The locations of all features shown are approximate.
- 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.

Data Source: Site survey CAD file "XS-SUR.dwg" provided by Bush, Roed & Hitchings , Inc., dated March 2012. Aerial photo from Aerial Express, 2009. Contour data from Puget Sound LIDAR Consortium, 2000.

Projection: NAD83 WA State Planes, N Zone, US Foot

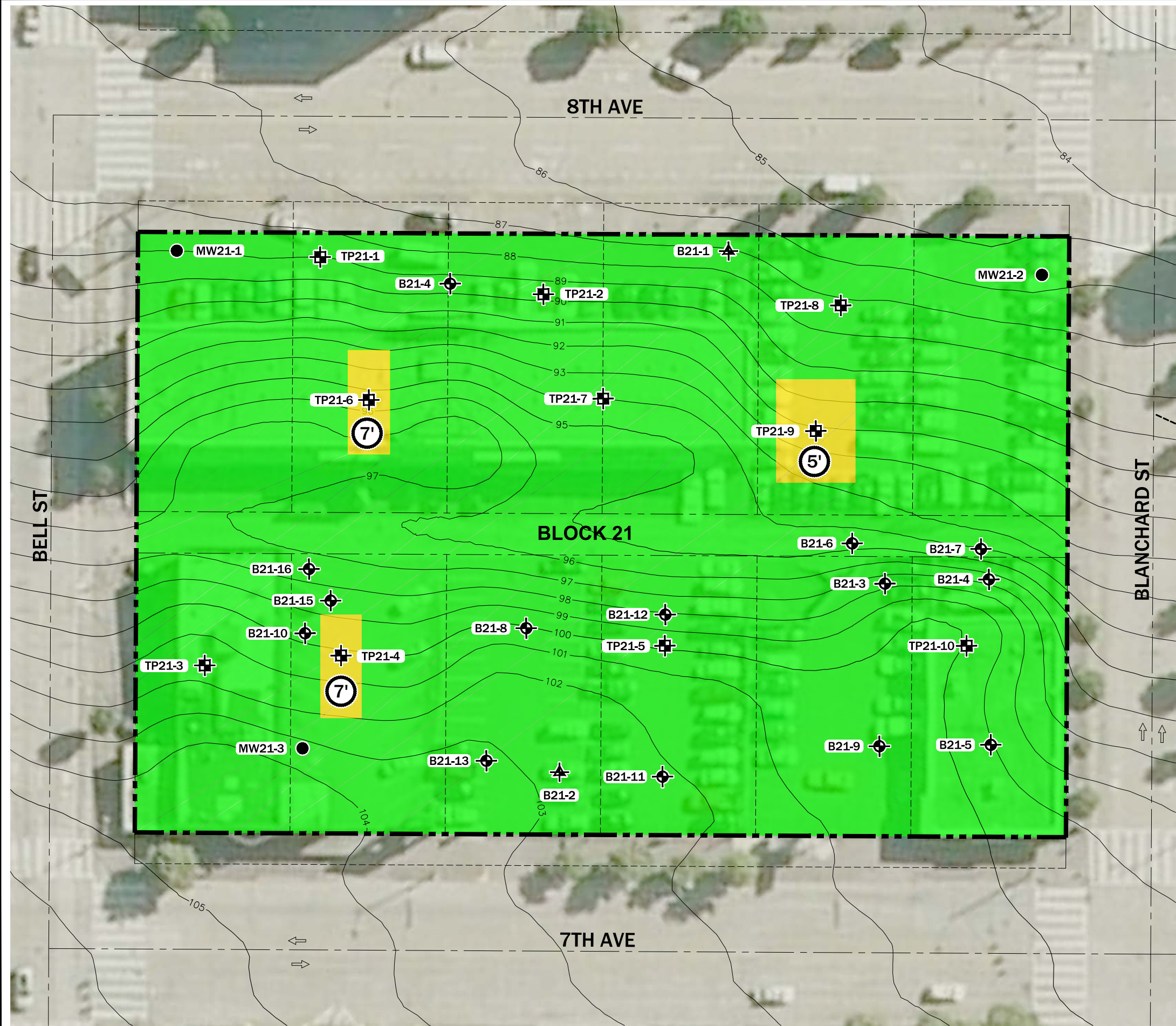


Soil Chemical Analytical Results

Rufus 2.0 Block 21
Seattle, Washington

Figure 3

P:\20\20434001\CAD\30\Environmental\Task 1000 Block 21\2043400130_F03 Soil Management Categories.dwg TAB:11x17 Landscape Date Exported: 10/02/17 - 16:57 by trnchaud



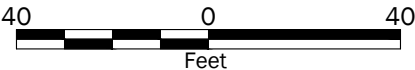
Legend

- B21-1 Boring Completed for this Study
- MW21-1 Monitoring Well Completed for this Study
- B21-1 Deep Hollow-Stem Auger Boring Completed for this Study
- TP21-1 Test Pit Completed for this Study
- Subject Property Boundary
- Contaminants of concern detected at concentrations less than MTCA cleanup levels in fill soil. Soil excavated from this location may be disposed of as Class II to Cadman.
- Contaminants of concern either not detected or detected similar to natural background concentrations in fill soil. Soil excavated from these locations may be disposed of as "non-regulated" soil, at the discretion of the owner.
- 5' Approximate impacted/contaminated soil depth based on soil sample results.

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.

Data Source: Site survey CAD file "XS-SUR.dwg" provided by Bush, Roed & Hitchings, Inc., dated March 2012. Aerial photo from Aerial Express, 2009. Contour data from Puget Sound LIDAR Consortium, 2000.

Projection: NAD83 WA State Planes, N Zone, US Foot



Soil Management Categories	
Rufus 2.0 Block 21 Seattle, Washington	
	Figure 4

APPENDIX A
Field Procedures

APPENDIX A FIELD PROCEDURES

Field Screening of Soil Samples

Soil samples obtained from the explorations were evaluated for evidence of possible contamination using field screening techniques. Field screening results can be used as a general guideline to delineate areas of possible petroleum- or volatile organic compound (VOC)-related contamination in soils. In addition, screening results are often used as a basis for selecting soil samples for chemical analysis. The screening methods employed included: (1) visual examination, (2) water sheen testing, and (3) headspace vapor testing using a photoionization detector (PID).

Visual screening consists of observing the soil for stains indicative of petroleum-related contamination. Visual screening is generally more effective when contamination is related to heavy petroleum hydrocarbons such as motor oil, or when hydrocarbon concentrations are high. Sheen screening is a more sensitive screening method that can be effective in detecting petroleum-based products.

Water sheen testing involves placing soil in water and observing the water surface for signs of sheen. Sheens are classified as follows:

No Sheen (NS)	No visible sheen on water surface.
Slight Sheen (SS)	Light, colorless, dull sheen; spread is irregular, not rapid; sheen dissipates rapidly.
Moderate Sheen (MS)	Light to heavy sheen, may have some color/iridescence; spread is irregular to flowing; few remaining areas of no sheen on water surface.
Heavy Sheen (HS)	Heavy sheen with color/iridescence; spread is rapid; entire water surface may be covered with sheen.

Headspace vapor screening involves placing a soil sample in a plastic bag. Air is captured in the bag, and the bag is shaken to expose the soil to the air trapped in the bag. The probe of the PID is inserted into the bag. The PID measures the concentration of photoionizable gases and vapors in the sample bag headspace. The PID is designed to quantify photoionizable gases and vapors up to 2,000 parts per million (ppm), and is calibrated with isobutylene. A lower threshold of significance of 1 ppm is used in application.

Field screening results are site- and exploration- specific. The results may vary with temperature, moisture content, soil lithology, organic content and type of contaminant. The presence or absence of sheen does not necessarily confirm the presence or absence of contaminants in a sample.

APPENDIX B
Potentially Contaminant Impacted Soil
Notification Form

RUFUS 2.0 REDEVELOPMENT POTENTIALLY CONTAMINANT IMPACTED SOIL NOTIFICATION FORM

Prepared for: Acorn Development, LLC c/o Seneca Group 1191 Second Avenue, Suite 1500 Seattle, Washington 98101	<u>GENERAL INFORMATION</u>		
	DATE OF DISCOVERY:	TIME OF DISCOVERY:	
	PERSON DISCOVERING CONDITION:	PHONE NUMBER:	
Prepared by:  600 Stewart Street, Suite 1700 Seattle, WA 98101 206.728.2674	PERSON FILLING OUT FORM:	PHONE NUMBER:	
APPROXIMATE LOCATION OF SOIL ON THE SITE:			
<u>SOIL CHARACTERISTICS</u>			
PHYSICAL CHARACTERISTICS: Odor: ☐ Yes (Describe _____) ☐ No Staining: ☐ Yes (Describe _____) ☐ No Other: _____ _____	SOIL DISTURBED: ☐ Soil in-place ☐ Soil stockpiled	FREE LIQUIDS: ☐ Yes (Content _____ %) ☐ No	
ACTIONS TAKEN: _____ _____ _____ _____ _____		ESTIMATED VOLUME OF CONTAMINATED SOIL: _____ _____ _____	
<u>NOTIFICATION CONTACT INFORMATION</u>			
SENECA Ian Kell C: 206.948.8089 iank@senecagroup.com	GEOENGINEERS Chris Brown D: 206.239.3251 C: 206.427.7706 cbrown@geoengineers.com	GLY Tess Wakasugi-Don C: 425.577.1150 tess.wakasugi-don@gly.com	
<u>ADDITIONAL INFORMATION</u>			

This record serves to document information, actions, and notifications regarding the discovery of and response to the presence of suspected and known contamination on the project.

APPENDIX C

Chemical Analytical Reports



1311 N. 35th St.
Seattle, WA 98103
T: (206) 352-3790
F: (206) 352-7178
info@fremontanalytical.com

GeoEngineers, Inc. - Redmond
Chris Brown
8410 154th Ave. NE
Redmond, Washington 98052

RE: Rufus 2.0 WO11
Lab ID: 1210020

October 23, 2012

Attention Chris Brown:

Fremont Analytical, Inc. received 198 sample(s) on 10/15/2012 for the analyses presented in the following report.

Diesel and Heavy Oil by NWTPH-Dx/Dx Ext.
Gasoline by NWTPH-Gx
Mercury by EPA Method 7471
Polyaromatic Hydrocarbons by EPA Method 8270 (SIM)
Sample Moisture (Percent Moisture)
Total Metals by EPA Method 6020
Volatile Organic Compounds by EPA Method 8260

This report consists of the following:

- Case Narrative
- Analytical Results
- Applicable Quality Control Summary Reports
- Chain of Custody

All analyses were performed consistent with the Quality Assurance program of Fremont Analytical, Inc. Please contact the laboratory if you should have any questions about the results.

Thank you for using Fremont Analytical.

Sincerely,

Michael Dee
Sr. Chemist / Principal

CLIENT: GeoEngineers, Inc. - Redmond
Project: Rufus 2.0 WO11
Lab Order: 1210020

Work Order Sample Summary

Lab Sample ID	Client Sample ID	Date/Time Collected	Date/Time Received
1210020-001	B21-3-2.5	10/05/2012 8:37 AM	10/05/2012 4:08 PM
1210020-002	B21-3-5.0	10/05/2012 9:30 AM	10/05/2012 4:08 PM
1210020-003	B21-3-7.5	10/05/2012 9:33 AM	10/05/2012 4:08 PM
1210020-013	B21-4-2.5	10/05/2012 9:40 AM	10/05/2012 4:08 PM
1210020-014	B21-4-5.0	10/05/2012 9:42 AM	10/05/2012 4:08 PM
1210020-015	B21-4-7.5	10/05/2012 9:50 AM	10/05/2012 4:08 PM
1210020-025	B21-5-2.5	10/05/2012 10:05 AM	10/05/2012 4:08 PM
1210020-026	B21-5-5.0	10/05/2012 10:10 AM	10/05/2012 4:08 PM
1210020-027	B21-5-7.5	10/05/2012 10:25 AM	10/05/2012 4:08 PM
1210020-037	B21-6-2.5	10/05/2012 11:30 AM	10/05/2012 4:08 PM
1210020-038	B21-6-5.0	10/05/2012 11:33 AM	10/05/2012 4:08 PM
1210020-039	B21-6-7.5	10/05/2012 11:45 AM	10/05/2012 4:08 PM
1210020-040	B21-6-10.0	10/05/2012 11:50 AM	10/05/2012 4:08 PM
1210020-041	B21-6-12.5	10/05/2012 11:55 AM	10/05/2012 4:08 PM
1210020-049	B21-7-2.5	10/05/2012 12:16 PM	10/05/2012 4:08 PM
1210020-050	B21-7-5.0	10/05/2012 12:20 PM	10/05/2012 4:08 PM
1210020-051	B21-7-7.5	10/05/2012 12:23 PM	10/05/2012 4:08 PM
1210020-052	B21-7-10.0	10/05/2012 12:35 PM	10/05/2012 4:08 PM
1210020-053	B21-7-12.5	10/05/2012 12:40 PM	10/05/2012 4:08 PM
1210020-061	B21-8-2.5	10/05/2012 1:20 PM	10/05/2012 4:08 PM
1210020-062	B21-8-5.0	10/05/2012 1:24 PM	10/05/2012 4:08 PM
1210020-063	B21-8-7.5	10/05/2012 1:30 PM	10/05/2012 4:08 PM
1210020-073	B21-9-2.5	10/05/2012 2:15 PM	10/05/2012 4:08 PM
1210020-074	B21-9-5.0	10/05/2012 2:20 PM	10/05/2012 4:08 PM
1210020-075	B21-9-7.5	10/05/2012 2:30 PM	10/05/2012 4:08 PM
1210020-076	B21-9-10.0	10/05/2012 2:35 PM	10/05/2012 4:08 PM
1210020-077	B21-9-12.5	10/05/2012 2:38 PM	10/05/2012 4:08 PM
1210020-085	B21-10-2.5	10/08/2012 8:55 AM	10/08/2012 5:09 PM
1210020-086	B21-10-5.0	10/08/2012 8:58 AM	10/08/2012 5:09 PM
1210020-087	B21-10-7.5	10/08/2012 9:00 AM	10/08/2012 5:09 PM
1210020-088	B21-10-10.0	10/08/2012 9:05 AM	10/08/2012 5:09 PM
1210020-089	B21-10-12.5	10/08/2012 9:10 AM	10/08/2012 5:09 PM
1210020-090	B21-10-15.0	10/08/2012 9:15 AM	10/08/2012 5:09 PM
1210020-091	B21-10-17.5	10/08/2012 9:20 AM	10/08/2012 5:09 PM
1210020-092	B21-10-20.0	10/08/2012 9:24 AM	10/08/2012 5:09 PM
1210020-097	B21-11-2.5	10/08/2012 9:50 AM	10/08/2012 5:09 PM

Note: If no "Time Collected" is supplied, a default of 12:00AM is assigned

CLIENT: GeoEngineers, Inc. - Redmond
Project: Rufus 2.0 WO11
Lab Order: 1210020

Work Order Sample Summary

Lab Sample ID	Client Sample ID	Date/Time Collected	Date/Time Received
1210020-098	B21-11-5.0	10/08/2012 9:53 AM	10/08/2012 5:09 PM
1210020-099	B21-11-7.5	10/08/2012 9:55 AM	10/08/2012 5:09 PM
1210020-100	B21-11-10.0	10/08/2012 10:00 AM	10/08/2012 5:09 PM
1210020-101	B21-11-12.5	10/08/2012 10:02 AM	10/08/2012 5:09 PM
1210020-102	B21-11-15.0	10/08/2012 10:05 AM	10/08/2012 5:09 PM
1210020-103	B21-11-17.5	10/08/2012 10:10 AM	10/08/2012 5:09 PM
1210020-104	B21-11-20.0	10/08/2012 10:15 AM	10/08/2012 5:09 PM
1210020-109	B21-12-2.5	10/08/2012 10:35 AM	10/08/2012 5:09 PM
1210020-110	B21-12-5.0	10/08/2012 10:40 AM	10/08/2012 5:09 PM
1210020-111	B21-12-7.5	10/08/2012 10:45 AM	10/08/2012 5:09 PM
1210020-112	B21-12-10.0	10/08/2012 10:50 AM	10/08/2012 5:09 PM
1210020-113	B21-12-12.5	10/08/2012 11:00 AM	10/08/2012 5:09 PM
1210020-114	B21-12-15.0	10/08/2012 11:05 AM	10/08/2012 5:09 PM
1210020-115	B21-12-17.5	10/08/2012 11:10 AM	10/08/2012 5:09 PM
1210020-116	B21-12-20.0	10/08/2012 11:15 AM	10/08/2012 5:09 PM
1210020-121	B21-13-2.5	10/08/2012 12:05 PM	10/08/2012 5:09 PM
1210020-122	B21-13-5.0	10/08/2012 12:08 PM	10/08/2012 5:09 PM
1210020-123	B21-13-7.5	10/08/2012 12:10 PM	10/08/2012 5:09 PM
1210020-124	B21-13-10.0	10/08/2012 12:12 PM	10/08/2012 5:09 PM
1210020-125	B21-13-12.5	10/08/2012 12:15 PM	10/08/2012 5:09 PM
1210020-126	B21-13-15.0	10/08/2012 12:18 PM	10/08/2012 5:09 PM
1210020-127	B21-13-17.5	10/08/2012 12:20 PM	10/08/2012 5:09 PM
1210020-128	B21-13-20.0	10/08/2012 12:25 PM	10/08/2012 5:09 PM
1210020-133	B21-14-2.5	10/08/2012 1:25 PM	10/08/2012 5:09 PM
1210020-134	B21-14-5.0	10/08/2012 1:30 PM	10/08/2012 5:09 PM
1210020-135	B21-14-7.5	10/08/2012 1:33 PM	10/08/2012 5:09 PM
1210020-136	B21-14-10.0	10/08/2012 1:35 PM	10/08/2012 5:09 PM
1210020-137	B21-14-12.5	10/08/2012 1:40 PM	10/08/2012 5:09 PM
1210020-138	B21-14-15.0	10/08/2012 1:45 PM	10/08/2012 5:09 PM
1210020-139	B21-14-17.5	10/08/2012 1:47 PM	10/08/2012 5:09 PM
1210020-140	B21-14-20.0	10/08/2012 1:50 PM	10/08/2012 5:09 PM
1210020-145	B21-15-2.5	10/08/2012 2:25 PM	10/08/2012 5:09 PM
1210020-146	B21-15-5.0	10/08/2012 2:30 PM	10/08/2012 5:09 PM
1210020-147	B21-15-7.5	10/08/2012 2:33 PM	10/08/2012 5:09 PM
1210020-148	B21-15-10.0	10/08/2012 2:35 PM	10/08/2012 5:09 PM
1210020-149	B21-15-12.5	10/08/2012 2:40 PM	10/08/2012 5:09 PM
1210020-150	B21-15-15.0	10/08/2012 2:42 PM	10/08/2012 5:09 PM
1210020-151	B21-15-17.5	10/08/2012 2:43 PM	10/08/2012 5:09 PM
1210020-157	B21-16-2.5	10/08/2012 3:15 PM	10/08/2012 5:09 PM
1210020-158	B21-16-5.0	10/08/2012 3:17 PM	10/08/2012 5:09 PM
1210020-159	B21-16-7.5	10/08/2012 3:20 PM	10/08/2012 5:09 PM
1210020-160	B21-16-10.0	10/08/2012 3:25 PM	10/08/2012 5:09 PM

Note: If no "Time Collected" is supplied, a default of 12:00AM is assigned

CLIENT: GeoEngineers, Inc. - Redmond
Project: Rufus 2.0 WO11
Lab Order: 1210020

Work Order Sample Summary

Lab Sample ID	Client Sample ID	Date/Time Collected	Date/Time Received
1210020-161	B21-16-12.5	10/08/2012 3:27 PM	10/08/2012 5:09 PM
1210020-162	B21-16-15.0	10/08/2012 3:30 PM	10/08/2012 5:09 PM
1210020-163	B21-16-17.5	10/08/2012 3:35 PM	10/08/2012 5:09 PM
1210020-164	B21-16-20.0	10/08/2012 3:45 PM	10/08/2012 5:09 PM
1210020-217	MW21-1-2.5	10/10/2012 8:19 AM	10/10/2012 1:05 PM
1210020-218	MW21-1-5.0	10/10/2012 8:25 AM	10/10/2012 1:05 PM
1210020-219	MW21-1-7.5	10/10/2012 8:31 AM	10/10/2012 1:05 PM
1210020-220	MW21-1-10.0	10/10/2012 8:35 AM	10/10/2012 1:05 PM
1210020-221	MW21-1-12.5	10/10/2012 8:42 AM	10/10/2012 1:05 PM
1210020-222	MW21-1-15.0	10/10/2012 8:50 AM	10/10/2012 1:05 PM
1210020-223	MW21-1-17.5	10/10/2012 8:55 AM	10/10/2012 1:05 PM
1210020-224	MW21-1-20.0	10/10/2012 9:04 AM	10/10/2012 1:05 PM
1210020-226	MW21-1-25.0	10/10/2012 9:15 AM	10/10/2012 1:05 PM
1210020-228	MW21-1-30.0	10/10/2012 9:26 AM	10/10/2012 1:05 PM
1210020-229	MW21-2-2.5	10/08/2012 8:20 AM	10/08/2012 5:09 PM
1210020-230	MW21-2-5.0	10/08/2012 8:25 AM	10/08/2012 5:09 PM
1210020-231	MW21-2-7.5	10/08/2012 8:37 AM	10/08/2012 5:09 PM
1210020-232	MW21-2-10.0	10/08/2012 8:41 AM	10/08/2012 5:09 PM
1210020-233	MW21-2-12.5	10/08/2012 8:55 AM	10/08/2012 5:09 PM
1210020-235	MW21-2-17.5	10/08/2012 9:14 AM	10/08/2012 5:09 PM
1210020-236	MW21-2-20.0	10/08/2012 9:23 AM	10/08/2012 5:09 PM
1210020-237	MW21-2-22.5	10/08/2012 9:31 AM	10/08/2012 5:09 PM
1210020-238	MW21-2-25.0	10/08/2012 9:40 AM	10/08/2012 5:09 PM
1210020-239	MW21-2-27.5	10/08/2012 9:45 AM	10/08/2012 5:09 PM
1210020-240	MW21-2-30.0	10/08/2012 9:51 AM	10/08/2012 5:09 PM
1210020-241	MW21-3-2.5	10/09/2012 8:12 AM	10/09/2012 4:37 PM
1210020-242	MW21-3-5.0	10/09/2012 8:19 AM	10/09/2012 4:37 PM
1210020-243	MW21-3-7.5	10/09/2012 8:28 AM	10/09/2012 4:37 PM
1210020-244	MW21-3-10.0	10/09/2012 8:35 AM	10/09/2012 4:37 PM
1210020-245	MW21-3-12.5	10/09/2012 8:40 AM	10/09/2012 4:37 PM
1210020-246	MW21-3-15.0	10/09/2012 8:48 AM	10/09/2012 4:37 PM
1210020-247	MW21-3-17.5	10/09/2012 8:55 AM	10/09/2012 4:37 PM
1210020-248	MW21-3-20.0	10/09/2012 9:02 AM	10/09/2012 4:37 PM
1210020-250	MW21-3-25.0	10/09/2012 9:18 AM	10/09/2012 4:37 PM
1210020-252	MW21-3-30.0	10/09/2012 9:31 AM	10/09/2012 4:37 PM
1210020-253	B21-1-2.5	10/04/2012 8:32 AM	10/04/2012 4:20 PM
1210020-254	B21-1-5.0	10/04/2012 8:37 AM	10/04/2012 4:20 PM
1210020-255	B21-1-7.5	10/04/2012 8:43 AM	10/04/2012 4:20 PM
1210020-256	B21-1-10.0	10/04/2012 8:46 AM	10/04/2012 4:20 PM
1210020-257	B21-1-12.5	10/04/2012 8:50 AM	10/04/2012 4:20 PM
1210020-258	B21-1-15.0	10/04/2012 8:55 AM	10/04/2012 4:20 PM
1210020-259	B21-1-17.5	10/04/2012 9:00 AM	10/04/2012 4:20 PM

Note: If no "Time Collected" is supplied, a default of 12:00AM is assigned

CLIENT: GeoEngineers, Inc. - Redmond
Project: Rufus 2.0 WO11
Lab Order: 1210020

Work Order Sample Summary

Lab Sample ID	Client Sample ID	Date/Time Collected	Date/Time Received
1210020-260	B21-1-20.0	10/04/2012 9:05 AM	10/04/2012 4:20 PM
1210020-261	B21-1-22.5	10/04/2012 9:10 AM	10/04/2012 4:20 PM
1210020-262	B21-1-25.0	10/04/2012 9:11 AM	10/04/2012 4:20 PM
1210020-263	B21-1-27.5	10/04/2012 9:17 AM	10/04/2012 4:20 PM
1210020-264	B21-1-30.0	10/04/2012 9:31 AM	10/04/2012 4:20 PM
1210020-265	B21-2-2.5	10/11/2012 8:05 AM	10/11/2012 2:00 PM
1210020-266	B21-2-5.0	10/11/2012 8:15 AM	10/11/2012 2:00 PM
1210020-267	B21-2-7.5	10/11/2012 8:20 AM	10/11/2012 2:00 PM
1210020-268	B21-2-10.0	10/11/2012 8:25 AM	10/11/2012 2:00 PM
1210020-269	B21-2-12.5	10/11/2012 8:35 AM	10/11/2012 2:00 PM
1210020-270	B21-2-15.0	10/11/2012 8:40 AM	10/11/2012 2:00 PM
1210020-271	B21-2-17.5	10/11/2012 8:45 AM	10/11/2012 2:00 PM
1210020-272	B21-2-20.0	10/11/2012 8:54 AM	10/11/2012 2:00 PM
1210020-274	B21-2-25.0	10/11/2012 9:05 AM	10/11/2012 2:00 PM
1210020-276	B21-2-30.0	10/11/2012 9:12 AM	10/11/2012 2:00 PM
1210020-277	MW21-1-35.0	10/10/2012 9:36 AM	10/10/2012 1:05 PM
1210020-279	MW21-1-45.0	10/10/2012 9:53 AM	10/10/2012 1:05 PM
1210020-280	MW21-1-50.0	10/10/2012 10:10 AM	10/10/2012 1:05 PM
1210020-281	MW21-1-55.0	10/10/2012 10:15 AM	10/10/2012 1:05 PM
1210020-282	MW21-1-60.0	10/10/2012 10:30 AM	10/10/2012 1:05 PM
1210020-284	MW21-1-70.0	10/10/2012 10:50 AM	10/10/2012 1:05 PM
1210020-285	MW21-1-75.0	10/10/2012 10:59 AM	10/10/2012 1:05 PM
1210020-286	MW21-1-80.0	10/10/2012 11:16 AM	10/10/2012 1:05 PM
1210020-287	MW21-1-85.0	10/10/2012 11:33 AM	10/10/2012 1:05 PM
1210020-289	MW21-1-95.0	10/10/2012 12:00 PM	10/10/2012 1:05 PM
1210020-293	MW21-2-35.0	10/08/2012 9:57 AM	10/08/2012 5:09 PM
1210020-294	MW21-2-40.0	10/08/2012 10:04 AM	10/08/2012 5:09 PM
1210020-295	MW21-2-45.0	10/08/2012 10:12 AM	10/08/2012 5:09 PM
1210020-296	MW21-2-50.0	10/08/2012 10:20 AM	10/08/2012 5:09 PM
1210020-297	MW21-2-55.0	10/08/2012 10:33 AM	10/08/2012 5:09 PM
1210020-298	MW21-2-60.0	10/08/2012 10:45 AM	10/08/2012 5:09 PM
1210020-299	MW21-2-65.0	10/08/2012 10:57 AM	10/08/2012 5:09 PM
1210020-300	MW21-2-70.0	10/08/2012 11:06 AM	10/08/2012 5:09 PM
1210020-302	MW21-2-80.0	10/08/2012 11:30 AM	10/08/2012 5:09 PM
1210020-303	MW21-2-85.0	10/08/2012 11:44 AM	10/08/2012 5:09 PM
1210020-304	MW21-2-90.0	10/08/2012 12:00 PM	10/08/2012 5:09 PM
1210020-305	MW21-2-95.0	10/08/2012 12:06 PM	10/08/2012 5:09 PM
1210020-306	MW21-2-100	10/08/2012 12:37 PM	10/08/2012 5:09 PM
1210020-307	MW21-2-105	10/08/2012 12:55 PM	10/08/2012 5:09 PM
1210020-308	MW21-2-110	10/08/2012 1:20 PM	10/08/2012 5:09 PM
1210020-309	MW21-3-35.0	10/09/2012 9:42 AM	10/09/2012 4:37 PM
1210020-311	MW21-3-45.0	10/09/2012 10:25 AM	10/09/2012 4:37 PM

Note: If no "Time Collected" is supplied, a default of 12:00AM is assigned

CLIENT: GeoEngineers, Inc. - Redmond
Project: Rufus 2.0 WO11
Lab Order: 1210020

Work Order Sample Summary

Lab Sample ID	Client Sample ID	Date/Time Collected	Date/Time Received
1210020-312	MW21-3-50.0	10/09/2012 10:40 AM	10/09/2012 4:37 PM
1210020-313	MW21-3-55.0	10/09/2012 11:01 AM	10/09/2012 4:37 PM
1210020-314	MW21-3-60.0	10/09/2012 11:33 AM	10/09/2012 4:37 PM
1210020-315	MW21-3-65.0	10/09/2012 11:44 AM	10/09/2012 4:37 PM
1210020-316	MW21-3-70.0	10/09/2012 12:01 PM	10/09/2012 4:37 PM
1210020-317	MW21-3-75.0	10/09/2012 12:17 PM	10/09/2012 4:37 PM
1210020-318	MW21-3-80.0	10/09/2012 12:30 PM	10/09/2012 4:37 PM
1210020-320	MW21-3-90.0	10/09/2012 12:50 PM	10/09/2012 4:37 PM
1210020-321	MW21-3-95.0	10/09/2012 1:05 PM	10/09/2012 4:37 PM
1210020-322	MW21-3-100	10/09/2012 1:20 PM	10/09/2012 4:37 PM
1210020-325	B21-1-35.0	10/04/2012 9:38 AM	10/04/2012 4:20 PM
1210020-326	B21-1-40.0	10/04/2012 9:50 AM	10/04/2012 4:20 PM
1210020-327	B21-1-45.0	10/04/2012 10:00 AM	10/04/2012 4:20 PM
1210020-328	B21-1-50.0	10/04/2012 10:12 AM	10/04/2012 4:20 PM
1210020-329	B21-1-55.0	10/04/2012 10:24 AM	10/04/2012 4:20 PM
1210020-330	B21-1-60.0	10/04/2012 10:35 AM	10/04/2012 4:20 PM
1210020-331	B21-1-65.0	10/04/2012 10:45 AM	10/04/2012 4:20 PM
1210020-332	B21-1-70.0	10/04/2012 11:00 AM	10/04/2012 4:20 PM
1210020-333	B21-1-75.0	10/04/2012 11:17 AM	10/04/2012 4:20 PM
1210020-334	B21-1-80.0	10/04/2012 11:35 AM	10/04/2012 4:20 PM
1210020-335	B21-1-85.0	10/04/2012 11:52 AM	10/04/2012 4:20 PM
1210020-336	B21-1-90.0	10/04/2012 12:10 PM	10/04/2012 4:20 PM
1210020-337	B21-1-95.0	10/04/2012 12:30 PM	10/04/2012 4:20 PM
1210020-338	B21-1-100	10/04/2012 12:35 PM	10/04/2012 4:20 PM
1210020-341	B21-2-35.0	10/11/2012 9:20 AM	10/11/2012 2:00 PM
1210020-342	B21-2-40.0	10/11/2012 9:26 AM	10/11/2012 2:00 PM
1210020-344	B21-2-50.0	10/11/2012 10:09 AM	10/11/2012 2:00 PM
1210020-345	B21-2-55.0	10/11/2012 10:20 AM	10/11/2012 2:00 PM
1210020-346	B21-2-60.0	10/11/2012 10:30 AM	10/11/2012 2:00 PM
1210020-348	B21-2-70.0	10/11/2012 10:58 AM	10/11/2012 2:00 PM
1210020-349	B21-2-75.0	10/11/2012 11:45 AM	10/11/2012 2:00 PM
1210020-350	B21-2-80.0	10/11/2012 11:56 AM	10/11/2012 2:00 PM
1210020-351	B21-2-85.0	10/11/2012 12:15 PM	10/11/2012 2:00 PM
1210020-352	B21-2-90.0	10/11/2012 12:23 PM	10/11/2012 2:00 PM
1210020-353	B21-2-95.0	10/11/2012 12:30 PM	10/11/2012 2:00 PM
1210020-354	B21-2-100	10/11/2012 12:45 PM	10/11/2012 2:00 PM

Note: If no "Time Collected" is supplied, a default of 12:00AM is assigned

CLIENT: GeoEngineers, Inc. - Redmond**Project:** Rufus 2.0 WO11

I. SAMPLE RECEIPT:

All samples were received intact. The internal ice chest temperatures were measured on receipt and are recorded on the attached Sample Receipt Checklist.

II. GENERAL REPORTING COMMENTS:

Results are reported on a wet weight basis unless dry-weight correction is denoted in the units field on the analytical report ("mg/kg-dry" or "ug/kg-dry").

Matrix Spike (MS) and MS Duplicate (MSD) samples are tested from an analytical batch of "like" matrix to check for possible matrix effect. The MS and MSD will provide site specific matrix data only for those samples which are spiked by the laboratory. The sample chosen for spike purposes may or may not have been a sample submitted in this sample delivery group. The validity of the analytical procedures for which data is reported in this analytical report is determined by the Laboratory Control Sample (LCS) and the Method Blank (MB). The LCS and the MB are processed with the samples and the MS/MSD to ensure method criteria are achieved throughout the entire analytical process.

III. ANALYSES AND EXCEPTIONS:

Exceptions associated with this report will be footnoted in the analytical results page(s) or the quality control summary page(s) and/or noted below.



Analytical Report

WO#: 1210020

Date Reported: 10/23/2012

Client: GeoEngineers, Inc. - Redmond

Collection Date: 10/5/2012 9:33:00 AM

Project: Rufus 2.0 WO11

Lab ID: 1210020-003

Matrix: Soil

Client Sample ID: B21-3-7.5

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<u>Diesel and Heavy Oil by NWTPH-Dx/Dx Ext.</u>				Batch ID: 3445		Analyst: BR
Diesel (Fuel Oil)	ND	25.7		mg/Kg-dry	1	10/17/2012 5:14:00 AM
Heavy Oil	ND	64.2		mg/Kg-dry	1	10/17/2012 5:14:00 AM
Surr: 2-Fluorobiphenyl	103	50-150		%REC	1	10/17/2012 5:14:00 AM
Surr: o-Terphenyl	104	50-150		%REC	1	10/17/2012 5:14:00 AM

<u>Polyaromatic Hydrocarbons by EPA Method 8270 (SIM)</u>				Batch ID: 3447		Analyst: PH
Naphthalene	ND	61.5		µg/Kg-dry	1	10/18/2012 5:40:00 PM
2-Methylnaphthalene	ND	61.5		µg/Kg-dry	1	10/18/2012 5:40:00 PM
1-Methylnaphthalene	ND	61.5		µg/Kg-dry	1	10/18/2012 5:40:00 PM
Acenaphthylene	ND	61.5		µg/Kg-dry	1	10/18/2012 5:40:00 PM
Acenaphthene	ND	61.5		µg/Kg-dry	1	10/18/2012 5:40:00 PM
Fluorene	ND	61.5		µg/Kg-dry	1	10/18/2012 5:40:00 PM
Phenanthrene	ND	61.5		µg/Kg-dry	1	10/18/2012 5:40:00 PM
Anthracene	ND	61.5		µg/Kg-dry	1	10/18/2012 5:40:00 PM
Fluoranthene	ND	61.5		µg/Kg-dry	1	10/18/2012 5:40:00 PM
Pyrene	ND	61.5		µg/Kg-dry	1	10/18/2012 5:40:00 PM
Benz(a)anthracene	ND	61.5		µg/Kg-dry	1	10/18/2012 5:40:00 PM
Chrysene	ND	61.5		µg/Kg-dry	1	10/18/2012 5:40:00 PM
Benzo(b)fluoranthene	ND	61.5		µg/Kg-dry	1	10/18/2012 5:40:00 PM
Benzo(k)fluoranthene	ND	61.5		µg/Kg-dry	1	10/18/2012 5:40:00 PM
Benzo(a)pyrene	ND	61.5		µg/Kg-dry	1	10/18/2012 5:40:00 PM
Indeno(1,2,3-cd)pyrene	ND	61.5		µg/Kg-dry	1	10/18/2012 5:40:00 PM
Dibenz(a,h)anthracene	ND	61.5		µg/Kg-dry	1	10/18/2012 5:40:00 PM
Benzo(g,h,i)perylene	ND	61.5		µg/Kg-dry	1	10/18/2012 5:40:00 PM
Surr: 2-Fluorobiphenyl	90.3	50.4-142		%REC	1	10/18/2012 5:40:00 PM
Surr: Terphenyl-d14 (surr)	109	48.8-157		%REC	1	10/18/2012 5:40:00 PM

<u>Gasoline by NWTPH-Gx</u>				Batch ID: R6222		Analyst: EM
Gasoline	ND	5.92		mg/Kg-dry	1	10/16/2012 3:13:00 AM
Surr: 1,2-Dichloroethane-d4	106	65-135		%REC	1	10/16/2012 3:13:00 AM
Surr: Fluorobenzene	98.8	65-135		%REC	1	10/16/2012 3:13:00 AM

Qualifiers:	B	Analyte detected in the associated Method Blank	D	Dilution was required
	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
	J	Analyte detected below quantitation limits	ND	Not detected at the Reporting Limit
	RL	Reporting Limit	S	Spike recovery outside accepted recovery limits



Analytical Report

WO#: 1210020

Date Reported: 10/23/2012

Client: GeoEngineers, Inc. - Redmond

Collection Date: 10/5/2012 9:33:00 AM

Project: Rufus 2.0 WO11

Lab ID: 1210020-003

Matrix: Soil

Client Sample ID: B21-3-7.5

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Volatile Organic Compounds by EPA Method 8260				Batch ID: 3439		Analyst: EM
Dichlorodifluoromethane (CFC-12)	ND	0.0711		mg/Kg-dry	1	10/16/2012 3:13:00 AM
Chloromethane	ND	0.0711		mg/Kg-dry	1	10/16/2012 3:13:00 AM
Vinyl chloride	ND	0.00237		mg/Kg-dry	1	10/16/2012 3:13:00 AM
Bromomethane	ND	0.107		mg/Kg-dry	1	10/16/2012 3:13:00 AM
Trichlorofluoromethane (CFC-11)	ND	0.0592		mg/Kg-dry	1	10/16/2012 3:13:00 AM
Chloroethane	ND	0.0711		mg/Kg-dry	1	10/16/2012 3:13:00 AM
1,1-Dichloroethene	ND	0.0592		mg/Kg-dry	1	10/16/2012 3:13:00 AM
Methylene chloride	ND	0.0237		mg/Kg-dry	1	10/16/2012 3:13:00 AM
trans-1,2-Dichloroethene	ND	0.0237		mg/Kg-dry	1	10/16/2012 3:13:00 AM
Methyl tert-butyl ether (MTBE)	ND	0.0592		mg/Kg-dry	1	10/16/2012 3:13:00 AM
1,1-Dichloroethane	ND	0.0237		mg/Kg-dry	1	10/16/2012 3:13:00 AM
2,2-Dichloropropane	ND	0.0592		mg/Kg-dry	1	10/16/2012 3:13:00 AM
cis-1,2-Dichloroethene	ND	0.0237		mg/Kg-dry	1	10/16/2012 3:13:00 AM
Chloroform	ND	0.0237		mg/Kg-dry	1	10/16/2012 3:13:00 AM
1,1,1-Trichloroethane (TCA)	ND	0.0237		mg/Kg-dry	1	10/16/2012 3:13:00 AM
1,1-Dichloropropene	ND	0.0237		mg/Kg-dry	1	10/16/2012 3:13:00 AM
Carbon tetrachloride	ND	0.0237		mg/Kg-dry	1	10/16/2012 3:13:00 AM
1,2-Dichloroethane	ND	0.0355		mg/Kg-dry	1	10/16/2012 3:13:00 AM
Benzene	ND	0.0237		mg/Kg-dry	1	10/16/2012 3:13:00 AM
Trichloroethene (TCE)	ND	0.0355		mg/Kg-dry	1	10/16/2012 3:13:00 AM
1,2-Dichloropropane	ND	0.0237		mg/Kg-dry	1	10/16/2012 3:13:00 AM
Bromodichloromethane	ND	0.0237		mg/Kg-dry	1	10/16/2012 3:13:00 AM
Dibromomethane	ND	0.0474		mg/Kg-dry	1	10/16/2012 3:13:00 AM
cis-1,3-Dichloropropene	ND	0.0237		mg/Kg-dry	1	10/16/2012 3:13:00 AM
Toluene	ND	0.0237		mg/Kg-dry	1	10/16/2012 3:13:00 AM
trans-1,3-Dichloropropene	ND	0.0355		mg/Kg-dry	1	10/16/2012 3:13:00 AM
1,1,2-Trichloroethane	ND	0.0355		mg/Kg-dry	1	10/16/2012 3:13:00 AM
1,3-Dichloropropane	ND	0.0592		mg/Kg-dry	1	10/16/2012 3:13:00 AM
Tetrachloroethene (PCE)	ND	0.0237		mg/Kg-dry	1	10/16/2012 3:13:00 AM
Dibromochloromethane	ND	0.0355		mg/Kg-dry	1	10/16/2012 3:13:00 AM
1,2-Dibromoethane (EDB)	ND	0.00592		mg/Kg-dry	1	10/16/2012 3:13:00 AM
Chlorobenzene	ND	0.0237		mg/Kg-dry	1	10/16/2012 3:13:00 AM
1,1,1,2-Tetrachloroethane	ND	0.0355		mg/Kg-dry	1	10/16/2012 3:13:00 AM
Ethylbenzene	ND	0.0355		mg/Kg-dry	1	10/16/2012 3:13:00 AM
m,p-Xylene	ND	0.0237		mg/Kg-dry	1	10/16/2012 3:13:00 AM

Qualifiers: B Analyte detected in the associated Method Blank
E Value above quantitation range
J Analyte detected below quantitation limits
RL Reporting Limit

D Dilution was required
H Holding times for preparation or analysis exceeded
ND Not detected at the Reporting Limit
S Spike recovery outside accepted recovery limits



Analytical Report

WO#: 1210020

Date Reported: 10/23/2012

Client: GeoEngineers, Inc. - Redmond

Collection Date: 10/5/2012 9:33:00 AM

Project: Rufus 2.0 WO11

Lab ID: 1210020-003

Matrix: Soil

Client Sample ID: B21-3-7.5

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
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Volatile Organic Compounds by EPA Method 8260

Batch ID: 3439

Analyst: EM

o-Xylene	ND	0.0237		mg/Kg-dry	1	10/16/2012 3:13:00 AM
Styrene	ND	0.0237		mg/Kg-dry	1	10/16/2012 3:13:00 AM
Isopropylbenzene	ND	0.0948		mg/Kg-dry	1	10/16/2012 3:13:00 AM
Bromoform	ND	0.0237		mg/Kg-dry	1	10/16/2012 3:13:00 AM
1,1,2,2-Tetrachloroethane	ND	0.0237		mg/Kg-dry	1	10/16/2012 3:13:00 AM
n-Propylbenzene	ND	0.0237		mg/Kg-dry	1	10/16/2012 3:13:00 AM
Bromobenzene	ND	0.0355		mg/Kg-dry	1	10/16/2012 3:13:00 AM
1,3,5-Trimethylbenzene	ND	0.0237		mg/Kg-dry	1	10/16/2012 3:13:00 AM
2-Chlorotoluene	ND	0.0237		mg/Kg-dry	1	10/16/2012 3:13:00 AM
4-Chlorotoluene	ND	0.0237		mg/Kg-dry	1	10/16/2012 3:13:00 AM
tert-Butylbenzene	ND	0.0237		mg/Kg-dry	1	10/16/2012 3:13:00 AM
1,2,3-Trichloropropane	ND	0.0237		mg/Kg-dry	1	10/16/2012 3:13:00 AM
1,2,4-Trichlorobenzene	ND	0.0592		mg/Kg-dry	1	10/16/2012 3:13:00 AM
sec-Butylbenzene	ND	0.0237		mg/Kg-dry	1	10/16/2012 3:13:00 AM
4-Isopropyltoluene	ND	0.0237		mg/Kg-dry	1	10/16/2012 3:13:00 AM
1,3-Dichlorobenzene	ND	0.0237		mg/Kg-dry	1	10/16/2012 3:13:00 AM
1,4-Dichlorobenzene	ND	0.0237		mg/Kg-dry	1	10/16/2012 3:13:00 AM
n-Butylbenzene	ND	0.0237		mg/Kg-dry	1	10/16/2012 3:13:00 AM
1,2-Dichlorobenzene	ND	0.0237		mg/Kg-dry	1	10/16/2012 3:13:00 AM
1,2-Dibromo-3-chloropropane	ND	0.0355		mg/Kg-dry	1	10/16/2012 3:13:00 AM
1,2,4-Trimethylbenzene	ND	0.0237		mg/Kg-dry	1	10/16/2012 3:13:00 AM
Hexachlorobutadiene	ND	0.118		mg/Kg-dry	1	10/16/2012 3:13:00 AM
Naphthalene	ND	0.0355		mg/Kg-dry	1	10/16/2012 3:13:00 AM
1,2,3-Trichlorobenzene	ND	0.0237		mg/Kg-dry	1	10/16/2012 3:13:00 AM
Surr: 1-Bromo-4-fluorobenzene	101	63.1-141		%REC	1	10/16/2012 3:13:00 AM
Surr: Dibromofluoromethane	98.6	67.6-119		%REC	1	10/16/2012 3:13:00 AM
Surr: Toluene-d8	100	78.5-126		%REC	1	10/16/2012 3:13:00 AM

Total Metals by EPA Method 6020

Batch ID: 3449

Analyst: SG

Arsenic	5.04	0.104		mg/Kg-dry	1	10/16/2012 9:15:48 PM
Barium	160	0.521		mg/Kg-dry	1	10/16/2012 9:15:48 PM
Cadmium	ND	0.208		mg/Kg-dry	1	10/16/2012 9:15:48 PM
Chromium	74.4	0.104		mg/Kg-dry	1	10/16/2012 9:15:48 PM
Lead	5.41	0.208		mg/Kg-dry	1	10/16/2012 9:15:48 PM

Qualifiers: B Analyte detected in the associated Method Blank
E Value above quantitation range
J Analyte detected below quantitation limits
RL Reporting Limit

D Dilution was required
H Holding times for preparation or analysis exceeded
ND Not detected at the Reporting Limit
S Spike recovery outside accepted recovery limits



Analytical Report

WO#: 1210020

Date Reported: 10/23/2012

Client: GeoEngineers, Inc. - Redmond

Collection Date: 10/5/2012 9:33:00 AM

Project: Rufus 2.0 WO11

Lab ID: 1210020-003

Matrix: Soil

Client Sample ID: B21-3-7.5

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<u>Total Metals by EPA Method 6020</u>				Batch ID: 3449		Analyst: SG
Selenium	ND	0.521		mg/Kg-dry	1	10/16/2012 9:15:48 PM
Silver	ND	0.104		mg/Kg-dry	1	10/16/2012 9:15:48 PM
<u>Mercury by EPA Method 7471</u>				Batch ID: 3441		Analyst: SG
Mercury	ND	0.327		mg/Kg-dry	1	10/16/2012 7:37:13 PM
<u>Sample Moisture (Percent Moisture)</u>				Batch ID: R6156		Analyst: CM
Percent Moisture	25.0			wt%	1	10/16/2012 10:35:24 AM

Qualifiers: B Analyte detected in the associated Method Blank
E Value above quantitation range
J Analyte detected below quantitation limits
RL Reporting Limit

D Dilution was required
H Holding times for preparation or analysis exceeded
ND Not detected at the Reporting Limit
S Spike recovery outside accepted recovery limits



Analytical Report

WO#: 1210020

Date Reported: 10/23/2012

Client: GeoEngineers, Inc. - Redmond

Collection Date: 10/5/2012 9:42:00 AM

Project: Rufus 2.0 WO11

Lab ID: 1210020-014

Matrix: Soil

Client Sample ID: B21-4-5.0

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<u>Diesel and Heavy Oil by NWTPH-Dx/Dx Ext.</u>				Batch ID: 3445		Analyst: BR
Diesel (Fuel Oil)	ND	22.4		mg/Kg-dry	1	10/17/2012 6:07:00 AM
Heavy Oil	ND	55.9		mg/Kg-dry	1	10/17/2012 6:07:00 AM
Surr: 2-Fluorobiphenyl	105	50-150		%REC	1	10/17/2012 6:07:00 AM
Surr: o-Terphenyl	106	50-150		%REC	1	10/17/2012 6:07:00 AM
<u>Polyaromatic Hydrocarbons by EPA Method 8270 (SIM)</u>				Batch ID: 3447		Analyst: PH
Naphthalene	ND	52.6		µg/Kg-dry	1	10/18/2012 6:31:00 PM
2-Methylnaphthalene	ND	52.6		µg/Kg-dry	1	10/18/2012 6:31:00 PM
1-Methylnaphthalene	ND	52.6		µg/Kg-dry	1	10/18/2012 6:31:00 PM
Acenaphthylene	ND	52.6		µg/Kg-dry	1	10/18/2012 6:31:00 PM
Acenaphthene	ND	52.6		µg/Kg-dry	1	10/18/2012 6:31:00 PM
Fluorene	ND	52.6		µg/Kg-dry	1	10/18/2012 6:31:00 PM
Phenanthrene	ND	52.6		µg/Kg-dry	1	10/18/2012 6:31:00 PM
Anthracene	ND	52.6		µg/Kg-dry	1	10/18/2012 6:31:00 PM
Fluoranthene	ND	52.6		µg/Kg-dry	1	10/18/2012 6:31:00 PM
Pyrene	ND	52.6		µg/Kg-dry	1	10/18/2012 6:31:00 PM
Benz(a)anthracene	ND	52.6		µg/Kg-dry	1	10/18/2012 6:31:00 PM
Chrysene	ND	52.6		µg/Kg-dry	1	10/18/2012 6:31:00 PM
Benzo(b)fluoranthene	ND	52.6		µg/Kg-dry	1	10/18/2012 6:31:00 PM
Benzo(k)fluoranthene	ND	52.6		µg/Kg-dry	1	10/18/2012 6:31:00 PM
Benzo(a)pyrene	ND	52.6		µg/Kg-dry	1	10/18/2012 6:31:00 PM
Indeno(1,2,3-cd)pyrene	ND	52.6		µg/Kg-dry	1	10/18/2012 6:31:00 PM
Dibenz(a,h)anthracene	ND	52.6		µg/Kg-dry	1	10/18/2012 6:31:00 PM
Benzo(g,h,i)perylene	ND	52.6		µg/Kg-dry	1	10/18/2012 6:31:00 PM
Surr: 2-Fluorobiphenyl	60.9	50.4-142		%REC	1	10/18/2012 6:31:00 PM
Surr: Terphenyl-d14 (surr)	85.3	48.8-157		%REC	1	10/18/2012 6:31:00 PM
<u>Gasoline by NWTPH-Gx</u>				Batch ID: R6222		Analyst: EM
Gasoline	ND	5.02		mg/Kg-dry	1	10/16/2012 4:13:00 AM
Surr: 1,2-Dichloroethane-d4	106	65-135		%REC	1	10/16/2012 4:13:00 AM
Surr: Fluorobenzene	100	65-135		%REC	1	10/16/2012 4:13:00 AM

Qualifiers: B Analyte detected in the associated Method Blank
E Value above quantitation range
J Analyte detected below quantitation limits
RL Reporting Limit

D Dilution was required
H Holding times for preparation or analysis exceeded
ND Not detected at the Reporting Limit
S Spike recovery outside accepted recovery limits



Analytical Report

WO#: 1210020

Date Reported: 10/23/2012

Client: GeoEngineers, Inc. - Redmond

Collection Date: 10/5/2012 9:42:00 AM

Project: Rufus 2.0 WO11

Lab ID: 1210020-014

Matrix: Soil

Client Sample ID: B21-4-5.0

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
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Volatile Organic Compounds by EPA Method 8260

Batch ID: 3439

Analyst: EM

Dichlorodifluoromethane (CFC-12)	ND	0.0602		mg/Kg-dry	1	10/16/2012 4:13:00 AM
Chloromethane	ND	0.0602		mg/Kg-dry	1	10/16/2012 4:13:00 AM
Vinyl chloride	ND	0.00201		mg/Kg-dry	1	10/16/2012 4:13:00 AM
Bromomethane	ND	0.0903		mg/Kg-dry	1	10/16/2012 4:13:00 AM
Trichlorofluoromethane (CFC-11)	ND	0.0502		mg/Kg-dry	1	10/16/2012 4:13:00 AM
Chloroethane	ND	0.0602		mg/Kg-dry	1	10/16/2012 4:13:00 AM
1,1-Dichloroethene	ND	0.0502		mg/Kg-dry	1	10/16/2012 4:13:00 AM
Methylene chloride	ND	0.0201		mg/Kg-dry	1	10/16/2012 4:13:00 AM
trans-1,2-Dichloroethene	ND	0.0201		mg/Kg-dry	1	10/16/2012 4:13:00 AM
Methyl tert-butyl ether (MTBE)	ND	0.0502		mg/Kg-dry	1	10/16/2012 4:13:00 AM
1,1-Dichloroethane	ND	0.0201		mg/Kg-dry	1	10/16/2012 4:13:00 AM
2,2-Dichloropropane	ND	0.0502		mg/Kg-dry	1	10/16/2012 4:13:00 AM
cis-1,2-Dichloroethene	ND	0.0201		mg/Kg-dry	1	10/16/2012 4:13:00 AM
Chloroform	ND	0.0201		mg/Kg-dry	1	10/16/2012 4:13:00 AM
1,1,1-Trichloroethane (TCA)	ND	0.0201		mg/Kg-dry	1	10/16/2012 4:13:00 AM
1,1-Dichloropropene	ND	0.0201		mg/Kg-dry	1	10/16/2012 4:13:00 AM
Carbon tetrachloride	ND	0.0201		mg/Kg-dry	1	10/16/2012 4:13:00 AM
1,2-Dichloroethane	ND	0.0301		mg/Kg-dry	1	10/16/2012 4:13:00 AM
Benzene	ND	0.0201		mg/Kg-dry	1	10/16/2012 4:13:00 AM
Trichloroethene (TCE)	ND	0.0301		mg/Kg-dry	1	10/16/2012 4:13:00 AM
1,2-Dichloropropane	ND	0.0201		mg/Kg-dry	1	10/16/2012 4:13:00 AM
Bromodichloromethane	ND	0.0201		mg/Kg-dry	1	10/16/2012 4:13:00 AM
Dibromomethane	ND	0.0401		mg/Kg-dry	1	10/16/2012 4:13:00 AM
cis-1,3-Dichloropropene	ND	0.0201		mg/Kg-dry	1	10/16/2012 4:13:00 AM
Toluene	ND	0.0201		mg/Kg-dry	1	10/16/2012 4:13:00 AM
trans-1,3-Dichloropropene	ND	0.0301		mg/Kg-dry	1	10/16/2012 4:13:00 AM
1,1,2-Trichloroethane	ND	0.0301		mg/Kg-dry	1	10/16/2012 4:13:00 AM
1,3-Dichloropropane	ND	0.0502		mg/Kg-dry	1	10/16/2012 4:13:00 AM
Tetrachloroethene (PCE)	ND	0.0201		mg/Kg-dry	1	10/16/2012 4:13:00 AM
Dibromochloromethane	ND	0.0301		mg/Kg-dry	1	10/16/2012 4:13:00 AM
1,2-Dibromoethane (EDB)	ND	0.00502		mg/Kg-dry	1	10/16/2012 4:13:00 AM
Chlorobenzene	ND	0.0201		mg/Kg-dry	1	10/16/2012 4:13:00 AM
1,1,1,2-Tetrachloroethane	ND	0.0301		mg/Kg-dry	1	10/16/2012 4:13:00 AM
Ethylbenzene	ND	0.0301		mg/Kg-dry	1	10/16/2012 4:13:00 AM
m,p-Xylene	ND	0.0201		mg/Kg-dry	1	10/16/2012 4:13:00 AM

Qualifiers: B Analyte detected in the associated Method Blank
E Value above quantitation range
J Analyte detected below quantitation limits
RL Reporting Limit

D Dilution was required
H Holding times for preparation or analysis exceeded
ND Not detected at the Reporting Limit
S Spike recovery outside accepted recovery limits



Analytical Report

WO#: 1210020

Date Reported: 10/23/2012

Client: GeoEngineers, Inc. - Redmond

Collection Date: 10/5/2012 9:42:00 AM

Project: Rufus 2.0 WO11

Lab ID: 1210020-014

Matrix: Soil

Client Sample ID: B21-4-5.0

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Volatile Organic Compounds by EPA Method 8260				Batch ID: 3439		Analyst: EM
o-Xylene	ND	0.0201		mg/Kg-dry	1	10/16/2012 4:13:00 AM
Styrene	ND	0.0201		mg/Kg-dry	1	10/16/2012 4:13:00 AM
Isopropylbenzene	ND	0.0803		mg/Kg-dry	1	10/16/2012 4:13:00 AM
Bromoform	ND	0.0201		mg/Kg-dry	1	10/16/2012 4:13:00 AM
1,1,2,2-Tetrachloroethane	ND	0.0201		mg/Kg-dry	1	10/16/2012 4:13:00 AM
n-Propylbenzene	ND	0.0201		mg/Kg-dry	1	10/16/2012 4:13:00 AM
Bromobenzene	ND	0.0301		mg/Kg-dry	1	10/16/2012 4:13:00 AM
1,3,5-Trimethylbenzene	ND	0.0201		mg/Kg-dry	1	10/16/2012 4:13:00 AM
2-Chlorotoluene	ND	0.0201		mg/Kg-dry	1	10/16/2012 4:13:00 AM
4-Chlorotoluene	ND	0.0201		mg/Kg-dry	1	10/16/2012 4:13:00 AM
tert-Butylbenzene	ND	0.0201		mg/Kg-dry	1	10/16/2012 4:13:00 AM
1,2,3-Trichloropropane	ND	0.0201		mg/Kg-dry	1	10/16/2012 4:13:00 AM
1,2,4-Trichlorobenzene	ND	0.0502		mg/Kg-dry	1	10/16/2012 4:13:00 AM
sec-Butylbenzene	ND	0.0201		mg/Kg-dry	1	10/16/2012 4:13:00 AM
4-Isopropyltoluene	ND	0.0201		mg/Kg-dry	1	10/16/2012 4:13:00 AM
1,3-Dichlorobenzene	ND	0.0201		mg/Kg-dry	1	10/16/2012 4:13:00 AM
1,4-Dichlorobenzene	ND	0.0201		mg/Kg-dry	1	10/16/2012 4:13:00 AM
n-Butylbenzene	ND	0.0201		mg/Kg-dry	1	10/16/2012 4:13:00 AM
1,2-Dichlorobenzene	ND	0.0201		mg/Kg-dry	1	10/16/2012 4:13:00 AM
1,2-Dibromo-3-chloropropane	ND	0.0301		mg/Kg-dry	1	10/16/2012 4:13:00 AM
1,2,4-Trimethylbenzene	ND	0.0201		mg/Kg-dry	1	10/16/2012 4:13:00 AM
Hexachlorobutadiene	ND	0.100		mg/Kg-dry	1	10/16/2012 4:13:00 AM
Naphthalene	ND	0.0301		mg/Kg-dry	1	10/16/2012 4:13:00 AM
1,2,3-Trichlorobenzene	ND	0.0201		mg/Kg-dry	1	10/16/2012 4:13:00 AM
Surr: 1-Bromo-4-fluorobenzene	98.1	63.1-141		%REC	1	10/16/2012 4:13:00 AM
Surr: Dibromofluoromethane	98.0	67.6-119		%REC	1	10/16/2012 4:13:00 AM
Surr: Toluene-d8	101	78.5-126		%REC	1	10/16/2012 4:13:00 AM

Total Metals by EPA Method 6020

Batch ID: 3449

Analyst: SG

Arsenic	7.24	0.0769		mg/Kg-dry	1	10/16/2012 10:29:54 PM
Barium	106	0.385		mg/Kg-dry	1	10/16/2012 10:29:54 PM
Cadmium	ND	0.154		mg/Kg-dry	1	10/16/2012 10:29:54 PM
Chromium	49.8	0.0769		mg/Kg-dry	1	10/16/2012 10:29:54 PM
Lead	3.46	0.154		mg/Kg-dry	1	10/16/2012 10:29:54 PM

Qualifiers: B Analyte detected in the associated Method Blank
E Value above quantitation range
J Analyte detected below quantitation limits
RL Reporting Limit

D Dilution was required
H Holding times for preparation or analysis exceeded
ND Not detected at the Reporting Limit
S Spike recovery outside accepted recovery limits



Analytical Report

WO#: 1210020

Date Reported: 10/23/2012

Client: GeoEngineers, Inc. - Redmond

Collection Date: 10/5/2012 9:42:00 AM

Project: Rufus 2.0 WO11

Lab ID: 1210020-014

Matrix: Soil

Client Sample ID: B21-4-5.0

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<u>Total Metals by EPA Method 6020</u>				Batch ID: 3449		Analyst: SG
Selenium	ND	0.385		mg/Kg-dry	1	10/16/2012 10:29:54 PM
Silver	ND	0.0769		mg/Kg-dry	1	10/16/2012 10:29:54 PM
<u>Mercury by EPA Method 7471</u>				Batch ID: 3441		Analyst: SG
Mercury	ND	0.290		mg/Kg-dry	1	10/16/2012 7:38:49 PM
<u>Sample Moisture (Percent Moisture)</u>				Batch ID: R6156		Analyst: CM
Percent Moisture	15.6			wt%	1	10/16/2012 10:35:24 AM

Qualifiers: B Analyte detected in the associated Method Blank
E Value above quantitation range
J Analyte detected below quantitation limits
RL Reporting Limit

D Dilution was required
H Holding times for preparation or analysis exceeded
ND Not detected at the Reporting Limit
S Spike recovery outside accepted recovery limits



Analytical Report

WO#: 1210020

Date Reported: 10/23/2012

Client: GeoEngineers, Inc. - Redmond

Collection Date: 10/5/2012 10:25:00 AM

Project: Rufus 2.0 WO11

Lab ID: 1210020-027

Matrix: Soil

Client Sample ID: B21-5-7.5

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
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Diesel and Heavy Oil by NWTPH-Dx/Dx Ext.

Batch ID: 3445

Analyst: BR

Diesel (Fuel Oil)	ND	23.6		mg/Kg-dry	1	10/17/2012 6:34:00 AM
Heavy Oil	ND	59.0		mg/Kg-dry	1	10/17/2012 6:34:00 AM
Surr: 2-Fluorobiphenyl	106	50-150		%REC	1	10/17/2012 6:34:00 AM
Surr: o-Terphenyl	106	50-150		%REC	1	10/17/2012 6:34:00 AM

Polyaromatic Hydrocarbons by EPA Method 8270 (SIM)

Batch ID: 3447

Analyst: PH

Naphthalene	ND	55.0		µg/Kg-dry	1	10/18/2012 7:22:00 PM
2-Methylnaphthalene	ND	55.0		µg/Kg-dry	1	10/18/2012 7:22:00 PM
1-Methylnaphthalene	ND	55.0		µg/Kg-dry	1	10/18/2012 7:22:00 PM
Acenaphthylene	ND	55.0		µg/Kg-dry	1	10/18/2012 7:22:00 PM
Acenaphthene	ND	55.0		µg/Kg-dry	1	10/18/2012 7:22:00 PM
Fluorene	ND	55.0		µg/Kg-dry	1	10/18/2012 7:22:00 PM
Phenanthrene	ND	55.0		µg/Kg-dry	1	10/18/2012 7:22:00 PM
Anthracene	ND	55.0		µg/Kg-dry	1	10/18/2012 7:22:00 PM
Fluoranthene	ND	55.0		µg/Kg-dry	1	10/18/2012 7:22:00 PM
Pyrene	ND	55.0		µg/Kg-dry	1	10/18/2012 7:22:00 PM
Benz(a)anthracene	ND	55.0		µg/Kg-dry	1	10/18/2012 7:22:00 PM
Chrysene	ND	55.0		µg/Kg-dry	1	10/18/2012 7:22:00 PM
Benzo(b)fluoranthene	ND	55.0		µg/Kg-dry	1	10/18/2012 7:22:00 PM
Benzo(k)fluoranthene	ND	55.0		µg/Kg-dry	1	10/18/2012 7:22:00 PM
Benzo(a)pyrene	ND	55.0		µg/Kg-dry	1	10/18/2012 7:22:00 PM
Indeno(1,2,3-cd)pyrene	ND	55.0		µg/Kg-dry	1	10/18/2012 7:22:00 PM
Dibenz(a,h)anthracene	ND	55.0		µg/Kg-dry	1	10/18/2012 7:22:00 PM
Benzo(g,h,i)perylene	ND	55.0		µg/Kg-dry	1	10/18/2012 7:22:00 PM
Surr: 2-Fluorobiphenyl	90.0	50.4-142		%REC	1	10/18/2012 7:22:00 PM
Surr: Terphenyl-d14 (surr)	102	48.8-157		%REC	1	10/18/2012 7:22:00 PM

Gasoline by NWTPH-Gx

Batch ID: R6222

Analyst: EM

Gasoline	ND	5.31		mg/Kg-dry	1	10/16/2012 5:42:00 AM
Surr: 1,2-Dichloroethane-d4	106	65-135		%REC	1	10/16/2012 5:42:00 AM
Surr: Fluorobenzene	98.5	65-135		%REC	1	10/16/2012 5:42:00 AM

Qualifiers: B Analyte detected in the associated Method Blank
E Value above quantitation range
J Analyte detected below quantitation limits
RL Reporting Limit

D Dilution was required
H Holding times for preparation or analysis exceeded
ND Not detected at the Reporting Limit
S Spike recovery outside accepted recovery limits



Analytical Report

WO#: 1210020

Date Reported: 10/23/2012

Client: GeoEngineers, Inc. - Redmond

Collection Date: 10/5/2012 10:25:00 AM

Project: Rufus 2.0 WO11

Lab ID: 1210020-027

Matrix: Soil

Client Sample ID: B21-5-7.5

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
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Volatile Organic Compounds by EPA Method 8260

Batch ID: 3439

Analyst: EM

Dichlorodifluoromethane (CFC-12)	ND	0.0637		mg/Kg-dry	1	10/16/2012 5:42:00 AM
Chloromethane	ND	0.0637		mg/Kg-dry	1	10/16/2012 5:42:00 AM
Vinyl chloride	ND	0.00212		mg/Kg-dry	1	10/16/2012 5:42:00 AM
Bromomethane	ND	0.0956		mg/Kg-dry	1	10/16/2012 5:42:00 AM
Trichlorofluoromethane (CFC-11)	ND	0.0531		mg/Kg-dry	1	10/16/2012 5:42:00 AM
Chloroethane	ND	0.0637		mg/Kg-dry	1	10/16/2012 5:42:00 AM
1,1-Dichloroethene	ND	0.0531		mg/Kg-dry	1	10/16/2012 5:42:00 AM
Methylene chloride	ND	0.0212		mg/Kg-dry	1	10/16/2012 5:42:00 AM
trans-1,2-Dichloroethene	ND	0.0212		mg/Kg-dry	1	10/16/2012 5:42:00 AM
Methyl tert-butyl ether (MTBE)	ND	0.0531		mg/Kg-dry	1	10/16/2012 5:42:00 AM
1,1-Dichloroethane	ND	0.0212		mg/Kg-dry	1	10/16/2012 5:42:00 AM
2,2-Dichloropropane	ND	0.0531		mg/Kg-dry	1	10/16/2012 5:42:00 AM
cis-1,2-Dichloroethene	ND	0.0212		mg/Kg-dry	1	10/16/2012 5:42:00 AM
Chloroform	ND	0.0212		mg/Kg-dry	1	10/16/2012 5:42:00 AM
1,1,1-Trichloroethane (TCA)	ND	0.0212		mg/Kg-dry	1	10/16/2012 5:42:00 AM
1,1-Dichloropropene	ND	0.0212		mg/Kg-dry	1	10/16/2012 5:42:00 AM
Carbon tetrachloride	ND	0.0212		mg/Kg-dry	1	10/16/2012 5:42:00 AM
1,2-Dichloroethane	ND	0.0319		mg/Kg-dry	1	10/16/2012 5:42:00 AM
Benzene	ND	0.0212		mg/Kg-dry	1	10/16/2012 5:42:00 AM
Trichloroethene (TCE)	ND	0.0319		mg/Kg-dry	1	10/16/2012 5:42:00 AM
1,2-Dichloropropane	ND	0.0212		mg/Kg-dry	1	10/16/2012 5:42:00 AM
Bromodichloromethane	ND	0.0212		mg/Kg-dry	1	10/16/2012 5:42:00 AM
Dibromomethane	ND	0.0425		mg/Kg-dry	1	10/16/2012 5:42:00 AM
cis-1,3-Dichloropropene	ND	0.0212		mg/Kg-dry	1	10/16/2012 5:42:00 AM
Toluene	ND	0.0212		mg/Kg-dry	1	10/16/2012 5:42:00 AM
trans-1,3-Dichloropropene	ND	0.0319		mg/Kg-dry	1	10/16/2012 5:42:00 AM
1,1,2-Trichloroethane	ND	0.0319		mg/Kg-dry	1	10/16/2012 5:42:00 AM
1,3-Dichloropropane	ND	0.0531		mg/Kg-dry	1	10/16/2012 5:42:00 AM
Tetrachloroethene (PCE)	ND	0.0212		mg/Kg-dry	1	10/16/2012 5:42:00 AM
Dibromochloromethane	ND	0.0319		mg/Kg-dry	1	10/16/2012 5:42:00 AM
1,2-Dibromoethane (EDB)	ND	0.00531		mg/Kg-dry	1	10/16/2012 5:42:00 AM
Chlorobenzene	ND	0.0212		mg/Kg-dry	1	10/16/2012 5:42:00 AM
1,1,1,2-Tetrachloroethane	ND	0.0319		mg/Kg-dry	1	10/16/2012 5:42:00 AM
Ethylbenzene	ND	0.0319		mg/Kg-dry	1	10/16/2012 5:42:00 AM
m,p-Xylene	ND	0.0212		mg/Kg-dry	1	10/16/2012 5:42:00 AM

Qualifiers: B Analyte detected in the associated Method Blank
E Value above quantitation range
J Analyte detected below quantitation limits
RL Reporting Limit

D Dilution was required
H Holding times for preparation or analysis exceeded
ND Not detected at the Reporting Limit
S Spike recovery outside accepted recovery limits



Analytical Report

WO#: 1210020

Date Reported: 10/23/2012

Client: GeoEngineers, Inc. - Redmond

Collection Date: 10/5/2012 10:25:00 AM

Project: Rufus 2.0 WO11

Lab ID: 1210020-027

Matrix: Soil

Client Sample ID: B21-5-7.5

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
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Volatile Organic Compounds by EPA Method 8260

Batch ID: 3439

Analyst: EM

o-Xylene	ND	0.0212		mg/Kg-dry	1	10/16/2012 5:42:00 AM
Styrene	ND	0.0212		mg/Kg-dry	1	10/16/2012 5:42:00 AM
Isopropylbenzene	ND	0.0849		mg/Kg-dry	1	10/16/2012 5:42:00 AM
Bromoform	ND	0.0212		mg/Kg-dry	1	10/16/2012 5:42:00 AM
1,1,2,2-Tetrachloroethane	ND	0.0212		mg/Kg-dry	1	10/16/2012 5:42:00 AM
n-Propylbenzene	ND	0.0212		mg/Kg-dry	1	10/16/2012 5:42:00 AM
Bromobenzene	ND	0.0319		mg/Kg-dry	1	10/16/2012 5:42:00 AM
1,3,5-Trimethylbenzene	ND	0.0212		mg/Kg-dry	1	10/16/2012 5:42:00 AM
2-Chlorotoluene	ND	0.0212		mg/Kg-dry	1	10/16/2012 5:42:00 AM
4-Chlorotoluene	ND	0.0212		mg/Kg-dry	1	10/16/2012 5:42:00 AM
tert-Butylbenzene	ND	0.0212		mg/Kg-dry	1	10/16/2012 5:42:00 AM
1,2,3-Trichloropropane	ND	0.0212		mg/Kg-dry	1	10/16/2012 5:42:00 AM
1,2,4-Trichlorobenzene	ND	0.0531		mg/Kg-dry	1	10/16/2012 5:42:00 AM
sec-Butylbenzene	ND	0.0212		mg/Kg-dry	1	10/16/2012 5:42:00 AM
4-Isopropyltoluene	ND	0.0212		mg/Kg-dry	1	10/16/2012 5:42:00 AM
1,3-Dichlorobenzene	ND	0.0212		mg/Kg-dry	1	10/16/2012 5:42:00 AM
1,4-Dichlorobenzene	ND	0.0212		mg/Kg-dry	1	10/16/2012 5:42:00 AM
n-Butylbenzene	ND	0.0212		mg/Kg-dry	1	10/16/2012 5:42:00 AM
1,2-Dichlorobenzene	ND	0.0212		mg/Kg-dry	1	10/16/2012 5:42:00 AM
1,2-Dibromo-3-chloropropane	ND	0.0319		mg/Kg-dry	1	10/16/2012 5:42:00 AM
1,2,4-Trimethylbenzene	ND	0.0212		mg/Kg-dry	1	10/16/2012 5:42:00 AM
Hexachlorobutadiene	ND	0.106		mg/Kg-dry	1	10/16/2012 5:42:00 AM
Naphthalene	ND	0.0319		mg/Kg-dry	1	10/16/2012 5:42:00 AM
1,2,3-Trichlorobenzene	ND	0.0212		mg/Kg-dry	1	10/16/2012 5:42:00 AM
Surr: 1-Bromo-4-fluorobenzene	100	63.1-141		%REC	1	10/16/2012 5:42:00 AM
Surr: Dibromofluoromethane	98.2	67.6-119		%REC	1	10/16/2012 5:42:00 AM
Surr: Toluene-d8	101	78.5-126		%REC	1	10/16/2012 5:42:00 AM

Total Metals by EPA Method 6020

Batch ID: 3449

Analyst: SG

Arsenic	6.54	0.0966		mg/Kg-dry	1	10/16/2012 10:38:57 PM
Barium	138	0.483		mg/Kg-dry	1	10/16/2012 10:38:57 PM
Cadmium	ND	0.193		mg/Kg-dry	1	10/16/2012 10:38:57 PM
Chromium	50.7	0.0966		mg/Kg-dry	1	10/16/2012 10:38:57 PM
Lead	4.39	0.193		mg/Kg-dry	1	10/16/2012 10:38:57 PM

Qualifiers: B Analyte detected in the associated Method Blank
E Value above quantitation range
J Analyte detected below quantitation limits
RL Reporting Limit

D Dilution was required
H Holding times for preparation or analysis exceeded
ND Not detected at the Reporting Limit
S Spike recovery outside accepted recovery limits



Analytical Report

WO#: 1210020

Date Reported: 10/23/2012

Client: GeoEngineers, Inc. - Redmond

Collection Date: 10/5/2012 10:25:00 AM

Project: Rufus 2.0 WO11

Lab ID: 1210020-027

Matrix: Soil

Client Sample ID: B21-5-7.5

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<u>Total Metals by EPA Method 6020</u>				Batch ID: 3449		Analyst: SG
Selenium	ND	0.483		mg/Kg-dry	1	10/16/2012 10:38:57 PM
Silver	ND	0.0966		mg/Kg-dry	1	10/16/2012 10:38:57 PM
<u>Mercury by EPA Method 7471</u>				Batch ID: 3441		Analyst: SG
Mercury	ND	0.302		mg/Kg-dry	1	10/16/2012 7:40:26 PM
<u>Sample Moisture (Percent Moisture)</u>				Batch ID: R6156		Analyst: CM
Percent Moisture	20.4			wt%	1	10/16/2012 10:35:24 AM

Qualifiers: B Analyte detected in the associated Method Blank
E Value above quantitation range
J Analyte detected below quantitation limits
RL Reporting Limit

D Dilution was required
H Holding times for preparation or analysis exceeded
ND Not detected at the Reporting Limit
S Spike recovery outside accepted recovery limits



Analytical Report

WO#: 1210020

Date Reported: 10/23/2012

Client: GeoEngineers, Inc. - Redmond

Collection Date: 10/5/2012 11:45:00 AM

Project: Rufus 2.0 WO11

Lab ID: 1210020-039

Matrix: Soil

Client Sample ID: B21-6-7.5

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<u>Diesel and Heavy Oil by NWTPH-Dx/Dx Ext.</u>				Batch ID: 3445		Analyst: BR
Diesel (Fuel Oil)	ND	24.0		mg/Kg-dry	1	10/17/2012 7:01:00 AM
Heavy Oil	ND	60.0		mg/Kg-dry	1	10/17/2012 7:01:00 AM
Surr: 2-Fluorobiphenyl	102	50-150		%REC	1	10/17/2012 7:01:00 AM
Surr: o-Terphenyl	103	50-150		%REC	1	10/17/2012 7:01:00 AM

<u>Polyaromatic Hydrocarbons by EPA Method 8270 (SIM)</u>				Batch ID: 3447		Analyst: PH
Naphthalene	ND	58.3		µg/Kg-dry	1	10/18/2012 7:48:00 PM
2-Methylnaphthalene	ND	58.3		µg/Kg-dry	1	10/18/2012 7:48:00 PM
1-Methylnaphthalene	ND	58.3		µg/Kg-dry	1	10/18/2012 7:48:00 PM
Acenaphthylene	ND	58.3		µg/Kg-dry	1	10/18/2012 7:48:00 PM
Acenaphthene	ND	58.3		µg/Kg-dry	1	10/18/2012 7:48:00 PM
Fluorene	ND	58.3		µg/Kg-dry	1	10/18/2012 7:48:00 PM
Phenanthrene	ND	58.3		µg/Kg-dry	1	10/18/2012 7:48:00 PM
Anthracene	ND	58.3		µg/Kg-dry	1	10/18/2012 7:48:00 PM
Fluoranthene	ND	58.3		µg/Kg-dry	1	10/18/2012 7:48:00 PM
Pyrene	ND	58.3		µg/Kg-dry	1	10/18/2012 7:48:00 PM
Benz(a)anthracene	ND	58.3		µg/Kg-dry	1	10/18/2012 7:48:00 PM
Chrysene	ND	58.3		µg/Kg-dry	1	10/18/2012 7:48:00 PM
Benzo(b)fluoranthene	ND	58.3		µg/Kg-dry	1	10/18/2012 7:48:00 PM
Benzo(k)fluoranthene	ND	58.3		µg/Kg-dry	1	10/18/2012 7:48:00 PM
Benzo(a)pyrene	ND	58.3		µg/Kg-dry	1	10/18/2012 7:48:00 PM
Indeno(1,2,3-cd)pyrene	ND	58.3		µg/Kg-dry	1	10/18/2012 7:48:00 PM
Dibenz(a,h)anthracene	ND	58.3		µg/Kg-dry	1	10/18/2012 7:48:00 PM
Benzo(g,h,i)perylene	ND	58.3		µg/Kg-dry	1	10/18/2012 7:48:00 PM
Surr: 2-Fluorobiphenyl	64.5	50.4-142		%REC	1	10/18/2012 7:48:00 PM
Surr: Terphenyl-d14 (surr)	74.4	48.8-157		%REC	1	10/18/2012 7:48:00 PM

<u>Gasoline by NWTPH-Gx</u>				Batch ID: R6222		Analyst: EM
Gasoline	ND	5.95		mg/Kg-dry	1	10/16/2012 6:12:00 AM
Surr: 1,2-Dichloroethane-d4	107	65-135		%REC	1	10/16/2012 6:12:00 AM
Surr: Fluorobenzene	100	65-135		%REC	1	10/16/2012 6:12:00 AM

Qualifiers: B Analyte detected in the associated Method Blank
E Value above quantitation range
J Analyte detected below quantitation limits
RL Reporting Limit

D Dilution was required
H Holding times for preparation or analysis exceeded
ND Not detected at the Reporting Limit
S Spike recovery outside accepted recovery limits



Analytical Report

WO#: 1210020

Date Reported: 10/23/2012

Client: GeoEngineers, Inc. - Redmond

Collection Date: 10/5/2012 11:45:00 AM

Project: Rufus 2.0 WO11

Lab ID: 1210020-039

Matrix: Soil

Client Sample ID: B21-6-7.5

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
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Volatile Organic Compounds by EPA Method 8260

Batch ID: 3439

Analyst: EM

Dichlorodifluoromethane (CFC-12)	ND	0.0714		mg/Kg-dry	1	10/16/2012 6:12:00 AM
Chloromethane	ND	0.0714		mg/Kg-dry	1	10/16/2012 6:12:00 AM
Vinyl chloride	ND	0.00238		mg/Kg-dry	1	10/16/2012 6:12:00 AM
Bromomethane	ND	0.107		mg/Kg-dry	1	10/16/2012 6:12:00 AM
Trichlorofluoromethane (CFC-11)	ND	0.0595		mg/Kg-dry	1	10/16/2012 6:12:00 AM
Chloroethane	ND	0.0714		mg/Kg-dry	1	10/16/2012 6:12:00 AM
1,1-Dichloroethene	ND	0.0595		mg/Kg-dry	1	10/16/2012 6:12:00 AM
Methylene chloride	ND	0.0238		mg/Kg-dry	1	10/16/2012 6:12:00 AM
trans-1,2-Dichloroethene	ND	0.0238		mg/Kg-dry	1	10/16/2012 6:12:00 AM
Methyl tert-butyl ether (MTBE)	ND	0.0595		mg/Kg-dry	1	10/16/2012 6:12:00 AM
1,1-Dichloroethane	ND	0.0238		mg/Kg-dry	1	10/16/2012 6:12:00 AM
2,2-Dichloropropane	ND	0.0595		mg/Kg-dry	1	10/16/2012 6:12:00 AM
cis-1,2-Dichloroethene	ND	0.0238		mg/Kg-dry	1	10/16/2012 6:12:00 AM
Chloroform	ND	0.0238		mg/Kg-dry	1	10/16/2012 6:12:00 AM
1,1,1-Trichloroethane (TCA)	ND	0.0238		mg/Kg-dry	1	10/16/2012 6:12:00 AM
1,1-Dichloropropene	ND	0.0238		mg/Kg-dry	1	10/16/2012 6:12:00 AM
Carbon tetrachloride	ND	0.0238		mg/Kg-dry	1	10/16/2012 6:12:00 AM
1,2-Dichloroethane	ND	0.0357		mg/Kg-dry	1	10/16/2012 6:12:00 AM
Benzene	ND	0.0238		mg/Kg-dry	1	10/16/2012 6:12:00 AM
Trichloroethene (TCE)	ND	0.0357		mg/Kg-dry	1	10/16/2012 6:12:00 AM
1,2-Dichloropropane	ND	0.0238		mg/Kg-dry	1	10/16/2012 6:12:00 AM
Bromodichloromethane	ND	0.0238		mg/Kg-dry	1	10/16/2012 6:12:00 AM
Dibromomethane	ND	0.0476		mg/Kg-dry	1	10/16/2012 6:12:00 AM
cis-1,3-Dichloropropene	ND	0.0238		mg/Kg-dry	1	10/16/2012 6:12:00 AM
Toluene	ND	0.0238		mg/Kg-dry	1	10/16/2012 6:12:00 AM
trans-1,3-Dichloropropene	ND	0.0357		mg/Kg-dry	1	10/16/2012 6:12:00 AM
1,1,2-Trichloroethane	ND	0.0357		mg/Kg-dry	1	10/16/2012 6:12:00 AM
1,3-Dichloropropane	ND	0.0595		mg/Kg-dry	1	10/16/2012 6:12:00 AM
Tetrachloroethene (PCE)	ND	0.0238		mg/Kg-dry	1	10/16/2012 6:12:00 AM
Dibromochloromethane	ND	0.0357		mg/Kg-dry	1	10/16/2012 6:12:00 AM
1,2-Dibromoethane (EDB)	ND	0.00595		mg/Kg-dry	1	10/16/2012 6:12:00 AM
Chlorobenzene	ND	0.0238		mg/Kg-dry	1	10/16/2012 6:12:00 AM
1,1,1,2-Tetrachloroethane	ND	0.0357		mg/Kg-dry	1	10/16/2012 6:12:00 AM
Ethylbenzene	ND	0.0357		mg/Kg-dry	1	10/16/2012 6:12:00 AM
m,p-Xylene	ND	0.0238		mg/Kg-dry	1	10/16/2012 6:12:00 AM

Qualifiers: B Analyte detected in the associated Method Blank
E Value above quantitation range
J Analyte detected below quantitation limits
RL Reporting Limit

D Dilution was required
H Holding times for preparation or analysis exceeded
ND Not detected at the Reporting Limit
S Spike recovery outside accepted recovery limits



Analytical Report

WO#: 1210020

Date Reported: 10/23/2012

Client: GeoEngineers, Inc. - Redmond

Collection Date: 10/5/2012 11:45:00 AM

Project: Rufus 2.0 WO11

Lab ID: 1210020-039

Matrix: Soil

Client Sample ID: B21-6-7.5

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
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Volatile Organic Compounds by EPA Method 8260

Batch ID: 3439

Analyst: EM

o-Xylene	ND	0.0238		mg/Kg-dry	1	10/16/2012 6:12:00 AM
Styrene	ND	0.0238		mg/Kg-dry	1	10/16/2012 6:12:00 AM
Isopropylbenzene	ND	0.0952		mg/Kg-dry	1	10/16/2012 6:12:00 AM
Bromoform	ND	0.0238		mg/Kg-dry	1	10/16/2012 6:12:00 AM
1,1,2,2-Tetrachloroethane	ND	0.0238		mg/Kg-dry	1	10/16/2012 6:12:00 AM
n-Propylbenzene	ND	0.0238		mg/Kg-dry	1	10/16/2012 6:12:00 AM
Bromobenzene	ND	0.0357		mg/Kg-dry	1	10/16/2012 6:12:00 AM
1,3,5-Trimethylbenzene	ND	0.0238		mg/Kg-dry	1	10/16/2012 6:12:00 AM
2-Chlorotoluene	ND	0.0238		mg/Kg-dry	1	10/16/2012 6:12:00 AM
4-Chlorotoluene	ND	0.0238		mg/Kg-dry	1	10/16/2012 6:12:00 AM
tert-Butylbenzene	ND	0.0238		mg/Kg-dry	1	10/16/2012 6:12:00 AM
1,2,3-Trichloropropane	ND	0.0238		mg/Kg-dry	1	10/16/2012 6:12:00 AM
1,2,4-Trichlorobenzene	ND	0.0595		mg/Kg-dry	1	10/16/2012 6:12:00 AM
sec-Butylbenzene	ND	0.0238		mg/Kg-dry	1	10/16/2012 6:12:00 AM
4-Isopropyltoluene	ND	0.0238		mg/Kg-dry	1	10/16/2012 6:12:00 AM
1,3-Dichlorobenzene	ND	0.0238		mg/Kg-dry	1	10/16/2012 6:12:00 AM
1,4-Dichlorobenzene	ND	0.0238		mg/Kg-dry	1	10/16/2012 6:12:00 AM
n-Butylbenzene	ND	0.0238		mg/Kg-dry	1	10/16/2012 6:12:00 AM
1,2-Dichlorobenzene	ND	0.0238		mg/Kg-dry	1	10/16/2012 6:12:00 AM
1,2-Dibromo-3-chloropropane	ND	0.0357		mg/Kg-dry	1	10/16/2012 6:12:00 AM
1,2,4-Trimethylbenzene	ND	0.0238		mg/Kg-dry	1	10/16/2012 6:12:00 AM
Hexachlorobutadiene	ND	0.119		mg/Kg-dry	1	10/16/2012 6:12:00 AM
Naphthalene	ND	0.0357		mg/Kg-dry	1	10/16/2012 6:12:00 AM
1,2,3-Trichlorobenzene	ND	0.0238		mg/Kg-dry	1	10/16/2012 6:12:00 AM
Surr: 1-Bromo-4-fluorobenzene	101	63.1-141		%REC	1	10/16/2012 6:12:00 AM
Surr: Dibromofluoromethane	98.7	67.6-119		%REC	1	10/16/2012 6:12:00 AM
Surr: Toluene-d8	101	78.5-126		%REC	1	10/16/2012 6:12:00 AM

Total Metals by EPA Method 6020

Batch ID: 3449

Analyst: SG

Arsenic	4.24	0.0945		mg/Kg-dry	1	10/16/2012 10:48:01 PM
Barium	138	0.472		mg/Kg-dry	1	10/16/2012 10:48:01 PM
Cadmium	ND	0.189		mg/Kg-dry	1	10/16/2012 10:48:01 PM
Chromium	66.0	0.0945		mg/Kg-dry	1	10/16/2012 10:48:01 PM
Lead	5.40	0.189		mg/Kg-dry	1	10/16/2012 10:48:01 PM

Qualifiers: B Analyte detected in the associated Method Blank
E Value above quantitation range
J Analyte detected below quantitation limits
RL Reporting Limit

D Dilution was required
H Holding times for preparation or analysis exceeded
ND Not detected at the Reporting Limit
S Spike recovery outside accepted recovery limits



Analytical Report

WO#: 1210020

Date Reported: 10/23/2012

Client: GeoEngineers, Inc. - Redmond

Collection Date: 10/5/2012 11:45:00 AM

Project: Rufus 2.0 WO11

Lab ID: 1210020-039

Matrix: Soil

Client Sample ID: B21-6-7.5

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<u>Total Metals by EPA Method 6020</u>				Batch ID: 3449		Analyst: SG
Selenium	ND	0.472		mg/Kg-dry	1	10/16/2012 10:48:01 PM
Silver	ND	0.0945		mg/Kg-dry	1	10/16/2012 10:48:01 PM
<u>Mercury by EPA Method 7471</u>				Batch ID: 3441		Analyst: SG
Mercury	ND	0.311		mg/Kg-dry	1	10/16/2012 7:42:03 PM
<u>Sample Moisture (Percent Moisture)</u>				Batch ID: R6156		Analyst: CM
Percent Moisture	22.7			wt%	1	10/16/2012 10:35:24 AM

Qualifiers: B Analyte detected in the associated Method Blank
E Value above quantitation range
J Analyte detected below quantitation limits
RL Reporting Limit

D Dilution was required
H Holding times for preparation or analysis exceeded
ND Not detected at the Reporting Limit
S Spike recovery outside accepted recovery limits



Analytical Report

WO#: 1210020

Date Reported: 10/23/2012

Client: GeoEngineers, Inc. - Redmond

Collection Date: 10/5/2012 11:55:00 AM

Project: Rufus 2.0 WO11

Lab ID: 1210020-041

Matrix: Soil

Client Sample ID: B21-6-12.5

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<u>Diesel and Heavy Oil by NWTPH-Dx/Dx Ext.</u>				Batch ID: 3445		Analyst: BR
Diesel (Fuel Oil)	ND	22.8		mg/Kg-dry	1	10/17/2012 7:27:00 AM
Heavy Oil	ND	57.1		mg/Kg-dry	1	10/17/2012 7:27:00 AM
Surr: 2-Fluorobiphenyl	98.5	50-150		%REC	1	10/17/2012 7:27:00 AM
Surr: o-Terphenyl	98.9	50-150		%REC	1	10/17/2012 7:27:00 AM
<u>Gasoline by NWTPH-Gx</u>				Batch ID: R6222		Analyst: EM
Gasoline	ND	4.98		mg/Kg-dry	1	10/16/2012 6:41:00 AM
Surr: 1,2-Dichloroethane-d4	107	65-135		%REC	1	10/16/2012 6:41:00 AM
Surr: Fluorobenzene	100	65-135		%REC	1	10/16/2012 6:41:00 AM
<u>Volatile Organic Compounds by EPA Method 8260</u>				Batch ID: 3439		Analyst: EM
Benzene	ND	0.0199		mg/Kg-dry	1	10/16/2012 6:41:00 AM
Toluene	ND	0.0199		mg/Kg-dry	1	10/16/2012 6:41:00 AM
Ethylbenzene	ND	0.0299		mg/Kg-dry	1	10/16/2012 6:41:00 AM
m,p-Xylene	ND	0.0199		mg/Kg-dry	1	10/16/2012 6:41:00 AM
o-Xylene	ND	0.0199		mg/Kg-dry	1	10/16/2012 6:41:00 AM
Surr: 1-Bromo-4-fluorobenzene	101	63.1-141		%REC	1	10/16/2012 6:41:00 AM
Surr: Dibromofluoromethane	97.7	67.6-119		%REC	1	10/16/2012 6:41:00 AM
Surr: Toluene-d8	101	78.5-126		%REC	1	10/16/2012 6:41:00 AM
<u>Total Metals by EPA Method 6020</u>				Batch ID: 3449		Analyst: SG
Arsenic	4.23	0.0846		mg/Kg-dry	1	10/16/2012 10:57:03 PM
Barium	117	0.423		mg/Kg-dry	1	10/16/2012 10:57:03 PM
Cadmium	ND	0.169		mg/Kg-dry	1	10/16/2012 10:57:03 PM
Chromium	62.9	0.0846		mg/Kg-dry	1	10/16/2012 10:57:03 PM
Lead	4.30	0.169		mg/Kg-dry	1	10/16/2012 10:57:03 PM
Selenium	ND	0.423		mg/Kg-dry	1	10/16/2012 10:57:03 PM
Silver	ND	0.0846		mg/Kg-dry	1	10/16/2012 10:57:03 PM
<u>Mercury by EPA Method 7471</u>				Batch ID: 3441		Analyst: SG
Mercury	ND	0.278		mg/Kg-dry	1	10/16/2012 7:43:40 PM

Qualifiers: B Analyte detected in the associated Method Blank
E Value above quantitation range
J Analyte detected below quantitation limits
RL Reporting Limit

D Dilution was required
H Holding times for preparation or analysis exceeded
ND Not detected at the Reporting Limit
S Spike recovery outside accepted recovery limits



Analytical Report

WO#: 1210020

Date Reported: 10/23/2012

Client: GeoEngineers, Inc. - Redmond

Collection Date: 10/5/2012 11:55:00 AM

Project: Rufus 2.0 WO11

Lab ID: 1210020-041

Matrix: Soil

Client Sample ID: B21-6-12.5

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
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Sample Moisture (Percent Moisture)

Batch ID: R6156

Analyst: CM

Percent Moisture

19.6

wt%

1

10/16/2012 10:35:24 AM

Qualifiers:

B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
RL	Reporting Limit

D	Dilution was required
H	Holding times for preparation or analysis exceeded
ND	Not detected at the Reporting Limit
S	Spike recovery outside accepted recovery limits



Analytical Report

WO#: 1210020

Date Reported: 10/23/2012

Client: GeoEngineers, Inc. - Redmond

Collection Date: 10/5/2012 12:20:00 PM

Project: Rufus 2.0 WO11

Lab ID: 1210020-050

Matrix: Soil

Client Sample ID: B21-7-5.0

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
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Diesel and Heavy Oil by NWTPH-Dx/Dx Ext.

Batch ID: 3445

Analyst: BR

Diesel (Fuel Oil)	ND	25.2		mg/Kg-dry	1	10/17/2012 7:54:00 AM
Heavy Oil	ND	63.1		mg/Kg-dry	1	10/17/2012 7:54:00 AM
Surr: 2-Fluorobiphenyl	97.3	50-150		%REC	1	10/17/2012 7:54:00 AM
Surr: o-Terphenyl	97.7	50-150		%REC	1	10/17/2012 7:54:00 AM

Polyaromatic Hydrocarbons by EPA Method 8270 (SIM)

Batch ID: 3447

Analyst: PH

Naphthalene	ND	57.6		µg/Kg-dry	1	10/18/2012 8:13:00 PM
2-Methylnaphthalene	ND	57.6		µg/Kg-dry	1	10/18/2012 8:13:00 PM
1-Methylnaphthalene	ND	57.6		µg/Kg-dry	1	10/18/2012 8:13:00 PM
Acenaphthylene	ND	57.6		µg/Kg-dry	1	10/18/2012 8:13:00 PM
Acenaphthene	ND	57.6		µg/Kg-dry	1	10/18/2012 8:13:00 PM
Fluorene	ND	57.6		µg/Kg-dry	1	10/18/2012 8:13:00 PM
Phenanthrene	ND	57.6		µg/Kg-dry	1	10/18/2012 8:13:00 PM
Anthracene	ND	57.6		µg/Kg-dry	1	10/18/2012 8:13:00 PM
Fluoranthene	ND	57.6		µg/Kg-dry	1	10/18/2012 8:13:00 PM
Pyrene	ND	57.6		µg/Kg-dry	1	10/18/2012 8:13:00 PM
Benz(a)anthracene	ND	57.6		µg/Kg-dry	1	10/18/2012 8:13:00 PM
Chrysene	ND	57.6		µg/Kg-dry	1	10/18/2012 8:13:00 PM
Benzo(b)fluoranthene	ND	57.6		µg/Kg-dry	1	10/18/2012 8:13:00 PM
Benzo(k)fluoranthene	ND	57.6		µg/Kg-dry	1	10/18/2012 8:13:00 PM
Benzo(a)pyrene	ND	57.6		µg/Kg-dry	1	10/18/2012 8:13:00 PM
Indeno(1,2,3-cd)pyrene	ND	57.6		µg/Kg-dry	1	10/18/2012 8:13:00 PM
Dibenz(a,h)anthracene	ND	57.6		µg/Kg-dry	1	10/18/2012 8:13:00 PM
Benzo(g,h,i)perylene	ND	57.6		µg/Kg-dry	1	10/18/2012 8:13:00 PM
Surr: 2-Fluorobiphenyl	77.0	50.4-142		%REC	1	10/18/2012 8:13:00 PM
Surr: Terphenyl-d14 (surr)	80.9	48.8-157		%REC	1	10/18/2012 8:13:00 PM

Gasoline by NWTPH-Gx

Batch ID: R6222

Analyst: EM

Gasoline	ND	5.60		mg/Kg-dry	1	10/16/2012 7:11:00 AM
Surr: 1,2-Dichloroethane-d4	107	65-135		%REC	1	10/16/2012 7:11:00 AM
Surr: Fluorobenzene	99.3	65-135		%REC	1	10/16/2012 7:11:00 AM

Qualifiers: B Analyte detected in the associated Method Blank
E Value above quantitation range
J Analyte detected below quantitation limits
RL Reporting Limit

D Dilution was required
H Holding times for preparation or analysis exceeded
ND Not detected at the Reporting Limit
S Spike recovery outside accepted recovery limits



Analytical Report

WO#: 1210020

Date Reported: 10/23/2012

Client: GeoEngineers, Inc. - Redmond

Collection Date: 10/5/2012 12:20:00 PM

Project: Rufus 2.0 WO11

Lab ID: 1210020-050

Matrix: Soil

Client Sample ID: B21-7-5.0

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
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Volatile Organic Compounds by EPA Method 8260

Batch ID: 3439

Analyst: EM

Dichlorodifluoromethane (CFC-12)	ND	0.0672		mg/Kg-dry	1	10/16/2012 7:11:00 AM
Chloromethane	ND	0.0672		mg/Kg-dry	1	10/16/2012 7:11:00 AM
Vinyl chloride	ND	0.00224		mg/Kg-dry	1	10/16/2012 7:11:00 AM
Bromomethane	ND	0.101		mg/Kg-dry	1	10/16/2012 7:11:00 AM
Trichlorofluoromethane (CFC-11)	ND	0.0560		mg/Kg-dry	1	10/16/2012 7:11:00 AM
Chloroethane	ND	0.0672		mg/Kg-dry	1	10/16/2012 7:11:00 AM
1,1-Dichloroethene	ND	0.0560		mg/Kg-dry	1	10/16/2012 7:11:00 AM
Methylene chloride	ND	0.0224		mg/Kg-dry	1	10/16/2012 7:11:00 AM
trans-1,2-Dichloroethene	ND	0.0224		mg/Kg-dry	1	10/16/2012 7:11:00 AM
Methyl tert-butyl ether (MTBE)	ND	0.0560		mg/Kg-dry	1	10/16/2012 7:11:00 AM
1,1-Dichloroethane	ND	0.0224		mg/Kg-dry	1	10/16/2012 7:11:00 AM
2,2-Dichloropropane	ND	0.0560		mg/Kg-dry	1	10/16/2012 7:11:00 AM
cis-1,2-Dichloroethene	ND	0.0224		mg/Kg-dry	1	10/16/2012 7:11:00 AM
Chloroform	ND	0.0224		mg/Kg-dry	1	10/16/2012 7:11:00 AM
1,1,1-Trichloroethane (TCA)	ND	0.0224		mg/Kg-dry	1	10/16/2012 7:11:00 AM
1,1-Dichloropropene	ND	0.0224		mg/Kg-dry	1	10/16/2012 7:11:00 AM
Carbon tetrachloride	ND	0.0224		mg/Kg-dry	1	10/16/2012 7:11:00 AM
1,2-Dichloroethane	ND	0.0336		mg/Kg-dry	1	10/16/2012 7:11:00 AM
Benzene	ND	0.0224		mg/Kg-dry	1	10/16/2012 7:11:00 AM
Trichloroethene (TCE)	ND	0.0336		mg/Kg-dry	1	10/16/2012 7:11:00 AM
1,2-Dichloropropane	ND	0.0224		mg/Kg-dry	1	10/16/2012 7:11:00 AM
Bromodichloromethane	ND	0.0224		mg/Kg-dry	1	10/16/2012 7:11:00 AM
Dibromomethane	ND	0.0448		mg/Kg-dry	1	10/16/2012 7:11:00 AM
cis-1,3-Dichloropropene	ND	0.0224		mg/Kg-dry	1	10/16/2012 7:11:00 AM
Toluene	ND	0.0224		mg/Kg-dry	1	10/16/2012 7:11:00 AM
trans-1,3-Dichloropropene	ND	0.0336		mg/Kg-dry	1	10/16/2012 7:11:00 AM
1,1,2-Trichloroethane	ND	0.0336		mg/Kg-dry	1	10/16/2012 7:11:00 AM
1,3-Dichloropropane	ND	0.0560		mg/Kg-dry	1	10/16/2012 7:11:00 AM
Tetrachloroethene (PCE)	ND	0.0224		mg/Kg-dry	1	10/16/2012 7:11:00 AM
Dibromochloromethane	ND	0.0336		mg/Kg-dry	1	10/16/2012 7:11:00 AM
1,2-Dibromoethane (EDB)	ND	0.00560		mg/Kg-dry	1	10/16/2012 7:11:00 AM
Chlorobenzene	ND	0.0224		mg/Kg-dry	1	10/16/2012 7:11:00 AM
1,1,1,2-Tetrachloroethane	ND	0.0336		mg/Kg-dry	1	10/16/2012 7:11:00 AM
Ethylbenzene	ND	0.0336		mg/Kg-dry	1	10/16/2012 7:11:00 AM
m,p-Xylene	ND	0.0224		mg/Kg-dry	1	10/16/2012 7:11:00 AM

Qualifiers: B Analyte detected in the associated Method Blank
E Value above quantitation range
J Analyte detected below quantitation limits
RL Reporting Limit

D Dilution was required
H Holding times for preparation or analysis exceeded
ND Not detected at the Reporting Limit
S Spike recovery outside accepted recovery limits



Analytical Report

WO#: 1210020

Date Reported: 10/23/2012

Client: GeoEngineers, Inc. - Redmond

Collection Date: 10/5/2012 12:20:00 PM

Project: Rufus 2.0 WO11

Lab ID: 1210020-050

Matrix: Soil

Client Sample ID: B21-7-5.0

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
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Volatile Organic Compounds by EPA Method 8260

Batch ID: 3439

Analyst: EM

o-Xylene	ND	0.0224		mg/Kg-dry	1	10/16/2012 7:11:00 AM
Styrene	ND	0.0224		mg/Kg-dry	1	10/16/2012 7:11:00 AM
Isopropylbenzene	ND	0.0896		mg/Kg-dry	1	10/16/2012 7:11:00 AM
Bromoform	ND	0.0224		mg/Kg-dry	1	10/16/2012 7:11:00 AM
1,1,2,2-Tetrachloroethane	ND	0.0224		mg/Kg-dry	1	10/16/2012 7:11:00 AM
n-Propylbenzene	ND	0.0224		mg/Kg-dry	1	10/16/2012 7:11:00 AM
Bromobenzene	ND	0.0336		mg/Kg-dry	1	10/16/2012 7:11:00 AM
1,3,5-Trimethylbenzene	ND	0.0224		mg/Kg-dry	1	10/16/2012 7:11:00 AM
2-Chlorotoluene	ND	0.0224		mg/Kg-dry	1	10/16/2012 7:11:00 AM
4-Chlorotoluene	ND	0.0224		mg/Kg-dry	1	10/16/2012 7:11:00 AM
tert-Butylbenzene	ND	0.0224		mg/Kg-dry	1	10/16/2012 7:11:00 AM
1,2,3-Trichloropropane	ND	0.0224		mg/Kg-dry	1	10/16/2012 7:11:00 AM
1,2,4-Trichlorobenzene	ND	0.0560		mg/Kg-dry	1	10/16/2012 7:11:00 AM
sec-Butylbenzene	ND	0.0224		mg/Kg-dry	1	10/16/2012 7:11:00 AM
4-Isopropyltoluene	ND	0.0224		mg/Kg-dry	1	10/16/2012 7:11:00 AM
1,3-Dichlorobenzene	ND	0.0224		mg/Kg-dry	1	10/16/2012 7:11:00 AM
1,4-Dichlorobenzene	ND	0.0224		mg/Kg-dry	1	10/16/2012 7:11:00 AM
n-Butylbenzene	ND	0.0224		mg/Kg-dry	1	10/16/2012 7:11:00 AM
1,2-Dichlorobenzene	ND	0.0224		mg/Kg-dry	1	10/16/2012 7:11:00 AM
1,2-Dibromo-3-chloropropane	ND	0.0336		mg/Kg-dry	1	10/16/2012 7:11:00 AM
1,2,4-Trimethylbenzene	ND	0.0224		mg/Kg-dry	1	10/16/2012 7:11:00 AM
Hexachlorobutadiene	ND	0.112		mg/Kg-dry	1	10/16/2012 7:11:00 AM
Naphthalene	ND	0.0336		mg/Kg-dry	1	10/16/2012 7:11:00 AM
1,2,3-Trichlorobenzene	ND	0.0224		mg/Kg-dry	1	10/16/2012 7:11:00 AM
Surr: 1-Bromo-4-fluorobenzene	99.4	63.1-141		%REC	1	10/16/2012 7:11:00 AM
Surr: Dibromofluoromethane	97.2	67.6-119		%REC	1	10/16/2012 7:11:00 AM
Surr: Toluene-d8	101	78.5-126		%REC	1	10/16/2012 7:11:00 AM

Total Metals by EPA Method 6020

Batch ID: 3449

Analyst: SG

Arsenic	9.65	0.0850		mg/Kg-dry	1	10/16/2012 11:06:06 PM
Barium	145	0.425		mg/Kg-dry	1	10/16/2012 11:06:06 PM
Cadmium	ND	0.170		mg/Kg-dry	1	10/16/2012 11:06:06 PM
Chromium	79.7	0.0850		mg/Kg-dry	1	10/16/2012 11:06:06 PM
Lead	5.84	0.170		mg/Kg-dry	1	10/16/2012 11:06:06 PM

Qualifiers: B Analyte detected in the associated Method Blank
E Value above quantitation range
J Analyte detected below quantitation limits
RL Reporting Limit

D Dilution was required
H Holding times for preparation or analysis exceeded
ND Not detected at the Reporting Limit
S Spike recovery outside accepted recovery limits



Analytical Report

WO#: 1210020

Date Reported: 10/23/2012

Client: GeoEngineers, Inc. - Redmond

Collection Date: 10/5/2012 12:20:00 PM

Project: Rufus 2.0 WO11

Lab ID: 1210020-050

Matrix: Soil

Client Sample ID: B21-7-5.0

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<u>Total Metals by EPA Method 6020</u>				Batch ID: 3449		Analyst: SG
Selenium	ND	0.425		mg/Kg-dry	1	10/16/2012 11:06:06 PM
Silver	ND	0.0850		mg/Kg-dry	1	10/16/2012 11:06:06 PM
<u>Mercury by EPA Method 7471</u>				Batch ID: 3441		Analyst: SG
Mercury	ND	0.287		mg/Kg-dry	1	10/16/2012 7:48:31 PM
<u>Sample Moisture (Percent Moisture)</u>				Batch ID: R6156		Analyst: CM
Percent Moisture	23.6			wt%	1	10/16/2012 10:35:24 AM

Qualifiers: B Analyte detected in the associated Method Blank
E Value above quantitation range
J Analyte detected below quantitation limits
RL Reporting Limit

D Dilution was required
H Holding times for preparation or analysis exceeded
ND Not detected at the Reporting Limit
S Spike recovery outside accepted recovery limits



Analytical Report

WO#: 1210020

Date Reported: 10/23/2012

Client: GeoEngineers, Inc. - Redmond

Collection Date: 10/5/2012 12:40:00 PM

Project: Rufus 2.0 WO11

Lab ID: 1210020-053

Matrix: Soil

Client Sample ID: B21-7-12.5

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<u>Diesel and Heavy Oil by NWTPH-Dx/Dx Ext.</u>				Batch ID: 3445		Analyst: BR
Diesel (Fuel Oil)	ND	21.9		mg/Kg-dry	1	10/17/2012 8:20:00 AM
Heavy Oil	ND	54.7		mg/Kg-dry	1	10/17/2012 8:20:00 AM
Surr: 2-Fluorobiphenyl	93.2	50-150		%REC	1	10/17/2012 8:20:00 AM
Surr: o-Terphenyl	94.5	50-150		%REC	1	10/17/2012 8:20:00 AM
<u>Gasoline by NWTPH-Gx</u>				Batch ID: R6222		Analyst: EM
Gasoline	ND	5.07		mg/Kg-dry	1	10/16/2012 7:41:00 AM
Surr: 1,2-Dichloroethane-d4	108	65-135		%REC	1	10/16/2012 7:41:00 AM
Surr: Fluorobenzene	101	65-135		%REC	1	10/16/2012 7:41:00 AM
<u>Volatile Organic Compounds by EPA Method 8260</u>				Batch ID: 3439		Analyst: EM
Benzene	ND	0.0203		mg/Kg-dry	1	10/16/2012 7:41:00 AM
Toluene	ND	0.0203		mg/Kg-dry	1	10/16/2012 7:41:00 AM
Ethylbenzene	ND	0.0304		mg/Kg-dry	1	10/16/2012 7:41:00 AM
m,p-Xylene	ND	0.0203		mg/Kg-dry	1	10/16/2012 7:41:00 AM
o-Xylene	ND	0.0203		mg/Kg-dry	1	10/16/2012 7:41:00 AM
Surr: 1-Bromo-4-fluorobenzene	101	63.1-141		%REC	1	10/16/2012 7:41:00 AM
Surr: Dibromofluoromethane	97.3	67.6-119		%REC	1	10/16/2012 7:41:00 AM
Surr: Toluene-d8	101	78.5-126		%REC	1	10/16/2012 7:41:00 AM
<u>Total Metals by EPA Method 6020</u>				Batch ID: 3449		Analyst: SG
Arsenic	6.87	0.0809		mg/Kg-dry	1	10/16/2012 11:15:08 PM
Barium	122	0.405		mg/Kg-dry	1	10/16/2012 11:15:08 PM
Cadmium	ND	0.162		mg/Kg-dry	1	10/16/2012 11:15:08 PM
Chromium	54.9	0.0809		mg/Kg-dry	1	10/16/2012 11:15:08 PM
Lead	4.35	0.162		mg/Kg-dry	1	10/16/2012 11:15:08 PM
Selenium	ND	0.405		mg/Kg-dry	1	10/16/2012 11:15:08 PM
Silver	ND	0.0809		mg/Kg-dry	1	10/16/2012 11:15:08 PM
<u>Mercury by EPA Method 7471</u>				Batch ID: 3441		Analyst: SG
Mercury	ND	0.282		mg/Kg-dry	1	10/16/2012 7:50:08 PM

Qualifiers: B Analyte detected in the associated Method Blank
E Value above quantitation range
J Analyte detected below quantitation limits
RL Reporting Limit

D Dilution was required
H Holding times for preparation or analysis exceeded
ND Not detected at the Reporting Limit
S Spike recovery outside accepted recovery limits



Analytical Report

WO#: 1210020

Date Reported: 10/23/2012

Client: GeoEngineers, Inc. - Redmond

Collection Date: 10/5/2012 12:40:00 PM

Project: Rufus 2.0 WO11

Lab ID: 1210020-053

Matrix: Soil

Client Sample ID: B21-7-12.5

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
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Sample Moisture (Percent Moisture)

Batch ID: R6156

Analyst: CM

Percent Moisture	14.8			wt%	1	10/16/2012 10:35:24 AM
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Qualifiers:

B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
RL	Reporting Limit

D	Dilution was required
H	Holding times for preparation or analysis exceeded
ND	Not detected at the Reporting Limit
S	Spike recovery outside accepted recovery limits



Analytical Report

WO#: 1210020

Date Reported: 10/23/2012

Client: GeoEngineers, Inc. - Redmond

Collection Date: 10/5/2012 1:24:00 PM

Project: Rufus 2.0 WO11

Lab ID: 1210020-062

Matrix: Soil

Client Sample ID: B21-8-5.0

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<u>Diesel and Heavy Oil by NWTPH-Dx/Dx Ext.</u>				Batch ID: 3445		Analyst: BR
Diesel (Fuel Oil)	ND	24.6		mg/Kg-dry	1	10/17/2012 8:47:00 AM
Heavy Oil	ND	61.6		mg/Kg-dry	1	10/17/2012 8:47:00 AM
Surr: 2-Fluorobiphenyl	102	50-150		%REC	1	10/17/2012 8:47:00 AM
Surr: o-Terphenyl	103	50-150		%REC	1	10/17/2012 8:47:00 AM
<u>Polyaromatic Hydrocarbons by EPA Method 8270 (SIM)</u>				Batch ID: 3447		Analyst: PH
Naphthalene	ND	57.2		µg/Kg-dry	1	10/18/2012 8:39:00 PM
2-Methylnaphthalene	ND	57.2		µg/Kg-dry	1	10/18/2012 8:39:00 PM
1-Methylnaphthalene	ND	57.2		µg/Kg-dry	1	10/18/2012 8:39:00 PM
Acenaphthylene	ND	57.2		µg/Kg-dry	1	10/18/2012 8:39:00 PM
Acenaphthene	ND	57.2		µg/Kg-dry	1	10/18/2012 8:39:00 PM
Fluorene	ND	57.2		µg/Kg-dry	1	10/18/2012 8:39:00 PM
Phenanthrene	ND	57.2		µg/Kg-dry	1	10/18/2012 8:39:00 PM
Anthracene	ND	57.2		µg/Kg-dry	1	10/18/2012 8:39:00 PM
Fluoranthene	ND	57.2		µg/Kg-dry	1	10/18/2012 8:39:00 PM
Pyrene	ND	57.2		µg/Kg-dry	1	10/18/2012 8:39:00 PM
Benz(a)anthracene	ND	57.2		µg/Kg-dry	1	10/18/2012 8:39:00 PM
Chrysene	ND	57.2		µg/Kg-dry	1	10/18/2012 8:39:00 PM
Benzo(b)fluoranthene	ND	57.2		µg/Kg-dry	1	10/18/2012 8:39:00 PM
Benzo(k)fluoranthene	ND	57.2		µg/Kg-dry	1	10/18/2012 8:39:00 PM
Benzo(a)pyrene	ND	57.2		µg/Kg-dry	1	10/18/2012 8:39:00 PM
Indeno(1,2,3-cd)pyrene	ND	57.2		µg/Kg-dry	1	10/18/2012 8:39:00 PM
Dibenz(a,h)anthracene	ND	57.2		µg/Kg-dry	1	10/18/2012 8:39:00 PM
Benzo(g,h,i)perylene	ND	57.2		µg/Kg-dry	1	10/18/2012 8:39:00 PM
Surr: 2-Fluorobiphenyl	64.3	50.4-142		%REC	1	10/18/2012 8:39:00 PM
Surr: Terphenyl-d14 (surr)	82.6	48.8-157		%REC	1	10/18/2012 8:39:00 PM
<u>Gasoline by NWTPH-Gx</u>				Batch ID: R6222		Analyst: EM
Gasoline	ND	5.94		mg/Kg-dry	1	10/16/2012 8:11:00 AM
Surr: 1,2-Dichloroethane-d4	106	65-135		%REC	1	10/16/2012 8:11:00 AM
Surr: Fluorobenzene	100	65-135		%REC	1	10/16/2012 8:11:00 AM

Qualifiers: B Analyte detected in the associated Method Blank
E Value above quantitation range
J Analyte detected below quantitation limits
RL Reporting Limit

D Dilution was required
H Holding times for preparation or analysis exceeded
ND Not detected at the Reporting Limit
S Spike recovery outside accepted recovery limits



Analytical Report

WO#: 1210020

Date Reported: 10/23/2012

Client: GeoEngineers, Inc. - Redmond

Collection Date: 10/5/2012 1:24:00 PM

Project: Rufus 2.0 WO11

Lab ID: 1210020-062

Matrix: Soil

Client Sample ID: B21-8-5.0

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
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Volatile Organic Compounds by EPA Method 8260

Batch ID: 3439

Analyst: EM

Dichlorodifluoromethane (CFC-12)	ND	0.0712		mg/Kg-dry	1	10/16/2012 8:11:00 AM
Chloromethane	ND	0.0712		mg/Kg-dry	1	10/16/2012 8:11:00 AM
Vinyl chloride	ND	0.00237		mg/Kg-dry	1	10/16/2012 8:11:00 AM
Bromomethane	ND	0.107		mg/Kg-dry	1	10/16/2012 8:11:00 AM
Trichlorofluoromethane (CFC-11)	ND	0.0594		mg/Kg-dry	1	10/16/2012 8:11:00 AM
Chloroethane	ND	0.0712		mg/Kg-dry	1	10/16/2012 8:11:00 AM
1,1-Dichloroethene	ND	0.0594		mg/Kg-dry	1	10/16/2012 8:11:00 AM
Methylene chloride	ND	0.0237		mg/Kg-dry	1	10/16/2012 8:11:00 AM
trans-1,2-Dichloroethene	ND	0.0237		mg/Kg-dry	1	10/16/2012 8:11:00 AM
Methyl tert-butyl ether (MTBE)	ND	0.0594		mg/Kg-dry	1	10/16/2012 8:11:00 AM
1,1-Dichloroethane	ND	0.0237		mg/Kg-dry	1	10/16/2012 8:11:00 AM
2,2-Dichloropropane	ND	0.0594		mg/Kg-dry	1	10/16/2012 8:11:00 AM
cis-1,2-Dichloroethene	ND	0.0237		mg/Kg-dry	1	10/16/2012 8:11:00 AM
Chloroform	ND	0.0237		mg/Kg-dry	1	10/16/2012 8:11:00 AM
1,1,1-Trichloroethane (TCA)	ND	0.0237		mg/Kg-dry	1	10/16/2012 8:11:00 AM
1,1-Dichloropropene	ND	0.0237		mg/Kg-dry	1	10/16/2012 8:11:00 AM
Carbon tetrachloride	ND	0.0237		mg/Kg-dry	1	10/16/2012 8:11:00 AM
1,2-Dichloroethane	ND	0.0356		mg/Kg-dry	1	10/16/2012 8:11:00 AM
Benzene	ND	0.0237		mg/Kg-dry	1	10/16/2012 8:11:00 AM
Trichloroethene (TCE)	ND	0.0356		mg/Kg-dry	1	10/16/2012 8:11:00 AM
1,2-Dichloropropane	ND	0.0237		mg/Kg-dry	1	10/16/2012 8:11:00 AM
Bromodichloromethane	ND	0.0237		mg/Kg-dry	1	10/16/2012 8:11:00 AM
Dibromomethane	ND	0.0475		mg/Kg-dry	1	10/16/2012 8:11:00 AM
cis-1,3-Dichloropropene	ND	0.0237		mg/Kg-dry	1	10/16/2012 8:11:00 AM
Toluene	ND	0.0237		mg/Kg-dry	1	10/16/2012 8:11:00 AM
trans-1,3-Dichloropropene	ND	0.0356		mg/Kg-dry	1	10/16/2012 8:11:00 AM
1,1,2-Trichloroethane	ND	0.0356		mg/Kg-dry	1	10/16/2012 8:11:00 AM
1,3-Dichloropropane	ND	0.0594		mg/Kg-dry	1	10/16/2012 8:11:00 AM
Tetrachloroethene (PCE)	ND	0.0237		mg/Kg-dry	1	10/16/2012 8:11:00 AM
Dibromochloromethane	ND	0.0356		mg/Kg-dry	1	10/16/2012 8:11:00 AM
1,2-Dibromoethane (EDB)	ND	0.00594		mg/Kg-dry	1	10/16/2012 8:11:00 AM
Chlorobenzene	ND	0.0237		mg/Kg-dry	1	10/16/2012 8:11:00 AM
1,1,1,2-Tetrachloroethane	ND	0.0356		mg/Kg-dry	1	10/16/2012 8:11:00 AM
Ethylbenzene	ND	0.0356		mg/Kg-dry	1	10/16/2012 8:11:00 AM
m,p-Xylene	ND	0.0237		mg/Kg-dry	1	10/16/2012 8:11:00 AM

Qualifiers: B Analyte detected in the associated Method Blank
E Value above quantitation range
J Analyte detected below quantitation limits
RL Reporting Limit

D Dilution was required
H Holding times for preparation or analysis exceeded
ND Not detected at the Reporting Limit
S Spike recovery outside accepted recovery limits



Analytical Report

WO#: 1210020

Date Reported: 10/23/2012

Client: GeoEngineers, Inc. - Redmond

Collection Date: 10/5/2012 1:24:00 PM

Project: Rufus 2.0 WO11

Lab ID: 1210020-062

Matrix: Soil

Client Sample ID: B21-8-5.0

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
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Volatile Organic Compounds by EPA Method 8260

Batch ID: 3439

Analyst: EM

o-Xylene	ND	0.0237		mg/Kg-dry	1	10/16/2012 8:11:00 AM
Styrene	ND	0.0237		mg/Kg-dry	1	10/16/2012 8:11:00 AM
Isopropylbenzene	ND	0.0950		mg/Kg-dry	1	10/16/2012 8:11:00 AM
Bromoform	ND	0.0237		mg/Kg-dry	1	10/16/2012 8:11:00 AM
1,1,2,2-Tetrachloroethane	ND	0.0237		mg/Kg-dry	1	10/16/2012 8:11:00 AM
n-Propylbenzene	ND	0.0237		mg/Kg-dry	1	10/16/2012 8:11:00 AM
Bromobenzene	ND	0.0356		mg/Kg-dry	1	10/16/2012 8:11:00 AM
1,3,5-Trimethylbenzene	ND	0.0237		mg/Kg-dry	1	10/16/2012 8:11:00 AM
2-Chlorotoluene	ND	0.0237		mg/Kg-dry	1	10/16/2012 8:11:00 AM
4-Chlorotoluene	ND	0.0237		mg/Kg-dry	1	10/16/2012 8:11:00 AM
tert-Butylbenzene	ND	0.0237		mg/Kg-dry	1	10/16/2012 8:11:00 AM
1,2,3-Trichloropropane	ND	0.0237		mg/Kg-dry	1	10/16/2012 8:11:00 AM
1,2,4-Trichlorobenzene	ND	0.0594		mg/Kg-dry	1	10/16/2012 8:11:00 AM
sec-Butylbenzene	ND	0.0237		mg/Kg-dry	1	10/16/2012 8:11:00 AM
4-Isopropyltoluene	ND	0.0237		mg/Kg-dry	1	10/16/2012 8:11:00 AM
1,3-Dichlorobenzene	ND	0.0237		mg/Kg-dry	1	10/16/2012 8:11:00 AM
1,4-Dichlorobenzene	ND	0.0237		mg/Kg-dry	1	10/16/2012 8:11:00 AM
n-Butylbenzene	ND	0.0237		mg/Kg-dry	1	10/16/2012 8:11:00 AM
1,2-Dichlorobenzene	ND	0.0237		mg/Kg-dry	1	10/16/2012 8:11:00 AM
1,2-Dibromo-3-chloropropane	ND	0.0356		mg/Kg-dry	1	10/16/2012 8:11:00 AM
1,2,4-Trimethylbenzene	ND	0.0237		mg/Kg-dry	1	10/16/2012 8:11:00 AM
Hexachlorobutadiene	ND	0.119		mg/Kg-dry	1	10/16/2012 8:11:00 AM
Naphthalene	ND	0.0356		mg/Kg-dry	1	10/16/2012 8:11:00 AM
1,2,3-Trichlorobenzene	ND	0.0237		mg/Kg-dry	1	10/16/2012 8:11:00 AM
Surr: 1-Bromo-4-fluorobenzene	103	63.1-141		%REC	1	10/16/2012 8:11:00 AM
Surr: Dibromofluoromethane	98.7	67.6-119		%REC	1	10/16/2012 8:11:00 AM
Surr: Toluene-d8	102	78.5-126		%REC	1	10/16/2012 8:11:00 AM

Total Metals by EPA Method 6020

Batch ID: 3449

Analyst: SG

Arsenic	5.47	0.0965		mg/Kg-dry	1	10/16/2012 11:24:10 PM
Barium	159	0.483		mg/Kg-dry	1	10/16/2012 11:24:10 PM
Cadmium	ND	0.193		mg/Kg-dry	1	10/16/2012 11:24:10 PM
Chromium	76.5	0.0965		mg/Kg-dry	1	10/16/2012 11:24:10 PM
Lead	5.60	0.193		mg/Kg-dry	1	10/16/2012 11:24:10 PM

Qualifiers: B Analyte detected in the associated Method Blank
E Value above quantitation range
J Analyte detected below quantitation limits
RL Reporting Limit

D Dilution was required
H Holding times for preparation or analysis exceeded
ND Not detected at the Reporting Limit
S Spike recovery outside accepted recovery limits



Analytical Report

WO#: 1210020

Date Reported: 10/23/2012

Client: GeoEngineers, Inc. - Redmond

Collection Date: 10/5/2012 1:24:00 PM

Project: Rufus 2.0 WO11

Lab ID: 1210020-062

Matrix: Soil

Client Sample ID: B21-8-5.0

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<u>Total Metals by EPA Method 6020</u>				Batch ID: 3449		Analyst: SG
Selenium	ND	0.483		mg/Kg-dry	1	10/16/2012 11:24:10 PM
Silver	ND	0.0965		mg/Kg-dry	1	10/16/2012 11:24:10 PM
<u>Mercury by EPA Method 7471</u>				Batch ID: 3441		Analyst: SG
Mercury	ND	0.302		mg/Kg-dry	1	10/16/2012 7:51:44 PM
<u>Sample Moisture (Percent Moisture)</u>				Batch ID: R6244		Analyst: CM
Percent Moisture	23.3			wt%	1	10/22/2012 10:21:44 AM

Qualifiers: B Analyte detected in the associated Method Blank
E Value above quantitation range
J Analyte detected below quantitation limits
RL Reporting Limit

D Dilution was required
H Holding times for preparation or analysis exceeded
ND Not detected at the Reporting Limit
S Spike recovery outside accepted recovery limits



Analytical Report

WO#: 1210020

Date Reported: 10/23/2012

Client: GeoEngineers, Inc. - Redmond

Collection Date: 10/5/2012 2:15:00 PM

Project: Rufus 2.0 WO11

Lab ID: 1210020-073

Matrix: Soil

Client Sample ID: B21-9-2.5

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<u>Diesel and Heavy Oil by NWTPH-Dx/Dx Ext.</u>				Batch ID: 3445		Analyst: BR
Diesel (Fuel Oil)	ND	22.1		mg/Kg-dry	1	10/17/2012 5:43:00 PM
Heavy Oil	ND	55.2		mg/Kg-dry	1	10/17/2012 5:43:00 PM
Surr: 2-Fluorobiphenyl	111	50-150		%REC	1	10/17/2012 5:43:00 PM
Surr: o-Terphenyl	107	50-150		%REC	1	10/17/2012 5:43:00 PM

<u>Polyaromatic Hydrocarbons by EPA Method 8270 (SIM)</u>				Batch ID: 3447		Analyst: PH
Naphthalene	ND	52.9		µg/Kg-dry	1	10/18/2012 9:04:00 PM
2-Methylnaphthalene	ND	52.9		µg/Kg-dry	1	10/18/2012 9:04:00 PM
1-Methylnaphthalene	ND	52.9		µg/Kg-dry	1	10/18/2012 9:04:00 PM
Acenaphthylene	ND	52.9		µg/Kg-dry	1	10/18/2012 9:04:00 PM
Acenaphthene	ND	52.9		µg/Kg-dry	1	10/18/2012 9:04:00 PM
Fluorene	ND	52.9		µg/Kg-dry	1	10/18/2012 9:04:00 PM
Phenanthrene	ND	52.9		µg/Kg-dry	1	10/18/2012 9:04:00 PM
Anthracene	ND	52.9		µg/Kg-dry	1	10/18/2012 9:04:00 PM
Fluoranthene	ND	52.9		µg/Kg-dry	1	10/18/2012 9:04:00 PM
Pyrene	ND	52.9		µg/Kg-dry	1	10/18/2012 9:04:00 PM
Benz(a)anthracene	ND	52.9		µg/Kg-dry	1	10/18/2012 9:04:00 PM
Chrysene	ND	52.9		µg/Kg-dry	1	10/18/2012 9:04:00 PM
Benzo(b)fluoranthene	ND	52.9		µg/Kg-dry	1	10/18/2012 9:04:00 PM
Benzo(k)fluoranthene	ND	52.9		µg/Kg-dry	1	10/18/2012 9:04:00 PM
Benzo(a)pyrene	ND	52.9		µg/Kg-dry	1	10/18/2012 9:04:00 PM
Indeno(1,2,3-cd)pyrene	ND	52.9		µg/Kg-dry	1	10/18/2012 9:04:00 PM
Dibenz(a,h)anthracene	ND	52.9		µg/Kg-dry	1	10/18/2012 9:04:00 PM
Benzo(g,h,i)perylene	ND	52.9		µg/Kg-dry	1	10/18/2012 9:04:00 PM
Surr: 2-Fluorobiphenyl	66.4	50.4-142		%REC	1	10/18/2012 9:04:00 PM
Surr: Terphenyl-d14 (surr)	80.8	48.8-157		%REC	1	10/18/2012 9:04:00 PM

<u>Gasoline by NWTPH-Gx</u>				Batch ID: R6222		Analyst: EM
Gasoline	ND	4.65		mg/Kg-dry	1	10/16/2012 8:40:00 AM
Surr: 1,2-Dichloroethane-d4	105	65-135		%REC	1	10/16/2012 8:40:00 AM
Surr: Fluorobenzene	98.7	65-135		%REC	1	10/16/2012 8:40:00 AM

Qualifiers:	B	Analyte detected in the associated Method Blank	D	Dilution was required
	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
	J	Analyte detected below quantitation limits	ND	Not detected at the Reporting Limit
	RL	Reporting Limit	S	Spike recovery outside accepted recovery limits



Analytical Report

WO#: 1210020

Date Reported: 10/23/2012

Client: GeoEngineers, Inc. - Redmond

Collection Date: 10/5/2012 2:15:00 PM

Project: Rufus 2.0 WO11

Lab ID: 1210020-073

Matrix: Soil

Client Sample ID: B21-9-2.5

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<u>Total Metals by EPA Method 6020</u>				Batch ID: 3449		Analyst: SG
Arsenic	8.14	0.0741		mg/Kg-dry	1	10/16/2012 11:33:12 PM
Barium	122	0.371		mg/Kg-dry	1	10/16/2012 11:33:12 PM
Cadmium	ND	0.148		mg/Kg-dry	1	10/16/2012 11:33:12 PM
Chromium	47.7	0.0741		mg/Kg-dry	1	10/16/2012 11:33:12 PM
Lead	3.71	0.148		mg/Kg-dry	1	10/16/2012 11:33:12 PM
Selenium	ND	0.371		mg/Kg-dry	1	10/16/2012 11:33:12 PM
Silver	1.07	0.0741		mg/Kg-dry	1	10/16/2012 11:33:12 PM
<u>Mercury by EPA Method 7471</u>				Batch ID: 3441		Analyst: SG
Mercury	ND	0.251		mg/Kg-dry	1	10/16/2012 7:53:21 PM
<u>Sample Moisture (Percent Moisture)</u>				Batch ID: R6156		Analyst: CM
Percent Moisture	15.7			wt%	1	10/16/2012 10:35:24 AM

Qualifiers: B Analyte detected in the associated Method Blank
E Value above quantitation range
J Analyte detected below quantitation limits
RL Reporting Limit

D Dilution was required
H Holding times for preparation or analysis exceeded
ND Not detected at the Reporting Limit
S Spike recovery outside accepted recovery limits



Analytical Report

WO#: 1210020

Date Reported: 10/23/2012

Client: GeoEngineers, Inc. - Redmond

Collection Date: 10/5/2012 2:35:00 PM

Project: Rufus 2.0 WO11

Lab ID: 1210020-076

Matrix: Soil

Client Sample ID: B21-9-10.0

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<u>Diesel and Heavy Oil by NWTPH-Dx/Dx Ext.</u>				Batch ID: 3445		Analyst: BR
Diesel (Fuel Oil)	ND	22.8		mg/Kg-dry	1	10/17/2012 6:10:00 PM
Heavy Oil	ND	56.9		mg/Kg-dry	1	10/17/2012 6:10:00 PM
Surr: 2-Fluorobiphenyl	119	50-150		%REC	1	10/17/2012 6:10:00 PM
Surr: o-Terphenyl	113	50-150		%REC	1	10/17/2012 6:10:00 PM
<u>Gasoline by NWTPH-Gx</u>				Batch ID: R6222		Analyst: EM
Gasoline	ND	5.21		mg/Kg-dry	1	10/16/2012 9:10:00 AM
Surr: 1,2-Dichloroethane-d4	107	65-135		%REC	1	10/16/2012 9:10:00 AM
Surr: Fluorobenzene	98.5	65-135		%REC	1	10/16/2012 9:10:00 AM
<u>Volatile Organic Compounds by EPA Method 8260</u>				Batch ID: 3439		Analyst: EM
Benzene	ND	0.0208		mg/Kg-dry	1	10/16/2012 9:10:00 AM
Toluene	ND	0.0208		mg/Kg-dry	1	10/16/2012 9:10:00 AM
Ethylbenzene	ND	0.0313		mg/Kg-dry	1	10/16/2012 9:10:00 AM
m,p-Xylene	ND	0.0208		mg/Kg-dry	1	10/16/2012 9:10:00 AM
o-Xylene	ND	0.0208		mg/Kg-dry	1	10/16/2012 9:10:00 AM
Surr: 1-Bromo-4-fluorobenzene	101	63.1-141		%REC	1	10/16/2012 9:10:00 AM
Surr: Dibromofluoromethane	99.6	67.6-119		%REC	1	10/16/2012 9:10:00 AM
Surr: Toluene-d8	100	78.5-126		%REC	1	10/16/2012 9:10:00 AM
<u>Total Metals by EPA Method 6020</u>				Batch ID: 3449		Analyst: SG
Arsenic	3.78	0.0818		mg/Kg-dry	1	10/16/2012 11:42:15 PM
Barium	88.7	0.409		mg/Kg-dry	1	10/16/2012 11:42:15 PM
Cadmium	ND	0.164		mg/Kg-dry	1	10/16/2012 11:42:15 PM
Chromium	44.4	0.0818		mg/Kg-dry	1	10/16/2012 11:42:15 PM
Lead	3.22	0.164		mg/Kg-dry	1	10/16/2012 11:42:15 PM
Selenium	ND	0.409		mg/Kg-dry	1	10/16/2012 11:42:15 PM
Silver	0.105	0.0818		mg/Kg-dry	1	10/16/2012 11:42:15 PM
<u>Mercury by EPA Method 7471</u>				Batch ID: 3441		Analyst: SG
Mercury	ND	0.291		mg/Kg-dry	1	10/16/2012 7:54:57 PM

Qualifiers: B Analyte detected in the associated Method Blank
E Value above quantitation range
J Analyte detected below quantitation limits
RL Reporting Limit

D Dilution was required
H Holding times for preparation or analysis exceeded
ND Not detected at the Reporting Limit
S Spike recovery outside accepted recovery limits



Analytical Report

WO#: 1210020

Date Reported: 10/23/2012

Client: GeoEngineers, Inc. - Redmond

Collection Date: 10/5/2012 2:35:00 PM

Project: Rufus 2.0 WO11

Lab ID: 1210020-076

Matrix: Soil

Client Sample ID: B21-9-10.0

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
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Sample Moisture (Percent Moisture)

Batch ID: R6156

Analyst: CM

Percent Moisture	19.0			wt%	1	10/16/2012 10:35:24 AM
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Qualifiers:

B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
RL	Reporting Limit

D	Dilution was required
H	Holding times for preparation or analysis exceeded
ND	Not detected at the Reporting Limit
S	Spike recovery outside accepted recovery limits



Analytical Report

WO#: 1210020

Date Reported: 10/23/2012

Client: GeoEngineers, Inc. - Redmond

Collection Date: 10/8/2012 8:55:00 AM

Project: Rufus 2.0 WO11

Lab ID: 1210020-085

Matrix: Soil

Client Sample ID: B21-10-2.5

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<u>Diesel and Heavy Oil by NWTPH-Dx/Dx Ext.</u>				Batch ID: 3445		Analyst: BR
Diesel (Fuel Oil)	ND	23.0		mg/Kg-dry	1	10/17/2012 6:37:00 PM
Heavy Oil	ND	57.5		mg/Kg-dry	1	10/17/2012 6:37:00 PM
Surr: 2-Fluorobiphenyl	109	50-150		%REC	1	10/17/2012 6:37:00 PM
Surr: o-Terphenyl	104	50-150		%REC	1	10/17/2012 6:37:00 PM

Polyaromatic Hydrocarbons by EPA Method 8270 (SIM)

Batch ID: 3447

Analyst: PH

Naphthalene	ND	53.4		µg/Kg-dry	1	10/18/2012 9:29:00 PM
2-Methylnaphthalene	ND	53.4		µg/Kg-dry	1	10/18/2012 9:29:00 PM
1-Methylnaphthalene	ND	53.4		µg/Kg-dry	1	10/18/2012 9:29:00 PM
Acenaphthylene	ND	53.4		µg/Kg-dry	1	10/18/2012 9:29:00 PM
Acenaphthene	ND	53.4		µg/Kg-dry	1	10/18/2012 9:29:00 PM
Fluorene	ND	53.4		µg/Kg-dry	1	10/18/2012 9:29:00 PM
Phenanthrene	ND	53.4		µg/Kg-dry	1	10/18/2012 9:29:00 PM
Anthracene	ND	53.4		µg/Kg-dry	1	10/18/2012 9:29:00 PM
Fluoranthene	ND	53.4		µg/Kg-dry	1	10/18/2012 9:29:00 PM
Pyrene	ND	53.4		µg/Kg-dry	1	10/18/2012 9:29:00 PM
Benz(a)anthracene	ND	53.4		µg/Kg-dry	1	10/18/2012 9:29:00 PM
Chrysene	ND	53.4		µg/Kg-dry	1	10/18/2012 9:29:00 PM
Benzo(b)fluoranthene	ND	53.4		µg/Kg-dry	1	10/18/2012 9:29:00 PM
Benzo(k)fluoranthene	ND	53.4		µg/Kg-dry	1	10/18/2012 9:29:00 PM
Benzo(a)pyrene	ND	53.4		µg/Kg-dry	1	10/18/2012 9:29:00 PM
Indeno(1,2,3-cd)pyrene	ND	53.4		µg/Kg-dry	1	10/18/2012 9:29:00 PM
Dibenz(a,h)anthracene	ND	53.4		µg/Kg-dry	1	10/18/2012 9:29:00 PM
Benzo(g,h,i)perylene	ND	53.4		µg/Kg-dry	1	10/18/2012 9:29:00 PM
Surr: 2-Fluorobiphenyl	60.9	50.4-142		%REC	1	10/18/2012 9:29:00 PM
Surr: Terphenyl-d14 (surr)	72.2	48.8-157		%REC	1	10/18/2012 9:29:00 PM

Gasoline by NWTPH-Gx

Batch ID: R6222

Analyst: EM

Gasoline	ND	5.25		mg/Kg-dry	1	10/16/2012 9:56:00 AM
Surr: 1,2-Dichloroethane-d4	106	65-135		%REC	1	10/16/2012 9:56:00 AM
Surr: Fluorobenzene	99.6	65-135		%REC	1	10/16/2012 9:56:00 AM

Qualifiers: B Analyte detected in the associated Method Blank
E Value above quantitation range
J Analyte detected below quantitation limits
RL Reporting Limit

D Dilution was required
H Holding times for preparation or analysis exceeded
ND Not detected at the Reporting Limit
S Spike recovery outside accepted recovery limits



Analytical Report

WO#: 1210020

Date Reported: 10/23/2012

Client: GeoEngineers, Inc. - Redmond

Collection Date: 10/8/2012 8:55:00 AM

Project: Rufus 2.0 WO11

Lab ID: 1210020-085

Matrix: Soil

Client Sample ID: B21-10-2.5

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
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Volatile Organic Compounds by EPA Method 8260

Batch ID: 3439

Analyst: EM

Dichlorodifluoromethane (CFC-12)	ND	0.0630		mg/Kg-dry	1	10/16/2012 9:56:00 AM
Chloromethane	ND	0.0630		mg/Kg-dry	1	10/16/2012 9:56:00 AM
Vinyl chloride	ND	0.00210		mg/Kg-dry	1	10/16/2012 9:56:00 AM
Bromomethane	ND	0.0945		mg/Kg-dry	1	10/16/2012 9:56:00 AM
Trichlorofluoromethane (CFC-11)	ND	0.0525		mg/Kg-dry	1	10/16/2012 9:56:00 AM
Chloroethane	ND	0.0630		mg/Kg-dry	1	10/16/2012 9:56:00 AM
1,1-Dichloroethene	ND	0.0525		mg/Kg-dry	1	10/16/2012 9:56:00 AM
Methylene chloride	ND	0.0210		mg/Kg-dry	1	10/16/2012 9:56:00 AM
trans-1,2-Dichloroethene	ND	0.0210		mg/Kg-dry	1	10/16/2012 9:56:00 AM
Methyl tert-butyl ether (MTBE)	ND	0.0525		mg/Kg-dry	1	10/16/2012 9:56:00 AM
1,1-Dichloroethane	ND	0.0210		mg/Kg-dry	1	10/16/2012 9:56:00 AM
2,2-Dichloropropane	ND	0.0525		mg/Kg-dry	1	10/16/2012 9:56:00 AM
cis-1,2-Dichloroethene	ND	0.0210		mg/Kg-dry	1	10/16/2012 9:56:00 AM
Chloroform	ND	0.0210		mg/Kg-dry	1	10/16/2012 9:56:00 AM
1,1,1-Trichloroethane (TCA)	ND	0.0210		mg/Kg-dry	1	10/16/2012 9:56:00 AM
1,1-Dichloropropene	ND	0.0210		mg/Kg-dry	1	10/16/2012 9:56:00 AM
Carbon tetrachloride	ND	0.0210		mg/Kg-dry	1	10/16/2012 9:56:00 AM
1,2-Dichloroethane	ND	0.0315		mg/Kg-dry	1	10/16/2012 9:56:00 AM
Benzene	ND	0.0210		mg/Kg-dry	1	10/16/2012 9:56:00 AM
Trichloroethene (TCE)	ND	0.0315		mg/Kg-dry	1	10/16/2012 9:56:00 AM
1,2-Dichloropropane	ND	0.0210		mg/Kg-dry	1	10/16/2012 9:56:00 AM
Bromodichloromethane	ND	0.0210		mg/Kg-dry	1	10/16/2012 9:56:00 AM
Dibromomethane	ND	0.0420		mg/Kg-dry	1	10/16/2012 9:56:00 AM
cis-1,3-Dichloropropene	ND	0.0210		mg/Kg-dry	1	10/16/2012 9:56:00 AM
Toluene	ND	0.0210		mg/Kg-dry	1	10/16/2012 9:56:00 AM
trans-1,3-Dichloropropene	ND	0.0315		mg/Kg-dry	1	10/16/2012 9:56:00 AM
1,1,2-Trichloroethane	ND	0.0315		mg/Kg-dry	1	10/16/2012 9:56:00 AM
1,3-Dichloropropane	ND	0.0525		mg/Kg-dry	1	10/16/2012 9:56:00 AM
Tetrachloroethene (PCE)	ND	0.0210		mg/Kg-dry	1	10/16/2012 9:56:00 AM
Dibromochloromethane	ND	0.0315		mg/Kg-dry	1	10/16/2012 9:56:00 AM
1,2-Dibromoethane (EDB)	ND	0.00525		mg/Kg-dry	1	10/16/2012 9:56:00 AM
Chlorobenzene	ND	0.0210		mg/Kg-dry	1	10/16/2012 9:56:00 AM
1,1,1,2-Tetrachloroethane	ND	0.0315		mg/Kg-dry	1	10/16/2012 9:56:00 AM
Ethylbenzene	ND	0.0315		mg/Kg-dry	1	10/16/2012 9:56:00 AM
m,p-Xylene	ND	0.0210		mg/Kg-dry	1	10/16/2012 9:56:00 AM

Qualifiers: B Analyte detected in the associated Method Blank
E Value above quantitation range
J Analyte detected below quantitation limits
RL Reporting Limit

D Dilution was required
H Holding times for preparation or analysis exceeded
ND Not detected at the Reporting Limit
S Spike recovery outside accepted recovery limits



Analytical Report

WO#: 1210020

Date Reported: 10/23/2012

Client: GeoEngineers, Inc. - Redmond

Collection Date: 10/8/2012 8:55:00 AM

Project: Rufus 2.0 WO11

Lab ID: 1210020-085

Matrix: Soil

Client Sample ID: B21-10-2.5

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
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Volatile Organic Compounds by EPA Method 8260

Batch ID: 3439

Analyst: EM

o-Xylene	ND	0.0210		mg/Kg-dry	1	10/16/2012 9:56:00 AM
Styrene	ND	0.0210		mg/Kg-dry	1	10/16/2012 9:56:00 AM
Isopropylbenzene	ND	0.0840		mg/Kg-dry	1	10/16/2012 9:56:00 AM
Bromoform	ND	0.0210		mg/Kg-dry	1	10/16/2012 9:56:00 AM
1,1,2,2-Tetrachloroethane	ND	0.0210		mg/Kg-dry	1	10/16/2012 9:56:00 AM
n-Propylbenzene	ND	0.0210		mg/Kg-dry	1	10/16/2012 9:56:00 AM
Bromobenzene	ND	0.0315		mg/Kg-dry	1	10/16/2012 9:56:00 AM
1,3,5-Trimethylbenzene	ND	0.0210		mg/Kg-dry	1	10/16/2012 9:56:00 AM
2-Chlorotoluene	ND	0.0210		mg/Kg-dry	1	10/16/2012 9:56:00 AM
4-Chlorotoluene	ND	0.0210		mg/Kg-dry	1	10/16/2012 9:56:00 AM
tert-Butylbenzene	ND	0.0210		mg/Kg-dry	1	10/16/2012 9:56:00 AM
1,2,3-Trichloropropane	ND	0.0210		mg/Kg-dry	1	10/16/2012 9:56:00 AM
1,2,4-Trichlorobenzene	ND	0.0525		mg/Kg-dry	1	10/16/2012 9:56:00 AM
sec-Butylbenzene	ND	0.0210		mg/Kg-dry	1	10/16/2012 9:56:00 AM
4-Isopropyltoluene	ND	0.0210		mg/Kg-dry	1	10/16/2012 9:56:00 AM
1,3-Dichlorobenzene	ND	0.0210		mg/Kg-dry	1	10/16/2012 9:56:00 AM
1,4-Dichlorobenzene	ND	0.0210		mg/Kg-dry	1	10/16/2012 9:56:00 AM
n-Butylbenzene	ND	0.0210		mg/Kg-dry	1	10/16/2012 9:56:00 AM
1,2-Dichlorobenzene	ND	0.0210		mg/Kg-dry	1	10/16/2012 9:56:00 AM
1,2-Dibromo-3-chloropropane	ND	0.0315		mg/Kg-dry	1	10/16/2012 9:56:00 AM
1,2,4-Trimethylbenzene	ND	0.0210		mg/Kg-dry	1	10/16/2012 9:56:00 AM
Hexachlorobutadiene	ND	0.105		mg/Kg-dry	1	10/16/2012 9:56:00 AM
Naphthalene	ND	0.0315		mg/Kg-dry	1	10/16/2012 9:56:00 AM
1,2,3-Trichlorobenzene	ND	0.0210		mg/Kg-dry	1	10/16/2012 9:56:00 AM
Surr: 1-Bromo-4-fluorobenzene	104	63.1-141		%REC	1	10/16/2012 9:56:00 AM
Surr: Dibromofluoromethane	97.3	67.6-119		%REC	1	10/16/2012 9:56:00 AM
Surr: Toluene-d8	100	78.5-126		%REC	1	10/16/2012 9:56:00 AM

Total Metals by EPA Method 6020

Batch ID: 3449

Analyst: SG

Arsenic	4.54	0.0785		mg/Kg-dry	1	10/16/2012 11:51:17 PM
Barium	130	0.392		mg/Kg-dry	1	10/16/2012 11:51:17 PM
Cadmium	ND	0.157		mg/Kg-dry	1	10/16/2012 11:51:17 PM
Chromium	57.9	0.0785		mg/Kg-dry	1	10/16/2012 11:51:17 PM
Lead	16.6	0.157		mg/Kg-dry	1	10/16/2012 11:51:17 PM

Qualifiers: B Analyte detected in the associated Method Blank
E Value above quantitation range
J Analyte detected below quantitation limits
RL Reporting Limit

D Dilution was required
H Holding times for preparation or analysis exceeded
ND Not detected at the Reporting Limit
S Spike recovery outside accepted recovery limits



Analytical Report

WO#: 1210020

Date Reported: 10/23/2012

Client: GeoEngineers, Inc. - Redmond

Collection Date: 10/8/2012 8:55:00 AM

Project: Rufus 2.0 WO11

Lab ID: 1210020-085

Matrix: Soil

Client Sample ID: B21-10-2.5

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<u>Total Metals by EPA Method 6020</u>				Batch ID: 3449		Analyst: SG
Selenium	ND	0.392		mg/Kg-dry	1	10/16/2012 11:51:17 PM
Silver	0.109	0.0785		mg/Kg-dry	1	10/16/2012 11:51:17 PM
<u>Mercury by EPA Method 7471</u>				Batch ID: 3456		Analyst: MC
Mercury	ND	0.250		mg/Kg-dry	1	10/18/2012 11:51:31 AM
<u>Sample Moisture (Percent Moisture)</u>				Batch ID: R6156		Analyst: CM
Percent Moisture	16.7			wt%	1	10/16/2012 10:35:24 AM

Qualifiers: B Analyte detected in the associated Method Blank
E Value above quantitation range
J Analyte detected below quantitation limits
RL Reporting Limit

D Dilution was required
H Holding times for preparation or analysis exceeded
ND Not detected at the Reporting Limit
S Spike recovery outside accepted recovery limits



Analytical Report

WO#: 1210020

Date Reported: 10/23/2012

Client: GeoEngineers, Inc. - Redmond

Collection Date: 10/8/2012 9:20:00 AM

Project: Rufus 2.0 WO11

Lab ID: 1210020-091

Matrix: Soil

Client Sample ID: B21-10-17.5

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<u>Diesel and Heavy Oil by NWTPH-Dx/Dx Ext.</u>				Batch ID: 3445		Analyst: BR
Diesel (Fuel Oil)	ND	18.6		mg/Kg-dry	1	10/17/2012 7:31:00 PM
Heavy Oil	ND	46.5		mg/Kg-dry	1	10/17/2012 7:31:00 PM
Surr: 2-Fluorobiphenyl	106	50-150		%REC	1	10/17/2012 7:31:00 PM
Surr: o-Terphenyl	100	50-150		%REC	1	10/17/2012 7:31:00 PM
<u>Gasoline by NWTPH-Gx</u>				Batch ID: R6222		Analyst: EM
Gasoline	ND	7.30		mg/Kg-dry	1	10/16/2012 10:26:00 AM
Surr: 1,2-Dichloroethane-d4	106	65-135		%REC	1	10/16/2012 10:26:00 AM
Surr: Fluorobenzene	101	65-135		%REC	1	10/16/2012 10:26:00 AM
<u>Volatile Organic Compounds by EPA Method 8260</u>				Batch ID: 3439		Analyst: EM
Dichlorodifluoromethane (CFC-12)	ND	0.0876		mg/Kg-dry	1	10/16/2012 10:26:00 AM
Chloromethane	ND	0.0876		mg/Kg-dry	1	10/16/2012 10:26:00 AM
Vinyl chloride	ND	0.00292		mg/Kg-dry	1	10/16/2012 10:26:00 AM
Bromomethane	ND	0.131		mg/Kg-dry	1	10/16/2012 10:26:00 AM
Trichlorofluoromethane (CFC-11)	ND	0.0730		mg/Kg-dry	1	10/16/2012 10:26:00 AM
Chloroethane	ND	0.0876		mg/Kg-dry	1	10/16/2012 10:26:00 AM
1,1-Dichloroethene	ND	0.0730		mg/Kg-dry	1	10/16/2012 10:26:00 AM
Methylene chloride	ND	0.0292		mg/Kg-dry	1	10/16/2012 10:26:00 AM
trans-1,2-Dichloroethene	ND	0.0292		mg/Kg-dry	1	10/16/2012 10:26:00 AM
Methyl tert-butyl ether (MTBE)	ND	0.0730		mg/Kg-dry	1	10/16/2012 10:26:00 AM
1,1-Dichloroethane	ND	0.0292		mg/Kg-dry	1	10/16/2012 10:26:00 AM
2,2-Dichloropropane	ND	0.0730		mg/Kg-dry	1	10/16/2012 10:26:00 AM
cis-1,2-Dichloroethene	ND	0.0292		mg/Kg-dry	1	10/16/2012 10:26:00 AM
Chloroform	ND	0.0292		mg/Kg-dry	1	10/16/2012 10:26:00 AM
1,1,1-Trichloroethane (TCA)	ND	0.0292		mg/Kg-dry	1	10/16/2012 10:26:00 AM
1,1-Dichloropropene	ND	0.0292		mg/Kg-dry	1	10/16/2012 10:26:00 AM
Carbon tetrachloride	ND	0.0292		mg/Kg-dry	1	10/16/2012 10:26:00 AM
1,2-Dichloroethane (EDC)	ND	0.0438		mg/Kg-dry	1	10/16/2012 10:26:00 AM
Benzene	ND	0.0292		mg/Kg-dry	1	10/16/2012 10:26:00 AM
Trichloroethene (TCE)	ND	0.0438		mg/Kg-dry	1	10/16/2012 10:26:00 AM
1,2-Dichloropropane	ND	0.0292		mg/Kg-dry	1	10/16/2012 10:26:00 AM
Bromodichloromethane	ND	0.0292		mg/Kg-dry	1	10/16/2012 10:26:00 AM

Qualifiers: B Analyte detected in the associated Method Blank
E Value above quantitation range
J Analyte detected below quantitation limits
RL Reporting Limit

D Dilution was required
H Holding times for preparation or analysis exceeded
ND Not detected at the Reporting Limit
S Spike recovery outside accepted recovery limits



Analytical Report

WO#: 1210020

Date Reported: 10/23/2012

Client: GeoEngineers, Inc. - Redmond

Collection Date: 10/8/2012 9:20:00 AM

Project: Rufus 2.0 WO11

Lab ID: 1210020-091

Matrix: Soil

Client Sample ID: B21-10-17.5

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Volatile Organic Compounds by EPA Method 8260				Batch ID: 3439		Analyst: EM
Dibromomethane	ND	0.0584		mg/Kg-dry	1	10/16/2012 10:26:00 AM
cis-1,3-Dichloropropene	ND	0.0292		mg/Kg-dry	1	10/16/2012 10:26:00 AM
Toluene	ND	0.0292		mg/Kg-dry	1	10/16/2012 10:26:00 AM
trans-1,3-Dichloropropylene	ND	0.0438		mg/Kg-dry	1	10/16/2012 10:26:00 AM
1,1,2-Trichloroethane	ND	0.0438		mg/Kg-dry	1	10/16/2012 10:26:00 AM
1,3-Dichloropropane	ND	0.0730		mg/Kg-dry	1	10/16/2012 10:26:00 AM
Tetrachloroethene (PCE)	ND	0.0292		mg/Kg-dry	1	10/16/2012 10:26:00 AM
Dibromochloromethane	ND	0.0438		mg/Kg-dry	1	10/16/2012 10:26:00 AM
1,2-Dibromoethane (EDB)	ND	0.00730		mg/Kg-dry	1	10/16/2012 10:26:00 AM
Chlorobenzene	ND	0.0292		mg/Kg-dry	1	10/16/2012 10:26:00 AM
1,1,1,2-Tetrachloroethane	ND	0.0438		mg/Kg-dry	1	10/16/2012 10:26:00 AM
Ethylbenzene	ND	0.0438		mg/Kg-dry	1	10/16/2012 10:26:00 AM
m,p-Xylene	ND	0.0292		mg/Kg-dry	1	10/16/2012 10:26:00 AM
o-Xylene	ND	0.0292		mg/Kg-dry	1	10/16/2012 10:26:00 AM
Styrene	ND	0.0292		mg/Kg-dry	1	10/16/2012 10:26:00 AM
Isopropylbenzene	ND	0.117		mg/Kg-dry	1	10/16/2012 10:26:00 AM
Bromoform	ND	0.0292		mg/Kg-dry	1	10/16/2012 10:26:00 AM
1,1,2,2-Tetrachloroethane	ND	0.0292		mg/Kg-dry	1	10/16/2012 10:26:00 AM
n-Propylbenzene	ND	0.0292		mg/Kg-dry	1	10/16/2012 10:26:00 AM
Bromobenzene	ND	0.0438		mg/Kg-dry	1	10/16/2012 10:26:00 AM
1,3,5-Trimethylbenzene	ND	0.0292		mg/Kg-dry	1	10/16/2012 10:26:00 AM
2-Chlorotoluene	ND	0.0292		mg/Kg-dry	1	10/16/2012 10:26:00 AM
4-Chlorotoluene	ND	0.0292		mg/Kg-dry	1	10/16/2012 10:26:00 AM
tert-Butylbenzene	ND	0.0292		mg/Kg-dry	1	10/16/2012 10:26:00 AM
1,2,3-Trichloropropane	ND	0.0292		mg/Kg-dry	1	10/16/2012 10:26:00 AM
1,2,4-Trichlorobenzene	ND	0.0730		mg/Kg-dry	1	10/16/2012 10:26:00 AM
sec-Butylbenzene	ND	0.0292		mg/Kg-dry	1	10/16/2012 10:26:00 AM
4-Isopropyltoluene	ND	0.0292		mg/Kg-dry	1	10/16/2012 10:26:00 AM
1,3-Dichlorobenzene	ND	0.0292		mg/Kg-dry	1	10/16/2012 10:26:00 AM
1,4-Dichlorobenzene	ND	0.0292		mg/Kg-dry	1	10/16/2012 10:26:00 AM
n-Butylbenzene	ND	0.0292		mg/Kg-dry	1	10/16/2012 10:26:00 AM
1,2-Dichlorobenzene	ND	0.0292		mg/Kg-dry	1	10/16/2012 10:26:00 AM
1,2-Dibromo-3-chloropropane	ND	0.0438		mg/Kg-dry	1	10/16/2012 10:26:00 AM
1,2,4-Trimethylbenzene	ND	0.0292		mg/Kg-dry	1	10/16/2012 10:26:00 AM
Hexachlorobutadiene	ND	0.146		mg/Kg-dry	1	10/16/2012 10:26:00 AM

Qualifiers: B Analyte detected in the associated Method Blank
E Value above quantitation range
J Analyte detected below quantitation limits
RL Reporting Limit

D Dilution was required
H Holding times for preparation or analysis exceeded
ND Not detected at the Reporting Limit
S Spike recovery outside accepted recovery limits



Analytical Report

WO#: 1210020

Date Reported: 10/23/2012

Client: GeoEngineers, Inc. - Redmond

Collection Date: 10/8/2012 9:20:00 AM

Project: Rufus 2.0 WO11

Lab ID: 1210020-091

Matrix: Soil

Client Sample ID: B21-10-17.5

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<u>Volatile Organic Compounds by EPA Method 8260</u>				Batch ID: 3439		Analyst: EM
Napthalene	ND	0.0438		mg/Kg-dry	1	10/16/2012 10:26:00 AM
1,2,3-Trichlorobenzene	ND	0.0292		mg/Kg-dry	1	10/16/2012 10:26:00 AM
Surr: 1-Bromo-4-fluorobenzene	103	63.1-141		%REC	1	10/16/2012 10:26:00 AM
Surr: Dibromofluoromethane	98.5	67.6-119		%REC	1	10/16/2012 10:26:00 AM
Surr: Toluene-d8	98.9	78.5-126		%REC	1	10/16/2012 10:26:00 AM
<u>Total Metals by EPA Method 6020</u>				Batch ID: 3449		Analyst: SG
Arsenic	3.46	0.0669	B	mg/Kg-dry	1	10/17/2012 12:19:21 AM
Barium	21.0	0.335		mg/Kg-dry	1	10/17/2012 12:19:21 AM
Cadmium	ND	0.134		mg/Kg-dry	1	10/17/2012 12:19:21 AM
Chromium	17.2	0.0669		mg/Kg-dry	1	10/17/2012 12:19:21 AM
Lead	1.25	0.134		mg/Kg-dry	1	10/17/2012 12:19:21 AM
Selenium	ND	0.335		mg/Kg-dry	1	10/17/2012 12:19:21 AM
Silver	ND	0.0669		mg/Kg-dry	1	10/17/2012 12:19:21 AM
<u>Mercury by EPA Method 7471</u>				Batch ID: 3456		Analyst: MC
Mercury	ND	0.240		mg/Kg-dry	1	10/18/2012 11:53:07 AM
<u>Sample Moisture (Percent Moisture)</u>				Batch ID: R6156		Analyst: CM
Percent Moisture	1.73			wt%	1	10/16/2012 10:35:24 AM

Qualifiers: B Analyte detected in the associated Method Blank
E Value above quantitation range
J Analyte detected below quantitation limits
RL Reporting Limit

D Dilution was required
H Holding times for preparation or analysis exceeded
ND Not detected at the Reporting Limit
S Spike recovery outside accepted recovery limits



Analytical Report

WO#: 1210020

Date Reported: 10/23/2012

Client: GeoEngineers, Inc. - Redmond

Collection Date: 10/8/2012 9:50:00 AM

Project: Rufus 2.0 WO11

Lab ID: 1210020-097

Matrix: Soil

Client Sample ID: B21-11-2.5

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<u>Diesel and Heavy Oil by NWTPH-Dx/Dx Ext.</u>				Batch ID: 3445		Analyst: BR
Diesel (Fuel Oil)	ND	21.9		mg/Kg-dry	1	10/17/2012 7:58:00 PM
Heavy Oil	ND	54.8		mg/Kg-dry	1	10/17/2012 7:58:00 PM
Surr: 2-Fluorobiphenyl	97.3	50-150		%REC	1	10/17/2012 7:58:00 PM
Surr: o-Terphenyl	90.9	50-150		%REC	1	10/17/2012 7:58:00 PM

Polyaromatic Hydrocarbons by EPA Method 8270 (SIM)

Batch ID: 3447

Analyst: PH

Naphthalene	ND	52.0		µg/Kg-dry	1	10/18/2012 9:55:00 PM
2-Methylnaphthalene	ND	52.0		µg/Kg-dry	1	10/18/2012 9:55:00 PM
1-Methylnaphthalene	ND	52.0		µg/Kg-dry	1	10/18/2012 9:55:00 PM
Acenaphthylene	ND	52.0		µg/Kg-dry	1	10/18/2012 9:55:00 PM
Acenaphthene	ND	52.0		µg/Kg-dry	1	10/18/2012 9:55:00 PM
Fluorene	ND	52.0		µg/Kg-dry	1	10/18/2012 9:55:00 PM
Phenanthrene	ND	52.0		µg/Kg-dry	1	10/18/2012 9:55:00 PM
Anthracene	ND	52.0		µg/Kg-dry	1	10/18/2012 9:55:00 PM
Fluoranthene	ND	52.0		µg/Kg-dry	1	10/18/2012 9:55:00 PM
Pyrene	ND	52.0		µg/Kg-dry	1	10/18/2012 9:55:00 PM
Benz(a)anthracene	ND	52.0		µg/Kg-dry	1	10/18/2012 9:55:00 PM
Chrysene	ND	52.0		µg/Kg-dry	1	10/18/2012 9:55:00 PM
Benzo(b)fluoranthene	ND	52.0		µg/Kg-dry	1	10/18/2012 9:55:00 PM
Benzo(k)fluoranthene	ND	52.0		µg/Kg-dry	1	10/18/2012 9:55:00 PM
Benzo(a)pyrene	ND	52.0		µg/Kg-dry	1	10/18/2012 9:55:00 PM
Indeno(1,2,3-cd)pyrene	ND	52.0		µg/Kg-dry	1	10/18/2012 9:55:00 PM
Dibenz(a,h)anthracene	ND	52.0		µg/Kg-dry	1	10/18/2012 9:55:00 PM
Benzo(g,h,i)perylene	ND	52.0		µg/Kg-dry	1	10/18/2012 9:55:00 PM
Surr: 2-Fluorobiphenyl	72.4	50.4-142		%REC	1	10/18/2012 9:55:00 PM
Surr: Terphenyl-d14 (surr)	85.0	48.8-157		%REC	1	10/18/2012 9:55:00 PM

Gasoline by NWTPH-Gx

Batch ID: R6222

Analyst: EM

Gasoline	ND	4.82		mg/Kg-dry	1	10/16/2012 10:56:00 AM
Surr: 1,2-Dichloroethane-d4	109	65-135		%REC	1	10/16/2012 10:56:00 AM
Surr: Fluorobenzene	101	65-135		%REC	1	10/16/2012 10:56:00 AM

Qualifiers: B Analyte detected in the associated Method Blank
E Value above quantitation range
J Analyte detected below quantitation limits
RL Reporting Limit

D Dilution was required
H Holding times for preparation or analysis exceeded
ND Not detected at the Reporting Limit
S Spike recovery outside accepted recovery limits



Analytical Report

WO#: 1210020

Date Reported: 10/23/2012

Client: GeoEngineers, Inc. - Redmond

Collection Date: 10/8/2012 9:50:00 AM

Project: Rufus 2.0 WO11

Lab ID: 1210020-097

Matrix: Soil

Client Sample ID: B21-11-2.5

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
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Volatile Organic Compounds by EPA Method 8260

Batch ID: 3439

Analyst: EM

Dichlorodifluoromethane (CFC-12)	ND	0.0578		mg/Kg-dry	1	10/16/2012 10:56:00 AM
Chloromethane	ND	0.0578		mg/Kg-dry	1	10/16/2012 10:56:00 AM
Vinyl chloride	ND	0.00193		mg/Kg-dry	1	10/16/2012 10:56:00 AM
Bromomethane	ND	0.0867		mg/Kg-dry	1	10/16/2012 10:56:00 AM
Trichlorofluoromethane (CFC-11)	ND	0.0482		mg/Kg-dry	1	10/16/2012 10:56:00 AM
Chloroethane	ND	0.0578		mg/Kg-dry	1	10/16/2012 10:56:00 AM
1,1-Dichloroethene	ND	0.0482		mg/Kg-dry	1	10/16/2012 10:56:00 AM
Methylene chloride	ND	0.0193		mg/Kg-dry	1	10/16/2012 10:56:00 AM
trans-1,2-Dichloroethene	ND	0.0193		mg/Kg-dry	1	10/16/2012 10:56:00 AM
Methyl tert-butyl ether (MTBE)	ND	0.0482		mg/Kg-dry	1	10/16/2012 10:56:00 AM
1,1-Dichloroethane	ND	0.0193		mg/Kg-dry	1	10/16/2012 10:56:00 AM
2,2-Dichloropropane	ND	0.0482		mg/Kg-dry	1	10/16/2012 10:56:00 AM
cis-1,2-Dichloroethene	ND	0.0193		mg/Kg-dry	1	10/16/2012 10:56:00 AM
Chloroform	ND	0.0193		mg/Kg-dry	1	10/16/2012 10:56:00 AM
1,1,1-Trichloroethane (TCA)	ND	0.0193		mg/Kg-dry	1	10/16/2012 10:56:00 AM
1,1-Dichloropropene	ND	0.0193		mg/Kg-dry	1	10/16/2012 10:56:00 AM
Carbon tetrachloride	ND	0.0193		mg/Kg-dry	1	10/16/2012 10:56:00 AM
1,2-Dichloroethane	ND	0.0289		mg/Kg-dry	1	10/16/2012 10:56:00 AM
Benzene	ND	0.0193		mg/Kg-dry	1	10/16/2012 10:56:00 AM
Trichloroethene (TCE)	ND	0.0289		mg/Kg-dry	1	10/16/2012 10:56:00 AM
1,2-Dichloropropane	ND	0.0193		mg/Kg-dry	1	10/16/2012 10:56:00 AM
Bromodichloromethane	ND	0.0193		mg/Kg-dry	1	10/16/2012 10:56:00 AM
Dibromomethane	ND	0.0385		mg/Kg-dry	1	10/16/2012 10:56:00 AM
cis-1,3-Dichloropropene	ND	0.0193		mg/Kg-dry	1	10/16/2012 10:56:00 AM
Toluene	ND	0.0193		mg/Kg-dry	1	10/16/2012 10:56:00 AM
trans-1,3-Dichloropropene	ND	0.0289		mg/Kg-dry	1	10/16/2012 10:56:00 AM
1,1,2-Trichloroethane	ND	0.0289		mg/Kg-dry	1	10/16/2012 10:56:00 AM
1,3-Dichloropropane	ND	0.0482		mg/Kg-dry	1	10/16/2012 10:56:00 AM
Tetrachloroethene (PCE)	ND	0.0193		mg/Kg-dry	1	10/16/2012 10:56:00 AM
Dibromochloromethane	ND	0.0289		mg/Kg-dry	1	10/16/2012 10:56:00 AM
1,2-Dibromoethane (EDB)	ND	0.00482		mg/Kg-dry	1	10/16/2012 10:56:00 AM
Chlorobenzene	ND	0.0193		mg/Kg-dry	1	10/16/2012 10:56:00 AM
1,1,1,2-Tetrachloroethane	ND	0.0289		mg/Kg-dry	1	10/16/2012 10:56:00 AM
Ethylbenzene	ND	0.0289		mg/Kg-dry	1	10/16/2012 10:56:00 AM
m,p-Xylene	ND	0.0193		mg/Kg-dry	1	10/16/2012 10:56:00 AM

Qualifiers: B Analyte detected in the associated Method Blank
E Value above quantitation range
J Analyte detected below quantitation limits
RL Reporting Limit

D Dilution was required
H Holding times for preparation or analysis exceeded
ND Not detected at the Reporting Limit
S Spike recovery outside accepted recovery limits



Analytical Report

WO#: 1210020

Date Reported: 10/23/2012

Client: GeoEngineers, Inc. - Redmond

Collection Date: 10/8/2012 9:50:00 AM

Project: Rufus 2.0 WO11

Lab ID: 1210020-097

Matrix: Soil

Client Sample ID: B21-11-2.5

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
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Volatile Organic Compounds by EPA Method 8260

Batch ID: 3439

Analyst: EM

o-Xylene	ND	0.0193		mg/Kg-dry	1	10/16/2012 10:56:00 AM
Styrene	ND	0.0193		mg/Kg-dry	1	10/16/2012 10:56:00 AM
Isopropylbenzene	ND	0.0771		mg/Kg-dry	1	10/16/2012 10:56:00 AM
Bromoform	ND	0.0193		mg/Kg-dry	1	10/16/2012 10:56:00 AM
1,1,2,2-Tetrachloroethane	ND	0.0193		mg/Kg-dry	1	10/16/2012 10:56:00 AM
n-Propylbenzene	ND	0.0193		mg/Kg-dry	1	10/16/2012 10:56:00 AM
Bromobenzene	ND	0.0289		mg/Kg-dry	1	10/16/2012 10:56:00 AM
1,3,5-Trimethylbenzene	ND	0.0193		mg/Kg-dry	1	10/16/2012 10:56:00 AM
2-Chlorotoluene	ND	0.0193		mg/Kg-dry	1	10/16/2012 10:56:00 AM
4-Chlorotoluene	ND	0.0193		mg/Kg-dry	1	10/16/2012 10:56:00 AM
tert-Butylbenzene	ND	0.0193		mg/Kg-dry	1	10/16/2012 10:56:00 AM
1,2,3-Trichloropropane	ND	0.0193		mg/Kg-dry	1	10/16/2012 10:56:00 AM
1,2,4-Trichlorobenzene	ND	0.0482		mg/Kg-dry	1	10/16/2012 10:56:00 AM
sec-Butylbenzene	ND	0.0193		mg/Kg-dry	1	10/16/2012 10:56:00 AM
4-Isopropyltoluene	ND	0.0193		mg/Kg-dry	1	10/16/2012 10:56:00 AM
1,3-Dichlorobenzene	ND	0.0193		mg/Kg-dry	1	10/16/2012 10:56:00 AM
1,4-Dichlorobenzene	ND	0.0193		mg/Kg-dry	1	10/16/2012 10:56:00 AM
n-Butylbenzene	ND	0.0193		mg/Kg-dry	1	10/16/2012 10:56:00 AM
1,2-Dichlorobenzene	ND	0.0193		mg/Kg-dry	1	10/16/2012 10:56:00 AM
1,2-Dibromo-3-chloropropane	ND	0.0289		mg/Kg-dry	1	10/16/2012 10:56:00 AM
1,2,4-Trimethylbenzene	ND	0.0193		mg/Kg-dry	1	10/16/2012 10:56:00 AM
Hexachlorobutadiene	ND	0.0963		mg/Kg-dry	1	10/16/2012 10:56:00 AM
Naphthalene	ND	0.0289		mg/Kg-dry	1	10/16/2012 10:56:00 AM
1,2,3-Trichlorobenzene	ND	0.0193		mg/Kg-dry	1	10/16/2012 10:56:00 AM
Surr: 1-Bromo-4-fluorobenzene	103	63.1-141		%REC	1	10/16/2012 10:56:00 AM
Surr: Dibromofluoromethane	98.4	67.6-119		%REC	1	10/16/2012 10:56:00 AM
Surr: Toluene-d8	100	78.5-126		%REC	1	10/16/2012 10:56:00 AM

Total Metals by EPA Method 6020

Batch ID: 3449

Analyst: SG

Arsenic	4.82	0.0775		mg/Kg-dry	1	10/17/2012 12:28:23 AM
Barium	118	0.387		mg/Kg-dry	1	10/17/2012 12:28:23 AM
Cadmium	ND	0.155		mg/Kg-dry	1	10/17/2012 12:28:23 AM
Chromium	52.7	0.0775		mg/Kg-dry	1	10/17/2012 12:28:23 AM
Lead	16.2	0.155		mg/Kg-dry	1	10/17/2012 12:28:23 AM

Qualifiers: B Analyte detected in the associated Method Blank
E Value above quantitation range
J Analyte detected below quantitation limits
RL Reporting Limit

D Dilution was required
H Holding times for preparation or analysis exceeded
ND Not detected at the Reporting Limit
S Spike recovery outside accepted recovery limits



Analytical Report

WO#: 1210020

Date Reported: 10/23/2012

Client: GeoEngineers, Inc. - Redmond

Collection Date: 10/8/2012 9:50:00 AM

Project: Rufus 2.0 WO11

Lab ID: 1210020-097

Matrix: Soil

Client Sample ID: B21-11-2.5

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<u>Total Metals by EPA Method 6020</u>				Batch ID: 3449		Analyst: SG
Selenium	ND	0.387		mg/Kg-dry	1	10/17/2012 12:28:23 AM
Silver	ND	0.0775		mg/Kg-dry	1	10/17/2012 12:28:23 AM
<u>Mercury by EPA Method 7471</u>				Batch ID: 3456		Analyst: MC
Mercury	ND	0.271		mg/Kg-dry	1	10/18/2012 11:57:57 AM
<u>Sample Moisture (Percent Moisture)</u>				Batch ID: R6156		Analyst: CM
Percent Moisture	16.2			wt%	1	10/16/2012 10:35:24 AM

Qualifiers: B Analyte detected in the associated Method Blank
E Value above quantitation range
J Analyte detected below quantitation limits
RL Reporting Limit

D Dilution was required
H Holding times for preparation or analysis exceeded
ND Not detected at the Reporting Limit
S Spike recovery outside accepted recovery limits



Analytical Report

WO#: 1210020

Date Reported: 10/23/2012

Client: GeoEngineers, Inc. - Redmond

Collection Date: 10/8/2012 10:00:00 AM

Project: Rufus 2.0 WO11

Lab ID: 1210020-100

Matrix: Soil

Client Sample ID: B21-11-10.0

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<u>Diesel and Heavy Oil by NWTPH-Dx/Dx Ext.</u>				Batch ID: 3445		Analyst: BR
Diesel (Fuel Oil)	ND	27.8		mg/Kg-dry	1	10/17/2012 8:25:00 PM
Heavy Oil	ND	69.4		mg/Kg-dry	1	10/17/2012 8:25:00 PM
Surr: 2-Fluorobiphenyl	98.2	50-150		%REC	1	10/17/2012 8:25:00 PM
Surr: o-Terphenyl	92.4	50-150		%REC	1	10/17/2012 8:25:00 PM
<u>Polyaromatic Hydrocarbons by EPA Method 8270 (SIM)</u>				Batch ID: 3447		Analyst: PH
Naphthalene	ND	61.8		µg/Kg-dry	1	10/18/2012 10:20:00 PM
2-Methylnaphthalene	ND	61.8		µg/Kg-dry	1	10/18/2012 10:20:00 PM
1-Methylnaphthalene	ND	61.8		µg/Kg-dry	1	10/18/2012 10:20:00 PM
Acenaphthylene	ND	61.8		µg/Kg-dry	1	10/18/2012 10:20:00 PM
Acenaphthene	ND	61.8		µg/Kg-dry	1	10/18/2012 10:20:00 PM
Fluorene	ND	61.8		µg/Kg-dry	1	10/18/2012 10:20:00 PM
Phenanthrene	ND	61.8		µg/Kg-dry	1	10/18/2012 10:20:00 PM
Anthracene	ND	61.8		µg/Kg-dry	1	10/18/2012 10:20:00 PM
Fluoranthene	ND	61.8		µg/Kg-dry	1	10/18/2012 10:20:00 PM
Pyrene	ND	61.8		µg/Kg-dry	1	10/18/2012 10:20:00 PM
Benz(a)anthracene	ND	61.8		µg/Kg-dry	1	10/18/2012 10:20:00 PM
Chrysene	ND	61.8		µg/Kg-dry	1	10/18/2012 10:20:00 PM
Benzo(b)fluoranthene	ND	61.8		µg/Kg-dry	1	10/18/2012 10:20:00 PM
Benzo(k)fluoranthene	ND	61.8		µg/Kg-dry	1	10/18/2012 10:20:00 PM
Benzo(a)pyrene	ND	61.8		µg/Kg-dry	1	10/18/2012 10:20:00 PM
Indeno(1,2,3-cd)pyrene	ND	61.8		µg/Kg-dry	1	10/18/2012 10:20:00 PM
Dibenz(a,h)anthracene	ND	61.8		µg/Kg-dry	1	10/18/2012 10:20:00 PM
Benzo(g,h,i)perylene	ND	61.8		µg/Kg-dry	1	10/18/2012 10:20:00 PM
Surr: 2-Fluorobiphenyl	75.0	50.4-142		%REC	1	10/18/2012 10:20:00 PM
Surr: Terphenyl-d14 (surr)	82.6	48.8-157		%REC	1	10/18/2012 10:20:00 PM
<u>Gasoline by NWTPH-Gx</u>				Batch ID: R6222		Analyst: EM
Gasoline	ND	6.21		mg/Kg-dry	1	10/16/2012 12:26:00 PM
Surr: 1,2-Dichloroethane-d4	106	65-135		%REC	1	10/16/2012 12:26:00 PM
Surr: Fluorobenzene	99.9	65-135		%REC	1	10/16/2012 12:26:00 PM

Qualifiers: B Analyte detected in the associated Method Blank
E Value above quantitation range
J Analyte detected below quantitation limits
RL Reporting Limit

D Dilution was required
H Holding times for preparation or analysis exceeded
ND Not detected at the Reporting Limit
S Spike recovery outside accepted recovery limits



Analytical Report

WO#: 1210020

Date Reported: 10/23/2012

Client: GeoEngineers, Inc. - Redmond

Collection Date: 10/8/2012 10:00:00 AM

Project: Rufus 2.0 WO11

Lab ID: 1210020-100

Matrix: Soil

Client Sample ID: B21-11-10.0

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Volatile Organic Compounds by EPA Method 8260				Batch ID: 3439		Analyst: EM
Dichlorodifluoromethane (CFC-12)	ND	0.0745		mg/Kg-dry	1	10/16/2012 12:26:00 PM
Chloromethane	ND	0.0745		mg/Kg-dry	1	10/16/2012 12:26:00 PM
Vinyl chloride	ND	0.00248		mg/Kg-dry	1	10/16/2012 12:26:00 PM
Bromomethane	ND	0.112		mg/Kg-dry	1	10/16/2012 12:26:00 PM
Trichlorofluoromethane (CFC-11)	ND	0.0621		mg/Kg-dry	1	10/16/2012 12:26:00 PM
Chloroethane	ND	0.0745		mg/Kg-dry	1	10/16/2012 12:26:00 PM
1,1-Dichloroethene	ND	0.0621		mg/Kg-dry	1	10/16/2012 12:26:00 PM
Methylene chloride	ND	0.0248		mg/Kg-dry	1	10/16/2012 12:26:00 PM
trans-1,2-Dichloroethene	ND	0.0248		mg/Kg-dry	1	10/16/2012 12:26:00 PM
Methyl tert-butyl ether (MTBE)	ND	0.0621		mg/Kg-dry	1	10/16/2012 12:26:00 PM
1,1-Dichloroethane	ND	0.0248		mg/Kg-dry	1	10/16/2012 12:26:00 PM
2,2-Dichloropropane	ND	0.0621		mg/Kg-dry	1	10/16/2012 12:26:00 PM
cis-1,2-Dichloroethene	ND	0.0248		mg/Kg-dry	1	10/16/2012 12:26:00 PM
Chloroform	ND	0.0248		mg/Kg-dry	1	10/16/2012 12:26:00 PM
1,1,1-Trichloroethane (TCA)	ND	0.0248		mg/Kg-dry	1	10/16/2012 12:26:00 PM
1,1-Dichloropropene	ND	0.0248		mg/Kg-dry	1	10/16/2012 12:26:00 PM
Carbon tetrachloride	ND	0.0248		mg/Kg-dry	1	10/16/2012 12:26:00 PM
1,2-Dichloroethane	ND	0.0373		mg/Kg-dry	1	10/16/2012 12:26:00 PM
Benzene	ND	0.0248		mg/Kg-dry	1	10/16/2012 12:26:00 PM
Trichloroethene (TCE)	ND	0.0373		mg/Kg-dry	1	10/16/2012 12:26:00 PM
1,2-Dichloropropane	ND	0.0248		mg/Kg-dry	1	10/16/2012 12:26:00 PM
Bromodichloromethane	ND	0.0248		mg/Kg-dry	1	10/16/2012 12:26:00 PM
Dibromomethane	ND	0.0497		mg/Kg-dry	1	10/16/2012 12:26:00 PM
cis-1,3-Dichloropropene	ND	0.0248		mg/Kg-dry	1	10/16/2012 12:26:00 PM
Toluene	ND	0.0248		mg/Kg-dry	1	10/16/2012 12:26:00 PM
trans-1,3-Dichloropropene	ND	0.0373		mg/Kg-dry	1	10/16/2012 12:26:00 PM
1,1,2-Trichloroethane	ND	0.0373		mg/Kg-dry	1	10/16/2012 12:26:00 PM
1,3-Dichloropropane	ND	0.0621		mg/Kg-dry	1	10/16/2012 12:26:00 PM
Tetrachloroethene (PCE)	ND	0.0248		mg/Kg-dry	1	10/16/2012 12:26:00 PM
Dibromochloromethane	ND	0.0373		mg/Kg-dry	1	10/16/2012 12:26:00 PM
1,2-Dibromoethane (EDB)	ND	0.00621		mg/Kg-dry	1	10/16/2012 12:26:00 PM
Chlorobenzene	ND	0.0248		mg/Kg-dry	1	10/16/2012 12:26:00 PM
1,1,1,2-Tetrachloroethane	ND	0.0373		mg/Kg-dry	1	10/16/2012 12:26:00 PM
Ethylbenzene	ND	0.0373		mg/Kg-dry	1	10/16/2012 12:26:00 PM
m,p-Xylene	ND	0.0248		mg/Kg-dry	1	10/16/2012 12:26:00 PM

Qualifiers: B Analyte detected in the associated Method Blank
E Value above quantitation range
J Analyte detected below quantitation limits
RL Reporting Limit

D Dilution was required
H Holding times for preparation or analysis exceeded
ND Not detected at the Reporting Limit
S Spike recovery outside accepted recovery limits



Analytical Report

WO#: 1210020

Date Reported: 10/23/2012

Client: GeoEngineers, Inc. - Redmond

Collection Date: 10/8/2012 10:00:00 AM

Project: Rufus 2.0 WO11

Lab ID: 1210020-100

Matrix: Soil

Client Sample ID: B21-11-10.0

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
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Volatile Organic Compounds by EPA Method 8260

Batch ID: 3439

Analyst: EM

o-Xylene	ND	0.0248		mg/Kg-dry	1	10/16/2012 12:26:00 PM
Styrene	ND	0.0248		mg/Kg-dry	1	10/16/2012 12:26:00 PM
Isopropylbenzene	ND	0.0994		mg/Kg-dry	1	10/16/2012 12:26:00 PM
Bromoform	ND	0.0248		mg/Kg-dry	1	10/16/2012 12:26:00 PM
1,1,2,2-Tetrachloroethane	ND	0.0248		mg/Kg-dry	1	10/16/2012 12:26:00 PM
n-Propylbenzene	ND	0.0248		mg/Kg-dry	1	10/16/2012 12:26:00 PM
Bromobenzene	ND	0.0373		mg/Kg-dry	1	10/16/2012 12:26:00 PM
1,3,5-Trimethylbenzene	ND	0.0248		mg/Kg-dry	1	10/16/2012 12:26:00 PM
2-Chlorotoluene	ND	0.0248		mg/Kg-dry	1	10/16/2012 12:26:00 PM
4-Chlorotoluene	ND	0.0248		mg/Kg-dry	1	10/16/2012 12:26:00 PM
tert-Butylbenzene	ND	0.0248		mg/Kg-dry	1	10/16/2012 12:26:00 PM
1,2,3-Trichloropropane	ND	0.0248		mg/Kg-dry	1	10/16/2012 12:26:00 PM
1,2,4-Trichlorobenzene	ND	0.0621		mg/Kg-dry	1	10/16/2012 12:26:00 PM
sec-Butylbenzene	ND	0.0248		mg/Kg-dry	1	10/16/2012 12:26:00 PM
4-Isopropyltoluene	ND	0.0248		mg/Kg-dry	1	10/16/2012 12:26:00 PM
1,3-Dichlorobenzene	ND	0.0248		mg/Kg-dry	1	10/16/2012 12:26:00 PM
1,4-Dichlorobenzene	ND	0.0248		mg/Kg-dry	1	10/16/2012 12:26:00 PM
n-Butylbenzene	ND	0.0248		mg/Kg-dry	1	10/16/2012 12:26:00 PM
1,2-Dichlorobenzene	ND	0.0248		mg/Kg-dry	1	10/16/2012 12:26:00 PM
1,2-Dibromo-3-chloropropane	ND	0.0373		mg/Kg-dry	1	10/16/2012 12:26:00 PM
1,2,4-Trimethylbenzene	ND	0.0248		mg/Kg-dry	1	10/16/2012 12:26:00 PM
Hexachlorobutadiene	ND	0.124		mg/Kg-dry	1	10/16/2012 12:26:00 PM
Naphthalene	ND	0.0373		mg/Kg-dry	1	10/16/2012 12:26:00 PM
1,2,3-Trichlorobenzene	ND	0.0248		mg/Kg-dry	1	10/16/2012 12:26:00 PM
Surr: 1-Bromo-4-fluorobenzene	98.2	63.1-141		%REC	1	10/16/2012 12:26:00 PM
Surr: Dibromofluoromethane	98.2	67.6-119		%REC	1	10/16/2012 12:26:00 PM
Surr: Toluene-d8	101	78.5-126		%REC	1	10/16/2012 12:26:00 PM

Total Metals by EPA Method 6020

Batch ID: 3449

Analyst: SG

Arsenic	4.39	0.0965		mg/Kg-dry	1	10/17/2012 12:37:25 AM
Barium	180	0.482		mg/Kg-dry	1	10/17/2012 12:37:25 AM
Cadmium	ND	0.193		mg/Kg-dry	1	10/17/2012 12:37:25 AM
Chromium	92.7	0.0965		mg/Kg-dry	1	10/17/2012 12:37:25 AM
Lead	5.77	0.193		mg/Kg-dry	1	10/17/2012 12:37:25 AM

Qualifiers: B Analyte detected in the associated Method Blank
E Value above quantitation range
J Analyte detected below quantitation limits
RL Reporting Limit

D Dilution was required
H Holding times for preparation or analysis exceeded
ND Not detected at the Reporting Limit
S Spike recovery outside accepted recovery limits



Analytical Report

WO#: 1210020

Date Reported: 10/23/2012

Client: GeoEngineers, Inc. - Redmond

Collection Date: 10/8/2012 10:00:00 AM

Project: Rufus 2.0 WO11

Lab ID: 1210020-100

Matrix: Soil

Client Sample ID: B21-11-10.0

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<u>Total Metals by EPA Method 6020</u>				Batch ID: 3449		Analyst: SG
Selenium	ND	0.482		mg/Kg-dry	1	10/17/2012 12:37:25 AM
Silver	ND	0.0965		mg/Kg-dry	1	10/17/2012 12:37:25 AM
<u>Mercury by EPA Method 7471</u>				Batch ID: 3456		Analyst: MC
Mercury	ND	0.341		mg/Kg-dry	1	10/18/2012 11:59:34 AM
<u>Sample Moisture (Percent Moisture)</u>				Batch ID: R6156		Analyst: CM
Percent Moisture	28.0			wt%	1	10/16/2012 10:35:24 AM

Qualifiers: B Analyte detected in the associated Method Blank
E Value above quantitation range
J Analyte detected below quantitation limits
RL Reporting Limit

D Dilution was required
H Holding times for preparation or analysis exceeded
ND Not detected at the Reporting Limit
S Spike recovery outside accepted recovery limits



Analytical Report

WO#: 1210020

Date Reported: 10/23/2012

Client: GeoEngineers, Inc. - Redmond

Collection Date: 10/8/2012 10:40:00 AM

Project: Rufus 2.0 WO11

Lab ID: 1210020-110

Matrix: Soil

Client Sample ID: B21-12-5.0

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<u>Diesel and Heavy Oil by NWTPH-Dx/Dx Ext.</u>				Batch ID: 3445		Analyst: BR
Diesel (Fuel Oil)	ND	23.4		mg/Kg-dry	1	10/17/2012 8:52:00 PM
Heavy Oil	ND	58.4		mg/Kg-dry	1	10/17/2012 8:52:00 PM
Surr: 2-Fluorobiphenyl	106	50-150		%REC	1	10/17/2012 8:52:00 PM
Surr: o-Terphenyl	100	50-150		%REC	1	10/17/2012 8:52:00 PM

<u>Polyaromatic Hydrocarbons by EPA Method 8270 (SIM)</u>				Batch ID: 3447		Analyst: PH
Naphthalene	ND	55.5		µg/Kg-dry	1	10/19/2012 2:53:00 PM
2-Methylnaphthalene	ND	55.5		µg/Kg-dry	1	10/19/2012 2:53:00 PM
1-Methylnaphthalene	ND	55.5		µg/Kg-dry	1	10/19/2012 2:53:00 PM
Acenaphthylene	ND	55.5		µg/Kg-dry	1	10/19/2012 2:53:00 PM
Acenaphthene	ND	55.5		µg/Kg-dry	1	10/19/2012 2:53:00 PM
Fluorene	ND	55.5		µg/Kg-dry	1	10/19/2012 2:53:00 PM
Phenanthrene	ND	55.5		µg/Kg-dry	1	10/19/2012 2:53:00 PM
Anthracene	ND	55.5		µg/Kg-dry	1	10/19/2012 2:53:00 PM
Fluoranthene	ND	55.5		µg/Kg-dry	1	10/19/2012 2:53:00 PM
Pyrene	ND	55.5		µg/Kg-dry	1	10/19/2012 2:53:00 PM
Benz(a)anthracene	ND	55.5		µg/Kg-dry	1	10/19/2012 2:53:00 PM
Chrysene	ND	55.5		µg/Kg-dry	1	10/19/2012 2:53:00 PM
Benzo(b)fluoranthene	ND	55.5		µg/Kg-dry	1	10/19/2012 2:53:00 PM
Benzo(k)fluoranthene	ND	55.5		µg/Kg-dry	1	10/19/2012 2:53:00 PM
Benzo(a)pyrene	ND	55.5		µg/Kg-dry	1	10/19/2012 2:53:00 PM
Indeno(1,2,3-cd)pyrene	ND	55.5		µg/Kg-dry	1	10/19/2012 2:53:00 PM
Dibenz(a,h)anthracene	ND	55.5		µg/Kg-dry	1	10/19/2012 2:53:00 PM
Benzo(g,h,i)perylene	ND	55.5		µg/Kg-dry	1	10/19/2012 2:53:00 PM
Surr: 2-Fluorobiphenyl	112	50.4-142		%REC	1	10/19/2012 2:53:00 PM
Surr: Terphenyl-d14 (surr)	112	48.8-157		%REC	1	10/19/2012 2:53:00 PM

<u>Gasoline by NWTPH-Gx</u>				Batch ID: R6222		Analyst: EM
Gasoline	ND	5.65		mg/Kg-dry	1	10/16/2012 12:56:00 PM
Surr: 1,2-Dichloroethane-d4	108	65-135		%REC	1	10/16/2012 12:56:00 PM
Surr: Fluorobenzene	101	65-135		%REC	1	10/16/2012 12:56:00 PM

Qualifiers: B Analyte detected in the associated Method Blank
E Value above quantitation range
J Analyte detected below quantitation limits
RL Reporting Limit

D Dilution was required
H Holding times for preparation or analysis exceeded
ND Not detected at the Reporting Limit
S Spike recovery outside accepted recovery limits



Analytical Report

WO#: 1210020

Date Reported: 10/23/2012

Client: GeoEngineers, Inc. - Redmond

Collection Date: 10/8/2012 10:40:00 AM

Project: Rufus 2.0 WO11

Lab ID: 1210020-110

Matrix: Soil

Client Sample ID: B21-12-5.0

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Volatile Organic Compounds by EPA Method 8260				Batch ID: 3439		Analyst: EM
Dichlorodifluoromethane (CFC-12)	ND	0.0678		mg/Kg-dry	1	10/16/2012 12:56:00 PM
Chloromethane	ND	0.0678		mg/Kg-dry	1	10/16/2012 12:56:00 PM
Vinyl chloride	ND	0.00226		mg/Kg-dry	1	10/16/2012 12:56:00 PM
Bromomethane	ND	0.102		mg/Kg-dry	1	10/16/2012 12:56:00 PM
Trichlorofluoromethane (CFC-11)	ND	0.0565		mg/Kg-dry	1	10/16/2012 12:56:00 PM
Chloroethane	ND	0.0678		mg/Kg-dry	1	10/16/2012 12:56:00 PM
1,1-Dichloroethene	ND	0.0565		mg/Kg-dry	1	10/16/2012 12:56:00 PM
Methylene chloride	ND	0.0226		mg/Kg-dry	1	10/16/2012 12:56:00 PM
trans-1,2-Dichloroethene	ND	0.0226		mg/Kg-dry	1	10/16/2012 12:56:00 PM
Methyl tert-butyl ether (MTBE)	ND	0.0565		mg/Kg-dry	1	10/16/2012 12:56:00 PM
1,1-Dichloroethane	ND	0.0226		mg/Kg-dry	1	10/16/2012 12:56:00 PM
2,2-Dichloropropane	ND	0.0565		mg/Kg-dry	1	10/16/2012 12:56:00 PM
cis-1,2-Dichloroethene	ND	0.0226		mg/Kg-dry	1	10/16/2012 12:56:00 PM
Chloroform	ND	0.0226		mg/Kg-dry	1	10/16/2012 12:56:00 PM
1,1,1-Trichloroethane (TCA)	ND	0.0226		mg/Kg-dry	1	10/16/2012 12:56:00 PM
1,1-Dichloropropene	ND	0.0226		mg/Kg-dry	1	10/16/2012 12:56:00 PM
Carbon tetrachloride	ND	0.0226		mg/Kg-dry	1	10/16/2012 12:56:00 PM
1,2-Dichloroethane	ND	0.0339		mg/Kg-dry	1	10/16/2012 12:56:00 PM
Benzene	ND	0.0226		mg/Kg-dry	1	10/16/2012 12:56:00 PM
Trichloroethene (TCE)	ND	0.0339		mg/Kg-dry	1	10/16/2012 12:56:00 PM
1,2-Dichloropropane	ND	0.0226		mg/Kg-dry	1	10/16/2012 12:56:00 PM
Bromodichloromethane	ND	0.0226		mg/Kg-dry	1	10/16/2012 12:56:00 PM
Dibromomethane	ND	0.0452		mg/Kg-dry	1	10/16/2012 12:56:00 PM
cis-1,3-Dichloropropene	ND	0.0226		mg/Kg-dry	1	10/16/2012 12:56:00 PM
Toluene	ND	0.0226		mg/Kg-dry	1	10/16/2012 12:56:00 PM
trans-1,3-Dichloropropene	ND	0.0339		mg/Kg-dry	1	10/16/2012 12:56:00 PM
1,1,2-Trichloroethane	ND	0.0339		mg/Kg-dry	1	10/16/2012 12:56:00 PM
1,3-Dichloropropane	ND	0.0565		mg/Kg-dry	1	10/16/2012 12:56:00 PM
Tetrachloroethene (PCE)	ND	0.0226		mg/Kg-dry	1	10/16/2012 12:56:00 PM
Dibromochloromethane	ND	0.0339		mg/Kg-dry	1	10/16/2012 12:56:00 PM
1,2-Dibromoethane (EDB)	ND	0.00565		mg/Kg-dry	1	10/16/2012 12:56:00 PM
Chlorobenzene	ND	0.0226		mg/Kg-dry	1	10/16/2012 12:56:00 PM
1,1,1,2-Tetrachloroethane	ND	0.0339		mg/Kg-dry	1	10/16/2012 12:56:00 PM
Ethylbenzene	ND	0.0339		mg/Kg-dry	1	10/16/2012 12:56:00 PM
m,p-Xylene	ND	0.0226		mg/Kg-dry	1	10/16/2012 12:56:00 PM

Qualifiers: B Analyte detected in the associated Method Blank
E Value above quantitation range
J Analyte detected below quantitation limits
RL Reporting Limit

D Dilution was required
H Holding times for preparation or analysis exceeded
ND Not detected at the Reporting Limit
S Spike recovery outside accepted recovery limits



Analytical Report

WO#: 1210020

Date Reported: 10/23/2012

Client: GeoEngineers, Inc. - Redmond

Collection Date: 10/8/2012 10:40:00 AM

Project: Rufus 2.0 WO11

Lab ID: 1210020-110

Matrix: Soil

Client Sample ID: B21-12-5.0

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<u>Volatile Organic Compounds by EPA Method 8260</u>				Batch ID: 3439		Analyst: EM
o-Xylene	ND	0.0226		mg/Kg-dry	1	10/16/2012 12:56:00 PM
Styrene	ND	0.0226		mg/Kg-dry	1	10/16/2012 12:56:00 PM
Isopropylbenzene	ND	0.0904		mg/Kg-dry	1	10/16/2012 12:56:00 PM
Bromoform	ND	0.0226		mg/Kg-dry	1	10/16/2012 12:56:00 PM
1,1,2,2-Tetrachloroethane	ND	0.0226		mg/Kg-dry	1	10/16/2012 12:56:00 PM
n-Propylbenzene	ND	0.0226		mg/Kg-dry	1	10/16/2012 12:56:00 PM
Bromobenzene	ND	0.0339		mg/Kg-dry	1	10/16/2012 12:56:00 PM
1,3,5-Trimethylbenzene	ND	0.0226		mg/Kg-dry	1	10/16/2012 12:56:00 PM
2-Chlorotoluene	ND	0.0226		mg/Kg-dry	1	10/16/2012 12:56:00 PM
4-Chlorotoluene	ND	0.0226		mg/Kg-dry	1	10/16/2012 12:56:00 PM
tert-Butylbenzene	ND	0.0226		mg/Kg-dry	1	10/16/2012 12:56:00 PM
1,2,3-Trichloropropane	ND	0.0226		mg/Kg-dry	1	10/16/2012 12:56:00 PM
1,2,4-Trichlorobenzene	ND	0.0565		mg/Kg-dry	1	10/16/2012 12:56:00 PM
sec-Butylbenzene	ND	0.0226		mg/Kg-dry	1	10/16/2012 12:56:00 PM
4-Isopropyltoluene	ND	0.0226		mg/Kg-dry	1	10/16/2012 12:56:00 PM
1,3-Dichlorobenzene	ND	0.0226		mg/Kg-dry	1	10/16/2012 12:56:00 PM
1,4-Dichlorobenzene	ND	0.0226		mg/Kg-dry	1	10/16/2012 12:56:00 PM
n-Butylbenzene	ND	0.0226		mg/Kg-dry	1	10/16/2012 12:56:00 PM
1,2-Dichlorobenzene	ND	0.0226		mg/Kg-dry	1	10/16/2012 12:56:00 PM
1,2-Dibromo-3-chloropropane	ND	0.0339		mg/Kg-dry	1	10/16/2012 12:56:00 PM
1,2,4-Trimethylbenzene	ND	0.0226		mg/Kg-dry	1	10/16/2012 12:56:00 PM
Hexachlorobutadiene	ND	0.113		mg/Kg-dry	1	10/16/2012 12:56:00 PM
Naphthalene	ND	0.0339		mg/Kg-dry	1	10/16/2012 12:56:00 PM
1,2,3-Trichlorobenzene	ND	0.0226		mg/Kg-dry	1	10/16/2012 12:56:00 PM
Surr: 1-Bromo-4-fluorobenzene	102	63.1-141		%REC	1	10/16/2012 12:56:00 PM
Surr: Dibromofluoromethane	97.6	67.6-119		%REC	1	10/16/2012 12:56:00 PM
Surr: Toluene-d8	99.3	78.5-126		%REC	1	10/16/2012 12:56:00 PM

Total Metals by EPA Method 6020

Batch ID: 3449

Analyst: SG

Arsenic	5.48	0.0851		mg/Kg-dry	1	10/17/2012 12:46:29 AM
Barium	119	0.426		mg/Kg-dry	1	10/17/2012 12:46:29 AM
Cadmium	ND	0.170		mg/Kg-dry	1	10/17/2012 12:46:29 AM
Chromium	49.6	0.0851		mg/Kg-dry	1	10/17/2012 12:46:29 AM
Lead	4.42	0.170		mg/Kg-dry	1	10/17/2012 12:46:29 AM

Qualifiers: B Analyte detected in the associated Method Blank
E Value above quantitation range
J Analyte detected below quantitation limits
RL Reporting Limit

D Dilution was required
H Holding times for preparation or analysis exceeded
ND Not detected at the Reporting Limit
S Spike recovery outside accepted recovery limits



Analytical Report

WO#: 1210020

Date Reported: 10/23/2012

Client: GeoEngineers, Inc. - Redmond

Collection Date: 10/8/2012 10:40:00 AM

Project: Rufus 2.0 WO11

Lab ID: 1210020-110

Matrix: Soil

Client Sample ID: B21-12-5.0

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<u>Total Metals by EPA Method 6020</u>				Batch ID: 3449		Analyst: SG
Selenium	ND	0.426		mg/Kg-dry	1	10/17/2012 12:46:29 AM
Silver	ND	0.0851		mg/Kg-dry	1	10/17/2012 12:46:29 AM
<u>Mercury by EPA Method 7471</u>				Batch ID: 3456		Analyst: MC
Mercury	ND	0.315		mg/Kg-dry	1	10/18/2012 12:01:12 PM
<u>Sample Moisture (Percent Moisture)</u>				Batch ID: R6156		Analyst: CM
Percent Moisture	20.6			wt%	1	10/16/2012 10:35:24 AM

Qualifiers: B Analyte detected in the associated Method Blank
E Value above quantitation range
J Analyte detected below quantitation limits
RL Reporting Limit

D Dilution was required
H Holding times for preparation or analysis exceeded
ND Not detected at the Reporting Limit
S Spike recovery outside accepted recovery limits



Analytical Report

WO#: 1210020

Date Reported: 10/23/2012

Client: GeoEngineers, Inc. - Redmond

Collection Date: 10/8/2012 11:10:00 AM

Project: Rufus 2.0 WO11

Lab ID: 1210020-115

Matrix: Soil

Client Sample ID: B21-12-17.5

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
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Diesel and Heavy Oil by NWTPH-Dx/Dx Ext.

Batch ID: 3445

Analyst: BR

Diesel (Fuel Oil)	ND	20.2		mg/Kg-dry	1	10/17/2012 9:19:00 PM
Heavy Oil	ND	50.4		mg/Kg-dry	1	10/17/2012 9:19:00 PM
Surr: 2-Fluorobiphenyl	105	50-150		%REC	1	10/17/2012 9:19:00 PM
Surr: o-Terphenyl	99.5	50-150		%REC	1	10/17/2012 9:19:00 PM

Polyaromatic Hydrocarbons by EPA Method 8270 (SIM)

Batch ID: 3448

Analyst: PH

Naphthalene	ND	51.0		µg/Kg-dry	1	10/18/2012 1:10:00 AM
2-Methylnaphthalene	ND	51.0		µg/Kg-dry	1	10/18/2012 1:10:00 AM
1-Methylnaphthalene	ND	51.0		µg/Kg-dry	1	10/18/2012 1:10:00 AM
Acenaphthylene	ND	51.0		µg/Kg-dry	1	10/18/2012 1:10:00 AM
Acenaphthene	ND	51.0		µg/Kg-dry	1	10/18/2012 1:10:00 AM
Fluorene	ND	51.0		µg/Kg-dry	1	10/18/2012 1:10:00 AM
Phenanthrene	ND	51.0		µg/Kg-dry	1	10/18/2012 1:10:00 AM
Anthracene	ND	51.0		µg/Kg-dry	1	10/18/2012 1:10:00 AM
Fluoranthene	ND	51.0		µg/Kg-dry	1	10/18/2012 1:10:00 AM
Pyrene	ND	51.0		µg/Kg-dry	1	10/18/2012 1:10:00 AM
Benz(a)anthracene	ND	51.0		µg/Kg-dry	1	10/18/2012 1:10:00 AM
Chrysene	ND	51.0		µg/Kg-dry	1	10/18/2012 1:10:00 AM
Benzo(b)fluoranthene	ND	51.0		µg/Kg-dry	1	10/18/2012 1:10:00 AM
Benzo(k)fluoranthene	ND	51.0		µg/Kg-dry	1	10/18/2012 1:10:00 AM
Benzo(a)pyrene	ND	51.0		µg/Kg-dry	1	10/18/2012 1:10:00 AM
Indeno(1,2,3-cd)pyrene	ND	51.0		µg/Kg-dry	1	10/18/2012 1:10:00 AM
Dibenz(a,h)anthracene	ND	51.0		µg/Kg-dry	1	10/18/2012 1:10:00 AM
Benzo(g,h,i)perylene	ND	51.0		µg/Kg-dry	1	10/18/2012 1:10:00 AM
Surr: 2-Fluorobiphenyl	127	50.4-142		%REC	1	10/18/2012 1:10:00 AM
Surr: Terphenyl-d14 (surr)	109	48.8-157		%REC	1	10/18/2012 1:10:00 AM

Gasoline by NWTPH-Gx

Batch ID: R6222

Analyst: EM

Gasoline	ND	4.80		mg/Kg-dry	1	10/16/2012 1:26:00 PM
Surr: 1,2-Dichloroethane-d4	107	65-135		%REC	1	10/16/2012 1:26:00 PM
Surr: Fluorobenzene	101	65-135		%REC	1	10/16/2012 1:26:00 PM

Qualifiers: B Analyte detected in the associated Method Blank
E Value above quantitation range
J Analyte detected below quantitation limits
RL Reporting Limit

D Dilution was required
H Holding times for preparation or analysis exceeded
ND Not detected at the Reporting Limit
S Spike recovery outside accepted recovery limits



Analytical Report

WO#: 1210020

Date Reported: 10/23/2012

Client: GeoEngineers, Inc. - Redmond

Collection Date: 10/8/2012 11:10:00 AM

Project: Rufus 2.0 WO11

Lab ID: 1210020-115

Matrix: Soil

Client Sample ID: B21-12-17.5

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
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Volatile Organic Compounds by EPA Method 8260

Batch ID: 3439

Analyst: EM

Dichlorodifluoromethane (CFC-12)	ND	0.0577		mg/Kg-dry	1	10/16/2012 1:26:00 PM
Chloromethane	ND	0.0577		mg/Kg-dry	1	10/16/2012 1:26:00 PM
Vinyl chloride	ND	0.00192		mg/Kg-dry	1	10/16/2012 1:26:00 PM
Bromomethane	ND	0.0865		mg/Kg-dry	1	10/16/2012 1:26:00 PM
Trichlorofluoromethane (CFC-11)	ND	0.0480		mg/Kg-dry	1	10/16/2012 1:26:00 PM
Chloroethane	ND	0.0577		mg/Kg-dry	1	10/16/2012 1:26:00 PM
1,1-Dichloroethene	ND	0.0480		mg/Kg-dry	1	10/16/2012 1:26:00 PM
Methylene chloride	ND	0.0192		mg/Kg-dry	1	10/16/2012 1:26:00 PM
trans-1,2-Dichloroethene	ND	0.0192		mg/Kg-dry	1	10/16/2012 1:26:00 PM
Methyl tert-butyl ether (MTBE)	ND	0.0480		mg/Kg-dry	1	10/16/2012 1:26:00 PM
1,1-Dichloroethane	ND	0.0192		mg/Kg-dry	1	10/16/2012 1:26:00 PM
2,2-Dichloropropane	ND	0.0480		mg/Kg-dry	1	10/16/2012 1:26:00 PM
cis-1,2-Dichloroethene	ND	0.0192		mg/Kg-dry	1	10/16/2012 1:26:00 PM
Chloroform	ND	0.0192		mg/Kg-dry	1	10/16/2012 1:26:00 PM
1,1,1-Trichloroethane (TCA)	ND	0.0192		mg/Kg-dry	1	10/16/2012 1:26:00 PM
1,1-Dichloropropene	ND	0.0192		mg/Kg-dry	1	10/16/2012 1:26:00 PM
Carbon tetrachloride	ND	0.0192		mg/Kg-dry	1	10/16/2012 1:26:00 PM
1,2-Dichloroethane	ND	0.0288		mg/Kg-dry	1	10/16/2012 1:26:00 PM
Benzene	ND	0.0192		mg/Kg-dry	1	10/16/2012 1:26:00 PM
Trichloroethene (TCE)	ND	0.0288		mg/Kg-dry	1	10/16/2012 1:26:00 PM
1,2-Dichloropropane	ND	0.0192		mg/Kg-dry	1	10/16/2012 1:26:00 PM
Bromodichloromethane	ND	0.0192		mg/Kg-dry	1	10/16/2012 1:26:00 PM
Dibromomethane	ND	0.0384		mg/Kg-dry	1	10/16/2012 1:26:00 PM
cis-1,3-Dichloropropene	ND	0.0192		mg/Kg-dry	1	10/16/2012 1:26:00 PM
Toluene	ND	0.0192		mg/Kg-dry	1	10/16/2012 1:26:00 PM
trans-1,3-Dichloropropene	ND	0.0288		mg/Kg-dry	1	10/16/2012 1:26:00 PM
1,1,2-Trichloroethane	ND	0.0288		mg/Kg-dry	1	10/16/2012 1:26:00 PM
1,3-Dichloropropane	ND	0.0480		mg/Kg-dry	1	10/16/2012 1:26:00 PM
Tetrachloroethene (PCE)	ND	0.0192		mg/Kg-dry	1	10/16/2012 1:26:00 PM
Dibromochloromethane	ND	0.0288		mg/Kg-dry	1	10/16/2012 1:26:00 PM
1,2-Dibromoethane (EDB)	ND	0.00480		mg/Kg-dry	1	10/16/2012 1:26:00 PM
Chlorobenzene	ND	0.0192		mg/Kg-dry	1	10/16/2012 1:26:00 PM
1,1,1,2-Tetrachloroethane	ND	0.0288		mg/Kg-dry	1	10/16/2012 1:26:00 PM
Ethylbenzene	ND	0.0288		mg/Kg-dry	1	10/16/2012 1:26:00 PM
m,p-Xylene	ND	0.0192		mg/Kg-dry	1	10/16/2012 1:26:00 PM

Qualifiers: B Analyte detected in the associated Method Blank
E Value above quantitation range
J Analyte detected below quantitation limits
RL Reporting Limit

D Dilution was required
H Holding times for preparation or analysis exceeded
ND Not detected at the Reporting Limit
S Spike recovery outside accepted recovery limits



Analytical Report

WO#: 1210020

Date Reported: 10/23/2012

Client: GeoEngineers, Inc. - Redmond

Collection Date: 10/8/2012 11:10:00 AM

Project: Rufus 2.0 WO11

Lab ID: 1210020-115

Matrix: Soil

Client Sample ID: B21-12-17.5

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
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Volatile Organic Compounds by EPA Method 8260

Batch ID: 3439

Analyst: EM

o-Xylene	ND	0.0192		mg/Kg-dry	1	10/16/2012 1:26:00 PM
Styrene	ND	0.0192		mg/Kg-dry	1	10/16/2012 1:26:00 PM
Isopropylbenzene	ND	0.0769		mg/Kg-dry	1	10/16/2012 1:26:00 PM
Bromoform	ND	0.0192		mg/Kg-dry	1	10/16/2012 1:26:00 PM
1,1,2,2-Tetrachloroethane	ND	0.0192		mg/Kg-dry	1	10/16/2012 1:26:00 PM
n-Propylbenzene	ND	0.0192		mg/Kg-dry	1	10/16/2012 1:26:00 PM
Bromobenzene	ND	0.0288		mg/Kg-dry	1	10/16/2012 1:26:00 PM
1,3,5-Trimethylbenzene	ND	0.0192		mg/Kg-dry	1	10/16/2012 1:26:00 PM
2-Chlorotoluene	ND	0.0192		mg/Kg-dry	1	10/16/2012 1:26:00 PM
4-Chlorotoluene	ND	0.0192		mg/Kg-dry	1	10/16/2012 1:26:00 PM
tert-Butylbenzene	ND	0.0192		mg/Kg-dry	1	10/16/2012 1:26:00 PM
1,2,3-Trichloropropane	ND	0.0192		mg/Kg-dry	1	10/16/2012 1:26:00 PM
1,2,4-Trichlorobenzene	ND	0.0480		mg/Kg-dry	1	10/16/2012 1:26:00 PM
sec-Butylbenzene	ND	0.0192		mg/Kg-dry	1	10/16/2012 1:26:00 PM
4-Isopropyltoluene	ND	0.0192		mg/Kg-dry	1	10/16/2012 1:26:00 PM
1,3-Dichlorobenzene	ND	0.0192		mg/Kg-dry	1	10/16/2012 1:26:00 PM
1,4-Dichlorobenzene	ND	0.0192		mg/Kg-dry	1	10/16/2012 1:26:00 PM
n-Butylbenzene	ND	0.0192		mg/Kg-dry	1	10/16/2012 1:26:00 PM
1,2-Dichlorobenzene	ND	0.0192		mg/Kg-dry	1	10/16/2012 1:26:00 PM
1,2-Dibromo-3-chloropropane	ND	0.0288		mg/Kg-dry	1	10/16/2012 1:26:00 PM
1,2,4-Trimethylbenzene	ND	0.0192		mg/Kg-dry	1	10/16/2012 1:26:00 PM
Hexachlorobutadiene	ND	0.0961		mg/Kg-dry	1	10/16/2012 1:26:00 PM
Naphthalene	ND	0.0288		mg/Kg-dry	1	10/16/2012 1:26:00 PM
1,2,3-Trichlorobenzene	ND	0.0192		mg/Kg-dry	1	10/16/2012 1:26:00 PM
Surr: 1-Bromo-4-fluorobenzene	102	63.1-141		%REC	1	10/16/2012 1:26:00 PM
Surr: Dibromofluoromethane	98.0	67.6-119		%REC	1	10/16/2012 1:26:00 PM
Surr: Toluene-d8	99.3	78.5-126		%REC	1	10/16/2012 1:26:00 PM

Total Metals by EPA Method 6020

Batch ID: 3449

Analyst: SG

Arsenic	1.45	0.0774		mg/Kg-dry	1	10/17/2012 12:55:32 AM
Barium	39.0	0.387		mg/Kg-dry	1	10/17/2012 12:55:32 AM
Cadmium	ND	0.155		mg/Kg-dry	1	10/17/2012 12:55:32 AM
Chromium	26.6	0.0774		mg/Kg-dry	1	10/17/2012 12:55:32 AM
Lead	1.63	0.155		mg/Kg-dry	1	10/17/2012 12:55:32 AM

Qualifiers: B Analyte detected in the associated Method Blank
E Value above quantitation range
J Analyte detected below quantitation limits
RL Reporting Limit

D Dilution was required
H Holding times for preparation or analysis exceeded
ND Not detected at the Reporting Limit
S Spike recovery outside accepted recovery limits



Analytical Report

WO#: 1210020

Date Reported: 10/23/2012

Client: GeoEngineers, Inc. - Redmond

Collection Date: 10/8/2012 11:10:00 AM

Project: Rufus 2.0 WO11

Lab ID: 1210020-115

Matrix: Soil

Client Sample ID: B21-12-17.5

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<u>Total Metals by EPA Method 6020</u>				Batch ID: 3449		Analyst: SG
Selenium	ND	0.387		mg/Kg-dry	1	10/17/2012 12:55:32 AM
Silver	ND	0.0774		mg/Kg-dry	1	10/17/2012 12:55:32 AM
<u>Mercury by EPA Method 7471</u>				Batch ID: 3456		Analyst: MC
Mercury	ND	0.229		mg/Kg-dry	1	10/18/2012 12:02:50 PM
<u>Sample Moisture (Percent Moisture)</u>				Batch ID: R6156		Analyst: CM
Percent Moisture	8.98			wt%	1	10/16/2012 10:35:24 AM

Qualifiers: B Analyte detected in the associated Method Blank
E Value above quantitation range
J Analyte detected below quantitation limits
RL Reporting Limit

D Dilution was required
H Holding times for preparation or analysis exceeded
ND Not detected at the Reporting Limit
S Spike recovery outside accepted recovery limits



Analytical Report

WO#: 1210020

Date Reported: 10/23/2012

Client: GeoEngineers, Inc. - Redmond

Collection Date: 10/8/2012 12:05:00 PM

Project: Rufus 2.0 WO11

Lab ID: 1210020-121

Matrix: Soil

Client Sample ID: B21-13-2.5

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<u>Diesel and Heavy Oil by NWTPH-Dx/Dx Ext.</u>				Batch ID: 3445		Analyst: BR
Diesel (Fuel Oil)	ND	24.6		mg/Kg-dry	1	10/17/2012 9:45:00 PM
Heavy Oil	ND	61.5		mg/Kg-dry	1	10/17/2012 9:45:00 PM
Surr: 2-Fluorobiphenyl	107	50-150		%REC	1	10/17/2012 9:45:00 PM
Surr: o-Terphenyl	99.4	50-150		%REC	1	10/17/2012 9:45:00 PM

<u>Polyaromatic Hydrocarbons by EPA Method 8270 (SIM)</u>				Batch ID: 3448		Analyst: PH
Naphthalene	ND	55.1		µg/Kg-dry	1	10/18/2012 6:35:00 AM
2-Methylnaphthalene	ND	55.1		µg/Kg-dry	1	10/18/2012 6:35:00 AM
1-Methylnaphthalene	ND	55.1		µg/Kg-dry	1	10/18/2012 6:35:00 AM
Acenaphthylene	ND	55.1		µg/Kg-dry	1	10/18/2012 6:35:00 AM
Acenaphthene	ND	55.1		µg/Kg-dry	1	10/18/2012 6:35:00 AM
Fluorene	ND	55.1		µg/Kg-dry	1	10/18/2012 6:35:00 AM
Phenanthrene	ND	55.1		µg/Kg-dry	1	10/18/2012 6:35:00 AM
Anthracene	ND	55.1		µg/Kg-dry	1	10/18/2012 6:35:00 AM
Fluoranthene	ND	55.1		µg/Kg-dry	1	10/18/2012 6:35:00 AM
Pyrene	ND	55.1		µg/Kg-dry	1	10/18/2012 6:35:00 AM
Benz(a)anthracene	ND	55.1		µg/Kg-dry	1	10/18/2012 6:35:00 AM
Chrysene	ND	55.1		µg/Kg-dry	1	10/18/2012 6:35:00 AM
Benzo(b)fluoranthene	ND	55.1		µg/Kg-dry	1	10/18/2012 6:35:00 AM
Benzo(k)fluoranthene	ND	55.1		µg/Kg-dry	1	10/18/2012 6:35:00 AM
Benzo(a)pyrene	ND	55.1		µg/Kg-dry	1	10/18/2012 6:35:00 AM
Indeno(1,2,3-cd)pyrene	ND	55.1		µg/Kg-dry	1	10/18/2012 6:35:00 AM
Dibenz(a,h)anthracene	ND	55.1		µg/Kg-dry	1	10/18/2012 6:35:00 AM
Benzo(g,h,i)perylene	ND	55.1		µg/Kg-dry	1	10/18/2012 6:35:00 AM
Surr: 2-Fluorobiphenyl	136	50.4-142		%REC	1	10/18/2012 6:35:00 AM
Surr: Terphenyl-d14 (surr)	126	48.8-157		%REC	1	10/18/2012 6:35:00 AM

<u>Gasoline by NWTPH-Gx</u>				Batch ID: R6222		Analyst: EM
Gasoline	ND	5.29		mg/Kg-dry	1	10/16/2012 1:56:00 PM
Surr: 1,2-Dichloroethane-d4	105	65-135		%REC	1	10/16/2012 1:56:00 PM
Surr: Fluorobenzene	100	65-135		%REC	1	10/16/2012 1:56:00 PM

Qualifiers:	B	Analyte detected in the associated Method Blank	D	Dilution was required
	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
	J	Analyte detected below quantitation limits	ND	Not detected at the Reporting Limit
	RL	Reporting Limit	S	Spike recovery outside accepted recovery limits



Analytical Report

WO#: 1210020

Date Reported: 10/23/2012

Client: GeoEngineers, Inc. - Redmond

Collection Date: 10/8/2012 12:05:00 PM

Project: Rufus 2.0 WO11

Lab ID: 1210020-121

Matrix: Soil

Client Sample ID: B21-13-2.5

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
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Volatile Organic Compounds by EPA Method 8260

Batch ID: 3439

Analyst: EM

Dichlorodifluoromethane (CFC-12)	ND	0.0635		mg/Kg-dry	1	10/16/2012 1:56:00 PM
Chloromethane	ND	0.0635		mg/Kg-dry	1	10/16/2012 1:56:00 PM
Vinyl chloride	ND	0.00212		mg/Kg-dry	1	10/16/2012 1:56:00 PM
Bromomethane	ND	0.0953		mg/Kg-dry	1	10/16/2012 1:56:00 PM
Trichlorofluoromethane (CFC-11)	ND	0.0529		mg/Kg-dry	1	10/16/2012 1:56:00 PM
Chloroethane	ND	0.0635		mg/Kg-dry	1	10/16/2012 1:56:00 PM
1,1-Dichloroethene	ND	0.0529		mg/Kg-dry	1	10/16/2012 1:56:00 PM
Methylene chloride	ND	0.0212		mg/Kg-dry	1	10/16/2012 1:56:00 PM
trans-1,2-Dichloroethene	ND	0.0212		mg/Kg-dry	1	10/16/2012 1:56:00 PM
Methyl tert-butyl ether (MTBE)	ND	0.0529		mg/Kg-dry	1	10/16/2012 1:56:00 PM
1,1-Dichloroethane	ND	0.0212		mg/Kg-dry	1	10/16/2012 1:56:00 PM
2,2-Dichloropropane	ND	0.0529		mg/Kg-dry	1	10/16/2012 1:56:00 PM
cis-1,2-Dichloroethene	ND	0.0212		mg/Kg-dry	1	10/16/2012 1:56:00 PM
Chloroform	ND	0.0212		mg/Kg-dry	1	10/16/2012 1:56:00 PM
1,1,1-Trichloroethane (TCA)	ND	0.0212		mg/Kg-dry	1	10/16/2012 1:56:00 PM
1,1-Dichloropropene	ND	0.0212		mg/Kg-dry	1	10/16/2012 1:56:00 PM
Carbon tetrachloride	ND	0.0212		mg/Kg-dry	1	10/16/2012 1:56:00 PM
1,2-Dichloroethane	ND	0.0318		mg/Kg-dry	1	10/16/2012 1:56:00 PM
Benzene	ND	0.0212		mg/Kg-dry	1	10/16/2012 1:56:00 PM
Trichloroethene (TCE)	ND	0.0318		mg/Kg-dry	1	10/16/2012 1:56:00 PM
1,2-Dichloropropane	ND	0.0212		mg/Kg-dry	1	10/16/2012 1:56:00 PM
Bromodichloromethane	ND	0.0212		mg/Kg-dry	1	10/16/2012 1:56:00 PM
Dibromomethane	ND	0.0424		mg/Kg-dry	1	10/16/2012 1:56:00 PM
cis-1,3-Dichloropropene	ND	0.0212		mg/Kg-dry	1	10/16/2012 1:56:00 PM
Toluene	ND	0.0212		mg/Kg-dry	1	10/16/2012 1:56:00 PM
trans-1,3-Dichloropropene	ND	0.0318		mg/Kg-dry	1	10/16/2012 1:56:00 PM
1,1,2-Trichloroethane	ND	0.0318		mg/Kg-dry	1	10/16/2012 1:56:00 PM
1,3-Dichloropropane	ND	0.0529		mg/Kg-dry	1	10/16/2012 1:56:00 PM
Tetrachloroethene (PCE)	ND	0.0212		mg/Kg-dry	1	10/16/2012 1:56:00 PM
Dibromochloromethane	ND	0.0318		mg/Kg-dry	1	10/16/2012 1:56:00 PM
1,2-Dibromoethane (EDB)	ND	0.00529		mg/Kg-dry	1	10/16/2012 1:56:00 PM
Chlorobenzene	ND	0.0212		mg/Kg-dry	1	10/16/2012 1:56:00 PM
1,1,1,2-Tetrachloroethane	ND	0.0318		mg/Kg-dry	1	10/16/2012 1:56:00 PM
Ethylbenzene	ND	0.0318		mg/Kg-dry	1	10/16/2012 1:56:00 PM
m,p-Xylene	ND	0.0212		mg/Kg-dry	1	10/16/2012 1:56:00 PM

Qualifiers: B Analyte detected in the associated Method Blank
E Value above quantitation range
J Analyte detected below quantitation limits
RL Reporting Limit

D Dilution was required
H Holding times for preparation or analysis exceeded
ND Not detected at the Reporting Limit
S Spike recovery outside accepted recovery limits



Analytical Report

WO#: 1210020

Date Reported: 10/23/2012

Client: GeoEngineers, Inc. - Redmond

Collection Date: 10/8/2012 12:05:00 PM

Project: Rufus 2.0 WO11

Lab ID: 1210020-121

Matrix: Soil

Client Sample ID: B21-13-2.5

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
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Volatile Organic Compounds by EPA Method 8260

Batch ID: 3439

Analyst: EM

o-Xylene	ND	0.0212		mg/Kg-dry	1	10/16/2012 1:56:00 PM
Styrene	ND	0.0212		mg/Kg-dry	1	10/16/2012 1:56:00 PM
Isopropylbenzene	ND	0.0847		mg/Kg-dry	1	10/16/2012 1:56:00 PM
Bromoform	ND	0.0212		mg/Kg-dry	1	10/16/2012 1:56:00 PM
1,1,2,2-Tetrachloroethane	ND	0.0212		mg/Kg-dry	1	10/16/2012 1:56:00 PM
n-Propylbenzene	ND	0.0212		mg/Kg-dry	1	10/16/2012 1:56:00 PM
Bromobenzene	ND	0.0318		mg/Kg-dry	1	10/16/2012 1:56:00 PM
1,3,5-Trimethylbenzene	ND	0.0212		mg/Kg-dry	1	10/16/2012 1:56:00 PM
2-Chlorotoluene	ND	0.0212		mg/Kg-dry	1	10/16/2012 1:56:00 PM
4-Chlorotoluene	ND	0.0212		mg/Kg-dry	1	10/16/2012 1:56:00 PM
tert-Butylbenzene	ND	0.0212		mg/Kg-dry	1	10/16/2012 1:56:00 PM
1,2,3-Trichloropropane	ND	0.0212		mg/Kg-dry	1	10/16/2012 1:56:00 PM
1,2,4-Trichlorobenzene	ND	0.0529		mg/Kg-dry	1	10/16/2012 1:56:00 PM
sec-Butylbenzene	ND	0.0212		mg/Kg-dry	1	10/16/2012 1:56:00 PM
4-Isopropyltoluene	ND	0.0212		mg/Kg-dry	1	10/16/2012 1:56:00 PM
1,3-Dichlorobenzene	ND	0.0212		mg/Kg-dry	1	10/16/2012 1:56:00 PM
1,4-Dichlorobenzene	ND	0.0212		mg/Kg-dry	1	10/16/2012 1:56:00 PM
n-Butylbenzene	ND	0.0212		mg/Kg-dry	1	10/16/2012 1:56:00 PM
1,2-Dichlorobenzene	ND	0.0212		mg/Kg-dry	1	10/16/2012 1:56:00 PM
1,2-Dibromo-3-chloropropane	ND	0.0318		mg/Kg-dry	1	10/16/2012 1:56:00 PM
1,2,4-Trimethylbenzene	ND	0.0212		mg/Kg-dry	1	10/16/2012 1:56:00 PM
Hexachlorobutadiene	ND	0.106		mg/Kg-dry	1	10/16/2012 1:56:00 PM
Naphthalene	ND	0.0318		mg/Kg-dry	1	10/16/2012 1:56:00 PM
1,2,3-Trichlorobenzene	ND	0.0212		mg/Kg-dry	1	10/16/2012 1:56:00 PM
Surr: 1-Bromo-4-fluorobenzene	99.9	63.1-141		%REC	1	10/16/2012 1:56:00 PM
Surr: Dibromofluoromethane	97.0	67.6-119		%REC	1	10/16/2012 1:56:00 PM
Surr: Toluene-d8	99.5	78.5-126		%REC	1	10/16/2012 1:56:00 PM

Total Metals by EPA Method 6020

Batch ID: 3449

Analyst: SG

Arsenic	10.1	0.0938		mg/Kg-dry	1	10/17/2012 1:04:35 AM
Barium	113	0.469		mg/Kg-dry	1	10/17/2012 1:04:35 AM
Cadmium	0.205	0.188		mg/Kg-dry	1	10/17/2012 1:04:35 AM
Chromium	60.8	0.0938		mg/Kg-dry	1	10/17/2012 1:04:35 AM
Lead	10.7	0.188		mg/Kg-dry	1	10/17/2012 1:04:35 AM

Qualifiers: B Analyte detected in the associated Method Blank
E Value above quantitation range
J Analyte detected below quantitation limits
RL Reporting Limit

D Dilution was required
H Holding times for preparation or analysis exceeded
ND Not detected at the Reporting Limit
S Spike recovery outside accepted recovery limits



Analytical Report

WO#: 1210020

Date Reported: 10/23/2012

Client: GeoEngineers, Inc. - Redmond

Collection Date: 10/8/2012 12:05:00 PM

Project: Rufus 2.0 WO11

Lab ID: 1210020-121

Matrix: Soil

Client Sample ID: B21-13-2.5

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
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Total Metals by EPA Method 6020

Batch ID: 3449

Analyst: SG

Selenium	ND	0.469		mg/Kg-dry	1	10/17/2012 1:04:35 AM
Silver	ND	0.0938		mg/Kg-dry	1	10/17/2012 1:04:35 AM

Mercury by EPA Method 7471

Batch ID: 3456

Analyst: MC

Mercury	ND	0.276		mg/Kg-dry	1	10/18/2012 12:04:25 PM
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Sample Moisture (Percent Moisture)

Batch ID: R6156

Analyst: CM

Percent Moisture	19.2			wt%	1	10/16/2012 10:35:24 AM
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Qualifiers:

B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
RL	Reporting Limit

D	Dilution was required
H	Holding times for preparation or analysis exceeded
ND	Not detected at the Reporting Limit
S	Spike recovery outside accepted recovery limits



Analytical Report

WO#: 1210020

Date Reported: 10/23/2012

Client: GeoEngineers, Inc. - Redmond

Collection Date: 10/8/2012 12:18:00 PM

Project: Rufus 2.0 WO11

Lab ID: 1210020-126

Matrix: Soil

Client Sample ID: B21-13-15.0

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<u>Diesel and Heavy Oil by NWTPH-Dx/Dx Ext.</u>				Batch ID: 3445		Analyst: BR
Diesel (Fuel Oil)	ND	19.1		mg/Kg-dry	1	10/17/2012 10:12:00 PM
Heavy Oil	ND	47.7		mg/Kg-dry	1	10/17/2012 10:12:00 PM
Surr: 2-Fluorobiphenyl	95.9	50-150		%REC	1	10/17/2012 10:12:00 PM
Surr: o-Terphenyl	89.0	50-150		%REC	1	10/17/2012 10:12:00 PM
<u>Gasoline by NWTPH-Gx</u>				Batch ID: R6222		Analyst: EM
Gasoline	ND	6.10		mg/Kg-dry	1	10/16/2012 2:26:00 PM
Surr: 1,2-Dichloroethane-d4	106	65-135		%REC	1	10/16/2012 2:26:00 PM
Surr: Fluorobenzene	99.5	65-135		%REC	1	10/16/2012 2:26:00 PM
<u>Volatile Organic Compounds by EPA Method 8260</u>				Batch ID: 3439		Analyst: EM
Dichlorodifluoromethane (CFC-12)	ND	0.0732		mg/Kg-dry	1	10/16/2012 2:26:00 PM
Chloromethane	ND	0.0732		mg/Kg-dry	1	10/16/2012 2:26:00 PM
Vinyl chloride	ND	0.00244		mg/Kg-dry	1	10/16/2012 2:26:00 PM
Bromomethane	ND	0.110		mg/Kg-dry	1	10/16/2012 2:26:00 PM
Trichlorofluoromethane (CFC-11)	ND	0.0610		mg/Kg-dry	1	10/16/2012 2:26:00 PM
Chloroethane	ND	0.0732		mg/Kg-dry	1	10/16/2012 2:26:00 PM
1,1-Dichloroethene	ND	0.0610		mg/Kg-dry	1	10/16/2012 2:26:00 PM
Methylene chloride	ND	0.0244		mg/Kg-dry	1	10/16/2012 2:26:00 PM
trans-1,2-Dichloroethene	ND	0.0244		mg/Kg-dry	1	10/16/2012 2:26:00 PM
Methyl tert-butyl ether (MTBE)	ND	0.0610		mg/Kg-dry	1	10/16/2012 2:26:00 PM
1,1-Dichloroethane	ND	0.0244		mg/Kg-dry	1	10/16/2012 2:26:00 PM
2,2-Dichloropropane	ND	0.0610		mg/Kg-dry	1	10/16/2012 2:26:00 PM
cis-1,2-Dichloroethene	ND	0.0244		mg/Kg-dry	1	10/16/2012 2:26:00 PM
Chloroform	ND	0.0244		mg/Kg-dry	1	10/16/2012 2:26:00 PM
1,1,1-Trichloroethane (TCA)	ND	0.0244		mg/Kg-dry	1	10/16/2012 2:26:00 PM
1,1-Dichloropropene	ND	0.0244		mg/Kg-dry	1	10/16/2012 2:26:00 PM
Carbon tetrachloride	ND	0.0244		mg/Kg-dry	1	10/16/2012 2:26:00 PM
1,2-Dichloroethane (EDC)	ND	0.0366		mg/Kg-dry	1	10/16/2012 2:26:00 PM
Benzene	ND	0.0244		mg/Kg-dry	1	10/16/2012 2:26:00 PM
Trichloroethene (TCE)	ND	0.0366		mg/Kg-dry	1	10/16/2012 2:26:00 PM
1,2-Dichloropropane	ND	0.0244		mg/Kg-dry	1	10/16/2012 2:26:00 PM
Bromodichloromethane	ND	0.0244		mg/Kg-dry	1	10/16/2012 2:26:00 PM

Qualifiers: B Analyte detected in the associated Method Blank
E Value above quantitation range
J Analyte detected below quantitation limits
RL Reporting Limit

D Dilution was required
H Holding times for preparation or analysis exceeded
ND Not detected at the Reporting Limit
S Spike recovery outside accepted recovery limits



Analytical Report

WO#: 1210020

Date Reported: 10/23/2012

Client: GeoEngineers, Inc. - Redmond

Collection Date: 10/8/2012 12:18:00 PM

Project: Rufus 2.0 WO11

Lab ID: 1210020-126

Matrix: Soil

Client Sample ID: B21-13-15.0

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
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Volatile Organic Compounds by EPA Method 8260

Batch ID: 3439

Analyst: EM

Dibromomethane	ND	0.0488		mg/Kg-dry	1	10/16/2012 2:26:00 PM
cis-1,3-Dichloropropene	ND	0.0244		mg/Kg-dry	1	10/16/2012 2:26:00 PM
Toluene	ND	0.0244		mg/Kg-dry	1	10/16/2012 2:26:00 PM
trans-1,3-Dichloropropylene	ND	0.0366		mg/Kg-dry	1	10/16/2012 2:26:00 PM
1,1,2-Trichloroethane	ND	0.0366		mg/Kg-dry	1	10/16/2012 2:26:00 PM
1,3-Dichloropropane	ND	0.0610		mg/Kg-dry	1	10/16/2012 2:26:00 PM
Tetrachloroethene (PCE)	ND	0.0244		mg/Kg-dry	1	10/16/2012 2:26:00 PM
Dibromochloromethane	ND	0.0366		mg/Kg-dry	1	10/16/2012 2:26:00 PM
1,2-Dibromoethane (EDB)	ND	0.00610		mg/Kg-dry	1	10/16/2012 2:26:00 PM
Chlorobenzene	ND	0.0244		mg/Kg-dry	1	10/16/2012 2:26:00 PM
1,1,1,2-Tetrachloroethane	ND	0.0366		mg/Kg-dry	1	10/16/2012 2:26:00 PM
Ethylbenzene	ND	0.0366		mg/Kg-dry	1	10/16/2012 2:26:00 PM
m,p-Xylene	ND	0.0244		mg/Kg-dry	1	10/16/2012 2:26:00 PM
o-Xylene	ND	0.0244		mg/Kg-dry	1	10/16/2012 2:26:00 PM
Styrene	ND	0.0244		mg/Kg-dry	1	10/16/2012 2:26:00 PM
Isopropylbenzene	ND	0.0976		mg/Kg-dry	1	10/16/2012 2:26:00 PM
Bromoform	ND	0.0244		mg/Kg-dry	1	10/16/2012 2:26:00 PM
1,1,2,2-Tetrachloroethane	ND	0.0244		mg/Kg-dry	1	10/16/2012 2:26:00 PM
n-Propylbenzene	ND	0.0244		mg/Kg-dry	1	10/16/2012 2:26:00 PM
Bromobenzene	ND	0.0366		mg/Kg-dry	1	10/16/2012 2:26:00 PM
1,3,5-Trimethylbenzene	ND	0.0244		mg/Kg-dry	1	10/16/2012 2:26:00 PM
2-Chlorotoluene	ND	0.0244		mg/Kg-dry	1	10/16/2012 2:26:00 PM
4-Chlorotoluene	ND	0.0244		mg/Kg-dry	1	10/16/2012 2:26:00 PM
tert-Butylbenzene	ND	0.0244		mg/Kg-dry	1	10/16/2012 2:26:00 PM
1,2,3-Trichloropropane	ND	0.0244		mg/Kg-dry	1	10/16/2012 2:26:00 PM
1,2,4-Trichlorobenzene	ND	0.0610		mg/Kg-dry	1	10/16/2012 2:26:00 PM
sec-Butylbenzene	ND	0.0244		mg/Kg-dry	1	10/16/2012 2:26:00 PM
4-Isopropyltoluene	ND	0.0244		mg/Kg-dry	1	10/16/2012 2:26:00 PM
1,3-Dichlorobenzene	ND	0.0244		mg/Kg-dry	1	10/16/2012 2:26:00 PM
1,4-Dichlorobenzene	ND	0.0244		mg/Kg-dry	1	10/16/2012 2:26:00 PM
n-Butylbenzene	ND	0.0244		mg/Kg-dry	1	10/16/2012 2:26:00 PM
1,2-Dichlorobenzene	ND	0.0244		mg/Kg-dry	1	10/16/2012 2:26:00 PM
1,2-Dibromo-3-chloropropane	ND	0.0366		mg/Kg-dry	1	10/16/2012 2:26:00 PM
1,2,4-Trimethylbenzene	ND	0.0244		mg/Kg-dry	1	10/16/2012 2:26:00 PM
Hexachlorobutadiene	ND	0.122		mg/Kg-dry	1	10/16/2012 2:26:00 PM

Qualifiers: B Analyte detected in the associated Method Blank
E Value above quantitation range
J Analyte detected below quantitation limits
RL Reporting Limit

D Dilution was required
H Holding times for preparation or analysis exceeded
ND Not detected at the Reporting Limit
S Spike recovery outside accepted recovery limits



Analytical Report

WO#: 1210020

Date Reported: 10/23/2012

Client: GeoEngineers, Inc. - Redmond

Collection Date: 10/8/2012 12:18:00 PM

Project: Rufus 2.0 WO11

Lab ID: 1210020-126

Matrix: Soil

Client Sample ID: B21-13-15.0

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
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Volatile Organic Compounds by EPA Method 8260

Batch ID: 3439

Analyst: EM

Napthalene	ND	0.0366		mg/Kg-dry	1	10/16/2012 2:26:00 PM
1,2,3-Trichlorobenzene	ND	0.0244		mg/Kg-dry	1	10/16/2012 2:26:00 PM
Surr: 1-Bromo-4-fluorobenzene	101	63.1-141		%REC	1	10/16/2012 2:26:00 PM
Surr: Dibromofluoromethane	98.3	67.6-119		%REC	1	10/16/2012 2:26:00 PM
Surr: Toluene-d8	100	78.5-126		%REC	1	10/16/2012 2:26:00 PM

Total Metals by EPA Method 6020

Batch ID: 3449

Analyst: SG

Arsenic	2.14	0.0683		mg/Kg-dry	1	10/17/2012 1:13:38 AM
Barium	21.5	0.342		mg/Kg-dry	1	10/17/2012 1:13:38 AM
Cadmium	ND	0.137		mg/Kg-dry	1	10/17/2012 1:13:38 AM
Chromium	20.7	0.0683		mg/Kg-dry	1	10/17/2012 1:13:38 AM
Lead	1.05	0.137		mg/Kg-dry	1	10/17/2012 1:13:38 AM
Selenium	ND	0.342		mg/Kg-dry	1	10/17/2012 1:13:38 AM
Silver	ND	0.0683		mg/Kg-dry	1	10/17/2012 1:13:38 AM

Mercury by EPA Method 7471

Batch ID: 3456

Analyst: MC

Mercury	ND	0.225		mg/Kg-dry	1	10/18/2012 12:06:01 PM
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Sample Moisture (Percent Moisture)

Batch ID: R6156

Analyst: CM

Percent Moisture	4.31			wt%	1	10/16/2012 10:35:24 AM
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Qualifiers: B Analyte detected in the associated Method Blank
E Value above quantitation range
J Analyte detected below quantitation limits
RL Reporting Limit

D Dilution was required
H Holding times for preparation or analysis exceeded
ND Not detected at the Reporting Limit
S Spike recovery outside accepted recovery limits



Analytical Report

WO#: 1210020

Date Reported: 10/23/2012

Client: GeoEngineers, Inc. - Redmond

Collection Date: 10/8/2012 1:25:00 PM

Project: Rufus 2.0 WO11

Lab ID: 1210020-133

Matrix: Soil

Client Sample ID: B21-14-2.5

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<u>Diesel and Heavy Oil by NWTPH-Dx/Dx Ext.</u>				Batch ID: 3445		Analyst: BR
Diesel (Fuel Oil)	ND	22.3		mg/Kg-dry	1	10/17/2012 10:39:00 PM
Heavy Oil	ND	55.8		mg/Kg-dry	1	10/17/2012 10:39:00 PM
Surr: 2-Fluorobiphenyl	99.2	50-150		%REC	1	10/17/2012 10:39:00 PM
Surr: o-Terphenyl	90.8	50-150		%REC	1	10/17/2012 10:39:00 PM
<u>Polyaromatic Hydrocarbons by EPA Method 8270 (SIM)</u>				Batch ID: 3448		Analyst: PH
Naphthalene	ND	52.8		µg/Kg-dry	1	10/18/2012 6:10:00 AM
2-Methylnaphthalene	ND	52.8		µg/Kg-dry	1	10/18/2012 6:10:00 AM
1-Methylnaphthalene	ND	52.8		µg/Kg-dry	1	10/18/2012 6:10:00 AM
Acenaphthylene	ND	52.8		µg/Kg-dry	1	10/18/2012 6:10:00 AM
Acenaphthene	ND	52.8		µg/Kg-dry	1	10/18/2012 6:10:00 AM
Fluorene	ND	52.8		µg/Kg-dry	1	10/18/2012 6:10:00 AM
Phenanthrene	ND	52.8		µg/Kg-dry	1	10/18/2012 6:10:00 AM
Anthracene	ND	52.8		µg/Kg-dry	1	10/18/2012 6:10:00 AM
Fluoranthene	ND	52.8		µg/Kg-dry	1	10/18/2012 6:10:00 AM
Pyrene	ND	52.8		µg/Kg-dry	1	10/18/2012 6:10:00 AM
Benz(a)anthracene	ND	52.8		µg/Kg-dry	1	10/18/2012 6:10:00 AM
Chrysene	ND	52.8		µg/Kg-dry	1	10/18/2012 6:10:00 AM
Benzo(b)fluoranthene	ND	52.8		µg/Kg-dry	1	10/18/2012 6:10:00 AM
Benzo(k)fluoranthene	ND	52.8		µg/Kg-dry	1	10/18/2012 6:10:00 AM
Benzo(a)pyrene	ND	52.8		µg/Kg-dry	1	10/18/2012 6:10:00 AM
Indeno(1,2,3-cd)pyrene	ND	52.8		µg/Kg-dry	1	10/18/2012 6:10:00 AM
Dibenz(a,h)anthracene	ND	52.8		µg/Kg-dry	1	10/18/2012 6:10:00 AM
Benzo(g,h,i)perylene	ND	52.8		µg/Kg-dry	1	10/18/2012 6:10:00 AM
Surr: 2-Fluorobiphenyl	114	50.4-142		%REC	1	10/18/2012 6:10:00 AM
Surr: Terphenyl-d14 (surr)	122	48.8-157		%REC	1	10/18/2012 6:10:00 AM
<u>Gasoline by NWTPH-Gx</u>				Batch ID: R6222		Analyst: EM
Gasoline	ND	4.90		mg/Kg-dry	1	10/16/2012 3:27:00 PM
Surr: 1,2-Dichloroethane-d4	108	65-135		%REC	1	10/16/2012 3:27:00 PM
Surr: Fluorobenzene	99.2	65-135		%REC	1	10/16/2012 3:27:00 PM

Qualifiers: B Analyte detected in the associated Method Blank
E Value above quantitation range
J Analyte detected below quantitation limits
RL Reporting Limit

D Dilution was required
H Holding times for preparation or analysis exceeded
ND Not detected at the Reporting Limit
S Spike recovery outside accepted recovery limits



Analytical Report

WO#: 1210020

Date Reported: 10/23/2012

Client: GeoEngineers, Inc. - Redmond

Collection Date: 10/8/2012 1:25:00 PM

Project: Rufus 2.0 WO11

Lab ID: 1210020-133

Matrix: Soil

Client Sample ID: B21-14-2.5

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Volatile Organic Compounds by EPA Method 8260				Batch ID: 3439		Analyst: EM
Dichlorodifluoromethane (CFC-12)	ND	0.0588		mg/Kg-dry	1	10/16/2012 3:27:00 PM
Chloromethane	ND	0.0588		mg/Kg-dry	1	10/16/2012 3:27:00 PM
Vinyl chloride	ND	0.00196		mg/Kg-dry	1	10/16/2012 3:27:00 PM
Bromomethane	ND	0.0882		mg/Kg-dry	1	10/16/2012 3:27:00 PM
Trichlorofluoromethane (CFC-11)	ND	0.0490		mg/Kg-dry	1	10/16/2012 3:27:00 PM
Chloroethane	ND	0.0588		mg/Kg-dry	1	10/16/2012 3:27:00 PM
1,1-Dichloroethene	ND	0.0490		mg/Kg-dry	1	10/16/2012 3:27:00 PM
Methylene chloride	ND	0.0196		mg/Kg-dry	1	10/16/2012 3:27:00 PM
trans-1,2-Dichloroethene	ND	0.0196		mg/Kg-dry	1	10/16/2012 3:27:00 PM
Methyl tert-butyl ether (MTBE)	ND	0.0490		mg/Kg-dry	1	10/16/2012 3:27:00 PM
1,1-Dichloroethane	ND	0.0196		mg/Kg-dry	1	10/16/2012 3:27:00 PM
2,2-Dichloropropane	ND	0.0490		mg/Kg-dry	1	10/16/2012 3:27:00 PM
cis-1,2-Dichloroethene	ND	0.0196		mg/Kg-dry	1	10/16/2012 3:27:00 PM
Chloroform	ND	0.0196		mg/Kg-dry	1	10/16/2012 3:27:00 PM
1,1,1-Trichloroethane (TCA)	ND	0.0196		mg/Kg-dry	1	10/16/2012 3:27:00 PM
1,1-Dichloropropene	ND	0.0196		mg/Kg-dry	1	10/16/2012 3:27:00 PM
Carbon tetrachloride	ND	0.0196		mg/Kg-dry	1	10/16/2012 3:27:00 PM
1,2-Dichloroethane	ND	0.0294		mg/Kg-dry	1	10/16/2012 3:27:00 PM
Benzene	ND	0.0196		mg/Kg-dry	1	10/16/2012 3:27:00 PM
Trichloroethene (TCE)	ND	0.0294		mg/Kg-dry	1	10/16/2012 3:27:00 PM
1,2-Dichloropropane	ND	0.0196		mg/Kg-dry	1	10/16/2012 3:27:00 PM
Bromodichloromethane	ND	0.0196		mg/Kg-dry	1	10/16/2012 3:27:00 PM
Dibromomethane	ND	0.0392		mg/Kg-dry	1	10/16/2012 3:27:00 PM
cis-1,3-Dichloropropene	ND	0.0196		mg/Kg-dry	1	10/16/2012 3:27:00 PM
Toluene	ND	0.0196		mg/Kg-dry	1	10/16/2012 3:27:00 PM
trans-1,3-Dichloropropene	ND	0.0294		mg/Kg-dry	1	10/16/2012 3:27:00 PM
1,1,2-Trichloroethane	ND	0.0294		mg/Kg-dry	1	10/16/2012 3:27:00 PM
1,3-Dichloropropane	ND	0.0490		mg/Kg-dry	1	10/16/2012 3:27:00 PM
Tetrachloroethene (PCE)	ND	0.0196		mg/Kg-dry	1	10/16/2012 3:27:00 PM
Dibromochloromethane	ND	0.0294		mg/Kg-dry	1	10/16/2012 3:27:00 PM
1,2-Dibromoethane (EDB)	ND	0.00490		mg/Kg-dry	1	10/16/2012 3:27:00 PM
Chlorobenzene	ND	0.0196		mg/Kg-dry	1	10/16/2012 3:27:00 PM
1,1,1,2-Tetrachloroethane	ND	0.0294		mg/Kg-dry	1	10/16/2012 3:27:00 PM
Ethylbenzene	ND	0.0294		mg/Kg-dry	1	10/16/2012 3:27:00 PM
m,p-Xylene	ND	0.0196		mg/Kg-dry	1	10/16/2012 3:27:00 PM

Qualifiers: B Analyte detected in the associated Method Blank
E Value above quantitation range
J Analyte detected below quantitation limits
RL Reporting Limit

D Dilution was required
H Holding times for preparation or analysis exceeded
ND Not detected at the Reporting Limit
S Spike recovery outside accepted recovery limits



Analytical Report

WO#: 1210020

Date Reported: 10/23/2012

Client: GeoEngineers, Inc. - Redmond

Collection Date: 10/8/2012 1:25:00 PM

Project: Rufus 2.0 WO11

Lab ID: 1210020-133

Matrix: Soil

Client Sample ID: B21-14-2.5

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
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Volatile Organic Compounds by EPA Method 8260

Batch ID: 3439

Analyst: EM

o-Xylene	ND	0.0196		mg/Kg-dry	1	10/16/2012 3:27:00 PM
Styrene	ND	0.0196		mg/Kg-dry	1	10/16/2012 3:27:00 PM
Isopropylbenzene	ND	0.0784		mg/Kg-dry	1	10/16/2012 3:27:00 PM
Bromoform	ND	0.0196		mg/Kg-dry	1	10/16/2012 3:27:00 PM
1,1,2,2-Tetrachloroethane	ND	0.0196		mg/Kg-dry	1	10/16/2012 3:27:00 PM
n-Propylbenzene	ND	0.0196		mg/Kg-dry	1	10/16/2012 3:27:00 PM
Bromobenzene	ND	0.0294		mg/Kg-dry	1	10/16/2012 3:27:00 PM
1,3,5-Trimethylbenzene	ND	0.0196		mg/Kg-dry	1	10/16/2012 3:27:00 PM
2-Chlorotoluene	ND	0.0196		mg/Kg-dry	1	10/16/2012 3:27:00 PM
4-Chlorotoluene	ND	0.0196		mg/Kg-dry	1	10/16/2012 3:27:00 PM
tert-Butylbenzene	ND	0.0196		mg/Kg-dry	1	10/16/2012 3:27:00 PM
1,2,3-Trichloropropane	ND	0.0196		mg/Kg-dry	1	10/16/2012 3:27:00 PM
1,2,4-Trichlorobenzene	ND	0.0490		mg/Kg-dry	1	10/16/2012 3:27:00 PM
sec-Butylbenzene	ND	0.0196		mg/Kg-dry	1	10/16/2012 3:27:00 PM
4-Isopropyltoluene	ND	0.0196		mg/Kg-dry	1	10/16/2012 3:27:00 PM
1,3-Dichlorobenzene	ND	0.0196		mg/Kg-dry	1	10/16/2012 3:27:00 PM
1,4-Dichlorobenzene	ND	0.0196		mg/Kg-dry	1	10/16/2012 3:27:00 PM
n-Butylbenzene	ND	0.0196		mg/Kg-dry	1	10/16/2012 3:27:00 PM
1,2-Dichlorobenzene	ND	0.0196		mg/Kg-dry	1	10/16/2012 3:27:00 PM
1,2-Dibromo-3-chloropropane	ND	0.0294		mg/Kg-dry	1	10/16/2012 3:27:00 PM
1,2,4-Trimethylbenzene	ND	0.0196		mg/Kg-dry	1	10/16/2012 3:27:00 PM
Hexachlorobutadiene	ND	0.0980		mg/Kg-dry	1	10/16/2012 3:27:00 PM
Naphthalene	ND	0.0294		mg/Kg-dry	1	10/16/2012 3:27:00 PM
1,2,3-Trichlorobenzene	ND	0.0196		mg/Kg-dry	1	10/16/2012 3:27:00 PM
Surr: 1-Bromo-4-fluorobenzene	100	63.1-141		%REC	1	10/16/2012 3:27:00 PM
Surr: Dibromofluoromethane	98.1	67.6-119		%REC	1	10/16/2012 3:27:00 PM
Surr: Toluene-d8	100	78.5-126		%REC	1	10/16/2012 3:27:00 PM

Total Metals by EPA Method 6020

Batch ID: 3449

Analyst: SG

Arsenic	2.42	0.0798		mg/Kg-dry	1	10/17/2012 1:22:40 AM
Barium	67.1	0.399		mg/Kg-dry	1	10/17/2012 1:22:40 AM
Cadmium	ND	0.160		mg/Kg-dry	1	10/17/2012 1:22:40 AM
Chromium	43.6	0.0798		mg/Kg-dry	1	10/17/2012 1:22:40 AM
Lead	3.02	0.160		mg/Kg-dry	1	10/17/2012 1:22:40 AM

Qualifiers: B Analyte detected in the associated Method Blank
E Value above quantitation range
J Analyte detected below quantitation limits
RL Reporting Limit

D Dilution was required
H Holding times for preparation or analysis exceeded
ND Not detected at the Reporting Limit
S Spike recovery outside accepted recovery limits



Analytical Report

WO#: 1210020

Date Reported: 10/23/2012

Client: GeoEngineers, Inc. - Redmond

Collection Date: 10/8/2012 1:25:00 PM

Project: Rufus 2.0 WO11

Lab ID: 1210020-133

Matrix: Soil

Client Sample ID: B21-14-2.5

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<u>Total Metals by EPA Method 6020</u>				Batch ID: 3449		Analyst: SG
Selenium	ND	0.399		mg/Kg-dry	1	10/17/2012 1:22:40 AM
Silver	ND	0.0798		mg/Kg-dry	1	10/17/2012 1:22:40 AM
<u>Mercury by EPA Method 7471</u>				Batch ID: 3456		Analyst: MC
Mercury	ND	0.274		mg/Kg-dry	1	10/18/2012 12:09:14 PM
<u>Sample Moisture (Percent Moisture)</u>				Batch ID: R6156		Analyst: CM
Percent Moisture	15.4			wt%	1	10/16/2012 10:35:24 AM

Qualifiers: B Analyte detected in the associated Method Blank
E Value above quantitation range
J Analyte detected below quantitation limits
RL Reporting Limit

D Dilution was required
H Holding times for preparation or analysis exceeded
ND Not detected at the Reporting Limit
S Spike recovery outside accepted recovery limits



Analytical Report

WO#: 1210020

Date Reported: 10/23/2012

Client: GeoEngineers, Inc. - Redmond

Collection Date: 10/8/2012 1:40:00 PM

Project: Rufus 2.0 WO11

Lab ID: 1210020-137

Matrix: Soil

Client Sample ID: B21-14-12.5

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<u>Diesel and Heavy Oil by NWTPH-Dx/Dx Ext.</u>				Batch ID: 3445		Analyst: BR
Diesel (Fuel Oil)	ND	21.4		mg/Kg-dry	1	10/17/2012 11:06:00 PM
Heavy Oil	ND	53.5		mg/Kg-dry	1	10/17/2012 11:06:00 PM
Surr: 2-Fluorobiphenyl	107	50-150		%REC	1	10/17/2012 11:06:00 PM
Surr: o-Terphenyl	99.4	50-150		%REC	1	10/17/2012 11:06:00 PM
<u>Gasoline by NWTPH-Gx</u>				Batch ID: R6251		Analyst: EM
Gasoline	ND	5.15		mg/Kg-dry	1	10/17/2012 4:17:00 AM
Surr: 1,2-Dichloroethane-d4	111	65-135		%REC	1	10/17/2012 4:17:00 AM
Surr: Fluorobenzene	101	65-135		%REC	1	10/17/2012 4:17:00 AM
<u>Volatile Organic Compounds by EPA Method 8260</u>				Batch ID: 3452		Analyst: EM
Benzene	ND	0.0206		mg/Kg-dry	1	10/17/2012 4:17:00 AM
Toluene	ND	0.0206		mg/Kg-dry	1	10/17/2012 4:17:00 AM
Ethylbenzene	ND	0.0309		mg/Kg-dry	1	10/17/2012 4:17:00 AM
m,p-Xylene	ND	0.0206		mg/Kg-dry	1	10/17/2012 4:17:00 AM
o-Xylene	ND	0.0206		mg/Kg-dry	1	10/17/2012 4:17:00 AM
Surr: 1-Bromo-4-fluorobenzene	99.0	63.1-141		%REC	1	10/17/2012 4:17:00 AM
Surr: Dibromofluoromethane	100	67.6-119		%REC	1	10/17/2012 4:17:00 AM
Surr: Toluene-d8	101	78.5-126		%REC	1	10/17/2012 4:17:00 AM
<u>Total Metals by EPA Method 6020</u>				Batch ID: 3450		Analyst: SG
Arsenic	3.44	0.114		mg/Kg-dry	1	10/17/2012 2:29:03 AM
Barium	90.4	0.568		mg/Kg-dry	1	10/17/2012 2:29:03 AM
Cadmium	ND	0.227		mg/Kg-dry	1	10/17/2012 2:29:03 AM
Chromium	48.2	0.114		mg/Kg-dry	1	10/17/2012 2:29:03 AM
Lead	3.80	0.227		mg/Kg-dry	1	10/17/2012 2:29:03 AM
Selenium	0.736	0.568		mg/Kg-dry	1	10/17/2012 2:29:03 AM
Silver	ND	0.114		mg/Kg-dry	1	10/17/2012 2:29:03 AM
<u>Mercury by EPA Method 7471</u>				Batch ID: 3456		Analyst: MC
Mercury	ND	0.222		mg/Kg-dry	1	10/18/2012 12:10:51 PM

Qualifiers: B Analyte detected in the associated Method Blank
E Value above quantitation range
J Analyte detected below quantitation limits
RL Reporting Limit

D Dilution was required
H Holding times for preparation or analysis exceeded
ND Not detected at the Reporting Limit
S Spike recovery outside accepted recovery limits



Analytical Report

WO#: 1210020

Date Reported: 10/23/2012

Client: GeoEngineers, Inc. - Redmond

Collection Date: 10/8/2012 1:40:00 PM

Project: Rufus 2.0 WO11

Lab ID: 1210020-137

Matrix: Soil

Client Sample ID: B21-14-12.5

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
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Sample Moisture (Percent Moisture)

Batch ID: R6156

Analyst: CM

Percent Moisture	12.0			wt%	1	10/16/2012 10:35:24 AM
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Qualifiers:

B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
RL	Reporting Limit

D	Dilution was required
H	Holding times for preparation or analysis exceeded
ND	Not detected at the Reporting Limit
S	Spike recovery outside accepted recovery limits



Analytical Report

WO#: 1210020

Date Reported: 10/23/2012

Client: GeoEngineers, Inc. - Redmond

Collection Date: 10/8/2012 2:30:00 PM

Project: Rufus 2.0 WO11

Lab ID: 1210020-146

Matrix: Soil

Client Sample ID: B21-15-5.0

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<u>Diesel and Heavy Oil by NWTPH-Dx/Dx Ext.</u>				Batch ID: 3446		Analyst: BR
Diesel (Fuel Oil)	ND	20.6		mg/Kg-dry	1	10/16/2012 8:17:00 PM
Heavy Oil	ND	51.5		mg/Kg-dry	1	10/16/2012 8:17:00 PM
Surr: 2-Fluorobiphenyl	104	50-150		%REC	1	10/16/2012 8:17:00 PM
Surr: o-Terphenyl	104	50-150		%REC	1	10/16/2012 8:17:00 PM

<u>Polyaromatic Hydrocarbons by EPA Method 8270 (SIM)</u>				Batch ID: 3448		Analyst: PH
Naphthalene	ND	52.9		µg/Kg-dry	1	10/18/2012 2:50:00 AM
2-Methylnaphthalene	ND	52.9		µg/Kg-dry	1	10/18/2012 2:50:00 AM
1-Methylnaphthalene	ND	52.9		µg/Kg-dry	1	10/18/2012 2:50:00 AM
Acenaphthylene	ND	52.9		µg/Kg-dry	1	10/18/2012 2:50:00 AM
Acenaphthene	ND	52.9		µg/Kg-dry	1	10/18/2012 2:50:00 AM
Fluorene	ND	52.9		µg/Kg-dry	1	10/18/2012 2:50:00 AM
Phenanthrene	ND	52.9		µg/Kg-dry	1	10/18/2012 2:50:00 AM
Anthracene	ND	52.9		µg/Kg-dry	1	10/18/2012 2:50:00 AM
Fluoranthene	ND	52.9		µg/Kg-dry	1	10/18/2012 2:50:00 AM
Pyrene	ND	52.9		µg/Kg-dry	1	10/18/2012 2:50:00 AM
Benz(a)anthracene	ND	52.9		µg/Kg-dry	1	10/18/2012 2:50:00 AM
Chrysene	ND	52.9		µg/Kg-dry	1	10/18/2012 2:50:00 AM
Benzo(b)fluoranthene	ND	52.9		µg/Kg-dry	1	10/18/2012 2:50:00 AM
Benzo(k)fluoranthene	ND	52.9		µg/Kg-dry	1	10/18/2012 2:50:00 AM
Benzo(a)pyrene	ND	52.9		µg/Kg-dry	1	10/18/2012 2:50:00 AM
Indeno(1,2,3-cd)pyrene	ND	52.9		µg/Kg-dry	1	10/18/2012 2:50:00 AM
Dibenz(a,h)anthracene	ND	52.9		µg/Kg-dry	1	10/18/2012 2:50:00 AM
Benzo(g,h,i)perylene	ND	52.9		µg/Kg-dry	1	10/18/2012 2:50:00 AM
Surr: 2-Fluorobiphenyl	100	50.4-142		%REC	1	10/18/2012 2:50:00 AM
Surr: Terphenyl-d14 (surr)	117	48.8-157		%REC	1	10/18/2012 2:50:00 AM

<u>Gasoline by NWTPH-Gx</u>				Batch ID: R6251		Analyst: EM
Gasoline	ND	5.11		mg/Kg-dry	1	10/17/2012 4:47:00 AM
Surr: 1,2-Dichloroethane-d4	111	65-135		%REC	1	10/17/2012 4:47:00 AM
Surr: Fluorobenzene	101	65-135		%REC	1	10/17/2012 4:47:00 AM

Qualifiers:	B	Analyte detected in the associated Method Blank	D	Dilution was required
	E	Value above quantitation range	H	Holding times for preparation or analysis exceeded
	J	Analyte detected below quantitation limits	ND	Not detected at the Reporting Limit
	RL	Reporting Limit	S	Spike recovery outside accepted recovery limits



Analytical Report

WO#: 1210020

Date Reported: 10/23/2012

Client: GeoEngineers, Inc. - Redmond

Collection Date: 10/8/2012 2:30:00 PM

Project: Rufus 2.0 WO11

Lab ID: 1210020-146

Matrix: Soil

Client Sample ID: B21-15-5.0

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
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Volatile Organic Compounds by EPA Method 8260

Batch ID: 3452

Analyst: EM

Dichlorodifluoromethane (CFC-12)	ND	0.0613		mg/Kg-dry	1	10/17/2012 4:47:00 AM
Chloromethane	ND	0.0613		mg/Kg-dry	1	10/17/2012 4:47:00 AM
Vinyl chloride	ND	0.00204		mg/Kg-dry	1	10/17/2012 4:47:00 AM
Bromomethane	ND	0.0919		mg/Kg-dry	1	10/17/2012 4:47:00 AM
Trichlorofluoromethane (CFC-11)	ND	0.0511		mg/Kg-dry	1	10/17/2012 4:47:00 AM
Chloroethane	ND	0.0613		mg/Kg-dry	1	10/17/2012 4:47:00 AM
1,1-Dichloroethene	ND	0.0511		mg/Kg-dry	1	10/17/2012 4:47:00 AM
Methylene chloride	ND	0.0204		mg/Kg-dry	1	10/17/2012 4:47:00 AM
trans-1,2-Dichloroethene	ND	0.0204		mg/Kg-dry	1	10/17/2012 4:47:00 AM
Methyl tert-butyl ether (MTBE)	ND	0.0511		mg/Kg-dry	1	10/17/2012 4:47:00 AM
1,1-Dichloroethane	ND	0.0204		mg/Kg-dry	1	10/17/2012 4:47:00 AM
2,2-Dichloropropane	ND	0.0511		mg/Kg-dry	1	10/17/2012 4:47:00 AM
cis-1,2-Dichloroethene	ND	0.0204		mg/Kg-dry	1	10/17/2012 4:47:00 AM
Chloroform	ND	0.0204		mg/Kg-dry	1	10/17/2012 4:47:00 AM
1,1,1-Trichloroethane (TCA)	ND	0.0204		mg/Kg-dry	1	10/17/2012 4:47:00 AM
1,1-Dichloropropene	ND	0.0204		mg/Kg-dry	1	10/17/2012 4:47:00 AM
Carbon tetrachloride	ND	0.0204		mg/Kg-dry	1	10/17/2012 4:47:00 AM
1,2-Dichloroethane	ND	0.0306		mg/Kg-dry	1	10/17/2012 4:47:00 AM
Benzene	ND	0.0204		mg/Kg-dry	1	10/17/2012 4:47:00 AM
Trichloroethene (TCE)	ND	0.0306		mg/Kg-dry	1	10/17/2012 4:47:00 AM
1,2-Dichloropropane	ND	0.0204		mg/Kg-dry	1	10/17/2012 4:47:00 AM
Bromodichloromethane	ND	0.0204		mg/Kg-dry	1	10/17/2012 4:47:00 AM
Dibromomethane	ND	0.0409		mg/Kg-dry	1	10/17/2012 4:47:00 AM
cis-1,3-Dichloropropene	ND	0.0204		mg/Kg-dry	1	10/17/2012 4:47:00 AM
Toluene	ND	0.0204		mg/Kg-dry	1	10/17/2012 4:47:00 AM
trans-1,3-Dichloropropene	ND	0.0306		mg/Kg-dry	1	10/17/2012 4:47:00 AM
1,1,2-Trichloroethane	ND	0.0306		mg/Kg-dry	1	10/17/2012 4:47:00 AM
1,3-Dichloropropane	ND	0.0511		mg/Kg-dry	1	10/17/2012 4:47:00 AM
Tetrachloroethene (PCE)	ND	0.0204		mg/Kg-dry	1	10/17/2012 4:47:00 AM
Dibromochloromethane	ND	0.0306		mg/Kg-dry	1	10/17/2012 4:47:00 AM
1,2-Dibromoethane (EDB)	ND	0.00511		mg/Kg-dry	1	10/17/2012 4:47:00 AM
Chlorobenzene	ND	0.0204		mg/Kg-dry	1	10/17/2012 4:47:00 AM
1,1,1,2-Tetrachloroethane	ND	0.0306		mg/Kg-dry	1	10/17/2012 4:47:00 AM
Ethylbenzene	ND	0.0306		mg/Kg-dry	1	10/17/2012 4:47:00 AM
m,p-Xylene	ND	0.0204		mg/Kg-dry	1	10/17/2012 4:47:00 AM

Qualifiers: B Analyte detected in the associated Method Blank
E Value above quantitation range
J Analyte detected below quantitation limits
RL Reporting Limit

D Dilution was required
H Holding times for preparation or analysis exceeded
ND Not detected at the Reporting Limit
S Spike recovery outside accepted recovery limits



Analytical Report

WO#: 1210020

Date Reported: 10/23/2012

Client: GeoEngineers, Inc. - Redmond

Collection Date: 10/8/2012 2:30:00 PM

Project: Rufus 2.0 WO11

Lab ID: 1210020-146

Matrix: Soil

Client Sample ID: B21-15-5.0

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Volatile Organic Compounds by EPA Method 8260				Batch ID: 3452		Analyst: EM
o-Xylene	ND	0.0204		mg/Kg-dry	1	10/17/2012 4:47:00 AM
Styrene	ND	0.0204		mg/Kg-dry	1	10/17/2012 4:47:00 AM
Isopropylbenzene	ND	0.0817		mg/Kg-dry	1	10/17/2012 4:47:00 AM
Bromoform	ND	0.0204		mg/Kg-dry	1	10/17/2012 4:47:00 AM
1,1,2,2-Tetrachloroethane	ND	0.0204		mg/Kg-dry	1	10/17/2012 4:47:00 AM
n-Propylbenzene	ND	0.0204		mg/Kg-dry	1	10/17/2012 4:47:00 AM
Bromobenzene	ND	0.0306		mg/Kg-dry	1	10/17/2012 4:47:00 AM
1,3,5-Trimethylbenzene	ND	0.0204		mg/Kg-dry	1	10/17/2012 4:47:00 AM
2-Chlorotoluene	ND	0.0204		mg/Kg-dry	1	10/17/2012 4:47:00 AM
4-Chlorotoluene	ND	0.0204		mg/Kg-dry	1	10/17/2012 4:47:00 AM
tert-Butylbenzene	ND	0.0204		mg/Kg-dry	1	10/17/2012 4:47:00 AM
1,2,3-Trichloropropane	ND	0.0204		mg/Kg-dry	1	10/17/2012 4:47:00 AM
1,2,4-Trichlorobenzene	ND	0.0511		mg/Kg-dry	1	10/17/2012 4:47:00 AM
sec-Butylbenzene	ND	0.0204		mg/Kg-dry	1	10/17/2012 4:47:00 AM
4-Isopropyltoluene	ND	0.0204		mg/Kg-dry	1	10/17/2012 4:47:00 AM
1,3-Dichlorobenzene	ND	0.0204		mg/Kg-dry	1	10/17/2012 4:47:00 AM
1,4-Dichlorobenzene	ND	0.0204		mg/Kg-dry	1	10/17/2012 4:47:00 AM
n-Butylbenzene	ND	0.0204		mg/Kg-dry	1	10/17/2012 4:47:00 AM
1,2-Dichlorobenzene	ND	0.0204		mg/Kg-dry	1	10/17/2012 4:47:00 AM
1,2-Dibromo-3-chloropropane	ND	0.0306		mg/Kg-dry	1	10/17/2012 4:47:00 AM
1,2,4-Trimethylbenzene	ND	0.0204		mg/Kg-dry	1	10/17/2012 4:47:00 AM
Hexachlorobutadiene	ND	0.102		mg/Kg-dry	1	10/17/2012 4:47:00 AM
Naphthalene	ND	0.0306		mg/Kg-dry	1	10/17/2012 4:47:00 AM
1,2,3-Trichlorobenzene	ND	0.0204		mg/Kg-dry	1	10/17/2012 4:47:00 AM
Surr: 1-Bromo-4-fluorobenzene	100	63.1-141		%REC	1	10/17/2012 4:47:00 AM
Surr: Dibromofluoromethane	100	67.6-119		%REC	1	10/17/2012 4:47:00 AM
Surr: Toluene-d8	101	78.5-126		%REC	1	10/17/2012 4:47:00 AM

Total Metals by EPA Method 6020

Batch ID: 3450

Analyst: SG

Arsenic	3.14	0.0890		mg/Kg-dry	1	10/17/2012 3:23:01 AM
Barium	71.8	0.445		mg/Kg-dry	1	10/17/2012 3:23:01 AM
Cadmium	ND	0.178		mg/Kg-dry	1	10/17/2012 3:23:01 AM
Chromium	41.7	0.0890		mg/Kg-dry	1	10/17/2012 3:23:01 AM
Lead	2.74	0.178		mg/Kg-dry	1	10/17/2012 3:23:01 AM

Qualifiers: B Analyte detected in the associated Method Blank
E Value above quantitation range
J Analyte detected below quantitation limits
RL Reporting Limit

D Dilution was required
H Holding times for preparation or analysis exceeded
ND Not detected at the Reporting Limit
S Spike recovery outside accepted recovery limits



Analytical Report

WO#: 1210020

Date Reported: 10/23/2012

Client: GeoEngineers, Inc. - Redmond

Collection Date: 10/8/2012 2:30:00 PM

Project: Rufus 2.0 WO11

Lab ID: 1210020-146

Matrix: Soil

Client Sample ID: B21-15-5.0

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<u>Total Metals by EPA Method 6020</u>				Batch ID: 3450		Analyst: SG
Selenium	ND	0.445		mg/Kg-dry	1	10/17/2012 3:23:01 AM
Silver	ND	0.0890		mg/Kg-dry	1	10/17/2012 3:23:01 AM
<u>Mercury by EPA Method 7471</u>				Batch ID: 3456		Analyst: MC
Mercury	ND	0.269		mg/Kg-dry	1	10/18/2012 12:12:28 PM
<u>Sample Moisture (Percent Moisture)</u>				Batch ID: R6156		Analyst: CM
Percent Moisture	15.5			wt%	1	10/16/2012 10:35:24 AM

Qualifiers: B Analyte detected in the associated Method Blank
E Value above quantitation range
J Analyte detected below quantitation limits
RL Reporting Limit

D Dilution was required
H Holding times for preparation or analysis exceeded
ND Not detected at the Reporting Limit
S Spike recovery outside accepted recovery limits



Analytical Report

WO#: 1210020

Date Reported: 10/23/2012

Client: GeoEngineers, Inc. - Redmond

Collection Date: 10/8/2012 2:40:00 PM

Project: Rufus 2.0 WO11

Lab ID: 1210020-149

Matrix: Soil

Client Sample ID: B21-15-12.5

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<u>Diesel and Heavy Oil by NWTPH-Dx/Dx Ext.</u>				Batch ID: 3446		Analyst: BR
Diesel (Fuel Oil)	ND	19.1		mg/Kg-dry	1	10/16/2012 9:11:00 PM
Heavy Oil	ND	47.7		mg/Kg-dry	1	10/16/2012 9:11:00 PM
Surr: 2-Fluorobiphenyl	95.6	50-150		%REC	1	10/16/2012 9:11:00 PM
Surr: o-Terphenyl	94.8	50-150		%REC	1	10/16/2012 9:11:00 PM
<u>Gasoline by NWTPH-Gx</u>				Batch ID: R6251		Analyst: EM
Gasoline	ND	6.07		mg/Kg-dry	1	10/17/2012 5:46:00 AM
Surr: 1,2-Dichloroethane-d4	112	65-135		%REC	1	10/17/2012 5:46:00 AM
Surr: Fluorobenzene	102	65-135		%REC	1	10/17/2012 5:46:00 AM
<u>Volatile Organic Compounds by EPA Method 8260</u>				Batch ID: 3452		Analyst: EM
Benzene	ND	0.0243		mg/Kg-dry	1	10/17/2012 5:46:00 AM
Toluene	ND	0.0243		mg/Kg-dry	1	10/17/2012 5:46:00 AM
Ethylbenzene	ND	0.0364		mg/Kg-dry	1	10/17/2012 5:46:00 AM
m,p-Xylene	ND	0.0243		mg/Kg-dry	1	10/17/2012 5:46:00 AM
o-Xylene	ND	0.0243		mg/Kg-dry	1	10/17/2012 5:46:00 AM
Surr: 1-Bromo-4-fluorobenzene	99.4	63.1-141		%REC	1	10/17/2012 5:46:00 AM
Surr: Dibromofluoromethane	99.4	67.6-119		%REC	1	10/17/2012 5:46:00 AM
Surr: Toluene-d8	101	78.5-126		%REC	1	10/17/2012 5:46:00 AM
<u>Total Metals by EPA Method 6020</u>				Batch ID: 3450		Analyst: SG
Arsenic	1.39	0.0855		mg/Kg-dry	1	10/17/2012 3:32:04 AM
Barium	44.1	0.427		mg/Kg-dry	1	10/17/2012 3:32:04 AM
Cadmium	ND	0.171		mg/Kg-dry	1	10/17/2012 3:32:04 AM
Chromium	31.3	0.0855		mg/Kg-dry	1	10/17/2012 3:32:04 AM
Lead	1.47	0.171		mg/Kg-dry	1	10/17/2012 3:32:04 AM
Selenium	ND	0.427		mg/Kg-dry	1	10/17/2012 3:32:04 AM
Silver	ND	0.0855		mg/Kg-dry	1	10/17/2012 3:32:04 AM
<u>Mercury by EPA Method 7471</u>				Batch ID: 3456		Analyst: MC
Mercury	ND	0.277		mg/Kg-dry	1	10/18/2012 12:53:56 PM

Qualifiers: B Analyte detected in the associated Method Blank
E Value above quantitation range
J Analyte detected below quantitation limits
RL Reporting Limit

D Dilution was required
H Holding times for preparation or analysis exceeded
ND Not detected at the Reporting Limit
S Spike recovery outside accepted recovery limits



Analytical Report

WO#: 1210020

Date Reported: 10/23/2012

Client: GeoEngineers, Inc. - Redmond

Collection Date: 10/8/2012 2:40:00 PM

Project: Rufus 2.0 WO11

Lab ID: 1210020-149

Matrix: Soil

Client Sample ID: B21-15-12.5

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
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Sample Moisture (Percent Moisture)

Batch ID: R6156

Analyst: CM

Percent Moisture	7.89			wt%	1	10/16/2012 10:35:24 AM
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Qualifiers:

B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
RL	Reporting Limit

D	Dilution was required
H	Holding times for preparation or analysis exceeded
ND	Not detected at the Reporting Limit
S	Spike recovery outside accepted recovery limits



Analytical Report

WO#: 1210020

Date Reported: 10/23/2012

Client: GeoEngineers, Inc. - Redmond

Collection Date: 10/8/2012 3:15:00 PM

Project: Rufus 2.0 WO11

Lab ID: 1210020-157

Matrix: Soil

Client Sample ID: B21-16-2.5

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<u>Diesel and Heavy Oil by NWTPH-Dx/Dx Ext.</u>				Batch ID: 3446		Analyst: BR
Diesel (Fuel Oil)	ND	22.1		mg/Kg-dry	1	10/16/2012 9:38:00 PM
Heavy Oil	ND	55.3		mg/Kg-dry	1	10/16/2012 9:38:00 PM
Surr: 2-Fluorobiphenyl	102	50-150		%REC	1	10/16/2012 9:38:00 PM
Surr: o-Terphenyl	103	50-150		%REC	1	10/16/2012 9:38:00 PM
<u>Polyaromatic Hydrocarbons by EPA Method 8270 (SIM)</u>				Batch ID: 3448		Analyst: PH
Naphthalene	ND	55.2		µg/Kg-dry	1	10/18/2012 3:15:00 AM
2-Methylnaphthalene	ND	55.2		µg/Kg-dry	1	10/18/2012 3:15:00 AM
1-Methylnaphthalene	ND	55.2		µg/Kg-dry	1	10/18/2012 3:15:00 AM
Acenaphthylene	ND	55.2		µg/Kg-dry	1	10/18/2012 3:15:00 AM
Acenaphthene	ND	55.2		µg/Kg-dry	1	10/18/2012 3:15:00 AM
Fluorene	ND	55.2		µg/Kg-dry	1	10/18/2012 3:15:00 AM
Phenanthrene	ND	55.2		µg/Kg-dry	1	10/18/2012 3:15:00 AM
Anthracene	ND	55.2		µg/Kg-dry	1	10/18/2012 3:15:00 AM
Fluoranthene	ND	55.2		µg/Kg-dry	1	10/18/2012 3:15:00 AM
Pyrene	ND	55.2		µg/Kg-dry	1	10/18/2012 3:15:00 AM
Benz(a)anthracene	ND	55.2		µg/Kg-dry	1	10/18/2012 3:15:00 AM
Chrysene	ND	55.2		µg/Kg-dry	1	10/18/2012 3:15:00 AM
Benzo(b)fluoranthene	ND	55.2		µg/Kg-dry	1	10/18/2012 3:15:00 AM
Benzo(k)fluoranthene	ND	55.2		µg/Kg-dry	1	10/18/2012 3:15:00 AM
Benzo(a)pyrene	ND	55.2		µg/Kg-dry	1	10/18/2012 3:15:00 AM
Indeno(1,2,3-cd)pyrene	ND	55.2		µg/Kg-dry	1	10/18/2012 3:15:00 AM
Dibenz(a,h)anthracene	ND	55.2		µg/Kg-dry	1	10/18/2012 3:15:00 AM
Benzo(g,h,i)perylene	ND	55.2		µg/Kg-dry	1	10/18/2012 3:15:00 AM
Surr: 2-Fluorobiphenyl	123	50.4-142		%REC	1	10/18/2012 3:15:00 AM
Surr: Terphenyl-d14 (surr)	119	48.8-157		%REC	1	10/18/2012 3:15:00 AM
<u>Gasoline by NWTPH-Gx</u>				Batch ID: R6251		Analyst: EM
Gasoline	ND	5.05		mg/Kg-dry	1	10/17/2012 7:14:00 AM
Surr: 1,2-Dichloroethane-d4	109	65-135		%REC	1	10/17/2012 7:14:00 AM
Surr: Fluorobenzene	101	65-135		%REC	1	10/17/2012 7:14:00 AM

Qualifiers: B Analyte detected in the associated Method Blank
E Value above quantitation range
J Analyte detected below quantitation limits
RL Reporting Limit

D Dilution was required
H Holding times for preparation or analysis exceeded
ND Not detected at the Reporting Limit
S Spike recovery outside accepted recovery limits



Analytical Report

WO#: 1210020

Date Reported: 10/23/2012

Client: GeoEngineers, Inc. - Redmond

Collection Date: 10/8/2012 3:15:00 PM

Project: Rufus 2.0 WO11

Lab ID: 1210020-157

Matrix: Soil

Client Sample ID: B21-16-2.5

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
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Volatile Organic Compounds by EPA Method 8260

Batch ID: 3452

Analyst: EM

Dichlorodifluoromethane (CFC-12)	ND	0.0606		mg/Kg-dry	1	10/17/2012 7:14:00 AM
Chloromethane	ND	0.0606		mg/Kg-dry	1	10/17/2012 7:14:00 AM
Vinyl chloride	ND	0.00202		mg/Kg-dry	1	10/17/2012 7:14:00 AM
Bromomethane	ND	0.0909		mg/Kg-dry	1	10/17/2012 7:14:00 AM
Trichlorofluoromethane (CFC-11)	ND	0.0505		mg/Kg-dry	1	10/17/2012 7:14:00 AM
Chloroethane	ND	0.0606		mg/Kg-dry	1	10/17/2012 7:14:00 AM
1,1-Dichloroethene	ND	0.0505		mg/Kg-dry	1	10/17/2012 7:14:00 AM
Methylene chloride	ND	0.0202		mg/Kg-dry	1	10/17/2012 7:14:00 AM
trans-1,2-Dichloroethene	ND	0.0202		mg/Kg-dry	1	10/17/2012 7:14:00 AM
Methyl tert-butyl ether (MTBE)	ND	0.0505		mg/Kg-dry	1	10/17/2012 7:14:00 AM
1,1-Dichloroethane	ND	0.0202		mg/Kg-dry	1	10/17/2012 7:14:00 AM
2,2-Dichloropropane	ND	0.0505		mg/Kg-dry	1	10/17/2012 7:14:00 AM
cis-1,2-Dichloroethene	ND	0.0202		mg/Kg-dry	1	10/17/2012 7:14:00 AM
Chloroform	ND	0.0202		mg/Kg-dry	1	10/17/2012 7:14:00 AM
1,1,1-Trichloroethane (TCA)	ND	0.0202		mg/Kg-dry	1	10/17/2012 7:14:00 AM
1,1-Dichloropropene	ND	0.0202		mg/Kg-dry	1	10/17/2012 7:14:00 AM
Carbon tetrachloride	ND	0.0202		mg/Kg-dry	1	10/17/2012 7:14:00 AM
1,2-Dichloroethane	ND	0.0303		mg/Kg-dry	1	10/17/2012 7:14:00 AM
Benzene	ND	0.0202		mg/Kg-dry	1	10/17/2012 7:14:00 AM
Trichloroethene (TCE)	ND	0.0303		mg/Kg-dry	1	10/17/2012 7:14:00 AM
1,2-Dichloropropane	ND	0.0202		mg/Kg-dry	1	10/17/2012 7:14:00 AM
Bromodichloromethane	ND	0.0202		mg/Kg-dry	1	10/17/2012 7:14:00 AM
Dibromomethane	ND	0.0404		mg/Kg-dry	1	10/17/2012 7:14:00 AM
cis-1,3-Dichloropropene	ND	0.0202		mg/Kg-dry	1	10/17/2012 7:14:00 AM
Toluene	ND	0.0202		mg/Kg-dry	1	10/17/2012 7:14:00 AM
trans-1,3-Dichloropropene	ND	0.0303		mg/Kg-dry	1	10/17/2012 7:14:00 AM
1,1,2-Trichloroethane	ND	0.0303		mg/Kg-dry	1	10/17/2012 7:14:00 AM
1,3-Dichloropropane	ND	0.0505		mg/Kg-dry	1	10/17/2012 7:14:00 AM
Tetrachloroethene (PCE)	ND	0.0202		mg/Kg-dry	1	10/17/2012 7:14:00 AM
Dibromochloromethane	ND	0.0303		mg/Kg-dry	1	10/17/2012 7:14:00 AM
1,2-Dibromoethane (EDB)	ND	0.00505		mg/Kg-dry	1	10/17/2012 7:14:00 AM
Chlorobenzene	ND	0.0202		mg/Kg-dry	1	10/17/2012 7:14:00 AM
1,1,1,2-Tetrachloroethane	ND	0.0303		mg/Kg-dry	1	10/17/2012 7:14:00 AM
Ethylbenzene	ND	0.0303		mg/Kg-dry	1	10/17/2012 7:14:00 AM
m,p-Xylene	ND	0.0202		mg/Kg-dry	1	10/17/2012 7:14:00 AM

Qualifiers: B Analyte detected in the associated Method Blank
E Value above quantitation range
J Analyte detected below quantitation limits
RL Reporting Limit

D Dilution was required
H Holding times for preparation or analysis exceeded
ND Not detected at the Reporting Limit
S Spike recovery outside accepted recovery limits



Analytical Report

WO#: 1210020

Date Reported: 10/23/2012

Client: GeoEngineers, Inc. - Redmond

Collection Date: 10/8/2012 3:15:00 PM

Project: Rufus 2.0 WO11

Lab ID: 1210020-157

Matrix: Soil

Client Sample ID: B21-16-2.5

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
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Volatile Organic Compounds by EPA Method 8260

Batch ID: 3452

Analyst: EM

o-Xylene	ND	0.0202		mg/Kg-dry	1	10/17/2012 7:14:00 AM
Styrene	ND	0.0202		mg/Kg-dry	1	10/17/2012 7:14:00 AM
Isopropylbenzene	ND	0.0808		mg/Kg-dry	1	10/17/2012 7:14:00 AM
Bromoform	ND	0.0202		mg/Kg-dry	1	10/17/2012 7:14:00 AM
1,1,2,2-Tetrachloroethane	ND	0.0202		mg/Kg-dry	1	10/17/2012 7:14:00 AM
n-Propylbenzene	ND	0.0202		mg/Kg-dry	1	10/17/2012 7:14:00 AM
Bromobenzene	ND	0.0303		mg/Kg-dry	1	10/17/2012 7:14:00 AM
1,3,5-Trimethylbenzene	ND	0.0202		mg/Kg-dry	1	10/17/2012 7:14:00 AM
2-Chlorotoluene	ND	0.0202		mg/Kg-dry	1	10/17/2012 7:14:00 AM
4-Chlorotoluene	ND	0.0202		mg/Kg-dry	1	10/17/2012 7:14:00 AM
tert-Butylbenzene	ND	0.0202		mg/Kg-dry	1	10/17/2012 7:14:00 AM
1,2,3-Trichloropropane	ND	0.0202		mg/Kg-dry	1	10/17/2012 7:14:00 AM
1,2,4-Trichlorobenzene	ND	0.0505		mg/Kg-dry	1	10/17/2012 7:14:00 AM
sec-Butylbenzene	ND	0.0202		mg/Kg-dry	1	10/17/2012 7:14:00 AM
4-Isopropyltoluene	ND	0.0202		mg/Kg-dry	1	10/17/2012 7:14:00 AM
1,3-Dichlorobenzene	ND	0.0202		mg/Kg-dry	1	10/17/2012 7:14:00 AM
1,4-Dichlorobenzene	ND	0.0202		mg/Kg-dry	1	10/17/2012 7:14:00 AM
n-Butylbenzene	ND	0.0202		mg/Kg-dry	1	10/17/2012 7:14:00 AM
1,2-Dichlorobenzene	ND	0.0202		mg/Kg-dry	1	10/17/2012 7:14:00 AM
1,2-Dibromo-3-chloropropane	ND	0.0303		mg/Kg-dry	1	10/17/2012 7:14:00 AM
1,2,4-Trimethylbenzene	ND	0.0202		mg/Kg-dry	1	10/17/2012 7:14:00 AM
Hexachlorobutadiene	ND	0.101		mg/Kg-dry	1	10/17/2012 7:14:00 AM
Naphthalene	ND	0.0303		mg/Kg-dry	1	10/17/2012 7:14:00 AM
1,2,3-Trichlorobenzene	ND	0.0202		mg/Kg-dry	1	10/17/2012 7:14:00 AM
Surr: 1-Bromo-4-fluorobenzene	98.4	63.1-141		%REC	1	10/17/2012 7:14:00 AM
Surr: Dibromofluoromethane	98.0	67.6-119		%REC	1	10/17/2012 7:14:00 AM
Surr: Toluene-d8	99.7	78.5-126		%REC	1	10/17/2012 7:14:00 AM

Total Metals by EPA Method 6020

Batch ID: 3450

Analyst: SG

Arsenic	5.54	0.0972		mg/Kg-dry	1	10/17/2012 4:00:09 AM
Barium	130	0.486		mg/Kg-dry	1	10/17/2012 4:00:09 AM
Cadmium	ND	0.194		mg/Kg-dry	1	10/17/2012 4:00:09 AM
Chromium	61.9	0.0972		mg/Kg-dry	1	10/17/2012 4:00:09 AM
Lead	11.1	0.194		mg/Kg-dry	1	10/17/2012 4:00:09 AM

Qualifiers: B Analyte detected in the associated Method Blank
E Value above quantitation range
J Analyte detected below quantitation limits
RL Reporting Limit

D Dilution was required
H Holding times for preparation or analysis exceeded
ND Not detected at the Reporting Limit
S Spike recovery outside accepted recovery limits



Analytical Report

WO#: 1210020

Date Reported: 10/23/2012

Client: GeoEngineers, Inc. - Redmond

Collection Date: 10/8/2012 3:15:00 PM

Project: Rufus 2.0 WO11

Lab ID: 1210020-157

Matrix: Soil

Client Sample ID: B21-16-2.5

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<u>Total Metals by EPA Method 6020</u>				Batch ID: 3450		Analyst: SG
Selenium	ND	0.486		mg/Kg-dry	1	10/17/2012 4:00:09 AM
Silver	ND	0.0972		mg/Kg-dry	1	10/17/2012 4:00:09 AM
<u>Mercury by EPA Method 7471</u>				Batch ID: 3456		Analyst: MC
Mercury	ND	0.287		mg/Kg-dry	1	10/18/2012 12:55:33 PM
<u>Sample Moisture (Percent Moisture)</u>				Batch ID: R6156		Analyst: CM
Percent Moisture	17.7			wt%	1	10/16/2012 10:35:24 AM

Qualifiers: B Analyte detected in the associated Method Blank
E Value above quantitation range
J Analyte detected below quantitation limits
RL Reporting Limit

D Dilution was required
H Holding times for preparation or analysis exceeded
ND Not detected at the Reporting Limit
S Spike recovery outside accepted recovery limits



Analytical Report

WO#: 1210020

Date Reported: 10/23/2012

Client: GeoEngineers, Inc. - Redmond

Collection Date: 10/8/2012 3:25:00 PM

Project: Rufus 2.0 WO11

Lab ID: 1210020-160

Matrix: Soil

Client Sample ID: B21-16-10.0

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<u>Diesel and Heavy Oil by NWTPH-Dx/Dx Ext.</u>				Batch ID: 3446		Analyst: BR
Diesel (Fuel Oil)	ND	19.5		mg/Kg-dry	1	10/16/2012 10:05:00 PM
Heavy Oil	ND	48.7		mg/Kg-dry	1	10/16/2012 10:05:00 PM
Surr: 2-Fluorobiphenyl	101	50-150		%REC	1	10/16/2012 10:05:00 PM
Surr: o-Terphenyl	102	50-150		%REC	1	10/16/2012 10:05:00 PM
<u>Gasoline by NWTPH-Gx</u>				Batch ID: R6251		Analyst: EM
Gasoline	ND	6.73		mg/Kg-dry	1	10/17/2012 7:44:00 AM
Surr: 1,2-Dichloroethane-d4	111	65-135		%REC	1	10/17/2012 7:44:00 AM
Surr: Fluorobenzene	101	65-135		%REC	1	10/17/2012 7:44:00 AM
<u>Volatile Organic Compounds by EPA Method 8260</u>				Batch ID: 3452		Analyst: EM
Dichlorodifluoromethane (CFC-12)	ND	0.0808		mg/Kg-dry	1	10/17/2012 7:44:00 AM
Chloromethane	ND	0.0808		mg/Kg-dry	1	10/17/2012 7:44:00 AM
Vinyl chloride	ND	0.00269		mg/Kg-dry	1	10/17/2012 7:44:00 AM
Bromomethane	ND	0.121		mg/Kg-dry	1	10/17/2012 7:44:00 AM
Trichlorofluoromethane (CFC-11)	ND	0.0673		mg/Kg-dry	1	10/17/2012 7:44:00 AM
Chloroethane	ND	0.0808		mg/Kg-dry	1	10/17/2012 7:44:00 AM
1,1-Dichloroethene	ND	0.0673		mg/Kg-dry	1	10/17/2012 7:44:00 AM
Methylene chloride	ND	0.0269		mg/Kg-dry	1	10/17/2012 7:44:00 AM
trans-1,2-Dichloroethene	ND	0.0269		mg/Kg-dry	1	10/17/2012 7:44:00 AM
Methyl tert-butyl ether (MTBE)	ND	0.0673		mg/Kg-dry	1	10/17/2012 7:44:00 AM
1,1-Dichloroethane	ND	0.0269		mg/Kg-dry	1	10/17/2012 7:44:00 AM
2,2-Dichloropropane	ND	0.0673		mg/Kg-dry	1	10/17/2012 7:44:00 AM
cis-1,2-Dichloroethene	ND	0.0269		mg/Kg-dry	1	10/17/2012 7:44:00 AM
Chloroform	ND	0.0269		mg/Kg-dry	1	10/17/2012 7:44:00 AM
1,1,1-Trichloroethane (TCA)	ND	0.0269		mg/Kg-dry	1	10/17/2012 7:44:00 AM
1,1-Dichloropropene	ND	0.0269		mg/Kg-dry	1	10/17/2012 7:44:00 AM
Carbon tetrachloride	ND	0.0269		mg/Kg-dry	1	10/17/2012 7:44:00 AM
1,2-Dichloroethane	ND	0.0404		mg/Kg-dry	1	10/17/2012 7:44:00 AM
Benzene	ND	0.0269		mg/Kg-dry	1	10/17/2012 7:44:00 AM
Trichloroethene (TCE)	ND	0.0404		mg/Kg-dry	1	10/17/2012 7:44:00 AM
1,2-Dichloropropane	ND	0.0269		mg/Kg-dry	1	10/17/2012 7:44:00 AM
Bromodichloromethane	ND	0.0269		mg/Kg-dry	1	10/17/2012 7:44:00 AM

Qualifiers: B Analyte detected in the associated Method Blank
E Value above quantitation range
J Analyte detected below quantitation limits
RL Reporting Limit

D Dilution was required
H Holding times for preparation or analysis exceeded
ND Not detected at the Reporting Limit
S Spike recovery outside accepted recovery limits



Analytical Report

WO#: 1210020

Date Reported: 10/23/2012

Client: GeoEngineers, Inc. - Redmond

Collection Date: 10/8/2012 3:25:00 PM

Project: Rufus 2.0 WO11

Lab ID: 1210020-160

Matrix: Soil

Client Sample ID: B21-16-10.0

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
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Volatile Organic Compounds by EPA Method 8260

Batch ID: 3452

Analyst: EM

Dibromomethane	ND	0.0538		mg/Kg-dry	1	10/17/2012 7:44:00 AM
cis-1,3-Dichloropropene	ND	0.0269		mg/Kg-dry	1	10/17/2012 7:44:00 AM
Toluene	ND	0.0269		mg/Kg-dry	1	10/17/2012 7:44:00 AM
trans-1,3-Dichloropropene	ND	0.0404		mg/Kg-dry	1	10/17/2012 7:44:00 AM
1,1,2-Trichloroethane	ND	0.0404		mg/Kg-dry	1	10/17/2012 7:44:00 AM
1,3-Dichloropropane	ND	0.0673		mg/Kg-dry	1	10/17/2012 7:44:00 AM
Tetrachloroethene (PCE)	ND	0.0269		mg/Kg-dry	1	10/17/2012 7:44:00 AM
Dibromochloromethane	ND	0.0404		mg/Kg-dry	1	10/17/2012 7:44:00 AM
1,2-Dibromoethane (EDB)	ND	0.00673		mg/Kg-dry	1	10/17/2012 7:44:00 AM
Chlorobenzene	ND	0.0269		mg/Kg-dry	1	10/17/2012 7:44:00 AM
1,1,1,2-Tetrachloroethane	ND	0.0404		mg/Kg-dry	1	10/17/2012 7:44:00 AM
Ethylbenzene	ND	0.0404		mg/Kg-dry	1	10/17/2012 7:44:00 AM
m,p-Xylene	ND	0.0269		mg/Kg-dry	1	10/17/2012 7:44:00 AM
o-Xylene	ND	0.0269		mg/Kg-dry	1	10/17/2012 7:44:00 AM
Styrene	ND	0.0269		mg/Kg-dry	1	10/17/2012 7:44:00 AM
Isopropylbenzene	ND	0.108		mg/Kg-dry	1	10/17/2012 7:44:00 AM
Bromoform	ND	0.0269		mg/Kg-dry	1	10/17/2012 7:44:00 AM
1,1,2,2-Tetrachloroethane	ND	0.0269		mg/Kg-dry	1	10/17/2012 7:44:00 AM
n-Propylbenzene	ND	0.0269		mg/Kg-dry	1	10/17/2012 7:44:00 AM
Bromobenzene	ND	0.0404		mg/Kg-dry	1	10/17/2012 7:44:00 AM
1,3,5-Trimethylbenzene	ND	0.0269		mg/Kg-dry	1	10/17/2012 7:44:00 AM
2-Chlorotoluene	ND	0.0269		mg/Kg-dry	1	10/17/2012 7:44:00 AM
4-Chlorotoluene	ND	0.0269		mg/Kg-dry	1	10/17/2012 7:44:00 AM
tert-Butylbenzene	ND	0.0269		mg/Kg-dry	1	10/17/2012 7:44:00 AM
1,2,3-Trichloropropane	ND	0.0269		mg/Kg-dry	1	10/17/2012 7:44:00 AM
1,2,4-Trichlorobenzene	ND	0.0673		mg/Kg-dry	1	10/17/2012 7:44:00 AM
sec-Butylbenzene	ND	0.0269		mg/Kg-dry	1	10/17/2012 7:44:00 AM
4-Isopropyltoluene	ND	0.0269		mg/Kg-dry	1	10/17/2012 7:44:00 AM
1,3-Dichlorobenzene	ND	0.0269		mg/Kg-dry	1	10/17/2012 7:44:00 AM
1,4-Dichlorobenzene	ND	0.0269		mg/Kg-dry	1	10/17/2012 7:44:00 AM
n-Butylbenzene	ND	0.0269		mg/Kg-dry	1	10/17/2012 7:44:00 AM
1,2-Dichlorobenzene	ND	0.0269		mg/Kg-dry	1	10/17/2012 7:44:00 AM
1,2-Dibromo-3-chloropropane	ND	0.0404		mg/Kg-dry	1	10/17/2012 7:44:00 AM
1,2,4-Trimethylbenzene	ND	0.0269		mg/Kg-dry	1	10/17/2012 7:44:00 AM
Hexachlorobutadiene	ND	0.135		mg/Kg-dry	1	10/17/2012 7:44:00 AM

Qualifiers: B Analyte detected in the associated Method Blank
E Value above quantitation range
J Analyte detected below quantitation limits
RL Reporting Limit

D Dilution was required
H Holding times for preparation or analysis exceeded
ND Not detected at the Reporting Limit
S Spike recovery outside accepted recovery limits



Analytical Report

WO#: 1210020

Date Reported: 10/23/2012

Client: GeoEngineers, Inc. - Redmond

Collection Date: 10/8/2012 3:25:00 PM

Project: Rufus 2.0 WO11

Lab ID: 1210020-160

Matrix: Soil

Client Sample ID: B21-16-10.0

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
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Volatile Organic Compounds by EPA Method 8260

Batch ID: 3452

Analyst: EM

Napthalene	ND	0.0404		mg/Kg-dry	1	10/17/2012 7:44:00 AM
1,2,3-Trichlorobenzene	ND	0.0269		mg/Kg-dry	1	10/17/2012 7:44:00 AM
Surr: 1-Bromo-4-fluorobenzene	99.8	63.1-141		%REC	1	10/17/2012 7:44:00 AM
Surr: Dibromofluoromethane	101	67.6-119		%REC	1	10/17/2012 7:44:00 AM
Surr: Toluene-d8	105	78.5-126		%REC	1	10/17/2012 7:44:00 AM

Total Metals by EPA Method 6020

Batch ID: 3450

Analyst: SG

Arsenic	1.15	0.0837		mg/Kg-dry	1	10/17/2012 4:09:12 AM
Barium	36.5	0.419		mg/Kg-dry	1	10/17/2012 4:09:12 AM
Cadmium	ND	0.167		mg/Kg-dry	1	10/17/2012 4:09:12 AM
Chromium	26.5	0.0837		mg/Kg-dry	1	10/17/2012 4:09:12 AM
Lead	1.20	0.167		mg/Kg-dry	1	10/17/2012 4:09:12 AM
Selenium	ND	0.419		mg/Kg-dry	1	10/17/2012 4:09:12 AM
Silver	ND	0.0837		mg/Kg-dry	1	10/17/2012 4:09:12 AM

Mercury by EPA Method 7471

Batch ID: 3456

Analyst: MC

Mercury	ND	0.232		mg/Kg-dry	1	10/18/2012 12:57:09 PM
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Sample Moisture (Percent Moisture)

Batch ID: R6156

Analyst: CM

Percent Moisture	3.70			wt%	1	10/16/2012 10:35:24 AM
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Qualifiers: B Analyte detected in the associated Method Blank
E Value above quantitation range
J Analyte detected below quantitation limits
RL Reporting Limit

D Dilution was required
H Holding times for preparation or analysis exceeded
ND Not detected at the Reporting Limit
S Spike recovery outside accepted recovery limits



Analytical Report

WO#: 1210020

Date Reported: 10/23/2012

Client: GeoEngineers, Inc. - Redmond

Collection Date: 10/10/2012 8:25:00 AM

Project: Rufus 2.0 WO11

Lab ID: 1210020-218

Matrix: Soil

Client Sample ID: MW21-1-5.0

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<u>Diesel and Heavy Oil by NWTPH-Dx/Dx Ext.</u>				Batch ID: 3446		Analyst: BR
Diesel (Fuel Oil)	ND	18.4		mg/Kg-dry	1	10/16/2012 10:32:00 PM
Heavy Oil	ND	46.1		mg/Kg-dry	1	10/16/2012 10:32:00 PM
Surr: 2-Fluorobiphenyl	99.3	50-150		%REC	1	10/16/2012 10:32:00 PM
Surr: o-Terphenyl	101	50-150		%REC	1	10/16/2012 10:32:00 PM
<u>Polyaromatic Hydrocarbons by EPA Method 8270 (SIM)</u>				Batch ID: 3448		Analyst: PH
Naphthalene	ND	45.7		µg/Kg-dry	1	10/18/2012 3:40:00 AM
2-Methylnaphthalene	ND	45.7		µg/Kg-dry	1	10/18/2012 3:40:00 AM
1-Methylnaphthalene	ND	45.7		µg/Kg-dry	1	10/18/2012 3:40:00 AM
Acenaphthylene	ND	45.7		µg/Kg-dry	1	10/18/2012 3:40:00 AM
Acenaphthene	ND	45.7		µg/Kg-dry	1	10/18/2012 3:40:00 AM
Fluorene	ND	45.7		µg/Kg-dry	1	10/18/2012 3:40:00 AM
Phenanthrene	ND	45.7		µg/Kg-dry	1	10/18/2012 3:40:00 AM
Anthracene	ND	45.7		µg/Kg-dry	1	10/18/2012 3:40:00 AM
Fluoranthene	ND	45.7		µg/Kg-dry	1	10/18/2012 3:40:00 AM
Pyrene	ND	45.7		µg/Kg-dry	1	10/18/2012 3:40:00 AM
Benz(a)anthracene	ND	45.7		µg/Kg-dry	1	10/18/2012 3:40:00 AM
Chrysene	ND	45.7		µg/Kg-dry	1	10/18/2012 3:40:00 AM
Benzo(b)fluoranthene	ND	45.7		µg/Kg-dry	1	10/18/2012 3:40:00 AM
Benzo(k)fluoranthene	ND	45.7		µg/Kg-dry	1	10/18/2012 3:40:00 AM
Benzo(a)pyrene	ND	45.7		µg/Kg-dry	1	10/18/2012 3:40:00 AM
Indeno(1,2,3-cd)pyrene	ND	45.7		µg/Kg-dry	1	10/18/2012 3:40:00 AM
Dibenz(a,h)anthracene	ND	45.7		µg/Kg-dry	1	10/18/2012 3:40:00 AM
Benzo(g,h,i)perylene	ND	45.7		µg/Kg-dry	1	10/18/2012 3:40:00 AM
Surr: 2-Fluorobiphenyl	97.6	50.4-142		%REC	1	10/18/2012 3:40:00 AM
Surr: Terphenyl-d14 (surr)	103	48.8-157		%REC	1	10/18/2012 3:40:00 AM
<u>Gasoline by NWTPH-Gx</u>				Batch ID: R6251		Analyst: EM
Gasoline	ND	6.72		mg/Kg-dry	1	10/17/2012 8:14:00 AM
Surr: 1,2-Dichloroethane-d4	110	65-135		%REC	1	10/17/2012 8:14:00 AM
Surr: Fluorobenzene	101	65-135		%REC	1	10/17/2012 8:14:00 AM

Qualifiers: B Analyte detected in the associated Method Blank
E Value above quantitation range
J Analyte detected below quantitation limits
RL Reporting Limit

D Dilution was required
H Holding times for preparation or analysis exceeded
ND Not detected at the Reporting Limit
S Spike recovery outside accepted recovery limits



Analytical Report

WO#: 1210020

Date Reported: 10/23/2012

Client: GeoEngineers, Inc. - Redmond

Collection Date: 10/10/2012 8:25:00 AM

Project: Rufus 2.0 WO11

Lab ID: 1210020-218

Matrix: Soil

Client Sample ID: MW21-1-5.0

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
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Volatile Organic Compounds by EPA Method 8260

Batch ID: 3452

Analyst: EM

Dichlorodifluoromethane (CFC-12)	ND	0.0807		mg/Kg-dry	1	10/17/2012 8:14:00 AM
Chloromethane	ND	0.0807		mg/Kg-dry	1	10/17/2012 8:14:00 AM
Vinyl chloride	ND	0.00269		mg/Kg-dry	1	10/17/2012 8:14:00 AM
Bromomethane	ND	0.121		mg/Kg-dry	1	10/17/2012 8:14:00 AM
Trichlorofluoromethane (CFC-11)	ND	0.0672		mg/Kg-dry	1	10/17/2012 8:14:00 AM
Chloroethane	ND	0.0807		mg/Kg-dry	1	10/17/2012 8:14:00 AM
1,1-Dichloroethene	ND	0.0672		mg/Kg-dry	1	10/17/2012 8:14:00 AM
Methylene chloride	ND	0.0269		mg/Kg-dry	1	10/17/2012 8:14:00 AM
trans-1,2-Dichloroethene	ND	0.0269		mg/Kg-dry	1	10/17/2012 8:14:00 AM
Methyl tert-butyl ether (MTBE)	ND	0.0672		mg/Kg-dry	1	10/17/2012 8:14:00 AM
1,1-Dichloroethane	ND	0.0269		mg/Kg-dry	1	10/17/2012 8:14:00 AM
2,2-Dichloropropane	ND	0.0672		mg/Kg-dry	1	10/17/2012 8:14:00 AM
cis-1,2-Dichloroethene	ND	0.0269		mg/Kg-dry	1	10/17/2012 8:14:00 AM
Chloroform	ND	0.0269		mg/Kg-dry	1	10/17/2012 8:14:00 AM
1,1,1-Trichloroethane (TCA)	ND	0.0269		mg/Kg-dry	1	10/17/2012 8:14:00 AM
1,1-Dichloropropene	ND	0.0269		mg/Kg-dry	1	10/17/2012 8:14:00 AM
Carbon tetrachloride	ND	0.0269		mg/Kg-dry	1	10/17/2012 8:14:00 AM
1,2-Dichloroethane	ND	0.0403		mg/Kg-dry	1	10/17/2012 8:14:00 AM
Benzene	ND	0.0269		mg/Kg-dry	1	10/17/2012 8:14:00 AM
Trichloroethene (TCE)	ND	0.0403		mg/Kg-dry	1	10/17/2012 8:14:00 AM
1,2-Dichloropropane	ND	0.0269		mg/Kg-dry	1	10/17/2012 8:14:00 AM
Bromodichloromethane	ND	0.0269		mg/Kg-dry	1	10/17/2012 8:14:00 AM
Dibromomethane	ND	0.0538		mg/Kg-dry	1	10/17/2012 8:14:00 AM
cis-1,3-Dichloropropene	ND	0.0269		mg/Kg-dry	1	10/17/2012 8:14:00 AM
Toluene	ND	0.0269		mg/Kg-dry	1	10/17/2012 8:14:00 AM
trans-1,3-Dichloropropene	ND	0.0403		mg/Kg-dry	1	10/17/2012 8:14:00 AM
1,1,2-Trichloroethane	ND	0.0403		mg/Kg-dry	1	10/17/2012 8:14:00 AM
1,3-Dichloropropane	ND	0.0672		mg/Kg-dry	1	10/17/2012 8:14:00 AM
Tetrachloroethene (PCE)	ND	0.0269		mg/Kg-dry	1	10/17/2012 8:14:00 AM
Dibromochloromethane	ND	0.0403		mg/Kg-dry	1	10/17/2012 8:14:00 AM
1,2-Dibromoethane (EDB)	ND	0.00672		mg/Kg-dry	1	10/17/2012 8:14:00 AM
Chlorobenzene	ND	0.0269		mg/Kg-dry	1	10/17/2012 8:14:00 AM
1,1,1,2-Tetrachloroethane	ND	0.0403		mg/Kg-dry	1	10/17/2012 8:14:00 AM
Ethylbenzene	ND	0.0403		mg/Kg-dry	1	10/17/2012 8:14:00 AM
m,p-Xylene	ND	0.0269		mg/Kg-dry	1	10/17/2012 8:14:00 AM

Qualifiers: B Analyte detected in the associated Method Blank
E Value above quantitation range
J Analyte detected below quantitation limits
RL Reporting Limit

D Dilution was required
H Holding times for preparation or analysis exceeded
ND Not detected at the Reporting Limit
S Spike recovery outside accepted recovery limits



Analytical Report

WO#: 1210020

Date Reported: 10/23/2012

Client: GeoEngineers, Inc. - Redmond

Collection Date: 10/10/2012 8:25:00 AM

Project: Rufus 2.0 WO11

Lab ID: 1210020-218

Matrix: Soil

Client Sample ID: MW21-1-5.0

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
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Volatile Organic Compounds by EPA Method 8260

Batch ID: 3452

Analyst: EM

o-Xylene	ND	0.0269		mg/Kg-dry	1	10/17/2012 8:14:00 AM
Styrene	ND	0.0269		mg/Kg-dry	1	10/17/2012 8:14:00 AM
Isopropylbenzene	ND	0.108		mg/Kg-dry	1	10/17/2012 8:14:00 AM
Bromoform	ND	0.0269		mg/Kg-dry	1	10/17/2012 8:14:00 AM
1,1,2,2-Tetrachloroethane	ND	0.0269		mg/Kg-dry	1	10/17/2012 8:14:00 AM
n-Propylbenzene	ND	0.0269		mg/Kg-dry	1	10/17/2012 8:14:00 AM
Bromobenzene	ND	0.0403		mg/Kg-dry	1	10/17/2012 8:14:00 AM
1,3,5-Trimethylbenzene	ND	0.0269		mg/Kg-dry	1	10/17/2012 8:14:00 AM
2-Chlorotoluene	ND	0.0269		mg/Kg-dry	1	10/17/2012 8:14:00 AM
4-Chlorotoluene	ND	0.0269		mg/Kg-dry	1	10/17/2012 8:14:00 AM
tert-Butylbenzene	ND	0.0269		mg/Kg-dry	1	10/17/2012 8:14:00 AM
1,2,3-Trichloropropane	ND	0.0269		mg/Kg-dry	1	10/17/2012 8:14:00 AM
1,2,4-Trichlorobenzene	ND	0.0672		mg/Kg-dry	1	10/17/2012 8:14:00 AM
sec-Butylbenzene	ND	0.0269		mg/Kg-dry	1	10/17/2012 8:14:00 AM
4-Isopropyltoluene	ND	0.0269		mg/Kg-dry	1	10/17/2012 8:14:00 AM
1,3-Dichlorobenzene	ND	0.0269		mg/Kg-dry	1	10/17/2012 8:14:00 AM
1,4-Dichlorobenzene	ND	0.0269		mg/Kg-dry	1	10/17/2012 8:14:00 AM
n-Butylbenzene	ND	0.0269		mg/Kg-dry	1	10/17/2012 8:14:00 AM
1,2-Dichlorobenzene	ND	0.0269		mg/Kg-dry	1	10/17/2012 8:14:00 AM
1,2-Dibromo-3-chloropropane	ND	0.0403		mg/Kg-dry	1	10/17/2012 8:14:00 AM
1,2,4-Trimethylbenzene	ND	0.0269		mg/Kg-dry	1	10/17/2012 8:14:00 AM
Hexachlorobutadiene	ND	0.134		mg/Kg-dry	1	10/17/2012 8:14:00 AM
Naphthalene	ND	0.0403		mg/Kg-dry	1	10/17/2012 8:14:00 AM
1,2,3-Trichlorobenzene	ND	0.0269		mg/Kg-dry	1	10/17/2012 8:14:00 AM
Surr: 1-Bromo-4-fluorobenzene	99.4	63.1-141		%REC	1	10/17/2012 8:14:00 AM
Surr: Dibromofluoromethane	99.2	67.6-119		%REC	1	10/17/2012 8:14:00 AM
Surr: Toluene-d8	100	78.5-126		%REC	1	10/17/2012 8:14:00 AM

Total Metals by EPA Method 6020

Batch ID: 3450

Analyst: SG

Arsenic	0.891	0.0900		mg/Kg-dry	1	10/17/2012 4:18:15 AM
Barium	43.0	0.450		mg/Kg-dry	1	10/17/2012 4:18:15 AM
Cadmium	ND	0.180		mg/Kg-dry	1	10/17/2012 4:18:15 AM
Chromium	31.9	0.0900		mg/Kg-dry	1	10/17/2012 4:18:15 AM
Lead	1.32	0.180		mg/Kg-dry	1	10/17/2012 4:18:15 AM

Qualifiers: B Analyte detected in the associated Method Blank
E Value above quantitation range
J Analyte detected below quantitation limits
RL Reporting Limit

D Dilution was required
H Holding times for preparation or analysis exceeded
ND Not detected at the Reporting Limit
S Spike recovery outside accepted recovery limits



Analytical Report

WO#: 1210020

Date Reported: 10/23/2012

Client: GeoEngineers, Inc. - Redmond

Collection Date: 10/10/2012 8:25:00 AM

Project: Rufus 2.0 WO11

Lab ID: 1210020-218

Matrix: Soil

Client Sample ID: MW21-1-5.0

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
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Total Metals by EPA Method 6020

Batch ID: 3450

Analyst: SG

Selenium	ND	0.450		mg/Kg-dry	1	10/17/2012 4:18:15 AM
Silver	ND	0.0900		mg/Kg-dry	1	10/17/2012 4:18:15 AM

Mercury by EPA Method 7471

Batch ID: 3456

Analyst: MC

Mercury	ND	0.264		mg/Kg-dry	1	10/18/2012 12:58:46 PM
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Sample Moisture (Percent Moisture)

Batch ID: R6156

Analyst: CM

Percent Moisture	3.39			wt%	1	10/16/2012 10:35:24 AM
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Qualifiers:

B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
RL	Reporting Limit

D	Dilution was required
H	Holding times for preparation or analysis exceeded
ND	Not detected at the Reporting Limit
S	Spike recovery outside accepted recovery limits



Analytical Report

WO#: 1210020

Date Reported: 10/23/2012

Client: GeoEngineers, Inc. - Redmond

Collection Date: 10/10/2012 8:55:00 AM

Project: Rufus 2.0 WO11

Lab ID: 1210020-223

Matrix: Soil

Client Sample ID: MW21-1-17.5

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<u>Diesel and Heavy Oil by NWTPH-Dx/Dx Ext.</u>				Batch ID: 3446		Analyst: BR
Diesel (Fuel Oil)	ND	20.2		mg/Kg-dry	1	10/16/2012 10:59:00 PM
Heavy Oil	ND	50.6		mg/Kg-dry	1	10/16/2012 10:59:00 PM
Surr: 2-Fluorobiphenyl	99.5	50-150		%REC	1	10/16/2012 10:59:00 PM
Surr: o-Terphenyl	101	50-150		%REC	1	10/16/2012 10:59:00 PM
<u>Polyaromatic Hydrocarbons by EPA Method 8270 (SIM)</u>				Batch ID: 3448		Analyst: PH
Naphthalene	ND	52.0		µg/Kg-dry	1	10/18/2012 4:05:00 AM
2-Methylnaphthalene	ND	52.0		µg/Kg-dry	1	10/18/2012 4:05:00 AM
1-Methylnaphthalene	ND	52.0		µg/Kg-dry	1	10/18/2012 4:05:00 AM
Acenaphthylene	ND	52.0		µg/Kg-dry	1	10/18/2012 4:05:00 AM
Acenaphthene	ND	52.0		µg/Kg-dry	1	10/18/2012 4:05:00 AM
Fluorene	ND	52.0		µg/Kg-dry	1	10/18/2012 4:05:00 AM
Phenanthrene	ND	52.0		µg/Kg-dry	1	10/18/2012 4:05:00 AM
Anthracene	ND	52.0		µg/Kg-dry	1	10/18/2012 4:05:00 AM
Fluoranthene	ND	52.0		µg/Kg-dry	1	10/18/2012 4:05:00 AM
Pyrene	ND	52.0		µg/Kg-dry	1	10/18/2012 4:05:00 AM
Benz(a)anthracene	ND	52.0		µg/Kg-dry	1	10/18/2012 4:05:00 AM
Chrysene	ND	52.0		µg/Kg-dry	1	10/18/2012 4:05:00 AM
Benzo(b)fluoranthene	ND	52.0		µg/Kg-dry	1	10/18/2012 4:05:00 AM
Benzo(k)fluoranthene	ND	52.0		µg/Kg-dry	1	10/18/2012 4:05:00 AM
Benzo(a)pyrene	ND	52.0		µg/Kg-dry	1	10/18/2012 4:05:00 AM
Indeno(1,2,3-cd)pyrene	ND	52.0		µg/Kg-dry	1	10/18/2012 4:05:00 AM
Dibenz(a,h)anthracene	ND	52.0		µg/Kg-dry	1	10/18/2012 4:05:00 AM
Benzo(g,h,i)perylene	ND	52.0		µg/Kg-dry	1	10/18/2012 4:05:00 AM
Surr: 2-Fluorobiphenyl	133	50.4-142		%REC	1	10/18/2012 4:05:00 AM
Surr: Terphenyl-d14 (surr)	109	48.8-157		%REC	1	10/18/2012 4:05:00 AM
<u>Gasoline by NWTPH-Gx</u>				Batch ID: R6251		Analyst: EM
Gasoline	ND	8.68		mg/Kg-dry	1	10/17/2012 8:43:00 AM
Surr: 1,2-Dichloroethane-d4	110	65-135		%REC	1	10/17/2012 8:43:00 AM
Surr: Fluorobenzene	100	65-135		%REC	1	10/17/2012 8:43:00 AM

Qualifiers: B Analyte detected in the associated Method Blank
E Value above quantitation range
J Analyte detected below quantitation limits
RL Reporting Limit

D Dilution was required
H Holding times for preparation or analysis exceeded
ND Not detected at the Reporting Limit
S Spike recovery outside accepted recovery limits



Analytical Report

WO#: 1210020

Date Reported: 10/23/2012

Client: GeoEngineers, Inc. - Redmond

Collection Date: 10/10/2012 8:55:00 AM

Project: Rufus 2.0 WO11

Lab ID: 1210020-223

Matrix: Soil

Client Sample ID: MW21-1-17.5

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
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Volatile Organic Compounds by EPA Method 8260

Batch ID: 3452

Analyst: EM

Benzene	ND	0.0347		mg/Kg-dry	1	10/17/2012 8:43:00 AM
Toluene	ND	0.0347		mg/Kg-dry	1	10/17/2012 8:43:00 AM
Ethylbenzene	ND	0.0521		mg/Kg-dry	1	10/17/2012 8:43:00 AM
m,p-Xylene	ND	0.0347		mg/Kg-dry	1	10/17/2012 8:43:00 AM
o-Xylene	ND	0.0347		mg/Kg-dry	1	10/17/2012 8:43:00 AM
Surr: 1-Bromo-4-fluorobenzene	101	63.1-141		%REC	1	10/17/2012 8:43:00 AM
Surr: Dibromofluoromethane	99.8	67.6-119		%REC	1	10/17/2012 8:43:00 AM
Surr: Toluene-d8	101	78.5-126		%REC	1	10/17/2012 8:43:00 AM

Total Metals by EPA Method 6020

Batch ID: 3450

Analyst: SG

Arsenic	3.97	0.0930		mg/Kg-dry	1	10/17/2012 4:27:18 AM
Barium	125	0.465		mg/Kg-dry	1	10/17/2012 4:27:18 AM
Cadmium	ND	0.186		mg/Kg-dry	1	10/17/2012 4:27:18 AM
Chromium	73.3	0.0930		mg/Kg-dry	1	10/17/2012 4:27:18 AM
Lead	4.79	0.186		mg/Kg-dry	1	10/17/2012 4:27:18 AM
Selenium	ND	0.465		mg/Kg-dry	1	10/17/2012 4:27:18 AM
Silver	ND	0.0930		mg/Kg-dry	1	10/17/2012 4:27:18 AM

Mercury by EPA Method 7471

Batch ID: 3456

Analyst: MC

Mercury	ND	0.242		mg/Kg-dry	1	10/18/2012 1:00:23 PM
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Sample Moisture (Percent Moisture)

Batch ID: R6156

Analyst: CM

Percent Moisture	12.5			wt%	1	10/16/2012 10:35:24 AM
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Qualifiers: B Analyte detected in the associated Method Blank
E Value above quantitation range
J Analyte detected below quantitation limits
RL Reporting Limit

D Dilution was required
H Holding times for preparation or analysis exceeded
ND Not detected at the Reporting Limit
S Spike recovery outside accepted recovery limits



Analytical Report

WO#: 1210020

Date Reported: 10/23/2012

Client: GeoEngineers, Inc. - Redmond

Collection Date: 10/8/2012 8:37:00 AM

Project: Rufus 2.0 WO11

Lab ID: 1210020-231

Matrix: Soil

Client Sample ID: MW21-2-7.5

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<u>Diesel and Heavy Oil by NWTPH-Dx/Dx Ext.</u>				Batch ID: 3446		Analyst: BR
Diesel (Fuel Oil)	ND	21.2		mg/Kg-dry	1	10/16/2012 11:26:00 PM
Heavy Oil	ND	53.1		mg/Kg-dry	1	10/16/2012 11:26:00 PM
Surr: 2-Fluorobiphenyl	98.8	50-150		%REC	1	10/16/2012 11:26:00 PM
Surr: o-Terphenyl	98.9	50-150		%REC	1	10/16/2012 11:26:00 PM
<u>Polyaromatic Hydrocarbons by EPA Method 8270 (SIM)</u>				Batch ID: 3448		Analyst: PH
Naphthalene	ND	53.4		µg/Kg-dry	1	10/18/2012 4:30:00 AM
2-Methylnaphthalene	ND	53.4		µg/Kg-dry	1	10/18/2012 4:30:00 AM
1-Methylnaphthalene	ND	53.4		µg/Kg-dry	1	10/18/2012 4:30:00 AM
Acenaphthylene	ND	53.4		µg/Kg-dry	1	10/18/2012 4:30:00 AM
Acenaphthene	ND	53.4		µg/Kg-dry	1	10/18/2012 4:30:00 AM
Fluorene	ND	53.4		µg/Kg-dry	1	10/18/2012 4:30:00 AM
Phenanthrene	ND	53.4		µg/Kg-dry	1	10/18/2012 4:30:00 AM
Anthracene	ND	53.4		µg/Kg-dry	1	10/18/2012 4:30:00 AM
Fluoranthene	ND	53.4		µg/Kg-dry	1	10/18/2012 4:30:00 AM
Pyrene	ND	53.4		µg/Kg-dry	1	10/18/2012 4:30:00 AM
Benz(a)anthracene	ND	53.4		µg/Kg-dry	1	10/18/2012 4:30:00 AM
Chrysene	ND	53.4		µg/Kg-dry	1	10/18/2012 4:30:00 AM
Benzo(b)fluoranthene	ND	53.4		µg/Kg-dry	1	10/18/2012 4:30:00 AM
Benzo(k)fluoranthene	ND	53.4		µg/Kg-dry	1	10/18/2012 4:30:00 AM
Benzo(a)pyrene	ND	53.4		µg/Kg-dry	1	10/18/2012 4:30:00 AM
Indeno(1,2,3-cd)pyrene	ND	53.4		µg/Kg-dry	1	10/18/2012 4:30:00 AM
Dibenz(a,h)anthracene	ND	53.4		µg/Kg-dry	1	10/18/2012 4:30:00 AM
Benzo(g,h,i)perylene	ND	53.4		µg/Kg-dry	1	10/18/2012 4:30:00 AM
Surr: 2-Fluorobiphenyl	103	50.4-142		%REC	1	10/18/2012 4:30:00 AM
Surr: Terphenyl-d14 (surr)	116	48.8-157		%REC	1	10/18/2012 4:30:00 AM
<u>Gasoline by NWTPH-Gx</u>				Batch ID: R6251		Analyst: EM
Gasoline	ND	4.22		mg/Kg-dry	1	10/17/2012 9:13:00 AM
Surr: 1,2-Dichloroethane-d4	111	65-135		%REC	1	10/17/2012 9:13:00 AM
Surr: Fluorobenzene	99.5	65-135		%REC	1	10/17/2012 9:13:00 AM

Qualifiers: B Analyte detected in the associated Method Blank
E Value above quantitation range
J Analyte detected below quantitation limits
RL Reporting Limit

D Dilution was required
H Holding times for preparation or analysis exceeded
ND Not detected at the Reporting Limit
S Spike recovery outside accepted recovery limits



Analytical Report

WO#: 1210020

Date Reported: 10/23/2012

Client: GeoEngineers, Inc. - Redmond

Collection Date: 10/8/2012 8:37:00 AM

Project: Rufus 2.0 WO11

Lab ID: 1210020-231

Matrix: Soil

Client Sample ID: MW21-2-7.5

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
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Volatile Organic Compounds by EPA Method 8260

Batch ID: 3452

Analyst: EM

Dichlorodifluoromethane (CFC-12)	ND	0.0507		mg/Kg-dry	1	10/17/2012 9:13:00 AM
Chloromethane	ND	0.0507		mg/Kg-dry	1	10/17/2012 9:13:00 AM
Vinyl chloride	ND	0.00169		mg/Kg-dry	1	10/17/2012 9:13:00 AM
Bromomethane	ND	0.0760		mg/Kg-dry	1	10/17/2012 9:13:00 AM
Trichlorofluoromethane (CFC-11)	ND	0.0422		mg/Kg-dry	1	10/17/2012 9:13:00 AM
Chloroethane	ND	0.0507		mg/Kg-dry	1	10/17/2012 9:13:00 AM
1,1-Dichloroethene	ND	0.0422		mg/Kg-dry	1	10/17/2012 9:13:00 AM
Methylene chloride	ND	0.0169		mg/Kg-dry	1	10/17/2012 9:13:00 AM
trans-1,2-Dichloroethene	ND	0.0169		mg/Kg-dry	1	10/17/2012 9:13:00 AM
Methyl tert-butyl ether (MTBE)	ND	0.0422		mg/Kg-dry	1	10/17/2012 9:13:00 AM
1,1-Dichloroethane	ND	0.0169		mg/Kg-dry	1	10/17/2012 9:13:00 AM
2,2-Dichloropropane	ND	0.0422		mg/Kg-dry	1	10/17/2012 9:13:00 AM
cis-1,2-Dichloroethene	ND	0.0169		mg/Kg-dry	1	10/17/2012 9:13:00 AM
Chloroform	ND	0.0169		mg/Kg-dry	1	10/17/2012 9:13:00 AM
1,1,1-Trichloroethane (TCA)	ND	0.0169		mg/Kg-dry	1	10/17/2012 9:13:00 AM
1,1-Dichloropropene	ND	0.0169		mg/Kg-dry	1	10/17/2012 9:13:00 AM
Carbon tetrachloride	ND	0.0169		mg/Kg-dry	1	10/17/2012 9:13:00 AM
1,2-Dichloroethane	ND	0.0253		mg/Kg-dry	1	10/17/2012 9:13:00 AM
Benzene	ND	0.0169		mg/Kg-dry	1	10/17/2012 9:13:00 AM
Trichloroethene (TCE)	ND	0.0253		mg/Kg-dry	1	10/17/2012 9:13:00 AM
1,2-Dichloropropane	ND	0.0169		mg/Kg-dry	1	10/17/2012 9:13:00 AM
Bromodichloromethane	ND	0.0169		mg/Kg-dry	1	10/17/2012 9:13:00 AM
Dibromomethane	ND	0.0338		mg/Kg-dry	1	10/17/2012 9:13:00 AM
cis-1,3-Dichloropropene	ND	0.0169		mg/Kg-dry	1	10/17/2012 9:13:00 AM
Toluene	ND	0.0169		mg/Kg-dry	1	10/17/2012 9:13:00 AM
trans-1,3-Dichloropropene	ND	0.0253		mg/Kg-dry	1	10/17/2012 9:13:00 AM
1,1,2-Trichloroethane	ND	0.0253		mg/Kg-dry	1	10/17/2012 9:13:00 AM
1,3-Dichloropropane	ND	0.0422		mg/Kg-dry	1	10/17/2012 9:13:00 AM
Tetrachloroethene (PCE)	ND	0.0169		mg/Kg-dry	1	10/17/2012 9:13:00 AM
Dibromochloromethane	ND	0.0253		mg/Kg-dry	1	10/17/2012 9:13:00 AM
1,2-Dibromoethane (EDB)	ND	0.00422		mg/Kg-dry	1	10/17/2012 9:13:00 AM
Chlorobenzene	ND	0.0169		mg/Kg-dry	1	10/17/2012 9:13:00 AM
1,1,1,2-Tetrachloroethane	ND	0.0253		mg/Kg-dry	1	10/17/2012 9:13:00 AM
Ethylbenzene	ND	0.0253		mg/Kg-dry	1	10/17/2012 9:13:00 AM
m,p-Xylene	ND	0.0169		mg/Kg-dry	1	10/17/2012 9:13:00 AM

Qualifiers: B Analyte detected in the associated Method Blank
E Value above quantitation range
J Analyte detected below quantitation limits
RL Reporting Limit

D Dilution was required
H Holding times for preparation or analysis exceeded
ND Not detected at the Reporting Limit
S Spike recovery outside accepted recovery limits



Analytical Report

WO#: 1210020

Date Reported: 10/23/2012

Client: GeoEngineers, Inc. - Redmond

Collection Date: 10/8/2012 8:37:00 AM

Project: Rufus 2.0 WO11

Lab ID: 1210020-231

Matrix: Soil

Client Sample ID: MW21-2-7.5

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<u>Volatile Organic Compounds by EPA Method 8260</u>				Batch ID: 3452		Analyst: EM
o-Xylene	ND	0.0169		mg/Kg-dry	1	10/17/2012 9:13:00 AM
Styrene	ND	0.0169		mg/Kg-dry	1	10/17/2012 9:13:00 AM
Isopropylbenzene	ND	0.0676		mg/Kg-dry	1	10/17/2012 9:13:00 AM
Bromoform	ND	0.0169		mg/Kg-dry	1	10/17/2012 9:13:00 AM
1,1,2,2-Tetrachloroethane	ND	0.0169		mg/Kg-dry	1	10/17/2012 9:13:00 AM
n-Propylbenzene	ND	0.0169		mg/Kg-dry	1	10/17/2012 9:13:00 AM
Bromobenzene	ND	0.0253		mg/Kg-dry	1	10/17/2012 9:13:00 AM
1,3,5-Trimethylbenzene	ND	0.0169		mg/Kg-dry	1	10/17/2012 9:13:00 AM
2-Chlorotoluene	ND	0.0169		mg/Kg-dry	1	10/17/2012 9:13:00 AM
4-Chlorotoluene	ND	0.0169		mg/Kg-dry	1	10/17/2012 9:13:00 AM
tert-Butylbenzene	ND	0.0169		mg/Kg-dry	1	10/17/2012 9:13:00 AM
1,2,3-Trichloropropane	ND	0.0169		mg/Kg-dry	1	10/17/2012 9:13:00 AM
1,2,4-Trichlorobenzene	ND	0.0422		mg/Kg-dry	1	10/17/2012 9:13:00 AM
sec-Butylbenzene	ND	0.0169		mg/Kg-dry	1	10/17/2012 9:13:00 AM
4-Isopropyltoluene	ND	0.0169		mg/Kg-dry	1	10/17/2012 9:13:00 AM
1,3-Dichlorobenzene	ND	0.0169		mg/Kg-dry	1	10/17/2012 9:13:00 AM
1,4-Dichlorobenzene	ND	0.0169		mg/Kg-dry	1	10/17/2012 9:13:00 AM
n-Butylbenzene	ND	0.0169		mg/Kg-dry	1	10/17/2012 9:13:00 AM
1,2-Dichlorobenzene	ND	0.0169		mg/Kg-dry	1	10/17/2012 9:13:00 AM
1,2-Dibromo-3-chloropropane	ND	0.0253		mg/Kg-dry	1	10/17/2012 9:13:00 AM
1,2,4-Trimethylbenzene	ND	0.0169		mg/Kg-dry	1	10/17/2012 9:13:00 AM
Hexachlorobutadiene	ND	0.0845		mg/Kg-dry	1	10/17/2012 9:13:00 AM
Naphthalene	ND	0.0253		mg/Kg-dry	1	10/17/2012 9:13:00 AM
1,2,3-Trichlorobenzene	ND	0.0169		mg/Kg-dry	1	10/17/2012 9:13:00 AM
Surr: 1-Bromo-4-fluorobenzene	103	63.1-141		%REC	1	10/17/2012 9:13:00 AM
Surr: Dibromofluoromethane	100	67.6-119		%REC	1	10/17/2012 9:13:00 AM
Surr: Toluene-d8	101	78.5-126		%REC	1	10/17/2012 9:13:00 AM

Total Metals by EPA Method 6020

Batch ID: 3450

Analyst: SG

Arsenic	3.09	0.0793		mg/Kg-dry	1	10/17/2012 4:36:21 AM
Barium	95.4	0.396		mg/Kg-dry	1	10/17/2012 4:36:21 AM
Cadmium	ND	0.159		mg/Kg-dry	1	10/17/2012 4:36:21 AM
Chromium	52.0	0.0793		mg/Kg-dry	1	10/17/2012 4:36:21 AM
Lead	3.41	0.159		mg/Kg-dry	1	10/17/2012 4:36:21 AM

Qualifiers: B Analyte detected in the associated Method Blank
E Value above quantitation range
J Analyte detected below quantitation limits
RL Reporting Limit

D Dilution was required
H Holding times for preparation or analysis exceeded
ND Not detected at the Reporting Limit
S Spike recovery outside accepted recovery limits



Analytical Report

WO#: 1210020

Date Reported: 10/23/2012

Client: GeoEngineers, Inc. - Redmond

Collection Date: 10/8/2012 8:37:00 AM

Project: Rufus 2.0 WO11

Lab ID: 1210020-231

Matrix: Soil

Client Sample ID: MW21-2-7.5

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<u>Total Metals by EPA Method 6020</u>				Batch ID: 3450		Analyst: SG
Selenium	ND	0.396		mg/Kg-dry	1	10/17/2012 4:36:21 AM
Silver	ND	0.0793		mg/Kg-dry	1	10/17/2012 4:36:21 AM
<u>Mercury by EPA Method 7471</u>				Batch ID: 3456		Analyst: MC
Mercury	ND	0.292		mg/Kg-dry	1	10/18/2012 1:02:01 PM
<u>Sample Moisture (Percent Moisture)</u>				Batch ID: R6156		Analyst: CM
Percent Moisture	17.6			wt%	1	10/16/2012 10:35:24 AM

Qualifiers: B Analyte detected in the associated Method Blank
E Value above quantitation range
J Analyte detected below quantitation limits
RL Reporting Limit

D Dilution was required
H Holding times for preparation or analysis exceeded
ND Not detected at the Reporting Limit
S Spike recovery outside accepted recovery limits



Analytical Report

WO#: 1210020

Date Reported: 10/23/2012

Client: GeoEngineers, Inc. - Redmond

Collection Date: 10/8/2012 9:23:00 AM

Project: Rufus 2.0 WO11

Lab ID: 1210020-236

Matrix: Soil

Client Sample ID: MW21-2-20.0

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<u>Diesel and Heavy Oil by NWTPH-Dx/Dx Ext.</u>				Batch ID: 3446		Analyst: BR
Diesel (Fuel Oil)	ND	21.2		mg/Kg-dry	1	10/16/2012 11:52:00 PM
Heavy Oil	ND	53.1		mg/Kg-dry	1	10/16/2012 11:52:00 PM
Surr: 2-Fluorobiphenyl	108	50-150		%REC	1	10/16/2012 11:52:00 PM
Surr: o-Terphenyl	110	50-150		%REC	1	10/16/2012 11:52:00 PM
<u>Gasoline by NWTPH-Gx</u>				Batch ID: R6251		Analyst: EM
Gasoline	ND	5.62		mg/Kg-dry	1	10/17/2012 9:43:00 AM
Surr: 1,2-Dichloroethane-d4	110	65-135		%REC	1	10/17/2012 9:43:00 AM
Surr: Fluorobenzene	101	65-135		%REC	1	10/17/2012 9:43:00 AM
<u>Volatile Organic Compounds by EPA Method 8260</u>				Batch ID: 3452		Analyst: EM
Benzene	ND	0.0225		mg/Kg-dry	1	10/17/2012 9:43:00 AM
Toluene	ND	0.0225		mg/Kg-dry	1	10/17/2012 9:43:00 AM
Ethylbenzene	ND	0.0337		mg/Kg-dry	1	10/17/2012 9:43:00 AM
m,p-Xylene	ND	0.0225		mg/Kg-dry	1	10/17/2012 9:43:00 AM
o-Xylene	ND	0.0225		mg/Kg-dry	1	10/17/2012 9:43:00 AM
Surr: 1-Bromo-4-fluorobenzene	100	63.1-141		%REC	1	10/17/2012 9:43:00 AM
Surr: Dibromofluoromethane	102	67.6-119		%REC	1	10/17/2012 9:43:00 AM
Surr: Toluene-d8	100	78.5-126		%REC	1	10/17/2012 9:43:00 AM
<u>Total Metals by EPA Method 6020</u>				Batch ID: 3450		Analyst: SG
Arsenic	2.01	0.0803		mg/Kg-dry	1	10/17/2012 4:45:24 AM
Barium	80.1	0.401		mg/Kg-dry	1	10/17/2012 4:45:24 AM
Cadmium	ND	0.161		mg/Kg-dry	1	10/17/2012 4:45:24 AM
Chromium	29.8	0.0803		mg/Kg-dry	1	10/17/2012 4:45:24 AM
Lead	1.68	0.161		mg/Kg-dry	1	10/17/2012 4:45:24 AM
Selenium	ND	0.401		mg/Kg-dry	1	10/17/2012 4:45:24 AM
Silver	ND	0.0803		mg/Kg-dry	1	10/17/2012 4:45:24 AM
<u>Mercury by EPA Method 7471</u>				Batch ID: 3465		Analyst: SG
Mercury	ND	0.255		mg/Kg-dry	1	10/19/2012 12:29:03 PM

Qualifiers: B Analyte detected in the associated Method Blank
E Value above quantitation range
J Analyte detected below quantitation limits
RL Reporting Limit

D Dilution was required
H Holding times for preparation or analysis exceeded
ND Not detected at the Reporting Limit
S Spike recovery outside accepted recovery limits



Analytical Report

WO#: 1210020

Date Reported: 10/23/2012

Client: GeoEngineers, Inc. - Redmond

Collection Date: 10/8/2012 9:23:00 AM

Project: Rufus 2.0 WO11

Lab ID: 1210020-236

Matrix: Soil

Client Sample ID: MW21-2-20.0

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
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Sample Moisture (Percent Moisture)

Batch ID: R6156

Analyst: CM

Percent Moisture	9.08			wt%	1	10/16/2012 10:35:24 AM
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Qualifiers:

B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
RL	Reporting Limit

D	Dilution was required
H	Holding times for preparation or analysis exceeded
ND	Not detected at the Reporting Limit
S	Spike recovery outside accepted recovery limits



Analytical Report

WO#: 1210020

Date Reported: 10/23/2012

Client: GeoEngineers, Inc. - Redmond

Collection Date: 10/9/2012 8:12:00 AM

Project: Rufus 2.0 WO11

Lab ID: 1210020-241

Matrix: Soil

Client Sample ID: MW21-3-2.5

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<u>Diesel and Heavy Oil by NWTPH-Dx/Dx Ext.</u>				Batch ID: 3446		Analyst: BR
Diesel (Fuel Oil)	ND	23.8		mg/Kg-dry	1	10/17/2012 12:19:00 AM
Heavy Oil	ND	59.4		mg/Kg-dry	1	10/17/2012 12:19:00 AM
Surr: 2-Fluorobiphenyl	106	50-150		%REC	1	10/17/2012 12:19:00 AM
Surr: o-Terphenyl	107	50-150		%REC	1	10/17/2012 12:19:00 AM
<u>Polyaromatic Hydrocarbons by EPA Method 8270 (SIM)</u>				Batch ID: 3448		Analyst: PH
Naphthalene	ND	55.1		µg/Kg-dry	1	10/18/2012 4:55:00 AM
2-Methylnaphthalene	ND	55.1		µg/Kg-dry	1	10/18/2012 4:55:00 AM
1-Methylnaphthalene	ND	55.1		µg/Kg-dry	1	10/18/2012 4:55:00 AM
Acenaphthylene	ND	55.1		µg/Kg-dry	1	10/18/2012 4:55:00 AM
Acenaphthene	ND	55.1		µg/Kg-dry	1	10/18/2012 4:55:00 AM
Fluorene	ND	55.1		µg/Kg-dry	1	10/18/2012 4:55:00 AM
Phenanthrene	ND	55.1		µg/Kg-dry	1	10/18/2012 4:55:00 AM
Anthracene	ND	55.1		µg/Kg-dry	1	10/18/2012 4:55:00 AM
Fluoranthene	ND	55.1		µg/Kg-dry	1	10/18/2012 4:55:00 AM
Pyrene	ND	55.1		µg/Kg-dry	1	10/18/2012 4:55:00 AM
Benz(a)anthracene	ND	55.1		µg/Kg-dry	1	10/18/2012 4:55:00 AM
Chrysene	ND	55.1		µg/Kg-dry	1	10/18/2012 4:55:00 AM
Benzo(b)fluoranthene	ND	55.1		µg/Kg-dry	1	10/18/2012 4:55:00 AM
Benzo(k)fluoranthene	ND	55.1		µg/Kg-dry	1	10/18/2012 4:55:00 AM
Benzo(a)pyrene	ND	55.1		µg/Kg-dry	1	10/18/2012 4:55:00 AM
Indeno(1,2,3-cd)pyrene	ND	55.1		µg/Kg-dry	1	10/18/2012 4:55:00 AM
Dibenz(a,h)anthracene	ND	55.1		µg/Kg-dry	1	10/18/2012 4:55:00 AM
Benzo(g,h,i)perylene	ND	55.1		µg/Kg-dry	1	10/18/2012 4:55:00 AM
Surr: 2-Fluorobiphenyl	99.7	50.4-142		%REC	1	10/18/2012 4:55:00 AM
Surr: Terphenyl-d14 (surr)	112	48.8-157		%REC	1	10/18/2012 4:55:00 AM
<u>Gasoline by NWTPH-Gx</u>				Batch ID: R6251		Analyst: EM
Gasoline	ND	7.79		mg/Kg-dry	1	10/17/2012 10:13:00 AM
Surr: 1,2-Dichloroethane-d4	110	65-135		%REC	1	10/17/2012 10:13:00 AM
Surr: Fluorobenzene	101	65-135		%REC	1	10/17/2012 10:13:00 AM

Qualifiers: B Analyte detected in the associated Method Blank
E Value above quantitation range
J Analyte detected below quantitation limits
RL Reporting Limit

D Dilution was required
H Holding times for preparation or analysis exceeded
ND Not detected at the Reporting Limit
S Spike recovery outside accepted recovery limits



Analytical Report

WO#: 1210020

Date Reported: 10/23/2012

Client: GeoEngineers, Inc. - Redmond

Collection Date: 10/9/2012 8:12:00 AM

Project: Rufus 2.0 WO11

Lab ID: 1210020-241

Matrix: Soil

Client Sample ID: MW21-3-2.5

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Volatile Organic Compounds by EPA Method 8260				Batch ID: 3452		Analyst: EM
Dichlorodifluoromethane (CFC-12)	ND	0.0935		mg/Kg-dry	1	10/17/2012 10:13:00 AM
Chloromethane	ND	0.0935		mg/Kg-dry	1	10/17/2012 10:13:00 AM
Vinyl chloride	ND	0.00312		mg/Kg-dry	1	10/17/2012 10:13:00 AM
Bromomethane	ND	0.140		mg/Kg-dry	1	10/17/2012 10:13:00 AM
Trichlorofluoromethane (CFC-11)	ND	0.0779		mg/Kg-dry	1	10/17/2012 10:13:00 AM
Chloroethane	ND	0.0935		mg/Kg-dry	1	10/17/2012 10:13:00 AM
1,1-Dichloroethene	ND	0.0779		mg/Kg-dry	1	10/17/2012 10:13:00 AM
Methylene chloride	ND	0.0312		mg/Kg-dry	1	10/17/2012 10:13:00 AM
trans-1,2-Dichloroethene	ND	0.0312		mg/Kg-dry	1	10/17/2012 10:13:00 AM
Methyl tert-butyl ether (MTBE)	ND	0.0779		mg/Kg-dry	1	10/17/2012 10:13:00 AM
1,1-Dichloroethane	ND	0.0312		mg/Kg-dry	1	10/17/2012 10:13:00 AM
2,2-Dichloropropane	ND	0.0779		mg/Kg-dry	1	10/17/2012 10:13:00 AM
cis-1,2-Dichloroethene	ND	0.0312		mg/Kg-dry	1	10/17/2012 10:13:00 AM
Chloroform	ND	0.0312		mg/Kg-dry	1	10/17/2012 10:13:00 AM
1,1,1-Trichloroethane (TCA)	ND	0.0312		mg/Kg-dry	1	10/17/2012 10:13:00 AM
1,1-Dichloropropene	ND	0.0312		mg/Kg-dry	1	10/17/2012 10:13:00 AM
Carbon tetrachloride	ND	0.0312		mg/Kg-dry	1	10/17/2012 10:13:00 AM
1,2-Dichloroethane	ND	0.0467		mg/Kg-dry	1	10/17/2012 10:13:00 AM
Benzene	ND	0.0312		mg/Kg-dry	1	10/17/2012 10:13:00 AM
Trichloroethene (TCE)	ND	0.0467		mg/Kg-dry	1	10/17/2012 10:13:00 AM
1,2-Dichloropropane	ND	0.0312		mg/Kg-dry	1	10/17/2012 10:13:00 AM
Bromodichloromethane	ND	0.0312		mg/Kg-dry	1	10/17/2012 10:13:00 AM
Dibromomethane	ND	0.0623		mg/Kg-dry	1	10/17/2012 10:13:00 AM
cis-1,3-Dichloropropene	ND	0.0312		mg/Kg-dry	1	10/17/2012 10:13:00 AM
Toluene	ND	0.0312		mg/Kg-dry	1	10/17/2012 10:13:00 AM
trans-1,3-Dichloropropene	ND	0.0467		mg/Kg-dry	1	10/17/2012 10:13:00 AM
1,1,2-Trichloroethane	ND	0.0467		mg/Kg-dry	1	10/17/2012 10:13:00 AM
1,3-Dichloropropane	ND	0.0779		mg/Kg-dry	1	10/17/2012 10:13:00 AM
Tetrachloroethene (PCE)	ND	0.0312		mg/Kg-dry	1	10/17/2012 10:13:00 AM
Dibromochloromethane	ND	0.0467		mg/Kg-dry	1	10/17/2012 10:13:00 AM
1,2-Dibromoethane (EDB)	ND	0.00779		mg/Kg-dry	1	10/17/2012 10:13:00 AM
Chlorobenzene	ND	0.0312		mg/Kg-dry	1	10/17/2012 10:13:00 AM
1,1,1,2-Tetrachloroethane	ND	0.0467		mg/Kg-dry	1	10/17/2012 10:13:00 AM
Ethylbenzene	ND	0.0467		mg/Kg-dry	1	10/17/2012 10:13:00 AM
m,p-Xylene	ND	0.0312		mg/Kg-dry	1	10/17/2012 10:13:00 AM

Qualifiers: B Analyte detected in the associated Method Blank
E Value above quantitation range
J Analyte detected below quantitation limits
RL Reporting Limit

D Dilution was required
H Holding times for preparation or analysis exceeded
ND Not detected at the Reporting Limit
S Spike recovery outside accepted recovery limits



Analytical Report

WO#: 1210020

Date Reported: 10/23/2012

Client: GeoEngineers, Inc. - Redmond

Collection Date: 10/9/2012 8:12:00 AM

Project: Rufus 2.0 WO11

Lab ID: 1210020-241

Matrix: Soil

Client Sample ID: MW21-3-2.5

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Volatile Organic Compounds by EPA Method 8260				Batch ID: 3452		Analyst: EM
o-Xylene	ND	0.0312		mg/Kg-dry	1	10/17/2012 10:13:00 AM
Styrene	ND	0.0312		mg/Kg-dry	1	10/17/2012 10:13:00 AM
Isopropylbenzene	ND	0.125		mg/Kg-dry	1	10/17/2012 10:13:00 AM
Bromoform	ND	0.0312		mg/Kg-dry	1	10/17/2012 10:13:00 AM
1,1,2,2-Tetrachloroethane	ND	0.0312		mg/Kg-dry	1	10/17/2012 10:13:00 AM
n-Propylbenzene	ND	0.0312		mg/Kg-dry	1	10/17/2012 10:13:00 AM
Bromobenzene	ND	0.0467		mg/Kg-dry	1	10/17/2012 10:13:00 AM
1,3,5-Trimethylbenzene	ND	0.0312		mg/Kg-dry	1	10/17/2012 10:13:00 AM
2-Chlorotoluene	ND	0.0312		mg/Kg-dry	1	10/17/2012 10:13:00 AM
4-Chlorotoluene	ND	0.0312		mg/Kg-dry	1	10/17/2012 10:13:00 AM
tert-Butylbenzene	ND	0.0312		mg/Kg-dry	1	10/17/2012 10:13:00 AM
1,2,3-Trichloropropane	ND	0.0312		mg/Kg-dry	1	10/17/2012 10:13:00 AM
1,2,4-Trichlorobenzene	ND	0.0779		mg/Kg-dry	1	10/17/2012 10:13:00 AM
sec-Butylbenzene	ND	0.0312		mg/Kg-dry	1	10/17/2012 10:13:00 AM
4-Isopropyltoluene	ND	0.0312		mg/Kg-dry	1	10/17/2012 10:13:00 AM
1,3-Dichlorobenzene	ND	0.0312		mg/Kg-dry	1	10/17/2012 10:13:00 AM
1,4-Dichlorobenzene	ND	0.0312		mg/Kg-dry	1	10/17/2012 10:13:00 AM
n-Butylbenzene	ND	0.0312		mg/Kg-dry	1	10/17/2012 10:13:00 AM
1,2-Dichlorobenzene	ND	0.0312		mg/Kg-dry	1	10/17/2012 10:13:00 AM
1,2-Dibromo-3-chloropropane	ND	0.0467		mg/Kg-dry	1	10/17/2012 10:13:00 AM
1,2,4-Trimethylbenzene	ND	0.0312		mg/Kg-dry	1	10/17/2012 10:13:00 AM
Hexachlorobutadiene	ND	0.156		mg/Kg-dry	1	10/17/2012 10:13:00 AM
Naphthalene	ND	0.0467		mg/Kg-dry	1	10/17/2012 10:13:00 AM
1,2,3-Trichlorobenzene	ND	0.0312		mg/Kg-dry	1	10/17/2012 10:13:00 AM
Surr: 1-Bromo-4-fluorobenzene	101	63.1-141		%REC	1	10/17/2012 10:13:00 AM
Surr: Dibromofluoromethane	99.0	67.6-119		%REC	1	10/17/2012 10:13:00 AM
Surr: Toluene-d8	102	78.5-126		%REC	1	10/17/2012 10:13:00 AM

Total Metals by EPA Method 6020

Batch ID: 3450

Analyst: SG

Arsenic	5.11	0.0918		mg/Kg-dry	1	10/17/2012 4:54:27 AM
Barium	175	0.459		mg/Kg-dry	1	10/17/2012 4:54:27 AM
Cadmium	ND	0.184		mg/Kg-dry	1	10/17/2012 4:54:27 AM
Chromium	63.3	0.0918		mg/Kg-dry	1	10/17/2012 4:54:27 AM
Lead	8.17	0.184		mg/Kg-dry	1	10/17/2012 4:54:27 AM

Qualifiers: B Analyte detected in the associated Method Blank
E Value above quantitation range
J Analyte detected below quantitation limits
RL Reporting Limit

D Dilution was required
H Holding times for preparation or analysis exceeded
ND Not detected at the Reporting Limit
S Spike recovery outside accepted recovery limits



Analytical Report

WO#: 1210020

Date Reported: 10/23/2012

Client: GeoEngineers, Inc. - Redmond

Collection Date: 10/9/2012 8:12:00 AM

Project: Rufus 2.0 WO11

Lab ID: 1210020-241

Matrix: Soil

Client Sample ID: MW21-3-2.5

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<u>Total Metals by EPA Method 6020</u>				Batch ID: 3450		Analyst: SG
Selenium	ND	0.459		mg/Kg-dry	1	10/17/2012 4:54:27 AM
Silver	ND	0.0918		mg/Kg-dry	1	10/17/2012 4:54:27 AM
<u>Mercury by EPA Method 7471</u>				Batch ID: 3465		Analyst: SG
Mercury	ND	0.270		mg/Kg-dry	1	10/19/2012 12:35:32 PM
<u>Sample Moisture (Percent Moisture)</u>				Batch ID: R6156		Analyst: CM
Percent Moisture	18.7			wt%	1	10/16/2012 10:35:24 AM

Qualifiers: B Analyte detected in the associated Method Blank
E Value above quantitation range
J Analyte detected below quantitation limits
RL Reporting Limit

D Dilution was required
H Holding times for preparation or analysis exceeded
ND Not detected at the Reporting Limit
S Spike recovery outside accepted recovery limits



Analytical Report

WO#: 1210020

Date Reported: 10/23/2012

Client: GeoEngineers, Inc. - Redmond

Collection Date: 10/9/2012 9:18:00 AM

Project: Rufus 2.0 WO11

Lab ID: 1210020-250

Matrix: Soil

Client Sample ID: MW21-3-25.0

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<u>Diesel and Heavy Oil by NWTPH-Dx/Dx Ext.</u>				Batch ID: 3446		Analyst: BR
Diesel (Fuel Oil)	ND	19.9		mg/Kg-dry	1	10/17/2012 12:46:00 AM
Heavy Oil	ND	49.8		mg/Kg-dry	1	10/17/2012 12:46:00 AM
Surr: 2-Fluorobiphenyl	101	50-150		%REC	1	10/17/2012 12:46:00 AM
Surr: o-Terphenyl	102	50-150		%REC	1	10/17/2012 12:46:00 AM
<u>Gasoline by NWTPH-Gx</u>				Batch ID: R6251		Analyst: EM
Gasoline	ND	4.90		mg/Kg-dry	1	10/17/2012 10:43:00 AM
Surr: 1,2-Dichloroethane-d4	111	65-135		%REC	1	10/17/2012 10:43:00 AM
Surr: Fluorobenzene	101	65-135		%REC	1	10/17/2012 10:43:00 AM
<u>Volatile Organic Compounds by EPA Method 8260</u>				Batch ID: 3452		Analyst: EM
Benzene	ND	0.0196		mg/Kg-dry	1	10/17/2012 10:43:00 AM
Toluene	ND	0.0196		mg/Kg-dry	1	10/17/2012 10:43:00 AM
Ethylbenzene	ND	0.0294		mg/Kg-dry	1	10/17/2012 10:43:00 AM
m,p-Xylene	ND	0.0196		mg/Kg-dry	1	10/17/2012 10:43:00 AM
o-Xylene	ND	0.0196		mg/Kg-dry	1	10/17/2012 10:43:00 AM
Surr: 1-Bromo-4-fluorobenzene	99.8	63.1-141		%REC	1	10/17/2012 10:43:00 AM
Surr: Dibromofluoromethane	98.5	67.6-119		%REC	1	10/17/2012 10:43:00 AM
Surr: Toluene-d8	99.7	78.5-126		%REC	1	10/17/2012 10:43:00 AM
<u>Total Metals by EPA Method 6020</u>				Batch ID: 3450		Analyst: SG
Arsenic	1.34	0.0775		mg/Kg-dry	1	10/17/2012 5:03:30 AM
Barium	28.5	0.387		mg/Kg-dry	1	10/17/2012 5:03:30 AM
Cadmium	ND	0.155		mg/Kg-dry	1	10/17/2012 5:03:30 AM
Chromium	28.0	0.0775		mg/Kg-dry	1	10/17/2012 5:03:30 AM
Lead	1.31	0.155		mg/Kg-dry	1	10/17/2012 5:03:30 AM
Selenium	ND	0.387		mg/Kg-dry	1	10/17/2012 5:03:30 AM
Silver	ND	0.0775		mg/Kg-dry	1	10/17/2012 5:03:30 AM
<u>Mercury by EPA Method 7471</u>				Batch ID: 3465		Analyst: SG
Mercury	ND	0.242		mg/Kg-dry	1	10/19/2012 12:37:08 PM

Qualifiers: B Analyte detected in the associated Method Blank
E Value above quantitation range
J Analyte detected below quantitation limits
RL Reporting Limit

D Dilution was required
H Holding times for preparation or analysis exceeded
ND Not detected at the Reporting Limit
S Spike recovery outside accepted recovery limits



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Analytical

Analytical Report

WO#: 1210020

Date Reported: 10/23/2012

Client: GeoEngineers, Inc. - Redmond

Collection Date: 10/9/2012 9:18:00 AM

Project: Rufus 2.0 WO11

Lab ID: 1210020-250

Matrix: Soil

Client Sample ID: MW21-3-25.0

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
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Sample Moisture (Percent Moisture)

Batch ID: R6156

Analyst: CM

Percent Moisture

7.82

wt%

1

10/16/2012 10:35:24 AM

Qualifiers:

B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
RL	Reporting Limit

D	Dilution was required
H	Holding times for preparation or analysis exceeded
ND	Not detected at the Reporting Limit
S	Spike recovery outside accepted recovery limits



Analytical Report

WO#: 1210020

Date Reported: 10/23/2012

Client: GeoEngineers, Inc. - Redmond

Collection Date: 10/4/2012 8:43:00 AM

Project: Rufus 2.0 WO11

Lab ID: 1210020-255

Matrix: Soil

Client Sample ID: B21-1-7.5

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<u>Diesel and Heavy Oil by NWTPH-Dx/Dx Ext.</u>				Batch ID: 3446		Analyst: BR
Diesel (Fuel Oil)	ND	19.6		mg/Kg-dry	1	10/17/2012 1:13:00 AM
Heavy Oil	ND	49.1		mg/Kg-dry	1	10/17/2012 1:13:00 AM
Surr: 2-Fluorobiphenyl	104	50-150		%REC	1	10/17/2012 1:13:00 AM
Surr: o-Terphenyl	105	50-150		%REC	1	10/17/2012 1:13:00 AM
<u>Polyaromatic Hydrocarbons by EPA Method 8270 (SIM)</u>				Batch ID: 3448		Analyst: PH
Naphthalene	ND	51.8		µg/Kg-dry	1	10/18/2012 5:20:00 AM
2-Methylnaphthalene	ND	51.8		µg/Kg-dry	1	10/18/2012 5:20:00 AM
1-Methylnaphthalene	ND	51.8		µg/Kg-dry	1	10/18/2012 5:20:00 AM
Acenaphthylene	ND	51.8		µg/Kg-dry	1	10/18/2012 5:20:00 AM
Acenaphthene	ND	51.8		µg/Kg-dry	1	10/18/2012 5:20:00 AM
Fluorene	ND	51.8		µg/Kg-dry	1	10/18/2012 5:20:00 AM
Phenanthrene	ND	51.8		µg/Kg-dry	1	10/18/2012 5:20:00 AM
Anthracene	ND	51.8		µg/Kg-dry	1	10/18/2012 5:20:00 AM
Fluoranthene	ND	51.8		µg/Kg-dry	1	10/18/2012 5:20:00 AM
Pyrene	ND	51.8		µg/Kg-dry	1	10/18/2012 5:20:00 AM
Benz(a)anthracene	ND	51.8		µg/Kg-dry	1	10/18/2012 5:20:00 AM
Chrysene	ND	51.8		µg/Kg-dry	1	10/18/2012 5:20:00 AM
Benzo(b)fluoranthene	ND	51.8		µg/Kg-dry	1	10/18/2012 5:20:00 AM
Benzo(k)fluoranthene	ND	51.8		µg/Kg-dry	1	10/18/2012 5:20:00 AM
Benzo(a)pyrene	ND	51.8		µg/Kg-dry	1	10/18/2012 5:20:00 AM
Indeno(1,2,3-cd)pyrene	ND	51.8		µg/Kg-dry	1	10/18/2012 5:20:00 AM
Dibenz(a,h)anthracene	ND	51.8		µg/Kg-dry	1	10/18/2012 5:20:00 AM
Benzo(g,h,i)perylene	ND	51.8		µg/Kg-dry	1	10/18/2012 5:20:00 AM
Surr: 2-Fluorobiphenyl	109	50.4-142		%REC	1	10/18/2012 5:20:00 AM
Surr: Terphenyl-d14 (surr)	104	48.8-157		%REC	1	10/18/2012 5:20:00 AM
<u>Gasoline by NWTPH-Gx</u>				Batch ID: R6251		Analyst: EM
Gasoline	ND	4.36		mg/Kg-dry	1	10/17/2012 11:13:00 AM
Surr: 1,2-Dichloroethane-d4	110	65-135		%REC	1	10/17/2012 11:13:00 AM
Surr: Fluorobenzene	102	65-135		%REC	1	10/17/2012 11:13:00 AM

Qualifiers: B Analyte detected in the associated Method Blank
E Value above quantitation range
J Analyte detected below quantitation limits
RL Reporting Limit

D Dilution was required
H Holding times for preparation or analysis exceeded
ND Not detected at the Reporting Limit
S Spike recovery outside accepted recovery limits



Analytical Report

WO#: 1210020

Date Reported: 10/23/2012

Client: GeoEngineers, Inc. - Redmond

Collection Date: 10/4/2012 8:43:00 AM

Project: Rufus 2.0 WO11

Lab ID: 1210020-255

Matrix: Soil

Client Sample ID: B21-1-7.5

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Volatile Organic Compounds by EPA Method 8260				Batch ID: 3452		Analyst: EM
Dichlorodifluoromethane (CFC-12)	ND	0.0523		mg/Kg-dry	1	10/17/2012 11:13:00 AM
Chloromethane	ND	0.0523		mg/Kg-dry	1	10/17/2012 11:13:00 AM
Vinyl chloride	ND	0.00174		mg/Kg-dry	1	10/17/2012 11:13:00 AM
Bromomethane	ND	0.0784		mg/Kg-dry	1	10/17/2012 11:13:00 AM
Trichlorofluoromethane (CFC-11)	ND	0.0436		mg/Kg-dry	1	10/17/2012 11:13:00 AM
Chloroethane	ND	0.0523		mg/Kg-dry	1	10/17/2012 11:13:00 AM
1,1-Dichloroethene	ND	0.0436		mg/Kg-dry	1	10/17/2012 11:13:00 AM
Methylene chloride	ND	0.0174		mg/Kg-dry	1	10/17/2012 11:13:00 AM
trans-1,2-Dichloroethene	ND	0.0174		mg/Kg-dry	1	10/17/2012 11:13:00 AM
Methyl tert-butyl ether (MTBE)	ND	0.0436		mg/Kg-dry	1	10/17/2012 11:13:00 AM
1,1-Dichloroethane	ND	0.0174		mg/Kg-dry	1	10/17/2012 11:13:00 AM
2,2-Dichloropropane	ND	0.0436		mg/Kg-dry	1	10/17/2012 11:13:00 AM
cis-1,2-Dichloroethene	ND	0.0174		mg/Kg-dry	1	10/17/2012 11:13:00 AM
Chloroform	ND	0.0174		mg/Kg-dry	1	10/17/2012 11:13:00 AM
1,1,1-Trichloroethane (TCA)	ND	0.0174		mg/Kg-dry	1	10/17/2012 11:13:00 AM
1,1-Dichloropropene	ND	0.0174		mg/Kg-dry	1	10/17/2012 11:13:00 AM
Carbon tetrachloride	ND	0.0174		mg/Kg-dry	1	10/17/2012 11:13:00 AM
1,2-Dichloroethane	ND	0.0261		mg/Kg-dry	1	10/17/2012 11:13:00 AM
Benzene	ND	0.0174		mg/Kg-dry	1	10/17/2012 11:13:00 AM
Trichloroethene (TCE)	ND	0.0261		mg/Kg-dry	1	10/17/2012 11:13:00 AM
1,2-Dichloropropane	ND	0.0174		mg/Kg-dry	1	10/17/2012 11:13:00 AM
Bromodichloromethane	ND	0.0174		mg/Kg-dry	1	10/17/2012 11:13:00 AM
Dibromomethane	ND	0.0348		mg/Kg-dry	1	10/17/2012 11:13:00 AM
cis-1,3-Dichloropropene	ND	0.0174		mg/Kg-dry	1	10/17/2012 11:13:00 AM
Toluene	ND	0.0174		mg/Kg-dry	1	10/17/2012 11:13:00 AM
trans-1,3-Dichloropropene	ND	0.0261		mg/Kg-dry	1	10/17/2012 11:13:00 AM
1,1,2-Trichloroethane	ND	0.0261		mg/Kg-dry	1	10/17/2012 11:13:00 AM
1,3-Dichloropropane	ND	0.0436		mg/Kg-dry	1	10/17/2012 11:13:00 AM
Tetrachloroethene (PCE)	ND	0.0174		mg/Kg-dry	1	10/17/2012 11:13:00 AM
Dibromochloromethane	ND	0.0261		mg/Kg-dry	1	10/17/2012 11:13:00 AM
1,2-Dibromoethane (EDB)	ND	0.00436		mg/Kg-dry	1	10/17/2012 11:13:00 AM
Chlorobenzene	ND	0.0174		mg/Kg-dry	1	10/17/2012 11:13:00 AM
1,1,1,2-Tetrachloroethane	ND	0.0261		mg/Kg-dry	1	10/17/2012 11:13:00 AM
Ethylbenzene	ND	0.0261		mg/Kg-dry	1	10/17/2012 11:13:00 AM
m,p-Xylene	ND	0.0174		mg/Kg-dry	1	10/17/2012 11:13:00 AM

Qualifiers: B Analyte detected in the associated Method Blank
E Value above quantitation range
J Analyte detected below quantitation limits
RL Reporting Limit

D Dilution was required
H Holding times for preparation or analysis exceeded
ND Not detected at the Reporting Limit
S Spike recovery outside accepted recovery limits



Analytical Report

WO#: 1210020

Date Reported: 10/23/2012

Client: GeoEngineers, Inc. - Redmond

Collection Date: 10/4/2012 8:43:00 AM

Project: Rufus 2.0 WO11

Lab ID: 1210020-255

Matrix: Soil

Client Sample ID: B21-1-7.5

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Volatile Organic Compounds by EPA Method 8260				Batch ID: 3452		Analyst: EM
o-Xylene	ND	0.0174		mg/Kg-dry	1	10/17/2012 11:13:00 AM
Styrene	ND	0.0174		mg/Kg-dry	1	10/17/2012 11:13:00 AM
Isopropylbenzene	ND	0.0697		mg/Kg-dry	1	10/17/2012 11:13:00 AM
Bromoform	ND	0.0174		mg/Kg-dry	1	10/17/2012 11:13:00 AM
1,1,2,2-Tetrachloroethane	ND	0.0174		mg/Kg-dry	1	10/17/2012 11:13:00 AM
n-Propylbenzene	ND	0.0174		mg/Kg-dry	1	10/17/2012 11:13:00 AM
Bromobenzene	ND	0.0261		mg/Kg-dry	1	10/17/2012 11:13:00 AM
1,3,5-Trimethylbenzene	ND	0.0174		mg/Kg-dry	1	10/17/2012 11:13:00 AM
2-Chlorotoluene	ND	0.0174		mg/Kg-dry	1	10/17/2012 11:13:00 AM
4-Chlorotoluene	ND	0.0174		mg/Kg-dry	1	10/17/2012 11:13:00 AM
tert-Butylbenzene	ND	0.0174		mg/Kg-dry	1	10/17/2012 11:13:00 AM
1,2,3-Trichloropropane	ND	0.0174		mg/Kg-dry	1	10/17/2012 11:13:00 AM
1,2,4-Trichlorobenzene	ND	0.0436		mg/Kg-dry	1	10/17/2012 11:13:00 AM
sec-Butylbenzene	ND	0.0174		mg/Kg-dry	1	10/17/2012 11:13:00 AM
4-Isopropyltoluene	ND	0.0174		mg/Kg-dry	1	10/17/2012 11:13:00 AM
1,3-Dichlorobenzene	ND	0.0174		mg/Kg-dry	1	10/17/2012 11:13:00 AM
1,4-Dichlorobenzene	ND	0.0174		mg/Kg-dry	1	10/17/2012 11:13:00 AM
n-Butylbenzene	ND	0.0174		mg/Kg-dry	1	10/17/2012 11:13:00 AM
1,2-Dichlorobenzene	ND	0.0174		mg/Kg-dry	1	10/17/2012 11:13:00 AM
1,2-Dibromo-3-chloropropane	ND	0.0261		mg/Kg-dry	1	10/17/2012 11:13:00 AM
1,2,4-Trimethylbenzene	ND	0.0174		mg/Kg-dry	1	10/17/2012 11:13:00 AM
Hexachlorobutadiene	ND	0.0871		mg/Kg-dry	1	10/17/2012 11:13:00 AM
Naphthalene	ND	0.0261		mg/Kg-dry	1	10/17/2012 11:13:00 AM
1,2,3-Trichlorobenzene	ND	0.0174		mg/Kg-dry	1	10/17/2012 11:13:00 AM
Surr: 1-Bromo-4-fluorobenzene	102	63.1-141		%REC	1	10/17/2012 11:13:00 AM
Surr: Dibromofluoromethane	99.5	67.6-119		%REC	1	10/17/2012 11:13:00 AM
Surr: Toluene-d8	99.4	78.5-126		%REC	1	10/17/2012 11:13:00 AM

Total Metals by EPA Method 6020

Batch ID: 3450

Analyst: SG

Arsenic	2.84	0.0859		mg/Kg-dry	1	10/17/2012 5:12:33 AM
Barium	75.8	0.430		mg/Kg-dry	1	10/17/2012 5:12:33 AM
Cadmium	ND	0.172		mg/Kg-dry	1	10/17/2012 5:12:33 AM
Chromium	42.8	0.0859		mg/Kg-dry	1	10/17/2012 5:12:33 AM
Lead	2.64	0.172		mg/Kg-dry	1	10/17/2012 5:12:33 AM

Qualifiers: B Analyte detected in the associated Method Blank
E Value above quantitation range
J Analyte detected below quantitation limits
RL Reporting Limit

D Dilution was required
H Holding times for preparation or analysis exceeded
ND Not detected at the Reporting Limit
S Spike recovery outside accepted recovery limits



Analytical Report

WO#: 1210020

Date Reported: 10/23/2012

Client: GeoEngineers, Inc. - Redmond

Collection Date: 10/4/2012 8:43:00 AM

Project: Rufus 2.0 WO11

Lab ID: 1210020-255

Matrix: Soil

Client Sample ID: B21-1-7.5

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<u>Total Metals by EPA Method 6020</u>				Batch ID: 3450		Analyst: SG
Selenium	ND	0.430		mg/Kg-dry	1	10/17/2012 5:12:33 AM
Silver	ND	0.0859		mg/Kg-dry	1	10/17/2012 5:12:33 AM
<u>Mercury by EPA Method 7471</u>				Batch ID: 3465		Analyst: SG
Mercury	ND	0.264		mg/Kg-dry	1	10/19/2012 12:38:43 PM
<u>Sample Moisture (Percent Moisture)</u>				Batch ID: R6156		Analyst: CM
Percent Moisture	12.5			wt%	1	10/16/2012 10:35:24 AM

Qualifiers: B Analyte detected in the associated Method Blank
E Value above quantitation range
J Analyte detected below quantitation limits
RL Reporting Limit

D Dilution was required
H Holding times for preparation or analysis exceeded
ND Not detected at the Reporting Limit
S Spike recovery outside accepted recovery limits



Analytical Report

WO#: 1210020

Date Reported: 10/23/2012

Client: GeoEngineers, Inc. - Redmond

Collection Date: 10/4/2012 9:11:00 AM

Project: Rufus 2.0 WO11

Lab ID: 1210020-262

Matrix: Soil

Client Sample ID: B21-1-25.0

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<u>Diesel and Heavy Oil by NWTPH-Dx/Dx Ext.</u>				Batch ID: 3446		Analyst: BR
Diesel (Fuel Oil)	ND	19.7		mg/Kg-dry	1	10/17/2012 1:40:00 AM
Heavy Oil	ND	49.3		mg/Kg-dry	1	10/17/2012 1:40:00 AM
Surr: 2-Fluorobiphenyl	97.3	50-150		%REC	1	10/17/2012 1:40:00 AM
Surr: o-Terphenyl	97.7	50-150		%REC	1	10/17/2012 1:40:00 AM
<u>Gasoline by NWTPH-Gx</u>				Batch ID: R6251		Analyst: EM
Gasoline	ND	5.49		mg/Kg-dry	1	10/17/2012 11:43:00 AM
Surr: 1,2-Dichloroethane-d4	111	65-135		%REC	1	10/17/2012 11:43:00 AM
Surr: Fluorobenzene	100	65-135		%REC	1	10/17/2012 11:43:00 AM
<u>Volatile Organic Compounds by EPA Method 8260</u>				Batch ID: 3452		Analyst: EM
Benzene	ND	0.0220		mg/Kg-dry	1	10/17/2012 11:43:00 AM
Toluene	ND	0.0220		mg/Kg-dry	1	10/17/2012 11:43:00 AM
Ethylbenzene	ND	0.0329		mg/Kg-dry	1	10/17/2012 11:43:00 AM
m,p-Xylene	ND	0.0220		mg/Kg-dry	1	10/17/2012 11:43:00 AM
o-Xylene	ND	0.0220		mg/Kg-dry	1	10/17/2012 11:43:00 AM
Surr: 1-Bromo-4-fluorobenzene	99.3	63.1-141		%REC	1	10/17/2012 11:43:00 AM
Surr: Dibromofluoromethane	100	67.6-119		%REC	1	10/17/2012 11:43:00 AM
Surr: Toluene-d8	102	78.5-126		%REC	1	10/17/2012 11:43:00 AM
<u>Total Metals by EPA Method 6020</u>				Batch ID: 3450		Analyst: SG
Arsenic	0.836	0.0782		mg/Kg-dry	1	10/17/2012 5:21:37 AM
Barium	38.0	0.391		mg/Kg-dry	1	10/17/2012 5:21:37 AM
Cadmium	ND	0.156		mg/Kg-dry	1	10/17/2012 5:21:37 AM
Chromium	27.0	0.0782		mg/Kg-dry	1	10/17/2012 5:21:37 AM
Lead	1.27	0.156		mg/Kg-dry	1	10/17/2012 5:21:37 AM
Selenium	ND	0.391		mg/Kg-dry	1	10/17/2012 5:21:37 AM
Silver	ND	0.0782		mg/Kg-dry	1	10/17/2012 5:21:37 AM
<u>Mercury by EPA Method 7471</u>				Batch ID: 3465		Analyst: SG
Mercury	ND	0.232		mg/Kg-dry	1	10/19/2012 12:40:19 PM

Qualifiers: B Analyte detected in the associated Method Blank
E Value above quantitation range
J Analyte detected below quantitation limits
RL Reporting Limit

D Dilution was required
H Holding times for preparation or analysis exceeded
ND Not detected at the Reporting Limit
S Spike recovery outside accepted recovery limits



Analytical Report

WO#: 1210020

Date Reported: 10/23/2012

Client: GeoEngineers, Inc. - Redmond

Collection Date: 10/4/2012 9:11:00 AM

Project: Rufus 2.0 WO11

Lab ID: 1210020-262

Matrix: Soil

Client Sample ID: B21-1-25.0

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
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Sample Moisture (Percent Moisture)

Batch ID: R6156

Analyst: CM

Percent Moisture	7.29			wt%	1	10/16/2012 10:35:24 AM
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Qualifiers:

B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
RL	Reporting Limit

D	Dilution was required
H	Holding times for preparation or analysis exceeded
ND	Not detected at the Reporting Limit
S	Spike recovery outside accepted recovery limits



Analytical Report

WO#: 1210020

Date Reported: 10/23/2012

Client: GeoEngineers, Inc. - Redmond

Collection Date: 10/11/2012 8:15:00 AM

Project: Rufus 2.0 WO11

Lab ID: 1210020-266

Matrix: Soil

Client Sample ID: B21-2-5.0

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
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Diesel and Heavy Oil by NWTPH-Dx/Dx Ext.

Batch ID: 3446

Analyst: BR

Diesel (Fuel Oil)	ND	25.2		mg/Kg-dry	1	10/17/2012 2:07:00 AM
Heavy Oil	ND	63.0		mg/Kg-dry	1	10/17/2012 2:07:00 AM
Surr: 2-Fluorobiphenyl	93.8	50-150		%REC	1	10/17/2012 2:07:00 AM
Surr: o-Terphenyl	94.1	50-150		%REC	1	10/17/2012 2:07:00 AM

Polyaromatic Hydrocarbons by EPA Method 8270 (SIM)

Batch ID: 3448

Analyst: PH

Naphthalene	ND	56.4		µg/Kg-dry	1	10/18/2012 5:45:00 AM
2-Methylnaphthalene	ND	56.4		µg/Kg-dry	1	10/18/2012 5:45:00 AM
1-Methylnaphthalene	ND	56.4		µg/Kg-dry	1	10/18/2012 5:45:00 AM
Acenaphthylene	ND	56.4		µg/Kg-dry	1	10/18/2012 5:45:00 AM
Acenaphthene	ND	56.4		µg/Kg-dry	1	10/18/2012 5:45:00 AM
Fluorene	ND	56.4		µg/Kg-dry	1	10/18/2012 5:45:00 AM
Phenanthrene	ND	56.4		µg/Kg-dry	1	10/18/2012 5:45:00 AM
Anthracene	ND	56.4		µg/Kg-dry	1	10/18/2012 5:45:00 AM
Fluoranthene	ND	56.4		µg/Kg-dry	1	10/18/2012 5:45:00 AM
Pyrene	ND	56.4		µg/Kg-dry	1	10/18/2012 5:45:00 AM
Benz(a)anthracene	ND	56.4		µg/Kg-dry	1	10/18/2012 5:45:00 AM
Chrysene	ND	56.4		µg/Kg-dry	1	10/18/2012 5:45:00 AM
Benzo(b)fluoranthene	ND	56.4		µg/Kg-dry	1	10/18/2012 5:45:00 AM
Benzo(k)fluoranthene	ND	56.4		µg/Kg-dry	1	10/18/2012 5:45:00 AM
Benzo(a)pyrene	ND	56.4		µg/Kg-dry	1	10/18/2012 5:45:00 AM
Indeno(1,2,3-cd)pyrene	ND	56.4		µg/Kg-dry	1	10/18/2012 5:45:00 AM
Dibenz(a,h)anthracene	ND	56.4		µg/Kg-dry	1	10/18/2012 5:45:00 AM
Benzo(g,h,i)perylene	ND	56.4		µg/Kg-dry	1	10/18/2012 5:45:00 AM
Surr: 2-Fluorobiphenyl	107	50.4-142		%REC	1	10/18/2012 5:45:00 AM
Surr: Terphenyl-d14 (surr)	110	48.8-157		%REC	1	10/18/2012 5:45:00 AM

Gasoline by NWTPH-Gx

Batch ID: R6251

Analyst: EM

Gasoline	ND	5.88		mg/Kg-dry	1	10/17/2012 1:13:00 PM
Surr: 1,2-Dichloroethane-d4	110	65-135		%REC	1	10/17/2012 1:13:00 PM
Surr: Fluorobenzene	99.8	65-135		%REC	1	10/17/2012 1:13:00 PM

Qualifiers: B Analyte detected in the associated Method Blank
E Value above quantitation range
J Analyte detected below quantitation limits
RL Reporting Limit

D Dilution was required
H Holding times for preparation or analysis exceeded
ND Not detected at the Reporting Limit
S Spike recovery outside accepted recovery limits



Analytical Report

WO#: 1210020

Date Reported: 10/23/2012

Client: GeoEngineers, Inc. - Redmond

Collection Date: 10/11/2012 8:15:00 AM

Project: Rufus 2.0 WO11

Lab ID: 1210020-266

Matrix: Soil

Client Sample ID: B21-2-5.0

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
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Volatile Organic Compounds by EPA Method 8260

Batch ID: 3452

Analyst: EM

Dichlorodifluoromethane (CFC-12)	ND	0.0705		mg/Kg-dry	1	10/17/2012 1:13:00 PM
Chloromethane	ND	0.0705		mg/Kg-dry	1	10/17/2012 1:13:00 PM
Vinyl chloride	ND	0.00235		mg/Kg-dry	1	10/17/2012 1:13:00 PM
Bromomethane	ND	0.106		mg/Kg-dry	1	10/17/2012 1:13:00 PM
Trichlorofluoromethane (CFC-11)	ND	0.0588		mg/Kg-dry	1	10/17/2012 1:13:00 PM
Chloroethane	ND	0.0705		mg/Kg-dry	1	10/17/2012 1:13:00 PM
1,1-Dichloroethene	ND	0.0588		mg/Kg-dry	1	10/17/2012 1:13:00 PM
Methylene chloride	ND	0.0235		mg/Kg-dry	1	10/17/2012 1:13:00 PM
trans-1,2-Dichloroethene	ND	0.0235		mg/Kg-dry	1	10/17/2012 1:13:00 PM
Methyl tert-butyl ether (MTBE)	ND	0.0588		mg/Kg-dry	1	10/17/2012 1:13:00 PM
1,1-Dichloroethane	ND	0.0235		mg/Kg-dry	1	10/17/2012 1:13:00 PM
2,2-Dichloropropane	ND	0.0588		mg/Kg-dry	1	10/17/2012 1:13:00 PM
cis-1,2-Dichloroethene	ND	0.0235		mg/Kg-dry	1	10/17/2012 1:13:00 PM
Chloroform	ND	0.0235		mg/Kg-dry	1	10/17/2012 1:13:00 PM
1,1,1-Trichloroethane (TCA)	ND	0.0235		mg/Kg-dry	1	10/17/2012 1:13:00 PM
1,1-Dichloropropene	ND	0.0235		mg/Kg-dry	1	10/17/2012 1:13:00 PM
Carbon tetrachloride	ND	0.0235		mg/Kg-dry	1	10/17/2012 1:13:00 PM
1,2-Dichloroethane	ND	0.0353		mg/Kg-dry	1	10/17/2012 1:13:00 PM
Benzene	ND	0.0235		mg/Kg-dry	1	10/17/2012 1:13:00 PM
Trichloroethene (TCE)	ND	0.0353		mg/Kg-dry	1	10/17/2012 1:13:00 PM
1,2-Dichloropropane	ND	0.0235		mg/Kg-dry	1	10/17/2012 1:13:00 PM
Bromodichloromethane	ND	0.0235		mg/Kg-dry	1	10/17/2012 1:13:00 PM
Dibromomethane	ND	0.0470		mg/Kg-dry	1	10/17/2012 1:13:00 PM
cis-1,3-Dichloropropene	ND	0.0235		mg/Kg-dry	1	10/17/2012 1:13:00 PM
Toluene	ND	0.0235		mg/Kg-dry	1	10/17/2012 1:13:00 PM
trans-1,3-Dichloropropene	ND	0.0353		mg/Kg-dry	1	10/17/2012 1:13:00 PM
1,1,2-Trichloroethane	ND	0.0353		mg/Kg-dry	1	10/17/2012 1:13:00 PM
1,3-Dichloropropane	ND	0.0588		mg/Kg-dry	1	10/17/2012 1:13:00 PM
Tetrachloroethene (PCE)	ND	0.0235		mg/Kg-dry	1	10/17/2012 1:13:00 PM
Dibromochloromethane	ND	0.0353		mg/Kg-dry	1	10/17/2012 1:13:00 PM
1,2-Dibromoethane (EDB)	ND	0.00588		mg/Kg-dry	1	10/17/2012 1:13:00 PM
Chlorobenzene	ND	0.0235		mg/Kg-dry	1	10/17/2012 1:13:00 PM
1,1,1,2-Tetrachloroethane	ND	0.0353		mg/Kg-dry	1	10/17/2012 1:13:00 PM
Ethylbenzene	ND	0.0353		mg/Kg-dry	1	10/17/2012 1:13:00 PM
m,p-Xylene	ND	0.0235		mg/Kg-dry	1	10/17/2012 1:13:00 PM

Qualifiers: B Analyte detected in the associated Method Blank
E Value above quantitation range
J Analyte detected below quantitation limits
RL Reporting Limit

D Dilution was required
H Holding times for preparation or analysis exceeded
ND Not detected at the Reporting Limit
S Spike recovery outside accepted recovery limits



Analytical Report

WO#: 1210020

Date Reported: 10/23/2012

Client: GeoEngineers, Inc. - Redmond

Collection Date: 10/11/2012 8:15:00 AM

Project: Rufus 2.0 WO11

Lab ID: 1210020-266

Matrix: Soil

Client Sample ID: B21-2-5.0

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
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Volatile Organic Compounds by EPA Method 8260

Batch ID: 3452

Analyst: EM

o-Xylene	ND	0.0235		mg/Kg-dry	1	10/17/2012 1:13:00 PM
Styrene	ND	0.0235		mg/Kg-dry	1	10/17/2012 1:13:00 PM
Isopropylbenzene	ND	0.0941		mg/Kg-dry	1	10/17/2012 1:13:00 PM
Bromoform	ND	0.0235		mg/Kg-dry	1	10/17/2012 1:13:00 PM
1,1,2,2-Tetrachloroethane	ND	0.0235		mg/Kg-dry	1	10/17/2012 1:13:00 PM
n-Propylbenzene	ND	0.0235		mg/Kg-dry	1	10/17/2012 1:13:00 PM
Bromobenzene	ND	0.0353		mg/Kg-dry	1	10/17/2012 1:13:00 PM
1,3,5-Trimethylbenzene	ND	0.0235		mg/Kg-dry	1	10/17/2012 1:13:00 PM
2-Chlorotoluene	ND	0.0235		mg/Kg-dry	1	10/17/2012 1:13:00 PM
4-Chlorotoluene	ND	0.0235		mg/Kg-dry	1	10/17/2012 1:13:00 PM
tert-Butylbenzene	ND	0.0235		mg/Kg-dry	1	10/17/2012 1:13:00 PM
1,2,3-Trichloropropane	ND	0.0235		mg/Kg-dry	1	10/17/2012 1:13:00 PM
1,2,4-Trichlorobenzene	ND	0.0588		mg/Kg-dry	1	10/17/2012 1:13:00 PM
sec-Butylbenzene	ND	0.0235		mg/Kg-dry	1	10/17/2012 1:13:00 PM
4-Isopropyltoluene	ND	0.0235		mg/Kg-dry	1	10/17/2012 1:13:00 PM
1,3-Dichlorobenzene	ND	0.0235		mg/Kg-dry	1	10/17/2012 1:13:00 PM
1,4-Dichlorobenzene	ND	0.0235		mg/Kg-dry	1	10/17/2012 1:13:00 PM
n-Butylbenzene	ND	0.0235		mg/Kg-dry	1	10/17/2012 1:13:00 PM
1,2-Dichlorobenzene	ND	0.0235		mg/Kg-dry	1	10/17/2012 1:13:00 PM
1,2-Dibromo-3-chloropropane	ND	0.0353		mg/Kg-dry	1	10/17/2012 1:13:00 PM
1,2,4-Trimethylbenzene	ND	0.0235		mg/Kg-dry	1	10/17/2012 1:13:00 PM
Hexachlorobutadiene	ND	0.118		mg/Kg-dry	1	10/17/2012 1:13:00 PM
Naphthalene	ND	0.0353		mg/Kg-dry	1	10/17/2012 1:13:00 PM
1,2,3-Trichlorobenzene	ND	0.0235		mg/Kg-dry	1	10/17/2012 1:13:00 PM
Surr: 1-Bromo-4-fluorobenzene	99.3	63.1-141		%REC	1	10/17/2012 1:13:00 PM
Surr: Dibromofluoromethane	100	67.6-119		%REC	1	10/17/2012 1:13:00 PM
Surr: Toluene-d8	101	78.5-126		%REC	1	10/17/2012 1:13:00 PM

Total Metals by EPA Method 6020

Batch ID: 3450

Analyst: SG

Arsenic	6.37	0.102		mg/Kg-dry	1	10/17/2012 5:48:40 AM
Barium	126	0.509		mg/Kg-dry	1	10/17/2012 5:48:40 AM
Cadmium	ND	0.204		mg/Kg-dry	1	10/17/2012 5:48:40 AM
Chromium	59.3	0.102		mg/Kg-dry	1	10/17/2012 5:48:40 AM
Lead	4.76	0.204		mg/Kg-dry	1	10/17/2012 5:48:40 AM

Qualifiers: B Analyte detected in the associated Method Blank
E Value above quantitation range
J Analyte detected below quantitation limits
RL Reporting Limit

D Dilution was required
H Holding times for preparation or analysis exceeded
ND Not detected at the Reporting Limit
S Spike recovery outside accepted recovery limits



Analytical Report

WO#: 1210020

Date Reported: 10/23/2012

Client: GeoEngineers, Inc. - Redmond

Collection Date: 10/11/2012 8:15:00 AM

Project: Rufus 2.0 WO11

Lab ID: 1210020-266

Matrix: Soil

Client Sample ID: B21-2-5.0

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<u>Total Metals by EPA Method 6020</u>				Batch ID: 3450		Analyst: SG
Selenium	ND	0.509		mg/Kg-dry	1	10/17/2012 5:48:40 AM
Silver	ND	0.102		mg/Kg-dry	1	10/17/2012 5:48:40 AM
<u>Mercury by EPA Method 7471</u>				Batch ID: 3465		Analyst: SG
Mercury	ND	0.309		mg/Kg-dry	1	10/19/2012 12:45:09 PM
<u>Sample Moisture (Percent Moisture)</u>				Batch ID: R6156		Analyst: CM
Percent Moisture	22.1			wt%	1	10/16/2012 10:35:24 AM

Qualifiers: B Analyte detected in the associated Method Blank
E Value above quantitation range
J Analyte detected below quantitation limits
RL Reporting Limit

D Dilution was required
H Holding times for preparation or analysis exceeded
ND Not detected at the Reporting Limit
S Spike recovery outside accepted recovery limits



Analytical Report

WO#: 1210020

Date Reported: 10/23/2012

Client: GeoEngineers, Inc. - Redmond

Collection Date: 10/11/2012 8:54:00 AM

Project: Rufus 2.0 WO11

Lab ID: 1210020-272

Matrix: Soil

Client Sample ID: B21-2-20.0

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<u>Diesel and Heavy Oil by NWTPH-Dx/Dx Ext.</u>				Batch ID: 3446		Analyst: BR
Diesel (Fuel Oil)	ND	17.6		mg/Kg-dry	1	10/17/2012 2:33:00 AM
Heavy Oil	ND	44.1		mg/Kg-dry	1	10/17/2012 2:33:00 AM
Surr: 2-Fluorobiphenyl	100	50-150		%REC	1	10/17/2012 2:33:00 AM
Surr: o-Terphenyl	99.8	50-150		%REC	1	10/17/2012 2:33:00 AM
<u>Gasoline by NWTPH-Gx</u>				Batch ID: R6251		Analyst: EM
Gasoline	ND	5.56		mg/Kg-dry	1	10/17/2012 1:43:00 PM
Surr: 1,2-Dichloroethane-d4	111	65-135		%REC	1	10/17/2012 1:43:00 PM
Surr: Fluorobenzene	101	65-135		%REC	1	10/17/2012 1:43:00 PM
<u>Volatile Organic Compounds by EPA Method 8260</u>				Batch ID: 3452		Analyst: EM
Benzene	ND	0.0223		mg/Kg-dry	1	10/17/2012 1:43:00 PM
Toluene	ND	0.0223		mg/Kg-dry	1	10/17/2012 1:43:00 PM
Ethylbenzene	ND	0.0334		mg/Kg-dry	1	10/17/2012 1:43:00 PM
m,p-Xylene	ND	0.0223		mg/Kg-dry	1	10/17/2012 1:43:00 PM
o-Xylene	ND	0.0223		mg/Kg-dry	1	10/17/2012 1:43:00 PM
Surr: 1-Bromo-4-fluorobenzene	100	63.1-141		%REC	1	10/17/2012 1:43:00 PM
Surr: Dibromofluoromethane	102	67.6-119		%REC	1	10/17/2012 1:43:00 PM
Surr: Toluene-d8	99.9	78.5-126		%REC	1	10/17/2012 1:43:00 PM
<u>Total Metals by EPA Method 6020</u>				Batch ID: 3450		Analyst: SG
Arsenic	2.12	0.0813		mg/Kg-dry	1	10/17/2012 5:57:44 AM
Barium	33.2	0.406		mg/Kg-dry	1	10/17/2012 5:57:44 AM
Cadmium	ND	0.163		mg/Kg-dry	1	10/17/2012 5:57:44 AM
Chromium	24.5	0.0813		mg/Kg-dry	1	10/17/2012 5:57:44 AM
Lead	1.36	0.163		mg/Kg-dry	1	10/17/2012 5:57:44 AM
Selenium	ND	0.406		mg/Kg-dry	1	10/17/2012 5:57:44 AM
Silver	ND	0.0813		mg/Kg-dry	1	10/17/2012 5:57:44 AM
<u>Mercury by EPA Method 7471</u>				Batch ID: 3465		Analyst: SG
Mercury	ND	0.229		mg/Kg-dry	1	10/19/2012 12:46:46 PM

Qualifiers: B Analyte detected in the associated Method Blank
E Value above quantitation range
J Analyte detected below quantitation limits
RL Reporting Limit

D Dilution was required
H Holding times for preparation or analysis exceeded
ND Not detected at the Reporting Limit
S Spike recovery outside accepted recovery limits



Analytical Report

WO#: 1210020

Date Reported: 10/23/2012

Client: GeoEngineers, Inc. - Redmond

Collection Date: 10/11/2012 8:54:00 AM

Project: Rufus 2.0 WO11

Lab ID: 1210020-272

Matrix: Soil

Client Sample ID: B21-2-20.0

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
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Sample Moisture (Percent Moisture)

Batch ID: R6156

Analyst: CM

Percent Moisture	2.37			wt%	1	10/16/2012 10:35:24 AM
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Qualifiers:

B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
RL	Reporting Limit

D	Dilution was required
H	Holding times for preparation or analysis exceeded
ND	Not detected at the Reporting Limit
S	Spike recovery outside accepted recovery limits



Date: 10/23/2012

Work Order: 1210020
CLIENT: GeoEngineers, Inc. - Redmond
Project: Rufus 2.0 WO11

QC SUMMARY REPORT

Total Metals by EPA Method 6020

Sample ID: MB-3449		SampType: MBLK		Units: mg/Kg		Prep Date: 10/16/2012			RunNo: 6172		
Client ID: MBLKS		Batch ID: 3449					Analysis Date: 10/16/2012			SeqNo: 122802	
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Arsenic	ND	0.100
Barium	ND	0.500
Cadmium	ND	0.200
Chromium	ND	0.100
Lead	ND	0.200
Selenium	ND	0.500
Silver	ND	0.100

Sample ID: LCS-3449		SampType: LCS		Units: mg/Kg		Prep Date: 10/16/2012			RunNo: 6172		
Client ID: LCSS		Batch ID: 3449					Analysis Date: 10/16/2012			SeqNo: 122803	
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Arsenic	108	0.100	102.0	0	106	69.41	130.39
Barium	744	0.500	797.0	0	93.3	74.78	125.22
Cadmium	91.9	0.200	86.50	0	106	73.18	127.17
Chromium	228	0.100	208.0	0	109	70.67	129.33
Lead	73.2	0.200	72.10	0	101	68.1	131.9
Selenium	175	0.500	165.0	0	106	67.88	132.12
Silver	22.3	0.100	31.30	0	71.3	65.18	134.82

Sample ID: 1210020-003BDUP	SampType: DUP	Units: mg/Kg-dry				Prep Date: 10/16/2012			RunNo: 6172		
Client ID: B21-3-7.5	Batch ID: 3449					Analysis Date: 10/16/2012			SeqNo: 122806		
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Arsenic	5.39	0.0939						5.038	6.71	30
Barium	147	0.469						160.1	8.55	30
Cadmium	ND	0.188						0	0	30
Chromium	69.9	0.0939						74.36	6.20	30

Qualifiers:

B	Analyte detected in the associated Method Blank	D	Dilution was required	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits	ND	Not detected at the Reporting Limit
R	RPD outside accepted recovery limits	RL	Reporting Limit	S	Spike recovery outside accepted recovery limits



Date: 10/23/2012

Work Order: 1210020
CLIENT: GeoEngineers, Inc. - Redmond
Project: Rufus 2.0 WO11

QC SUMMARY REPORT
Total Metals by EPA Method 6020

Sample ID: 1210020-003BDUP	SampType: DUP	Units: mg/Kg-dry				Prep Date: 10/16/2012			RunNo: 6172		
Client ID: B21-3-7.5	Batch ID: 3449					Analysis Date: 10/16/2012			SeqNo: 122806		
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	5.60	0.188						5.407	3.56	30	
Selenium	ND	0.469						0	0	30	
Silver	ND	0.0939						0.1026	200	30	R

NOTES:

R - High RPD due to low analyte concentration. In this range, high RPD's may be expected.

Sample ID: 1210020-003BMS	SampType: MS	Units: mg/Kg-dry				Prep Date: 10/16/2012			RunNo: 6172		
Client ID: B21-3-7.5	Batch ID: 3449	Analysis Date: 10/16/2012							SeqNo: 122808		
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	50.7	0.0860	43.00	5.038	106	75	125				
Barium	197	0.430	43.00	160.1	85.3	75	125				
Cadmium	2.19	0.172	2.150	0.1109	96.8	75	125				
Chromium	122	0.0860	43.00	74.36	111	75	125				
Lead	24.9	0.172	21.50	5.407	90.5	75	125				
Selenium	3.84	0.430	4.300	0.3452	81.2	75	125				
Silver	1.43	0.0860	2.150	0.1026	61.7	75	125				S

NOTES:

S - Low Ag spike recovery noted. The method is in control as indicated by the Laboratory Control Sample (LCS).

Sample ID: 1210020-003BMSD	SampType: MSD	Units: mg/Kg-dry				Prep Date: 10/16/2012			RunNo: 6172		
Client ID: B21-3-7.5	Batch ID: 3449					Analysis Date: 10/16/2012			SeqNo: 122809		
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	58.4	0.0987	49.37	5.038	108	75	125	50.69	14.2	30	
Barium	214	0.494	49.37	160.1	109	75	125	196.8	8.37	30	
Cadmium	2.52	0.197	2.469	0.1109	97.8	75	125	2.193	14.1	30	
Chromium	132	0.0987	49.37	74.36	116	75	125	122.3	7.47	30	
Lead	29.0	0.197	24.69	5.407	95.4	75	125	24.85	15.3	30	

Qualifiers:

B Analyte detected in the associated Method Blank
H Holding times for preparation or analysis exceeded
R RPD outside accepted recovery limits

D Dilution was required
J Analyte detected below quantitation limits
RL Reporting Limit

E Value above quantitation range
ND Not detected at the Reporting Limit
S Spike recovery outside accepted recovery limits



Date: 10/23/2012

Work Order: 1210020
CLIENT: GeoEngineers, Inc. - Redmond
Project: Rufus 2.0 WO11

QC SUMMARY REPORT

Total Metals by EPA Method 6020

Sample ID: 1210020-003BMSD		SampType: MSD		Units: mg/Kg-dry		Prep Date: 10/16/2012			RunNo: 6172		
Client ID: B21-3-7.5		Batch ID: 3449		Analysis Date: 10/16/2012						SeqNo: 122809	
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Selenium	4.50	0.494	4.937	0.3452	84.2	75	125	3.836	15.9	30	
Silver	1.72	0.0987	2.469	0.1026	65.5	75	125	1.429	18.5	30	S

NOTES:

S - Low Ag spike recovery noted. The method is in control as indicated by the Laboratory Control Sample (LCS).

Sample ID: 1210020-003BPDS		SampType: PDS		Units: mg/Kg-dry		Prep Date: 10/16/2012		RunNo: 6172			
Client ID: B21-3-7.5		Batch ID: 3449				Analysis Date: 10/16/2012		SeqNo: 122810			
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Silver	2.54	0.0889	2.50	0.197	46.2	75	125				S

NOTES:

S - Spike recovery indicates a possible matrix effect. The method is in control as indicated by the Laboratory Control Sample (LCS).

Sample ID: MB-3450	SampType: MBLK	Units: mg/Kg				Prep Date: 10/16/2012			RunNo: 6190		
Client ID: MBLKS	Batch ID: 3450	Analysis Date: 10/17/2012						SeqNo: 123152			
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	ND	0.100									
Barium	ND	0.500									
Cadmium	ND	0.200									
Chromium	ND	0.100									
Lead	ND	0.200									
Selenium	ND	0.500									
Silver	ND	0.100									

Qualifiers: B Analyte detected in the associated Method Blank
H Holding times for preparation or analysis exceeded
R RPD outside accepted recovery limits

D Dilution was required
J Analyte detected below quantitation limits
RL Reporting Limit

E Value above quantitation range
ND Not detected at the Reporting Limit
S Spike recovery outside accepted recovery limits



Date: 10/23/2012

Work Order: 1210020
CLIENT: GeoEngineers, Inc. - Redmond
Project: Rufus 2.0 WO11

QC SUMMARY REPORT
Total Metals by EPA Method 6020

Sample ID: LCS-3450	SampType: LCS	Units: mg/Kg				Prep Date: 10/16/2012			RunNo: 6190		
Client ID: LCSS	Batch ID: 3450	Analysis Date: 10/17/2012						SeqNo: 123153			
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	133	0.100	102.0	0	130	69.41	130.4				
Barium	817	0.500	797.0	0	102	74.78	125.2				
Cadmium	96.1	0.200	86.50	0	111	73.18	127.2				
Chromium	241	0.100	208.0	0	116	70.67	129.3				
Lead	76.2	0.200	72.10	0	106	68.1	131.9				
Selenium	184	0.500	165.0	0	112	67.88	132.1				
Silver	22.0	0.100	31.30	0	70.4	65.18	134.8				

Sample ID: 1210020-137BDUP	SampType: DUP	Units: mg/Kg-dry				Prep Date: 10/16/2012			RunNo: 6190		
Client ID: B21-14-12.5	Batch ID: 3450	Analysis Date: 10/17/2012							SeqNo: 123155		
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	2.20	0.0854						3.436	43.9	30	R
Barium	71.3	0.427						90.45	23.7	30	
Cadmium	ND	0.171						0	0	30	
Chromium	41.5	0.0854						48.20	14.9	30	
Lead	2.55	0.171						3.803	39.5	30	R
Selenium	ND	0.427						0.7358	200	30	R
Silver	ND	0.0854						0	0	30	

NOTES:

R - High RPD due to low analyte concentration. In this range, high RPD's may be expected.

Sample ID: 1210020-137BMS		SampType: MS		Units: mg/Kg-dry		Prep Date: 10/16/2012		RunNo: 6190			
Client ID: B21-14-12.5		Batch ID: 3450				Analysis Date: 10/17/2012		SeqNo: 123157			
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	51.5	0.0854	42.70	3.436	112	75	125				
Barium	100	0.427	42.70	90.45	22.6	75	125				S

Qualifiers:

B Analyte detected in the associated Method Blank
H Holding times for preparation or analysis exceeded
R RPD outside accepted recovery limits

D Dilution was required
J Analyte detected below quantitation limits
RL Reporting Limit

E Value above quantitation range
ND Not detected at the Reporting Limit
S Spike recovery outside accepted recovery limits



Date: 10/23/2012

Work Order: 1210020
CLIENT: GeoEngineers, Inc. - Redmond
Project: Rufus 2.0 WO11

QC SUMMARY REPORT
Total Metals by EPA Method 6020

Sample ID: 1210020-137BMS	SampType: MS	Units: mg/Kg-dry				Prep Date: 10/16/2012			RunNo: 6190		
Client ID: B21-14-12.5	Batch ID: 3450					Analysis Date: 10/17/2012			SeqNo: 123157		
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Cadmium	2.27	0.171	2.135	0.1055	102	75	125				
Chromium	90.0	0.0854	42.70	48.20	98.0	75	125				
Lead	22.2	0.171	21.35	3.803	86.3	75	125				
Selenium	4.32	0.427	4.270	0.7358	83.9	75	125				
Silver	0.919	0.0854	2.135	0	43.1	75	125				S

NOTES:

S - Outlying spike recoveries observed. A duplicate analysis was performed with similar results indicating a matrix effect.

Sample ID: 1210020-137BMSD	SampType: MSD	Units: mg/Kg-dry				Prep Date: 10/16/2012			RunNo: 6190		
Client ID: B21-14-12.5	Batch ID: 3450	Analysis Date: 10/17/2012							SeqNo: 123158		
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	57.0	0.0901	45.07	3.436	119	75	125	51.45	10.2	30	S
Barium	118	0.451	45.07	90.45	60.1	75	125	100.1	16.0	30	
Cadmium	2.52	0.180	2.253	0.1055	107	75	125	2.272	10.5	30	
Chromium	99.2	0.0901	45.07	48.20	113	75	125	90.03	9.72	30	
Lead	24.8	0.180	22.53	3.803	93.2	75	125	22.23	10.9	30	
Selenium	4.93	0.451	4.507	0.7358	93.0	75	125	4.319	13.1	30	
Silver	1.10	0.0901	2.253	0	48.7	75	125	0.9191	17.6	30	
											S

NOTES:

S - Outlying spike recoveries observed. A duplicate analysis was performed with similar results indicating a matrix effect.

Sample ID: 1210020-137BPDS	SampType: PDS	Units: mg/Kg-dry				Prep Date: 10/16/2012			RunNo: 6190		
Client ID: B21-14-12.5	Batch ID: 3450	Analysis Date: 10/17/2012							SeqNo: 123159		
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Barium	264	0.447	50.0	159	61.4	75	125				S
Silver	1.03	0.0894	2.50	-0.0629	20.6	75	125				S

Qualifiers:

B Analyte detected in the associated Method Blank
H Holding times for preparation or analysis exceeded
R RPD outside accepted recovery limits

D Dilution was required
J Analyte detected below quantitation limits
RL Reporting Limit

E Value above quantitation range
ND Not detected at the Reporting Limit
S Spike recovery outside accepted recovery limits



Date: 10/23/2012

Work Order: 1210020
CLIENT: GeoEngineers, Inc. - Redmond
Project: Rufus 2.0 WO11

QC SUMMARY REPORT

Total Metals by EPA Method 6020

Sample ID: 1210020-137BPDS		SampType: PDS		Units: mg/Kg-dry		Prep Date: 10/16/2012			RunNo: 6190		
Client ID: B21-14-12.5		Batch ID: 3450					Analysis Date: 10/17/2012			SeqNo: 123159	
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

NOTES:

S - Outlying spike recoveries due to matrix interference.

Qualifiers:	B	Analyte detected in the associated Method Blank	D	Dilution was required	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits	ND	Not detected at the Reporting Limit
	R	RPD outside accepted recovery limits	RL	Reporting Limit	S	Spike recovery outside accepted recovery limits



Date: 10/23/2012

Work Order: 1210020
CLIENT: GeoEngineers, Inc. - Redmond
Project: Rufus 2.0 WO11

QC SUMMARY REPORT

Mercury by EPA Method 7471

Sample ID: MB-3441		SampType: MBLK		Units: mg/Kg		Prep Date: 10/16/2012			RunNo: 6170		
Client ID: MBLKS		Batch ID: 3441					Analysis Date: 10/16/2012			SeqNo: 122713	
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Mercury ND 0.250

Sample ID: LCS-3441		SampType: LCS		Units: mg/Kg		Prep Date: 10/16/2012			RunNo: 6170		
Client ID: LCSS		Batch ID: 3441					Analysis Date: 10/16/2012			SeqNo: 122714	
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Mercury 0.516 0.250 0.5000 0 103 80 120

Sample ID: 1210099-001ADUP		SampType: DUP		Units: mg/Kg-dry		Prep Date: 10/16/2012			RunNo: 6170		
Client ID: BATCH		Batch ID: 3441					Analysis Date: 10/16/2012			SeqNo: 122716	
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Mercury ND 0.330 0 0 20 R

NOTES:

R - High RPD due to low analyte concentration. In this range, high RPD's may be expected.

Sample ID: 1210099-001AMS		SampType: MS		Units: mg/Kg-dry		Prep Date: 10/16/2012		RunNo: 6170			
Client ID: BATCH		Batch ID: 3441				Analysis Date: 10/16/2012		SeqNo: 122717			
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Mercury 0.647 0.306 0.6124 0.05783 96.2 70 130

Sample ID: 1210099-001AMSD		SampType: MSD		Units: mg/Kg-dry		Prep Date: 10/16/2012			RunNo: 6170		
Client ID: BATCH		Batch ID: 3441					Analysis Date: 10/16/2012			SeqNo: 122718	
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Mercury 0.647 0.301 0.6017 0.05783 98.0 70 130 0.6467 0.106 20

Qualifiers:

B Analyte detected in the associated Method Blank
H Holding times for preparation or analysis exceeded
R RPD outside accepted recovery limits

D Dilution was required
J Analyte detected below quantitation limits
RL Reporting Limit

E Value above quantitation range
ND Not detected at the Reporting Limit
S Spike recovery outside accepted recovery limits



Date: 10/23/2012

Work Order: 1210020
CLIENT: GeoEngineers, Inc. - Redmond
Project: Rufus 2.0 WO11

QC SUMMARY REPORT

Mercury by EPA Method 7471

Sample ID: 1210099-001AMSD		SampType: MSD		Units: mg/Kg-dry		Prep Date: 10/16/2012			RunNo: 6170		
Client ID: BATCH		Batch ID: 3441					Analysis Date: 10/16/2012			SeqNo: 122718	
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Sample ID: MB-3456		SampType: MBLK		Units: mg/Kg		Prep Date: 10/17/2012			RunNo: 6197			
Client ID: MBLKS		Batch ID: 3456					Analysis Date: 10/18/2012			SeqNo: 123310		
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual	
Mercury	ND	0.250										

Sample ID: LCS-3456	SampType: LCS	Units: mg/Kg				Prep Date: 10/17/2012			RunNo: 6197		
Client ID: LCSS	Batch ID: 3456	Analysis Date: 10/18/2012						SeqNo: 123311			
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	0.494	0.250	0.5000	0	98.8	80	120				

Sample ID: 1210094-005BDUP		SampType: DUP		Units: mg/Kg-dry		Prep Date: 10/17/2012		RunNo: 6197			
Client ID: BATCH		Batch ID: 3456				Analysis Date: 10/18/2012		SeqNo: 123313			
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	ND	0.218						0	0	20	

Sample ID: 1210094-005BMS		SampType: MS		Units: mg/Kg-dry		Prep Date: 10/17/2012		RunNo: 6197			
Client ID: BATCH		Batch ID: 3456				Analysis Date: 10/18/2012		SeqNo: 123314			
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	0.571	0.268	0.5359	0.02892	101	70	130				

Qualifiers:

B	Analyte detected in the associated Method Blank	D	Dilution was required	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits	ND	Not detected at the Reporting Limit
R	RPD outside accepted recovery limits	RL	Reporting Limit	S	Spike recovery outside accepted recovery limits



Date: 10/23/2012

Work Order: 1210020
CLIENT: GeoEngineers, Inc. - Redmond
Project: Rufus 2.0 WO11

QC SUMMARY REPORT

Mercury by EPA Method 7471

Sample ID: 1210094-005BMSD	SampType: MSD	Units: mg/Kg-dry				Prep Date: 10/17/2012			RunNo: 6197		
Client ID: BATCH	Batch ID: 3456	Analysis Date: 10/18/2012						SeqNo: 123315			
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercurv	0.628	0.278	0.5569	0.02892	108	70	130	0.5712	9.49	20	

Sample ID: MB-3465		SampType: MBLK		Units: mg/Kg		Prep Date: 10/18/2012			RunNo: 6224			
Client ID: MBLKS		Batch ID: 3465					Analysis Date: 10/19/2012			SeqNo: 123735		
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual	
Mercury	ND	0.250										

Sample ID: LCS-3465		SampType: LCS		Units: mg/Kg		Prep Date: 10/18/2012		RunNo: 6224			
Client ID: LCSS		Batch ID: 3465				Analysis Date: 10/19/2012		SeqNo: 123736			
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	0.486	0.250	0.5000	0	97.2	80	120				

Sample ID: 1210020-236BMS		SampType: MS		Units: mg/Kg-dry		Prep Date: 10/18/2012		RunNo: 6224			
Client ID: MW21-2-20.0		Batch ID: 3465				Analysis Date: 10/19/2012		SeqNo: 123739			
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	0.523	0.259	0.5188	0	101	70	130				

Sample ID: 1210020-236BMSD	SampType: MSD	Units: mg/Kg-dry				Prep Date: 10/18/2012			RunNo: 6224		
Client ID: MW21-2-20.0	Batch ID: 3465	Analysis Date: 10/19/2012						SeqNo: 123740			
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	0.527	0.259	0.5188	0	102	70	130	0.5230	0.791	20	

Qualifiers:

B	Analyte detected in the associated Method Blank
H	Holding times for preparation or analysis exceeded
R	RPD outside accepted recovery limits

D	Dilution was required
J	Analyte detected below quantitation limits
RL	Reporting Limit

E	Value above quantitation range
ND	Not detected at the Reporting Limit
S	Spike recovery outside accepted recovery limits



Date: 10/23/2012

Work Order: 1210020
CLIENT: GeoEngineers, Inc. - Redmond
Project: Rufus 2.0 WO11

QC SUMMARY REPORT

Mercury by EPA Method 7471

Sample ID: 1210163-005BDUP		SampType: DUP		Units: mg/Kg-dry		Prep Date: 10/18/2012		RunNo: 6224			
Client ID: BATCH		Batch ID: 3465				Analysis Date: 10/19/2012		SeqNo: 123750			
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	ND	0.294						0	0	20	

Qualifiers:

B	Analyte detected in the associated Method Blank	D	Dilution was required	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits	ND	Not detected at the Reporting Limit
R	RPD outside accepted recovery limits	RL	Reporting Limit	S	Spike recovery outside accepted recovery limits



Date: 10/23/2012

Work Order: 1210020
CLIENT: GeoEngineers, Inc. - Redmond
Project: Rufus 2.0 WO11

QC SUMMARY REPORT

Diesel and Heavy Oil by NWTPH-Dx/Dx Ext.

Sample ID: 1210020-146BDUP		SampType: DUP		Units: mg/Kg-dry		Prep Date: 10/16/2012			RunNo: 6247			
Client ID: B21-15-5.0		Batch ID: 3446					Analysis Date: 10/16/2012			SeqNo: 124091		
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual	

Diesel (Fuel Oil)	ND	22.9						0	0	30	
Heavy Oil	ND	57.1						0	0	30	
Surr: 2-Fluorobiphenyl	23.2		22.86		101	50	150		0		
Surr: o-Terphenyl	23.4		22.86		103	50	150		0		

Sample ID: LCS-3446		SampType: LCS			Units: mg/Kg		Prep Date: 10/16/2012		RunNo: 6247		
Client ID: LCSS		Batch ID: 3446			Analysis Date: 10/16/2012				SeqNo: 124108		
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Diesel (Fuel Oil)	569	20.0	500.0	0	114	65	135				
Surr: 2-Fluorobiphenyl	21.8		20.00		109	50	150				
Surr: o-Terphenyl	21.3		20.00		106	50	150				

Sample ID: MB-3446	SampType: MBLK	Units: mg/Kg			Prep Date: 10/16/2012			RunNo: 6247			
Client ID: MBLKS	Batch ID: 3446				Analysis Date: 10/16/2012			SeqNo: 124109			
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Diesel (Fuel Oil)	ND	20.0									
Heavy Oil	ND	50.0									
Surr: 2-Fluorobiphenyl	20.8		20.00		104	50	150				
Surr: o-Terphenyl	21.1		20.00		106	50	150				

Sample ID: 1210020-003BDUP		SampType: DUP		Units: mg/Kg-dry		Prep Date: 10/16/2012			RunNo: 6249		
Client ID: B21-3-7.5		Batch ID: 3445					Analysis Date: 10/17/2012			SeqNo: 124134	
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Diesel (Fuel Oil)	ND	24.8						0	0	30	
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Qualifiers:

B	Analyte detected in the associated Method Blank	D	Dilution was required	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits	ND	Not detected at the Reporting Limit
R	RPD outside accepted recovery limits	RL	Reporting Limit	S	Spike recovery outside accepted recovery limits



Date: 10/23/2012

Work Order: 1210020
CLIENT: GeoEngineers, Inc. - Redmond
Project: Rufus 2.0 WO11

QC SUMMARY REPORT

Diesel and Heavy Oil by NWTPH-Dx/Dx Ext.

Sample ID: 1210020-003BDUP		SampType: DUP		Units: mg/Kg-dry		Prep Date: 10/16/2012			RunNo: 6249			
Client ID: B21-3-7.5		Batch ID: 3445					Analysis Date: 10/17/2012			SeqNo: 124134		
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual	

Heavy Oil	ND	62.1						0	0	30	
Surr: 2-Fluorobiphenyl	24.9		24.85		100	50	150		0		
Surr: o-Terphenyl	24.8		24.85		100	50	150		0		

Sample ID: LCS-3445		SampType: LCS			Units: mg/Kg		Prep Date: 10/16/2012			RunNo: 6249		
Client ID: LCSS		Batch ID: 3445			Analysis Date: 10/17/2012					SeqNo: 124148		
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual	

Diesel (Fuel Oil)	592	20.0	500.0	0	118	65	135				
Surr: 2-Fluorobiphenyl	21.7		20.00		109	50	150				
Surr: o-Terphenyl	20.7		20.00		103	50	150				

Sample ID: MB-3445		SampType: MBLK		Units: mg/Kg		Prep Date: 10/16/2012			RunNo: 6249		
Client ID: MBLKS		Batch ID: 3445					Analysis Date: 10/17/2012			SeqNo: 124149	
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Diesel (Fuel Oil)	ND	20.0									
Heavy Oil	ND	50.0									
Surr: 2-Fluorobiphenyl	20.7		20.00		103	50	150				
Surr: o-Terphenyl	21.0		20.00		105	50	150				

Qualifiers:

B	Analyte detected in the associated Method Blank	D	Dilution was required	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits	ND	Not detected at the Reporting Limit
R	RPD outside accepted recovery limits	RL	Reporting Limit	S	Spike recovery outside accepted recovery limits



Date: 10/23/2012

Work Order: 1210020
CLIENT: GeoEngineers, Inc. - Redmond
Project: Rufus 2.0 WO11

QC SUMMARY REPORT
Polyaromatic Hydrocarbons by EPA Method 8270 (SIM)

Sample ID: MB-3448	SampType: MBLK	Units: µg/Kg				Prep Date: 10/17/2012			RunNo: 6192		
Client ID: MBLKS	Batch ID: 3448	Analysis Date: 10/18/2012							SeqNo: 123185		
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Naphthalene	ND	50.0									
2-Methylnaphthalene	ND	50.0									
1-Methylnaphthalene	ND	50.0									
Acenaphthylene	ND	50.0									
Acenaphthene	ND	50.0									
Fluorene	ND	50.0									
Phenanthrene	ND	50.0									
Anthracene	ND	50.0									
Fluoranthene	ND	50.0									
Pyrene	ND	50.0									
Benz(a)anthracene	ND	50.0									
Chrysene	ND	50.0									
Benzo(b)fluoranthene	ND	50.0									
Benzo(k)fluoranthene	ND	50.0									
Benzo(a)pyrene	ND	50.0									
Indeno(1,2,3-cd)pyrene	ND	50.0									
Dibenz(a,h)anthracene	ND	50.0									
Benzo(g,h,i)perylene	ND	50.0									
Surr: 2-Fluorobiphenyl	518		500.0		104	50.4	142				
Surr: Terphenyl-d14 (surr)	541		500.0		108	48.8	157				

Sample ID: LCS-3448	SampType: LCS	Units: µg/Kg				Prep Date: 10/17/2012			RunNo: 6192		
Client ID: LCSS	Batch ID: 3448					Analysis Date: 10/18/2012			SeqNo: 123186		
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Naphthalene	903	50.0	1,000	0	90.3	77.4	119				
2-Methylnaphthalene	953	50.0	1,000	0	95.3	77.1	122				
1-Methylnaphthalene	902	50.0	1,000	0	90.2	77.9	120				

Qualifiers:

B	Analyte detected in the associated Method Blank	D	Dilution was required	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits	ND	Not detected at the Reporting Limit
R	RPD outside accepted recovery limits	RL	Reporting Limit	S	Spike recovery outside accepted recovery limits



Date: 10/23/2012

Work Order: 1210020

CLIENT: GeoEngineers, Inc. - Redmond

Project: Rufus 2.0 WO11

QC SUMMARY REPORT

Polyaromatic Hydrocarbons by EPA Method 8270 (SIM)

Sample ID: LCS-3448	SampType: LCS	Units: µg/Kg				Prep Date: 10/17/2012			RunNo: 6192		
Client ID: LCSS	Batch ID: 3448					Analysis Date: 10/18/2012			SeqNo: 123186		
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Acenaphthylene	1,020	50.0	1,000	0	102	75.2	125				
Acenaphthene	896	50.0	1,000	0	89.6	76	120				
Fluorene	941	50.0	1,000	0	94.1	75.8	125				
Phenanthrene	891	50.0	1,000	0	89.1	74.2	121				
Anthracene	989	50.0	1,000	0	98.9	71.7	129				
Fluoranthene	1,050	50.0	1,000	0	105	68.3	135				
Pyrene	1,030	50.0	1,000	0	103	66.7	134				
Benz(a)anthracene	1,120	50.0	1,000	0	112	57.9	150				
Chrysene	888	50.0	1,000	0	88.8	76.1	123				
Benzo(b)fluoranthene	1,080	50.0	1,000	0	108	61.2	142				
Benzo(k)fluoranthene	862	50.0	1,000	0	86.2	68.1	134				
Benzo(a)pyrene	975	50.0	1,000	0	97.5	58.1	146				
Indeno(1,2,3-cd)pyrene	1,090	50.0	1,000	0	109	63.8	138				
Dibenz(a,h)anthracene	1,090	50.0	1,000	0	109	60.8	143				
Benzo(g,h,i)perylene	964	50.0	1,000	0	96.4	63.7	136				
Surr: 2-Fluorobiphenyl	517		500.0		103	50.4	142				
Surr: Terphenyl-d14 (surr)	540		500.0		108	48.8	157				

Sample ID: 1210020-115BMS	SampType: MS	Units: µg/Kg-dry				Prep Date: 10/17/2012			RunNo: 6192		
Client ID: B21-12-17.5	Batch ID: 3448					Analysis Date: 10/18/2012			SeqNo: 123188		
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Naphthalene	896	49.7	994.3	0	90.1	42.9	138				
2-Methylnaphthalene	960	49.7	994.3	0	96.5	42.8	151				
1-Methylnaphthalene	937	49.7	994.3	0	94.2	41.6	148				
Acenaphthylene	1,330	49.7	994.3	0	134	32.6	160				
Acenaphthene	916	49.7	994.3	0	92.2	46.3	142				
Fluorene	1,010	49.7	994.3	0	102	43.4	153				

Qualifiers:

B	Analyte detected in the associated Method Blank
H	Holding times for preparation or analysis exceeded
R	RPD outside accepted recovery limits

D	Dilution was required
J	Analyte detected below quantitation limits
RL	Reporting Limit

E	Value above quantitation range
ND	Not detected at the Reporting Limit
S	Spike recovery outside accepted recovery limits



Date: 10/23/2012

Work Order: 1210020

CLIENT: GeoEngineers, Inc. - Redmond

Project: Rufus 2.0 WO11

QC SUMMARY REPORT

Polyaromatic Hydrocarbons by EPA Method 8270 (SIM)

Sample ID: 1210020-115BMS	SampType: MS	Units: µg/Kg-dry				Prep Date: 10/17/2012			RunNo: 6192		
Client ID: B21-12-17.5	Batch ID: 3448	Analysis Date: 10/18/2012						SeqNo: 123188			
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Phenanthrene	907	49.7	994.3	0	91.2	45.5	140				
Anthracene	1,020	49.7	994.3	0	102	32.6	160				
Fluoranthene	1,120	49.7	994.3	0	112	44.6	161				
Pyrene	1,090	49.7	994.3	0	110	48.3	158				
Benz(a)anthracene	1,220	49.7	994.3	0	123	57.5	169				
Chrysene	919	49.7	994.3	0	92.4	45.2	146				
Benzo(b)fluoranthene	1,180	49.7	994.3	0	118	42.2	168				
Benzo(k)fluoranthene	895	49.7	994.3	0	90.1	48	161				
Benzo(a)pyrene	1,050	49.7	994.3	0	106	34.4	179				
Indeno(1,2,3-cd)pyrene	1,160	49.7	994.3	0	117	41.1	165				
Dibenz(a,h)anthracene	1,160	49.7	994.3	0	117	38.1	166				
Benzo(g,h,i)perylene	998	49.7	994.3	0	100	45.6	157				
Surr: 2-Fluorobiphenyl	567		497.1		114	50.4	142				
Surr: Terphenyl-d14 (surr)	556		497.1		112	48.8	157				

Sample ID: 1210020-121BDUP	SampType: DUP	Units: µg/Kg-dry				Prep Date: 10/17/2012			RunNo: 6192		
Client ID: B21-13-2.5	Batch ID: 3448	Analysis Date: 10/18/2012							SeqNo: 123202		
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Naphthalene	ND	55.0						0	0	30	
2-Methylnaphthalene	ND	55.0						0	0	30	
1-Methylnaphthalene	ND	55.0						0	0	30	
Acenaphthylene	ND	55.0						0	0	30	
Acenaphthene	ND	55.0						0	0	30	
Fluorene	ND	55.0						0	0	30	
Phenanthrene	ND	55.0						0	0	30	
Anthracene	ND	55.0						0	0	30	
Fluoranthene	ND	55.0						0	0	30	

Qualifiers: B Analyte detected in the associated Method Blank
H Holding times for preparation or analysis exceeded
R RPD outside accepted recovery limits

D Dilution was required
J Analyte detected below quantitation limits
RL Reporting Limit

E Value above quantitation range
ND Not detected at the Reporting Limit
S Spike recovery outside accepted recovery limits



Date: 10/23/2012

Work Order: 1210020
CLIENT: GeoEngineers, Inc. - Redmond
Project: Rufus 2.0 WO11

QC SUMMARY REPORT
Polyaromatic Hydrocarbons by EPA Method 8270 (SIM)

Sample ID: 1210020-121BDUP	SampType: DUP	Units: µg/Kg-dry			Prep Date: 10/17/2012			RunNo: 6192			
Client ID: B21-13-2.5	Batch ID: 3448				Analysis Date: 10/18/2012			SeqNo: 123202			
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Pyrene	ND	55.0						0	0	30	
Benz(a)anthracene	ND	55.0						0	0	30	
Chrysene	ND	55.0						0	0	30	
Benzo(b)fluoranthene	ND	55.0						0	0	30	
Benzo(k)fluoranthene	ND	55.0						0	0	30	
Benzo(a)pyrene	ND	55.0						0	0	30	
Indeno(1,2,3-cd)pyrene	ND	55.0						0	0	30	
Dibenz(a,h)anthracene	ND	55.0						0	0	30	
Benzo(g,h,i)perylene	ND	55.0						0	0	30	
Surr: 2-Fluorobiphenyl	653		550.0		119	50.4	142		0		
Surr: Terphenyl-d14 (surr)	668		550.0		122	48.8	157		0		

Sample ID: MB-3447	SampType: MBLK	Units: µg/Kg			Prep Date: 10/16/2012			RunNo: 6218			
Client ID: MBLKS	Batch ID: 3447	Analysis Date: 10/18/2012						SeqNo: 123603			
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Naphthalene	ND	50.0									
2-Methylnaphthalene	ND	50.0									
1-Methylnaphthalene	ND	50.0									
Acenaphthylene	ND	50.0									
Acenaphthene	ND	50.0									
Fluorene	ND	50.0									
Phenanthrene	ND	50.0									
Anthracene	ND	50.0									
Fluoranthene	ND	50.0									
Pyrene	ND	50.0									
Benz(a)anthracene	ND	50.0									
Chrysene	ND	50.0									

Qualifiers:

B	Analyte detected in the associated Method Blank	D	Dilution was required	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits	ND	Not detected at the Reporting Limit
R	RPD outside accepted recovery limits	RL	Reporting Limit	S	Spike recovery outside accepted recovery limits



Date: 10/23/2012

Work Order: 1210020

CLIENT: GeoEngineers, Inc. - Redmond

Project: Rufus 2.0 WO11

QC SUMMARY REPORT

Polyaromatic Hydrocarbons by EPA Method 8270 (SIM)

Sample ID: MB-3447	SampType: MBLK	Units: µg/Kg				Prep Date: 10/16/2012			RunNo: 6218		
Client ID: MBLKS	Batch ID: 3447	Analysis Date: 10/18/2012							SeqNo: 123603		
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzo(b)fluoranthene	ND	50.0									
Benzo(k)fluoranthene	ND	50.0									
Benzo(a)pyrene	ND	50.0									
Indeno(1,2,3-cd)pyrene	ND	50.0									
Dibenz(a,h)anthracene	ND	50.0									
Benzo(g,h,i)perylene	ND	50.0									
Surr: 2-Fluorobiphenyl	422		500.0		84.4	50.4	142				
Surr: Terphenyl-d14 (surr)	430		500.0		86.0	48.8	157				

Sample ID: LCS-3447	SampType: LCS	Units: µg/Kg				Prep Date: 10/16/2012			RunNo: 6218		
Client ID: LCSS	Batch ID: 3447	Analysis Date: 10/18/2012						SeqNo: 123604			
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Naphthalene	985	50.0	1,000	0	98.5	77.4	119				
2-Methylnaphthalene	1,050	50.0	1,000	0	105	77.1	122				
1-Methylnaphthalene	1,020	50.0	1,000	0	102	77.9	120				
Acenaphthylene	1,140	50.0	1,000	0	114	75.2	125				
Acenaphthene	1,020	50.0	1,000	0	102	76	120				
Fluorene	1,020	50.0	1,000	0	102	75.8	125				
Phenanthrene	959	50.0	1,000	0	95.9	74.2	121				
Anthracene	1,070	50.0	1,000	0	107	71.7	129				
Fluoranthene	1,060	50.0	1,000	0	106	68.3	135				
Pyrene	1,050	50.0	1,000	0	105	66.7	134				
Benz(a)anthracene	1,120	50.0	1,000	0	112	57.9	150				
Chrysene	950	50.0	1,000	0	95.0	76.1	123				
Benzo(b)fluoranthene	1,080	50.0	1,000	0	108	61.2	142				
Benzo(k)fluoranthene	1,110	50.0	1,000	0	111	68.1	134				
Benzo(a)pyrene	1,030	50.0	1,000	0	103	58.1	146				

Qualifiers: B Analyte detected in the associated Method Blank
H Holding times for preparation or analysis exceeded
R RPD outside accepted recovery limits

D Dilution was required
J Analyte detected below quantitation limits
RL Reporting Limit

E Value above quantitation range
ND Not detected at the Reporting Limit
S Spike recovery outside accepted recovery limits



Date: 10/23/2012

Work Order: 1210020

CLIENT: GeoEngineers, Inc. - Redmond

Project: Rufus 2.0 WO11

QC SUMMARY REPORT

Polyaromatic Hydrocarbons by EPA Method 8270 (SIM)

Sample ID: LCS-3447	SampType: LCS	Units: µg/Kg				Prep Date: 10/16/2012			RunNo: 6218		
Client ID: LCSS	Batch ID: 3447					Analysis Date: 10/18/2012			SeqNo: 123604		
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Indeno(1,2,3-cd)pyrene	1,130	50.0	1,000	0	113	63.8	138				
Dibenz(a,h)anthracene	1,120	50.0	1,000	0	112	60.8	143				
Benzo(g,h,i)perylene	1,010	50.0	1,000	0	101	63.7	136				
Surr: 2-Fluorobiphenyl	538		500.0		108	50.4	142				
Surr: Terphenyl-d14 (surr)	618		500.0		124	48.8	157				

Sample ID: 1210020-003BMS	SampType: MS	Units: µg/Kg-dry				Prep Date: 10/16/2012		RunNo: 6218			
Client ID: B21-3-7.5	Batch ID: 3447	Analysis Date: 10/18/2012						SeqNo: 123606			
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Naphthalene	1,140	59.8	1,196	0	95.3	42.9	138				
2-Methylnaphthalene	1,300	59.8	1,196	0	108	42.8	151				
1-Methylnaphthalene	1,290	59.8	1,196	0	108	41.6	148				
Acenaphthylene	1,590	59.8	1,196	0	133	32.6	160				
Acenaphthene	1,190	59.8	1,196	0	99.8	46.3	142				
Fluorene	1,240	59.8	1,196	0	103	43.4	153				
Phenanthrene	1,130	59.8	1,196	0	94.6	45.5	140				
Anthracene	1,270	59.8	1,196	0	106	32.6	160				
Fluoranthene	1,300	59.8	1,196	0	109	44.6	161				
Pyrene	1,280	59.8	1,196	0	107	48.3	158				
Benz(a)anthracene	1,430	59.8	1,196	0	120	57.5	169				
Chrysene	1,120	59.8	1,196	0	93.7	45.2	146				
Benzo(b)fluoranthene	1,340	59.8	1,196	0	112	42.2	168				
Benzo(k)fluoranthene	1,340	59.8	1,196	0	112	48	161				
Benzo(a)pyrene	1,270	59.8	1,196	0	106	34.4	179				
Indeno(1,2,3-cd)pyrene	1,370	59.8	1,196	0	115	41.1	165				
Dibenz(a,h)anthracene	1,370	59.8	1,196	0	114	38.1	166				
Benzo(g,h,i)perylene	1,200	59.8	1,196	0	101	45.6	157				

Qualifiers:

B	Analyte detected in the associated Method Blank
H	Holding times for preparation or analysis exceeded
R	RPD outside accepted recovery limits

D	Dilution was required
J	Analyte detected below quantitation limits
RL	Reporting Limit

E	Value above quantitation range
ND	Not detected at the Reporting Limit
S	Spike recovery outside accepted recovery limits



Date: 10/23/2012

Work Order: 1210020

CLIENT: GeoEngineers, Inc. - Redmond

Project: Rufus 2.0 WO11

QC SUMMARY REPORT

Polyaromatic Hydrocarbons by EPA Method 8270 (SIM)

Sample ID: 1210020-003BMS		SampType: MS		Units: µg/Kg-dry		Prep Date: 10/16/2012			RunNo: 6218			
Client ID: B21-3-7.5		Batch ID: 3447					Analysis Date: 10/18/2012			SeqNo: 123606		
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual	

Surr: 2-Fluorobiphenyl	642		598.0		107	50.4	142				
Surr: Terphenyl-d14 (surr)	730		598.0		122	48.8	157				

Sample ID: 1210020-014BDUP		SampType: DUP		Units: µg/Kg-dry		Prep Date: 10/16/2012		RunNo: 6218			
Client ID: B21-4-5.0		Batch ID: 3447				Analysis Date: 10/18/2012		SeqNo: 123608			
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Naphthalene	ND	52.3						0	0	30	
2-Methylnaphthalene	ND	52.3						0	0	30	
1-Methylnaphthalene	ND	52.3						0	0	30	
Acenaphthylene	ND	52.3						0	0	30	
Acenaphthene	ND	52.3						0	0	30	
Fluorene	ND	52.3						0	0	30	
Phenanthrene	ND	52.3						0	0	30	
Anthracene	ND	52.3						0	0	30	
Fluoranthene	ND	52.3						0	0	30	
Pyrene	ND	52.3						0	0	30	
Benz(a)anthracene	ND	52.3						0	0	30	
Chrysene	ND	52.3						0	0	30	
Benzo(b)fluoranthene	ND	52.3						0	0	30	
Benzo(k)fluoranthene	ND	52.3						0	0	30	
Benzo(a)pyrene	ND	52.3						0	0	30	
Indeno(1,2,3-cd)pyrene	ND	52.3						0	0	30	
Dibenz(a,h)anthracene	ND	52.3						0	0	30	
Benzo(g,h,i)perylene	ND	52.3						0	0	30	
Surr: 2-Fluorobiphenyl	378		523.4		72.2	50.4	142		0		
Surr: Terphenyl-d14 (surr)	367		523.4		70.0	48.8	157		0		

Qualifiers:

B	Analyte detected in the associated Method Blank
H	Holding times for preparation or analysis exceeded
R	RPD outside accepted recovery limits

D	Dilution was required
J	Analyte detected below quantitation limits
RL	Reporting Limit

E	Value above quantitation range
ND	Not detected at the Reporting Limit
S	Spike recovery outside accepted recovery limits



Date: 10/23/2012

Work Order: 1210020
CLIENT: GeoEngineers, Inc. - Redmond
Project: Rufus 2.0 WO11

QC SUMMARY REPORT
Polyaromatic Hydrocarbons by EPA Method 8270 (SIM)

Sample ID: CCV-3447B	SampType: CCV	Units: µg/Kg				Prep Date: 10/19/2012			RunNo: 6218		
Client ID: CCV	Batch ID: 3447	Analysis Date: 10/19/2012						SeqNo: 123774			
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Naphthalene	1,070	50.0	1,000	0	107	80	120				
2-Methylnaphthalene	1,120	50.0	1,000	0	112	80	120				
1-Methylnaphthalene	1,110	50.0	1,000	0	111	80	120				
Acenaphthylene	1,190	50.0	1,000	0	119	80	120				
Acenaphthene	1,060	50.0	1,000	0	106	80	120				
Fluorene	1,110	50.0	1,000	0	111	80	120				
Phenanthrene	1,060	50.0	1,000	0	106	80	120				
Anthracene	1,160	50.0	1,000	0	116	80	120				
Fluoranthene	1,190	50.0	1,000	0	119	80	120				
Pyrene	1,170	50.0	1,000	0	117	80	120				
Benz(a)anthracene	1,130	50.0	1,000	0	113	80	120				
Chrysene	1,050	50.0	1,000	0	105	80	120				
Benzo(b)fluoranthene	869	50.0	1,000	0	86.9	80	120				
Benzo(k)fluoranthene	1,180	50.0	1,000	0	118	80	120				
Benzo(a)pyrene	891	50.0	1,000	0	89.1	80	120				
Indeno(1,2,3-cd)pyrene	933	50.0	1,000	0	93.3	80	120				
Dibenz(a,h)anthracene	894	50.0	1,000	0	89.4	80	120				
Benzo(g,h,i)perylene	957	50.0	1,000	0	95.7	80	120				
Surr: 2-Fluorobiphenyl	500		500.0		100	50.4	142				
Surr: Terphenyl-d14 (surr)	529		500.0		106	48.8	157				

Qualifiers:	B	Analyte detected in the associated Method Blank	D	Dilution was required	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits	ND	Not detected at the Reporting Limit
	R	RPD outside accepted recovery limits	RL	Reporting Limit	S	Spike recovery outside accepted recovery limits



Date: 10/23/2012

Work Order: 1210020
CLIENT: GeoEngineers, Inc. - Redmond
Project: Rufus 2.0 WO11

QC SUMMARY REPORT

Gasoline by NWTPH-Gx

Sample ID: 1210020-003ADUP		SampType: DUP		Units: mg/Kg-dry		Prep Date: 10/15/2012			RunNo: 6222			
Client ID: B21-3-7.5		Batch ID: R6222					Analysis Date: 10/16/2012			SeqNo: 123688		
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual	

Gasoline	ND	5.92						0	0	30	
Surr: 1,2-Dichloroethane-d4	0.633		0.5922		107	65	135		0		
Surr: Fluorobenzene	0.596		0.5922		101	65	135		0		

Sample ID: LCS-R6222		SampType: LCS			Units: mg/Kg		Prep Date: 10/15/2012			RunNo: 6222		
Client ID: LCSS		Batch ID: R6222			Analysis Date: 10/16/2012			SeqNo: 123710				
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual	

Gasoline	21.9	5.00	25.00	0	87.5	65	135				
Surr: 1,2-Dichloroethane-d4	0.534		0.5000		107	65	135				
Surr: Fluorobenzene	0.505		0.5000		101	65	135				

Sample ID: MB-R6222		SampType: MBLK			Units: mg/Kg		Prep Date: 10/15/2012			RunNo: 6222		
Client ID: MBLKS		Batch ID: R6222			Analysis Date: 10/16/2012					SeqNo: 123711		
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual	

Gasoline	ND	5.00									
Surr: 1,2-Dichloroethane-d4	0.540		0.5000		108	65	135				
Surr: Fluorobenzene	0.497		0.5000		99.4	65	135				

Sample ID: 1210020-146ADUP		SampType: DUP			Units: mg/Kg-dry		Prep Date: 10/16/2012		RunNo: 6251		
Client ID: B21-15-5.0		Batch ID: R6251			Analysis Date: 10/17/2012				SeqNo: 124177		
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Gasoline	ND	5.11						0	0	30	
Surr: 1,2-Dichloroethane-d4	0.569		0.5108		111	65	135		0		
Surr: Fluorobenzene	0.514		0.5108		101	65	135		0		

Qualifiers:

B	Analyte detected in the associated Method Blank	D	Dilution was required	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits	ND	Not detected at the Reporting Limit
R	RPD outside accepted recovery limits	RL	Reporting Limit	S	Spike recovery outside accepted recovery limits



Date: 10/23/2012

Work Order: 1210020
CLIENT: GeoEngineers, Inc. - Redmond
Project: Rufus 2.0 WO11

QC SUMMARY REPORT

Gasoline by NWTPH-Gx

Sample ID: 1210020-146ADUP		SampType: DUP			Units: mg/Kg-dry		Prep Date: 10/16/2012			RunNo: 6251		
Client ID: B21-15-5.0		Batch ID: R6251			Analysis Date: 10/17/2012			SeqNo: 124177				
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual	

Sample ID: MB-R6251	SampType: MBLK	Units: mg/Kg				Prep Date: 10/16/2012			RunNo: 6251		
Client ID: MBLKS	Batch ID: R6251					Analysis Date: 10/17/2012			SeqNo: 124196		
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Gasoline	ND	5.00									
Surr: 1,2-Dichloroethane-d4	0.564		0.5000		113	65	135				
Surr: Fluorobenzene	0.516		0.5000		103	65	135				

Sample ID: LCS-R6251		SampType: LCS		Units: mg/Kg		Prep Date: 10/16/2012		RunNo: 6251			
Client ID: LCSS		Batch ID: R6251				Analysis Date: 10/17/2012		SeqNo: 124198			
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Gasoline	19.5	5.00	25.00	0	78.1	65	135				
Surr: 1,2-Dichloroethane-d4	0.542		0.5000		108	65	135				
Surr: Fluorobenzene	0.502		0.5000		100	65	135				

Qualifiers:

B	Analyte detected in the associated Method Blank	D	Dilution was required	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits	ND	Not detected at the Reporting Limit
R	RPD outside accepted recovery limits	RL	Reporting Limit	S	Spike recovery outside accepted recovery limits



Date: 10/23/2012

Work Order: 1210020
CLIENT: GeoEngineers, Inc. - Redmond
Project: Rufus 2.0 WO11

QC SUMMARY REPORT
Volatile Organic Compounds by EPA Method 8260

Sample ID: 1210020-003ADUP	SampType: DUP	Units: mg/Kg-dry			Prep Date: 10/15/2012			RunNo: 6221			
Client ID: B21-3-7.5	Batch ID: 3439	Analysis Date: 10/16/2012						SeqNo: 123659			
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Dichlorodifluoromethane (CFC-12)	ND	0.0711						0	0	30	
Chloromethane	ND	0.0711						0	0	30	
Vinyl chloride	ND	0.00237						0	0	30	
Bromomethane	ND	0.107						0	0	30	
Trichlorofluoromethane (CFC-11)	ND	0.0592						0	0	30	
Chloroethane	ND	0.0711						0	0	30	
1,1-Dichloroethene	ND	0.0592						0	0	30	
Methylene chloride	ND	0.0237						0	0	30	
trans-1,2-Dichloroethene	ND	0.0237						0	0	30	
Methyl tert-butyl ether (MTBE)	ND	0.0592						0	0	30	
1,1-Dichloroethane	ND	0.0237						0	0	30	
2,2-Dichloropropane	ND	0.0592						0	0	30	
cis-1,2-Dichloroethene	ND	0.0237						0	0	30	
Chloroform	ND	0.0237						0	0	30	
1,1,1-Trichloroethane (TCA)	ND	0.0237						0	0	30	
1,1-Dichloropropene	ND	0.0237						0	0	30	
Carbon tetrachloride	ND	0.0237						0	0	30	
1,2-Dichloroethane	ND	0.0355						0	0	30	
Benzene	ND	0.0237						0	0	30	
Trichloroethene (TCE)	ND	0.0355						0	0	30	
1,2-Dichloropropane	ND	0.0237						0	0	30	
Bromodichloromethane	ND	0.0237						0	0	30	
Dibromomethane	ND	0.0474						0	0	30	
cis-1,3-Dichloropropene	ND	0.0237						0	0	30	
Toluene	ND	0.0237						0	0	30	
trans-1,3-Dichloropropene	ND	0.0355						0	0	30	
1,1,2-Trichloroethane	ND	0.0355						0	0	30	
1,3-Dichloropropane	ND	0.0592						0	0	30	
Tetrachloroethene (PCE)	ND	0.0237						0	0	30	

Qualifiers: B Analyte detected in the associated Method Blank
H Holding times for preparation or analysis exceeded
R RPD outside accepted recovery limits

D Dilution was required
J Analyte detected below quantitation limits
RL Reporting Limit

E Value above quantitation range
ND Not detected at the Reporting Limit
S Spike recovery outside accepted recovery limits



Date: 10/23/2012

Work Order: 1210020

CLIENT: GeoEngineers, Inc. - Redmond

Project: Rufus 2.0 WO11

QC SUMMARY REPORT

Volatile Organic Compounds by EPA Method 8260

Sample ID: 1210020-003ADUP	SampType: DUP	Units: mg/Kg-dry				Prep Date: 10/15/2012			RunNo: 6221		
Client ID: B21-3-7.5	Batch ID: 3439	Analysis Date: 10/16/2012						SeqNo: 123659			
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Dibromochloromethane	ND	0.0355						0	0	30	
1,2-Dibromoethane (EDB)	ND	0.00592						0	0	30	
Chlorobenzene	ND	0.0237						0	0	30	
1,1,1,2-Tetrachloroethane	ND	0.0355						0	0	30	
Ethylbenzene	ND	0.0355						0	0	30	
m,p-Xylene	ND	0.0237						0	0	30	
o-Xylene	ND	0.0237						0	0	30	
Styrene	ND	0.0237						0	0	30	
Isopropylbenzene	ND	0.0948						0	0	30	
Bromoform	ND	0.0237						0	0	30	
1,1,2,2-Tetrachloroethane	ND	0.0237						0	0	30	
n-Propylbenzene	ND	0.0237						0	0	30	
Bromobenzene	ND	0.0355						0	0	30	
1,3,5-Trimethylbenzene	ND	0.0237						0	0	30	
2-Chlorotoluene	ND	0.0237						0	0	30	
4-Chlorotoluene	ND	0.0237						0	0	30	
tert-Butylbenzene	ND	0.0237						0	0	30	
1,2,3-Trichloropropane	ND	0.0237						0	0	30	
1,2,4-Trichlorobenzene	ND	0.0592						0	0	30	
sec-Butylbenzene	ND	0.0237						0	0	30	
4-Isopropyltoluene	ND	0.0237						0	0	30	
1,3-Dichlorobenzene	ND	0.0237						0	0	30	
1,4-Dichlorobenzene	ND	0.0237						0	0	30	
n-Butylbenzene	ND	0.0237						0	0	30	
1,2-Dichlorobenzene	ND	0.0237						0	0	30	
1,2-Dibromo-3-chloropropane	ND	0.0355						0	0	30	
1,2,4-Trimethylbenzene	ND	0.0237						0	0	30	
Hexachlorobutadiene	ND	0.118						0	0	30	
Naphthalene	ND	0.0355						0	0	30	

Qualifiers: B Analyte detected in the associated Method Blank
H Holding times for preparation or analysis exceeded
R RPD outside accepted recovery limits

D Dilution was required
J Analyte detected below quantitation limits
RL Reporting Limit

E Value above quantitation range
ND Not detected at the Reporting Limit
S Spike recovery outside accepted recovery limits



Date: 10/23/2012

Work Order: 1210020
CLIENT: GeoEngineers, Inc. - Redmond
Project: Rufus 2.0 WO11

QC SUMMARY REPORT

Volatile Organic Compounds by EPA Method 8260

Sample ID: 1210020-003ADUP	SampType: DUP	Units: mg/Kg-dry			Prep Date: 10/15/2012			RunNo: 6221			
Client ID: B21-3-7.5	Batch ID: 3439				Analysis Date: 10/16/2012			SeqNo: 123659			
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
1,2,3-Trichlorobenzene	ND	0.0237						0	0	30	
Surr: 1-Bromo-4-fluorobenzene	0.603		0.5922		102	63.1	141		0		
Surr: Dibromofluoromethane	0.582		0.5922		98.3	67.6	119		0		
Surr: Toluene-d8	0.603		0.5922		102	78.5	126		0		

Sample ID: 1210020-014AMS	SampType: MS	Units: mg/Kg-dry			Prep Date: 10/15/2012			RunNo: 6221			
Client ID: B21-4-5.0	Batch ID: 3439				Analysis Date: 10/16/2012			SeqNo: 123667			
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Dichlorodifluoromethane (CFC-12)	0.283	0.0602	0.5019	0	56.3	43.5	121				
Chloromethane	0.405	0.0602	0.5019	0	80.7	45	130				
Vinyl chloride	0.388	0.00201	0.5019	0	77.4	51.2	146				
Bromomethane	0.414	0.0903	0.5019	0	82.4	70	130				
Trichlorofluoromethane (CFC-11)	0.341	0.0502	0.5019	0	68.0	52.2	132				
Chloroethane	0.463	0.0602	0.5019	0	92.3	43.8	117				
1,1-Dichloroethene	0.401	0.0502	0.5019	0	80.0	61.9	141				
Methylene chloride	0.394	0.0201	0.5019	0	78.5	54.7	142				
trans-1,2-Dichloroethene	0.409	0.0201	0.5019	0	81.4	52	136				
Methyl tert-butyl ether (MTBE)	0.341	0.0502	0.5019	0	68.0	54.4	132				
1,1-Dichloroethane	0.394	0.0201	0.5019	0	78.6	51.8	141				
2,2-Dichloropropane	0.334	0.0502	0.5019	0	66.6	36	123				
cis-1,2-Dichloroethene	0.390	0.0201	0.5019	0	77.7	58.6	136				
Chloroform	0.381	0.0201	0.5019	0	75.9	53.2	129				
1,1,1-Trichloroethane (TCA)	0.388	0.0201	0.5019	0	77.3	58.3	145				
1,1-Dichloropropene	0.389	0.0201	0.5019	0	77.6	55.1	138				
Carbon tetrachloride	0.357	0.0201	0.5019	0	71.1	53.3	144				
1,2-Dichloroethane	0.356	0.0301	0.5019	0	71.0	51.3	139				
Benzene	0.390	0.0201	0.5019	0	77.8	63.5	133				

Qualifiers:

B	Analyte detected in the associated Method Blank	D	Dilution was required	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits	ND	Not detected at the Reporting Limit
R	RPD outside accepted recovery limits	RL	Reporting Limit	S	Spike recovery outside accepted recovery limits



Date: 10/23/2012

Work Order: 1210020
CLIENT: GeoEngineers, Inc. - Redmond
Project: Rufus 2.0 WO11

QC SUMMARY REPORT

Volatile Organic Compounds by EPA Method 8260

Sample ID: 1210020-014AMS	SampType: MS	Units: mg/Kg-dry				Prep Date: 10/15/2012			RunNo: 6221		
Client ID: B21-4-5.0	Batch ID: 3439	Analysis Date: 10/16/2012							SeqNo: 123667		
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Trichloroethene (TCE)	0.388	0.0301	0.5019	0	77.3	68.6	132				
1,2-Dichloropropane	0.391	0.0201	0.5019	0	77.9	59	136				
Bromodichloromethane	0.357	0.0201	0.5019	0	71.2	50.7	141				
Dibromomethane	0.361	0.0401	0.5019	0	71.9	50.6	137				
cis-1,3-Dichloropropene	0.357	0.0201	0.5019	0	71.2	52.3	129				
Toluene	0.388	0.0201	0.5019	0	77.4	67.8	129				
trans-1,3-Dichloropropene	0.341	0.0301	0.5019	0	67.9	52.2	138				
1,1,2-Trichloroethane	0.357	0.0301	0.5019	0	71.2	51.6	137				
1,3-Dichloropropane	0.339	0.0502	0.5019	0	67.6	53.1	134				
Tetrachloroethene (PCE)	0.331	0.0201	0.5019	0	66.0	44.1	141				
Dibromochloromethane	0.356	0.0301	0.5019	0	70.9	55.3	140				
1,2-Dibromoethane (EDB)	0.375	0.00502	0.5019	0	74.7	50.4	136				
Chlorobenzene	0.357	0.0201	0.5019	0	71.2	60	133				
1,1,1,2-Tetrachloroethane	0.357	0.0301	0.5019	0	71.2	53.1	142				
Ethylbenzene	0.371	0.0301	0.5019	0	73.9	54.5	134				
m,p-Xylene	0.715	0.0201	1.004	0	71.2	53.1	132				
o-Xylene	0.366	0.0201	0.5019	0	72.9	53.3	139				
Styrene	0.354	0.0201	0.5019	0	70.6	51.1	132				
Isopropylbenzene	0.360	0.0803	0.5019	0	71.7	58.9	138				
Bromoform	0.312	0.0201	0.5019	0	62.2	57.9	130				
1,1,2,2-Tetrachloroethane	0.325	0.0201	0.5019	0	64.7	51.9	131				
n-Propylbenzene	0.353	0.0201	0.5019	0	70.4	53.6	140				
Bromobenzene	0.340	0.0301	0.5019	0	67.7	54.2	140				
1,3,5-Trimethylbenzene	0.359	0.0201	0.5019	0	71.5	51.8	136				
2-Chlorotoluene	0.359	0.0201	0.5019	0	71.5	51.6	136				
4-Chlorotoluene	0.412	0.0201	0.5019	0	82.0	50.1	139				
tert-Butylbenzene	0.373	0.0201	0.5019	0	74.4	50.5	135				
1,2,3-Trichloropropane	0.312	0.0201	0.5019	0	62.2	50.5	131				
1,2,4-Trichlorobenzene	0.343	0.0502	0.5019	0	68.4	50.8	130				

Qualifiers:	B	Analyte detected in the associated Method Blank	D	Dilution was required	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits	ND	Not detected at the Reporting Limit
	R	RPD outside accepted recovery limits	RL	Reporting Limit	S	Spike recovery outside accepted recovery limits



Date: 10/23/2012

Work Order: 1210020
CLIENT: GeoEngineers, Inc. - Redmond
Project: Rufus 2.0 WO11

QC SUMMARY REPORT

Volatile Organic Compounds by EPA Method 8260

Sample ID: 1210020-014AMS	SampType: MS	Units: mg/Kg-dry				Prep Date: 10/15/2012			RunNo: 6221		
Client ID: B21-4-5.0	Batch ID: 3439	Analysis Date: 10/16/2012							SeqNo: 123667		
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
sec-Butylbenzene	0.366	0.0201	0.5019	0	73.0	52.6	141				
4-Isopropyltoluene	0.355	0.0201	0.5019	0	70.7	52.9	134				
1,3-Dichlorobenzene	0.325	0.0201	0.5019	0	64.8	52.6	131				
1,4-Dichlorobenzene	0.367	0.0201	0.5019	0	73.2	52.9	129				
n-Butylbenzene	0.352	0.0201	0.5019	0	70.1	52.6	130				
1,2-Dichlorobenzene	0.324	0.0201	0.5019	0	64.6	55.8	129				
1,2-Dibromo-3-chloropropane	0.287	0.0301	0.5019	0	57.1	53	129				
1,2,4-Trimethylbenzene	0.358	0.0201	0.5019	0	71.4	50.6	137				
Hexachlorobutadiene	0.396	0.100	0.5019	0	78.9	51.5	130				
Naphthalene	0.291	0.0301	0.5019	0	57.9	52.3	124				
1,2,3-Trichlorobenzene	0.293	0.0201	0.5019	0	58.3	54.4	124				
Surr: 1-Bromo-4-fluorobenzene	0.504		0.5019		100	63.1	141				
Surr: Dibromofluoromethane	0.493		0.5019		98.2	67.6	119				
Surr: Toluene-d8	0.509		0.5019		101	78.5	126				

Sample ID: LCS-3439	SampType: LCS	Units: mg/Kg				Prep Date: 10/15/2012			RunNo: 6221		
Client ID: LCSS	Batch ID: 3439	Analysis Date: 10/16/2012							SeqNo: 123683		
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Dichlorodifluoromethane (CFC-12)	0.775	0.0600	1.000	0	77.5	37.7	136				
Chloromethane	0.913	0.0600	1.000	0	91.3	38.8	132				
Vinyl chloride	0.932	0.00200	1.000	0	93.2	56.1	130				
Bromomethane	0.990	0.0900	1.000	0	99.0	44.3	149				
Trichlorofluoromethane (CFC-11)	0.904	0.0500	1.000	0	90.4	61.8	130				
Chloroethane	0.968	0.0600	1.000	0	96.8	52.2	131				
1,1-Dichloroethene	0.975	0.0500	1.000	0	97.5	64.6	134				
Methylene chloride	0.990	0.0200	1.000	0	99.0	60.6	140				
trans-1,2-Dichloroethene	0.982	0.0200	1.000	0	98.2	68.7	127				

Qualifiers:

B	Analyte detected in the associated Method Blank	D	Dilution was required	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits	ND	Not detected at the Reporting Limit
R	RPD outside accepted recovery limits	RL	Reporting Limit	S	Spike recovery outside accepted recovery limits



Date: 10/23/2012

Work Order: 1210020
CLIENT: GeoEngineers, Inc. - Redmond
Project: Rufus 2.0 WO11

QC SUMMARY REPORT
Volatile Organic Compounds by EPA Method 8260

Sample ID: LCS-3439	SampType: LCS	Units: mg/Kg				Prep Date: 10/15/2012			RunNo: 6221		
Client ID: LCSS	Batch ID: 3439	Analysis Date: 10/16/2012							SeqNo: 123683		
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Methyl tert-butyl ether (MTBE)	0.984	0.0500	1.000	0	98.4	73.4	128				
1,1-Dichloroethane	0.980	0.0200	1.000	0	98.0	65.5	132				
2,2-Dichloropropane	0.883	0.0500	1.000	0	88.3	28.1	149				
cis-1,2-Dichloroethene	0.978	0.0200	1.000	0	97.8	71.6	123				
Chloroform	1.00	0.0200	1.000	0	100	67.5	129				
1,1,1-Trichloroethane (TCA)	0.968	0.0200	1.000	0	96.8	74.4	130				
1,1-Dichloropropene	0.956	0.0200	1.000	0	95.6	72.7	131				
Carbon tetrachloride	0.944	0.0200	1.000	0	94.4	73	136				
1,2-Dichloroethane	0.967	0.0300	1.000	0	96.7	68.7	133				
Benzene	0.978	0.0200	1.000	0	97.8	74.6	124				
Trichloroethene (TCE)	0.996	0.0300	1.000	0	99.6	71.5	134				
1,2-Dichloropropane	0.913	0.0200	1.000	0	91.3	72.7	133				
Bromodichloromethane	0.910	0.0200	1.000	0	91.0	76.1	136				
Dibromomethane	0.962	0.0400	1.000	0	96.2	70	130				
cis-1,3-Dichloropropene	0.981	0.0200	1.000	0	98.1	59.1	143				
Toluene	0.988	0.0200	1.000	0	98.9	81.1	123				
trans-1,3-Dichloropropene	0.970	0.0300	1.000	0	97.0	49.2	149				
1,1,2-Trichloroethane	0.981	0.0300	1.000	0	98.1	74.5	129				
1,3-Dichloropropane	0.967	0.0500	1.000	0	96.7	70	130				
Tetrachloroethene (PCE)	1.06	0.0200	1.000	0	106	64.4	150				
Dibromochloromethane	0.981	0.0300	1.000	0	98.1	70.6	144				
1,2-Dibromoethane (EDB)	0.973	0.00500	1.000	0	97.3	70	130				
Chlorobenzene	0.962	0.0200	1.000	0	96.2	76.1	123				
1,1,1,2-Tetrachloroethane	0.984	0.0300	1.000	0	98.4	74.8	131				
Ethylbenzene	0.979	0.0300	1.000	0	97.9	74	129				
m,p-Xylene	1.92	0.0200	2.000	0	96.2	79.8	128				
o-Xylene	0.973	0.0200	1.000	0	97.3	77.3	128				
Styrene	0.972	0.0200	1.000	0	97.2	76.8	130				
Isopropylbenzene	0.967	0.0800	1.000	0	96.7	70	130				

Qualifiers:	B	Analyte detected in the associated Method Blank	D	Dilution was required	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits	ND	Not detected at the Reporting Limit
	R	RPD outside accepted recovery limits	RL	Reporting Limit	S	Spike recovery outside accepted recovery limits



Date: 10/23/2012

Work Order: 1210020
CLIENT: GeoEngineers, Inc. - Redmond
Project: Rufus 2.0 WO11

QC SUMMARY REPORT
Volatile Organic Compounds by EPA Method 8260

Sample ID: LCS-3439	SampType: LCS	Units: mg/Kg				Prep Date: 10/15/2012			RunNo: 6221		
Client ID: LCSS	Batch ID: 3439	Analysis Date: 10/16/2012							SeqNo: 123683		
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Bromoform	0.968	0.0200	1.000	0	96.8	67	154				
1,1,2,2-Tetrachloroethane	0.933	0.0200	1.000	0	93.3	61.9	139				
n-Propylbenzene	0.956	0.0200	1.000	0	95.6	78	130				
Bromobenzene	0.984	0.0300	1.000	0	98.4	49.2	144				
1,3,5-Trimethylbenzene	0.975	0.0200	1.000	0	97.5	79.7	128				
2-Chlorotoluene	0.962	0.0200	1.000	0	96.2	76.7	129				
4-Chlorotoluene	0.978	0.0200	1.000	0	97.8	77.5	125				
tert-Butylbenzene	0.933	0.0200	1.000	0	93.3	74.2	128				
1,2,3-Trichloropropane	0.953	0.0200	1.000	0	95.3	67.9	136				
1,2,4-Trichlorobenzene	0.904	0.0500	1.000	0	90.4	65.6	137				
sec-Butylbenzene	0.964	0.0200	1.000	0	96.4	75.6	133				
4-Isopropyltoluene	0.934	0.0200	1.000	0	93.4	76.8	131				
1,3-Dichlorobenzene	0.980	0.0200	1.000	0	98.0	72.8	128				
1,4-Dichlorobenzene	0.914	0.0200	1.000	0	91.4	72.6	126				
n-Butylbenzene	0.938	0.0200	1.000	0	93.8	65.3	136				
1,2-Dichlorobenzene	0.992	0.0200	1.000	0	99.2	72.8	126				
1,2-Dibromo-3-chloropropane	0.927	0.0300	1.000	0	92.6	64.3	135				
1,2,4-Trimethylbenzene	0.959	0.0200	1.000	0	95.9	77.5	129				
Hexachlorobutadiene	0.960	0.100	1.000	0	96.0	42	151				
Naphthalene	0.945	0.0300	1.000	0	94.5	64	130				
1,2,3-Trichlorobenzene	0.916	0.0200	1.000	0	91.6	62.1	140				
Surr: 1-Bromo-4-fluorobenzene	0.503		0.5000		101	63.1	141				
Surr: Dibromofluoromethane	0.496		0.5000		99.1	67.6	119				
Surr: Toluene-d8	0.507		0.5000		101	78.5	126				

Qualifiers:	B	Analyte detected in the associated Method Blank	D	Dilution was required	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits	ND	Not detected at the Reporting Limit
	R	RPD outside accepted recovery limits	RL	Reporting Limit	S	Spike recovery outside accepted recovery limits



Date: 10/23/2012

Work Order: 1210020
CLIENT: GeoEngineers, Inc. - Redmond
Project: Rufus 2.0 WO11

QC SUMMARY REPORT
Volatile Organic Compounds by EPA Method 8260

Sample ID: MB-3439	SampType: MBLK	Units: mg/Kg			Prep Date: 10/15/2012			RunNo: 6221			
Client ID: MBLKS	Batch ID: 3439	Analysis Date: 10/16/2012						SeqNo: 123684			
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Dichlorodifluoromethane (CFC-12)	ND	0.0600									
Chloromethane	ND	0.0600									
Vinyl chloride	ND	0.00200									
Bromomethane	ND	0.0900									
Trichlorofluoromethane (CFC-11)	ND	0.0500									
Chloroethane	ND	0.0600									
1,1-Dichloroethene	ND	0.0500									
Methylene chloride	ND	0.0200									
trans-1,2-Dichloroethene	ND	0.0200									
Methyl tert-butyl ether (MTBE)	ND	0.0500									
1,1-Dichloroethane	ND	0.0200									
2,2-Dichloropropane	ND	0.0500									
cis-1,2-Dichloroethene	ND	0.0200									
Chloroform	ND	0.0200									
1,1,1-Trichloroethane (TCA)	ND	0.0200									
1,1-Dichloropropene	ND	0.0200									
Carbon tetrachloride	ND	0.0200									
1,2-Dichloroethane	ND	0.0300									
Benzene	ND	0.0200									
Trichloroethene (TCE)	ND	0.0300									
1,2-Dichloropropane	ND	0.0200									
Bromodichloromethane	ND	0.0200									
Dibromomethane	ND	0.0400									
cis-1,3-Dichloropropene	ND	0.0200									
Toluene	ND	0.0200									
trans-1,3-Dichloropropene	ND	0.0300									
1,1,2-Trichloroethane	ND	0.0300									
1,3-Dichloropropane	ND	0.0500									
Tetrachloroethene (PCE)	ND	0.0200									

Qualifiers:	B	Analyte detected in the associated Method Blank	D	Dilution was required	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits	ND	Not detected at the Reporting Limit
	R	RPD outside accepted recovery limits	RL	Reporting Limit	S	Spike recovery outside accepted recovery limits



Date: 10/23/2012

Work Order: 1210020
CLIENT: GeoEngineers, Inc. - Redmond
Project: Rufus 2.0 WO11

QC SUMMARY REPORT
Volatile Organic Compounds by EPA Method 8260

Sample ID: MB-3439	SampType: MBLK	Units: mg/Kg			Prep Date: 10/15/2012			RunNo: 6221			
Client ID: MBLKS	Batch ID: 3439	Analysis Date: 10/16/2012						SeqNo: 123684			
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Dibromochloromethane	ND	0.0300									
1,2-Dibromoethane (EDB)	ND	0.00500									
Chlorobenzene	ND	0.0200									
1,1,1,2-Tetrachloroethane	ND	0.0300									
Ethylbenzene	ND	0.0300									
m,p-Xylene	ND	0.0200									
o-Xylene	ND	0.0200									
Styrene	ND	0.0200									
Isopropylbenzene	ND	0.0800									
Bromoform	ND	0.0200									
1,1,2,2-Tetrachloroethane	ND	0.0200									
n-Propylbenzene	ND	0.0200									
Bromobenzene	ND	0.0300									
1,3,5-Trimethylbenzene	ND	0.0200									
2-Chlorotoluene	ND	0.0200									
4-Chlorotoluene	ND	0.0200									
tert-Butylbenzene	ND	0.0200									
1,2,3-Trichloropropane	ND	0.0200									
1,2,4-Trichlorobenzene	ND	0.0500									
sec-Butylbenzene	ND	0.0200									
4-Isopropyltoluene	ND	0.0200									
1,3-Dichlorobenzene	ND	0.0200									
1,4-Dichlorobenzene	ND	0.0200									
n-Butylbenzene	ND	0.0200									
1,2-Dichlorobenzene	ND	0.0200									
1,2-Dibromo-3-chloropropane	ND	0.0300									
1,2,4-Trimethylbenzene	ND	0.0200									
Hexachlorobutadiene	ND	0.100									
Naphthalene	ND	0.0300									

Qualifiers:	B	Analyte detected in the associated Method Blank	D	Dilution was required	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits	ND	Not detected at the Reporting Limit
	R	RPD outside accepted recovery limits	RL	Reporting Limit	S	Spike recovery outside accepted recovery limits



Date: 10/23/2012

Work Order: 1210020
CLIENT: GeoEngineers, Inc. - Redmond
Project: Rufus 2.0 WO11

QC SUMMARY REPORT

Volatile Organic Compounds by EPA Method 8260

Sample ID: MB-3439		SampType: MBLK		Units: mg/Kg		Prep Date: 10/15/2012			RunNo: 6221		
Client ID: MBLKS		Batch ID: 3439					Analysis Date: 10/16/2012			SeqNo: 123684	
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

1,2,3-Trichlorobenzene	ND	0.0200									
Surr: 1-Bromo-4-fluorobenzene	0.511		0.5000		102	63.1	141				
Surr: Dibromofluoromethane	0.496		0.5000		99.1	67.6	119				
Surr: Toluene-d8	0.508		0.5000		102	78.5	126				

Sample ID: 1210020-146ADUP		SampType: DUP		Units: mg/Kg-dry		Prep Date: 10/16/2012			RunNo: 6250		
Client ID: B21-15-5.0		Batch ID: 3452					Analysis Date: 10/17/2012			SeqNo: 124153	
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Dichlorodifluoromethane (CFC-12)	ND	0.0613						0	0	30	
Chloromethane	ND	0.0613						0	0	30	
Vinyl chloride	ND	0.00204						0	0	30	
Bromomethane	ND	0.0919						0	0	30	
Trichlorofluoromethane (CFC-11)	ND	0.0511						0	0	30	
Chloroethane	ND	0.0613						0	0	30	
1,1-Dichloroethene	ND	0.0511						0	0	30	
Methylene chloride	ND	0.0204						0	0	30	
trans-1,2-Dichloroethene	ND	0.0204						0	0	30	
Methyl tert-butyl ether (MTBE)	ND	0.0511						0	0	30	
1,1-Dichloroethane	ND	0.0204						0	0	30	
2,2-Dichloropropane	ND	0.0511						0	0	30	
cis-1,2-Dichloroethene	ND	0.0204						0	0	30	
Chloroform	ND	0.0204						0	0	30	
1,1,1-Trichloroethane (TCA)	ND	0.0204						0	0	30	
1,1-Dichloropropene	ND	0.0204						0	0	30	
Carbon tetrachloride	ND	0.0204						0	0	30	
1,2-Dichloroethane	ND	0.0306						0	0	30	
Benzene	ND	0.0204						0	0	30	

Qualifiers:	B	Analyte detected in the associated Method Blank	D	Dilution was required	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits	ND	Not detected at the Reporting Limit
	R	RPD outside accepted recovery limits	RL	Reporting Limit	S	Spike recovery outside accepted recovery limits



Date: 10/23/2012

Work Order: 1210020
CLIENT: GeoEngineers, Inc. - Redmond
Project: Rufus 2.0 WO11

QC SUMMARY REPORT
Volatile Organic Compounds by EPA Method 8260

Sample ID: 1210020-146ADUP	SampType: DUP	Units: mg/Kg-dry				Prep Date: 10/16/2012			RunNo: 6250		
Client ID: B21-15-5.0	Batch ID: 3452	Analysis Date: 10/17/2012						SeqNo: 124153			
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Trichloroethene (TCE)	ND	0.0306						0	0	30	
1,2-Dichloropropane	ND	0.0204						0	0	30	
Bromodichloromethane	ND	0.0204						0	0	30	
Dibromomethane	ND	0.0409						0	0	30	
cis-1,3-Dichloropropene	ND	0.0204						0	0	30	
Toluene	ND	0.0204						0	0	30	
trans-1,3-Dichloropropene	ND	0.0306						0	0	30	
1,1,2-Trichloroethane	ND	0.0306						0	0	30	
1,3-Dichloropropane	ND	0.0511						0	0	30	
Tetrachloroethene (PCE)	ND	0.0204						0	0	30	
Dibromochloromethane	ND	0.0306						0	0	30	
1,2-Dibromoethane (EDB)	ND	0.00511						0	0	30	
Chlorobenzene	ND	0.0204						0	0	30	
1,1,1,2-Tetrachloroethane	ND	0.0306						0	0	30	
Ethylbenzene	ND	0.0306						0	0	30	
m,p-Xylene	ND	0.0204						0	0	30	
o-Xylene	ND	0.0204						0	0	30	
Styrene	ND	0.0204						0	0	30	
Isopropylbenzene	ND	0.0817						0	0	30	
Bromoform	ND	0.0204						0	0	30	
1,1,2,2-Tetrachloroethane	ND	0.0204						0	0	30	
n-Propylbenzene	ND	0.0204						0	0	30	
Bromobenzene	ND	0.0306						0	0	30	
1,3,5-Trimethylbenzene	ND	0.0204						0	0	30	
2-Chlorotoluene	ND	0.0204						0	0	30	
4-Chlorotoluene	ND	0.0204						0	0	30	
tert-Butylbenzene	ND	0.0204						0	0	30	
1,2,3-Trichloropropane	ND	0.0204						0	0	30	
1,2,4-Trichlorobenzene	ND	0.0511						0	0	30	

Qualifiers: B Analyte detected in the associated Method Blank
H Holding times for preparation or analysis exceeded
R RPD outside accepted recovery limits

D Dilution was required
J Analyte detected below quantitation limits
RL Reporting Limit

E Value above quantitation range
ND Not detected at the Reporting Limit
S Spike recovery outside accepted recovery limits



Date: 10/23/2012

Work Order: 1210020
CLIENT: GeoEngineers, Inc. - Redmond
Project: Rufus 2.0 WO11

QC SUMMARY REPORT

Volatile Organic Compounds by EPA Method 8260

Sample ID: 1210020-146ADUP		SampType: DUP		Units: mg/Kg-dry		Prep Date: 10/16/2012			RunNo: 6250		
Client ID: B21-15-5.0		Batch ID: 3452					Analysis Date: 10/17/2012			SeqNo: 124153	
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
sec-Butylbenzene	ND	0.0204						0	0	30	
4-Isopropyltoluene	ND	0.0204						0	0	30	
1,3-Dichlorobenzene	ND	0.0204						0	0	30	
1,4-Dichlorobenzene	ND	0.0204						0	0	30	
n-Butylbenzene	ND	0.0204						0	0	30	
1,2-Dichlorobenzene	ND	0.0204						0	0	30	
1,2-Dibromo-3-chloropropane	ND	0.0306						0	0	30	
1,2,4-Trimethylbenzene	ND	0.0204						0	0	30	
Hexachlorobutadiene	ND	0.102						0	0	30	
Naphthalene	ND	0.0306						0	0	30	
1,2,3-Trichlorobenzene	ND	0.0204						0	0	30	
Surr: 1-Bromo-4-fluorobenzene	0.505		0.5108		98.8	63.1	141		0		
Surr: Dibromofluoromethane	0.509		0.5108		99.6	67.6	119		0		
Surr: Toluene-d8	0.515		0.5108		101	78.5	126		0		

Sample ID: 1210020-149AMS		SampType: MS		Units: mg/Kg-dry		Prep Date: 10/16/2012		RunNo: 6250			
Client ID: B21-15-12.5		Batch ID: 3452				Analysis Date: 10/17/2012		SeqNo: 124155			
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Dichlorodifluoromethane (CFC-12)	0.627	0.0728	0.6068	0	103	43.5	121				
Chloromethane	0.791	0.0728	0.6068	0	130	45	130				S
Vinyl chloride	0.708	0.00243	0.6068	0	117	51.2	146				
Bromomethane	0.504	0.109	0.6068	0	83.1	70	130				
Trichlorofluoromethane (CFC-11)	0.556	0.0607	0.6068	0	91.6	52.2	132				
Chloroethane	0.697	0.0728	0.6068	0	115	43.8	117				
1,1-Dichloroethene	0.711	0.0607	0.6068	0	117	61.9	141				
Methylene chloride	0.659	0.0243	0.6068	0	109	54.7	142				
trans-1,2-Dichloroethene	0.713	0.0243	0.6068	0	118	52	136				

Qualifiers:

B	Analyte detected in the associated Method Blank	D	Dilution was required	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits	ND	Not detected at the Reporting Limit
R	RPD outside accepted recovery limits	RL	Reporting Limit	S	Spike recovery outside accepted recovery limits



Date: 10/23/2012

Work Order: 1210020
CLIENT: GeoEngineers, Inc. - Redmond
Project: Rufus 2.0 WO11

QC SUMMARY REPORT

Volatile Organic Compounds by EPA Method 8260

Sample ID: 1210020-149AMS		SampType: MS		Units: mg/Kg-dry		Prep Date: 10/16/2012		RunNo: 6250			
Client ID: B21-15-12.5		Batch ID: 3452				Analysis Date: 10/17/2012		SeqNo: 124155			
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Methyl tert-butyl ether (MTBE)	0.638	0.0607	0.6068	0	105	54.4	132				
1,1-Dichloroethane	0.730	0.0243	0.6068	0	120	51.8	141				
2,2-Dichloropropane	0.548	0.0607	0.6068	0	90.3	36	123				
cis-1,2-Dichloroethene	0.721	0.0243	0.6068	0	119	58.6	136				
Chloroform	0.695	0.0243	0.6068	0	115	53.2	129				
1,1,1-Trichloroethane (TCA)	0.708	0.0243	0.6068	0	117	58.3	145				
1,1-Dichloropropene	0.714	0.0243	0.6068	0	118	55.1	138				
Carbon tetrachloride	0.639	0.0243	0.6068	0	105	53.3	144				
1,2-Dichloroethane	0.655	0.0364	0.6068	0	108	51.3	139				
Benzene	0.718	0.0243	0.6068	0	118	63.5	133				
Trichloroethene (TCE)	0.744	0.0364	0.6068	0	123	68.6	132				
1,2-Dichloropropane	0.684	0.0243	0.6068	0	113	59	136				
Bromodichloromethane	0.634	0.0243	0.6068	0	104	50.7	141				
Dibromomethane	0.649	0.0485	0.6068	0	107	50.6	137				
cis-1,3-Dichloropropene	0.630	0.0243	0.6068	0	104	52.3	129				
Toluene	0.694	0.0243	0.6068	0	114	67.8	129				
trans-1,3-Dichloropropene	0.628	0.0364	0.6068	0	104	52.2	138				
1,1,2-Trichloroethane	0.634	0.0364	0.6068	0	105	51.6	137				
1,3-Dichloropropane	0.632	0.0607	0.6068	0	104	53.1	134				
Tetrachloroethene (PCE)	0.714	0.0243	0.6068	0	118	44.1	141				
Dibromochloromethane	0.644	0.0364	0.6068	0	106	55.3	140				
1,2-Dibromoethane (EDB)	0.616	0.00607	0.6068	0	102	50.4	136				
Chlorobenzene	0.654	0.0243	0.6068	0	108	60	133				
1,1,1,2-Tetrachloroethane	0.620	0.0364	0.6068	0	102	53.1	142				
Ethylbenzene	0.661	0.0364	0.6068	0	109	54.5	134				
m,p-Xylene	1.32	0.0243	1.214	0	109	53.1	132				
o-Xylene	0.663	0.0243	0.6068	0	109	53.3	139				
Styrene	0.631	0.0243	0.6068	0	104	51.1	132				
Isopropylbenzene	0.651	0.0971	0.6068	0	107	58.9	138				

Qualifiers:	B	Analyte detected in the associated Method Blank	D	Dilution was required	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits	ND	Not detected at the Reporting Limit
	R	RPD outside accepted recovery limits	RL	Reporting Limit	S	Spike recovery outside accepted recovery limits



Date: 10/23/2012

Work Order: 1210020
CLIENT: GeoEngineers, Inc. - Redmond
Project: Rufus 2.0 WO11

QC SUMMARY REPORT
Volatile Organic Compounds by EPA Method 8260

Sample ID: 1210020-149AMS	SampType: MS	Units: mg/Kg-dry				Prep Date: 10/16/2012			RunNo: 6250		
Client ID: B21-15-12.5	Batch ID: 3452	Analysis Date: 10/17/2012							SeqNo: 124155		
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Bromoform	0.569	0.0243	0.6068	0	93.8	57.9	130				
1,1,2,2-Tetrachloroethane	0.513	0.0243	0.6068	0	84.5	51.9	131				
n-Propylbenzene	0.632	0.0243	0.6068	0	104	53.6	140				
Bromobenzene	0.636	0.0364	0.6068	0	105	54.2	140				
1,3,5-Trimethylbenzene	0.620	0.0243	0.6068	0	102	51.8	136				
2-Chlorotoluene	0.615	0.0243	0.6068	0	101	51.6	136				
4-Chlorotoluene	0.612	0.0243	0.6068	0	101	50.1	139				
tert-Butylbenzene	0.616	0.0243	0.6068	0	102	50.5	135				
1,2,3-Trichloropropane	0.579	0.0243	0.6068	0	95.4	50.5	131				
1,2,4-Trichlorobenzene	0.523	0.0607	0.6068	0	86.2	50.8	130				
sec-Butylbenzene	0.629	0.0243	0.6068	0	104	52.6	141				
4-Isopropyltoluene	0.606	0.0243	0.6068	0	99.9	52.9	134				
1,3-Dichlorobenzene	0.610	0.0243	0.6068	0	101	52.6	131				
1,4-Dichlorobenzene	0.599	0.0243	0.6068	0	98.7	52.9	129				
n-Butylbenzene	0.595	0.0243	0.6068	0	98.1	52.6	130				
1,2-Dichlorobenzene	0.587	0.0243	0.6068	0	96.8	55.8	129				
1,2-Dibromo-3-chloropropane	0.589	0.0364	0.6068	0	97.0	53	129				
1,2,4-Trimethylbenzene	0.603	0.0243	0.6068	0	99.4	50.6	137				
Hexachlorobutadiene	0.604	0.121	0.6068	0	99.6	51.5	130				
Naphthalene	0.529	0.0364	0.6068	0	87.2	52.3	124				
1,2,3-Trichlorobenzene	0.544	0.0243	0.6068	0	89.6	54.4	124				
Surr: 1-Bromo-4-fluorobenzene	0.597		0.6068		98.4	63.1	141				
Surr: Dibromofluoromethane	0.608		0.6068		100	67.6	119				
Surr: Toluene-d8	0.612		0.6068		101	78.5	126				

NOTES:

S - Outlying QC recoveries were associated with this sample. The method is in control as indicated by the LCS.

Qualifiers:	B	Analyte detected in the associated Method Blank	D	Dilution was required	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits	ND	Not detected at the Reporting Limit
	R	RPD outside accepted recovery limits	RL	Reporting Limit	S	Spike recovery outside accepted recovery limits



Date: 10/23/2012

Work Order: 1210020
CLIENT: GeoEngineers, Inc. - Redmond
Project: Rufus 2.0 WO11

QC SUMMARY REPORT
Volatile Organic Compounds by EPA Method 8260

Sample ID: MB-3452	SampType: MBLK	Units: mg/Kg			Prep Date: 10/16/2012			RunNo: 6250			
Client ID: MBLKS	Batch ID: 3452	Analysis Date: 10/17/2012						SeqNo: 124171			
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Dichlorodifluoromethane (CFC-12)	ND	0.0600									
Chloromethane	ND	0.0600									
Vinyl chloride	ND	0.00200									
Bromomethane	ND	0.0900									
Trichlorofluoromethane (CFC-11)	ND	0.0500									
Chloroethane	ND	0.0600									
1,1-Dichloroethene	ND	0.0500									
Methylene chloride	ND	0.0200									
trans-1,2-Dichloroethene	ND	0.0200									
Methyl tert-butyl ether (MTBE)	ND	0.0500									
1,1-Dichloroethane	ND	0.0200									
2,2-Dichloropropane	ND	0.0500									
cis-1,2-Dichloroethene	ND	0.0200									
Chloroform	ND	0.0200									
1,1,1-Trichloroethane (TCA)	ND	0.0200									
1,1-Dichloropropene	ND	0.0200									
Carbon tetrachloride	ND	0.0200									
1,2-Dichloroethane	ND	0.0300									
Benzene	ND	0.0200									
Trichloroethene (TCE)	ND	0.0300									
1,2-Dichloropropane	ND	0.0200									
Bromodichloromethane	ND	0.0200									
Dibromomethane	ND	0.0400									
cis-1,3-Dichloropropene	ND	0.0200									
Toluene	ND	0.0200									
trans-1,3-Dichloropropene	ND	0.0300									
1,1,2-Trichloroethane	ND	0.0300									
1,3-Dichloropropane	ND	0.0500									
Tetrachloroethene (PCE)	ND	0.0200									

Qualifiers:	B	Analyte detected in the associated Method Blank	D	Dilution was required	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits	ND	Not detected at the Reporting Limit
	R	RPD outside accepted recovery limits	RL	Reporting Limit	S	Spike recovery outside accepted recovery limits



Date: 10/23/2012

Work Order: 1210020
CLIENT: GeoEngineers, Inc. - Redmond
Project: Rufus 2.0 WO11

QC SUMMARY REPORT
Volatile Organic Compounds by EPA Method 8260

Sample ID: MB-3452	SampType: MBLK	Units: mg/Kg				Prep Date: 10/16/2012			RunNo: 6250		
Client ID: MBLKS	Batch ID: 3452					Analysis Date: 10/17/2012			SeqNo: 124171		
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Dibromochloromethane	ND	0.0300									
1,2-Dibromoethane (EDB)	ND	0.00500									
Chlorobenzene	ND	0.0200									
1,1,1,2-Tetrachloroethane	ND	0.0300									
Ethylbenzene	ND	0.0300									
m,p-Xylene	ND	0.0200									
o-Xylene	ND	0.0200									
Styrene	ND	0.0200									
Isopropylbenzene	ND	0.0800									
Bromoform	ND	0.0200									
1,1,2,2-Tetrachloroethane	ND	0.0200									
n-Propylbenzene	ND	0.0200									
Bromobenzene	ND	0.0300									
1,3,5-Trimethylbenzene	ND	0.0200									
2-Chlorotoluene	ND	0.0200									
4-Chlorotoluene	ND	0.0200									
tert-Butylbenzene	ND	0.0200									
1,2,3-Trichloropropane	ND	0.0200									
1,2,4-Trichlorobenzene	ND	0.0500									
sec-Butylbenzene	ND	0.0200									
4-Isopropyltoluene	ND	0.0200									
1,3-Dichlorobenzene	ND	0.0200									
1,4-Dichlorobenzene	ND	0.0200									
n-Butylbenzene	ND	0.0200									
1,2-Dichlorobenzene	ND	0.0200									
1,2-Dibromo-3-chloropropane	ND	0.0300									
1,2,4-Trimethylbenzene	ND	0.0200									
Hexachlorobutadiene	ND	0.100									
Naphthalene	ND	0.0300									

Qualifiers:	B	Analyte detected in the associated Method Blank	D	Dilution was required	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits	ND	Not detected at the Reporting Limit
	R	RPD outside accepted recovery limits	RL	Reporting Limit	S	Spike recovery outside accepted recovery limits



Date: 10/23/2012

Work Order: 1210020
CLIENT: GeoEngineers, Inc. - Redmond
Project: Rufus 2.0 WO11

QC SUMMARY REPORT
Volatile Organic Compounds by EPA Method 8260

Sample ID: MB-3452	SampType: MBLK	Units: mg/Kg			Prep Date: 10/16/2012			RunNo: 6250			
Client ID: MBLKS	Batch ID: 3452				Analysis Date: 10/17/2012			SeqNo: 124171			
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
1,2,3-Trichlorobenzene	ND	0.0200									
Surr: 1-Bromo-4-fluorobenzene	0.504		0.5000		101	63.1	141				
Surr: Dibromofluoromethane	0.494		0.5000		98.8	67.6	119				
Surr: Toluene-d8	0.503		0.5000		101	78.5	126				

Sample ID: LCS-3452	SampType: LCS	Units: mg/Kg			Prep Date: 10/16/2012			RunNo: 6250			
Client ID: LCSS	Batch ID: 3452	Analysis Date: 10/17/2012						SeqNo: 124174			
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Dichlorodifluoromethane (CFC-12)	0.906	0.0600	1.000	0	90.6	37.7	136				
Chloromethane	0.988	0.0600	1.000	0	98.8	38.8	132				
Vinyl chloride	0.990	0.00200	1.000	0	99.0	56.1	130				
Bromomethane	1.04	0.0900	1.000	0	104	44.3	149				
Trichlorofluoromethane (CFC-11)	1.01	0.0500	1.000	0	101	61.8	130				
Chloroethane	1.01	0.0600	1.000	0	101	52.2	131				
1,1-Dichloroethene	1.05	0.0500	1.000	0	105	64.6	134				
Methylene chloride	1.01	0.0200	1.000	0	101	60.6	140				
trans-1,2-Dichloroethene	1.03	0.0200	1.000	0	103	68.7	127				
Methyl tert-butyl ether (MTBE)	1.01	0.0500	1.000	0	101	73.4	128				
1,1-Dichloroethane	1.05	0.0200	1.000	0	105	65.5	132				
2,2-Dichloropropane	0.970	0.0500	1.000	0	97.0	28.1	149				
cis-1,2-Dichloroethene	1.04	0.0200	1.000	0	104	71.6	123				
Chloroform	1.04	0.0200	1.000	0	104	67.5	129				
1,1,1-Trichloroethane (TCA)	1.03	0.0200	1.000	0	103	74.4	130				
1,1-Dichloropropene	1.02	0.0200	1.000	0	102	72.7	131				
Carbon tetrachloride	0.994	0.0200	1.000	0	99.4	73	136				
1,2-Dichloroethane	1.02	0.0300	1.000	0	102	68.7	133				
Benzene	1.02	0.0200	1.000	0	102	74.6	124				

Qualifiers:

B	Analyte detected in the associated Method Blank	D	Dilution was required	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits	ND	Not detected at the Reporting Limit
R	RPD outside accepted recovery limits	RL	Reporting Limit	S	Spike recovery outside accepted recovery limits



Date: 10/23/2012

Work Order: 1210020
CLIENT: GeoEngineers, Inc. - Redmond
Project: Rufus 2.0 WO11

QC SUMMARY REPORT
Volatile Organic Compounds by EPA Method 8260

Sample ID: LCS-3452	SampType: LCS	Units: mg/Kg				Prep Date: 10/16/2012			RunNo: 6250		
Client ID: LCSS	Batch ID: 3452	Analysis Date: 10/17/2012							SeqNo: 124174		
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Trichloroethene (TCE)	1.07	0.0300	1.000	0	107	71.5	134				
1,2-Dichloropropane	1.03	0.0200	1.000	0	103	72.7	133				
Bromodichloromethane	0.991	0.0200	1.000	0	99.1	76.1	136				
Dibromomethane	1.02	0.0400	1.000	0	102	70	130				
cis-1,3-Dichloropropene	1.01	0.0200	1.000	0	101	59.1	143				
Toluene	1.02	0.0200	1.000	0	102	81.1	123				
trans-1,3-Dichloropropene	1.00	0.0300	1.000	0	100	49.2	149				
1,1,2-Trichloroethane	1.00	0.0300	1.000	0	100	74.5	129				
1,3-Dichloropropane	1.00	0.0500	1.000	0	100	70	130				
Tetrachloroethene (PCE)	1.12	0.0200	1.000	0	112	64.4	150				
Dibromochloromethane	0.992	0.0300	1.000	0	99.2	70.6	144				
1,2-Dibromoethane (EDB)	0.993	0.00500	1.000	0	99.3	70	130				
Chlorobenzene	1.01	0.0200	1.000	0	101	76.1	123				
1,1,1,2-Tetrachloroethane	1.01	0.0300	1.000	0	101	74.8	131				
Ethylbenzene	1.02	0.0300	1.000	0	102	74	129				
m,p-Xylene	2.07	0.0200	2.000	0	103	79.8	128				
o-Xylene	1.02	0.0200	1.000	0	102	77.3	128				
Styrene	1.01	0.0200	1.000	0	101	76.8	130				
Isopropylbenzene	1.02	0.0800	1.000	0	102	70	130				
Bromoform	0.977	0.0200	1.000	0	97.7	67	154				
1,1,2,2-Tetrachloroethane	0.906	0.0200	1.000	0	90.7	61.9	139				
n-Propylbenzene	1.02	0.0200	1.000	0	102	78	130				
Bromobenzene	1.02	0.0300	1.000	0	102	49.2	144				
1,3,5-Trimethylbenzene	1.00	0.0200	1.000	0	100	79.7	128				
2-Chlorotoluene	1.02	0.0200	1.000	0	102	76.7	129				
4-Chlorotoluene	1.01	0.0200	1.000	0	101	77.5	125				
tert-Butylbenzene	0.942	0.0200	1.000	0	94.2	74.2	128				
1,2,3-Trichloropropane	0.988	0.0200	1.000	0	98.8	67.9	136				
1,2,4-Trichlorobenzene	0.969	0.0500	1.000	0	96.9	65.6	137				

Qualifiers:	B	Analyte detected in the associated Method Blank	D	Dilution was required	E	Value above quantitation range
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Date: 10/23/2012

Work Order: 1210020
CLIENT: GeoEngineers, Inc. - Redmond
Project: Rufus 2.0 WO11

QC SUMMARY REPORT
Volatile Organic Compounds by EPA Method 8260

Sample ID: LCS-3452	SampType: LCS	Units: mg/Kg				Prep Date: 10/16/2012			RunNo: 6250		
Client ID: LCSS	Batch ID: 3452	Analysis Date: 10/17/2012							SeqNo: 124174		
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
sec-Butylbenzene	0.976	0.0200	1.000	0	97.6	75.6	133				
4-Isopropyltoluene	0.991	0.0200	1.000	0	99.1	76.8	131				
1,3-Dichlorobenzene	1.01	0.0200	1.000	0	101	72.8	128				
1,4-Dichlorobenzene	1.01	0.0200	1.000	0	101	72.6	126				
n-Butylbenzene	1.01	0.0200	1.000	0	101	65.3	136				
1,2-Dichlorobenzene	1.02	0.0200	1.000	0	102	72.8	126				
1,2-Dibromo-3-chloropropane	0.946	0.0300	1.000	0	94.6	64.3	135				
1,2,4-Trimethylbenzene	1.01	0.0200	1.000	0	101	77.5	129				
Hexachlorobutadiene	0.966	0.100	1.000	0	96.6	42	151				
Naphthalene	0.970	0.0300	1.000	0	97.0	64	130				
1,2,3-Trichlorobenzene	0.972	0.0200	1.000	0	97.2	62.1	140				
Surr: 1-Bromo-4-fluorobenzene	0.507		0.5000		101	63.1	141				
Surr: Dibromofluoromethane	0.491		0.5000		98.1	67.6	119				
Surr: Toluene-d8	0.502		0.5000		100	78.5	126				

Qualifiers:	B	Analyte detected in the associated Method Blank	D	Dilution was required	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits	ND	Not detected at the Reporting Limit
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Client Name: **GEI1**

 Work Order Number: **1210020**

 Logged by: **Troy Zehr**

 Date Received: **10/15/2012**

Chain of Custody

1. Were custodial seals present? Yes ☐ No ☐ Not Required ☒
2. Is Chain of Custody complete? Yes ☒ No ☐ Not Present ☐
3. How was the sample delivered? Client

Log In

4. Coolers are present? Yes ☒ No ☐ NA ☐
5. Was an attempt made to cool the samples? Yes ☒ No ☐ NA ☐
6. Were all coolers received at a temperature of >0° C to 10.0°C Yes ☒ No ☐ NA ☐
7. Sample(s) in proper container(s)? Yes ☒ No ☐
8. Sufficient sample volume for indicated test(s)? Yes ☒ No ☐
9. Are samples properly preserved? Yes ☒ No ☐
10. Was preservative added to bottles? Yes ☐ No ☒ NA ☐
11. Is there headspace present in VOA vials? Yes ☐ No ☐ NA ☒
12. Did all sample containers arrive in good condition?(unbroken) Yes ☒ No ☐
13. Does paperwork match bottle labels? Yes ☒ No ☐
14. Are matrices correctly identified on Chain of Custody? Yes ☒ No ☐
15. Is it clear what analyses were requested? Yes ☒ No ☐
16. Were all holding times able to be met? Yes ☒ No ☐

Special Handling (if applicable)

17. Was client notified of all discrepancies with this order? Yes ☐ No ☐ NA ☒

Person Notified:		Date:	
By Whom:		Via:	☐ eMail ☐ Phone ☐ Fax ☐ In Person
Regarding:			
Client Instructions:			

18. Additional remarks/Discrepancies

Item Information

Item #	Temp °C	Condition
Cooler 1	5.1	Good
Cooler 2	6.2	Good
Cooler 3	4.8	Good
Cooler 4	5.2	Good
Cooler 5	6.1	Good

Item #	Temp °C	Condition
Cooler 6	6.5	Good
Cooler 7	5.4	Good
Cooler 8	5.9	Good
Cooler 9	6.3	Good
Temp Blank 1	5.0	Good
Temp Blank 2	5.4	Good
Temp Blank 3	3.6	Good
Temp Blank 4	4.9	Good
Temp Blank 5	5.4	Good
Temp Blank 6	6.1	Good
Temp Blank 7	5.1	Good



Fremont

1311 N. 35th Street
Seattle, WA 98103

Tel: 206-352-3790
Fax: 206-352-7178

Chain of Custody Record

Laboratory Project No (Internal): 1210020

Page: 1 of 3

Client: GREENHILLS

Address: SEATTLE, WA

City, State, Zip: 98103

Reports To (PM): CHRIS BROWN

Project Name: GREENHILLS

Location: SEATTLE, WA

Collected by: SLG

Project No: 20494-001-11

Date: 10/8/12

Time: 17:09

Sample Name: MW 21-2 - 2.5'

Sample Date: 10/8/12

Sample Time: 0825

Sample Type: 5

Sample Depth: 2.5'

Sample Volume: 5.0'

Sample Weight: 7.5

Sample Temperature: 10.0

Sample pH: 12.5

Sample Conductivity: 15.0

Sample Dissolved: NO SAMPLE

Sample Filtered: 17.5

Sample Analyzed: 20.0

Sample Stored: 22.5

Sample Released: 24.0

Sample Comments: NO SAMPLE

Client: GREENHILLS

Address: SEATTLE, WA

City, State, Zip: 98103

Reports To (PM): CHRIS BROWN

Project Name: GREENHILLS

Location: SEATTLE, WA

Collected by: SLG

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Sample pH: 12.5

Sample Conductivity: 15.0

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Sample Filtered: 17.5

Sample Analyzed: 20.0

Sample Stored: 22.5

Sample Released: 24.0

Sample Comments: NO SAMPLE

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City, State, Zip: 98103

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Sample Analyzed: 20.0

Sample Stored: 22.5

Sample Released: 24.0

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Address: SEATTLE, WA

City, State, Zip: 98103

Reports To (PM): CHRIS BROWN

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Location: SEATTLE, WA

Collected by: SLG

Project No: 20494-001-11

Date: 10/8/12

Time: 17:09

Sample Name: MW 21-2 - 2.5'

Sample Date: 10/8/12

Sample Time: 0825

Sample Type: 5

Sample Depth: 2.5'

Sample Volume: 5.0'

Sample Weight: 7.5

Sample Temperature: 10.0

Sample pH: 12.5

Sample Conductivity: 15.0

Sample Dissolved: NO SAMPLE

Sample Filtered: 17.5

Sample Analyzed: 20.0

Sample Stored: 22.5

Sample Released: 24.0

Sample Comments: NO SAMPLE

Client: GREENHILLS

Address: SEATTLE, WA

City, State, Zip: 98103

Reports To (PM): CHRIS BROWN

Project Name: GREENHILLS

Location: SEATTLE, WA

Collected by: SLG

Project No: 20494-001-11

Date: 10/8/12

Time: 17:09

Sample Name: MW 21-2 - 2.5'

Sample Date: 10/8/12

Sample Time: 0825

Sample Type: 5

Sample Depth: 2.5'

Sample Volume: 5.0'

Sample Weight: 7.5

Sample Temperature: 10.0

Sample pH: 12.5

Sample Conductivity: 15.0

Sample Dissolved: NO SAMPLE

Sample Filtered: 17.5

Sample Analyzed: 20.0

Sample Stored: 22.5

Sample Released: 24.0

Sample Comments: NO SAMPLE

Client: GREENHILLS

Address: SEATTLE, WA

City, State, Zip: 98103

Reports To (PM): CHRIS BROWN

Project Name: GREENHILLS

Location: SEATTLE, WA

Collected by: SLG

Project No: 20494-001-11

Date: 10/8/12

Time: 17:09

Sample Name: MW 21-2 - 2.5'

Sample Date: 10/8/12

Sample Time: 0825

Sample Type: 5

Sample Depth: 2.5'

Sample Volume: 5.0'

Sample Weight: 7.5

Sample Temperature: 10.0

Sample pH: 12.5

Sample Conductivity: 15.0

Sample Dissolved: NO SAMPLE

Sample Filtered: 17.5

Sample Analyzed: 20.0

Sample Stored: 22.5

Sample Released: 24.0

Sample Comments: NO SAMPLE

Client: GREENHILLS

Address: SEATTLE, WA

City, State, Zip: 98103

Reports To (PM): CHRIS BROWN

Project Name: GREENHILLS

Location: SEATTLE, WA

Collected by: SLG

Project No: 20494-001-11

Date: 10/8/12

Time: 17:09

Sample Name: MW 21-2 - 2.5'

Sample Date: 10/8/12

Sample Time: 0825

Sample Type: 5

Sample Depth: 2.5'

Sample Volume: 5.0'

Sample Weight: 7.5

Sample Temperature: 10.0

Sample pH: 12.5

Sample Conductivity: 15.0

Sample Dissolved: NO SAMPLE

Sample Filtered: 17.5

Sample Analyzed: 20.0

Sample Stored: 22.5

Sample Released: 24.0

Sample Comments: NO SAMPLE

Client: GREENHILLS

Address: SEATTLE, WA

City, State, Zip: 98103

Reports To (PM): CHRIS BROWN

Project Name: GREENHILLS

Location: SEATTLE, WA

Collected by: SLG

Project No: 20494-001-11

Date: 10/8/12

Time: 17:09

Sample Name: MW 21-2 - 2.5'

Sample Date: 10/8/12

Sample Time: 0825

Sample Type: 5

Sample Depth: 2.5'

Sample Volume: 5.0'

Sample Weight: 7.5

Sample Temperature: 10.0

Sample pH: 12.5

Sample Conductivity: 15.0

Sample Dissolved: NO SAMPLE

Sample Filtered: 17.5

Sample Analyzed: 20.0

Sample Stored: 22.5

Sample Released: 24.0

Sample Comments: NO SAMPLE

Client: GREENHILLS

Address: SEATTLE, WA

City, State, Zip: 98103

Reports To (PM): CHRIS BROWN

Project Name: GREENHILLS

Location: SEATTLE, WA

Collected by: SLG

Project No: 20494-001-11



1311 N. 35th Street
Seattle, WA 98103

Tel: 206-352-3790
Fax: 206-352-7178

Client: GEORGINA WILSON

Address: SEATTLE, WA

City, State, Zip: SEATTLE, WA

Reports To (PM): CHRIS BROWN

Phone: 206-427-7700

Cell: 206-427-7700

Email: CBROWN@GEORGINA.COM

Project No: 20434001-11

Chain of Custody Record

Laboratory Project No (Internal): 2

Page: 3

Date: 10/8/12

Project Name: PHUS 2.0 W/011

Location: SEATTLE, WA

Collected by: SLH

Project No: 20434001-11

Sample Name	Sample Date	Sample Time	Sample Type (Matrix)	Comments/Depth
MW 21-2 - 27.5	10/8/12	0945	S	
30.0		0951		
35.0		0957		
40.0		1004		
45.0		1012		
50.0		1020		
55.0		1033		
60.0		1045		
65.0		1057		
70.0		1106		

*Metals Analysis (Circle): MTCA-5 ROA-8 TAL Individuals: Ag Al As S Ba Be Ca Cd Co Cr Cu Fe Hg K Mg Mn Mo Na Ni Pb Sb Se Sr Sn Ti Tl U V Zn

**Anions (Circle): Nitrate Nitrite Chloride Sulfate Bromide Fluoride Phosphate Nitrate+Nitrite

Sample Disposal: ☐ Return to Client ☐ Disposal by Lab (Also may be analyzed if samples are retained after 30 days)

Relinquished: John Date/Time: 10/8/12 1625 Received: Georgina Date/Time: 10/8/12 17.09

TAT --> Next Day 2 Day 3 Day STD

www.fremontanalytical.com

Distribution: White - Lab, Yellow - File, Pink - Originator



Chain of Custody Record

Fremont
1311 N. 35th Street
Seattle, WA 98103
Tel: 206-352-3790
Fax: 206-352-7178

Laboratory Project No (Internal):
Page 3 of 3

Date: 10/8/12

Client: GEORGINA WILSON
Address: SEATTLE, WA
City, State, Zip: 98101
Reports To (PM): CHRIS BROWN Tel: 206-427-7700 collected by: SC
Email: CBROWN@GEORGINAWILSON.COM Project No: 20434-001-11

Sample Name	Sample Date	Sample Time	Sample Type (Matrix)	Comments/Depth
1 MW 21-2 - 75.0	10/8/12	NO SAMPLE		
2	80.0	1130		
3	85.0	1144		
4	90.0	1200		
5	95.0	1206		
6	100.0	1237		
7	105.0	1255		
8	110.0	1320		
9				
10				

*Metals Analysis (Circle): MICA-5 RICA-8 Priority Pollutants TAL Individual: Ag Al As B Ba Be Cd Co Cr Cu Fe Hg K Mg Mn Mo Na Ni Pb Se Sn Ti U V Zn

**Anions (Circle): Nitrate Nitrite Chloride Sulfate Bromide Fluoride Urate-Hintite

Sample Disposal: ☐ Return to Client ☐ Disposal by Lab (All numbers entered if samples are not in the lab.)

Relinquished: Chris Brown Date/Time: 10/8/12 16:35 Received: Don Zeb Date/Time: 10/8/12 17:09

TAT -> Next Day 2 Day 3 Day STD

www.fremontanalytical.com

Distribution: White - Lab, Yellow - File, Pink - Original



Fremont

1311 N. 35th Street
Seattle, WA 98103

Tel: 206-351-3790
Fax: 206-352-7173

Client:

GEVENDINERS

Address:

SEATTLE WA

City, State, Zip

SEATTLE WA

Reports To (PMT):

CHRIS BROWN

Project Name:

GEVENDINERS

Location:

SEATTLE WA

Collected by:

CHRIS BROWN

Project No.:

20434-201-11

Sample Name

MW 21-1

Sample Date

10/19/12

Sample Time

0819

Sample Type (Matrix)

S

Sample ID

0819

Sample ID

0825

Sample ID

0831

Sample ID

0835

Sample ID

0842

Sample ID

0850

Sample ID

0855

Sample ID

0904

Sample ID

0925

Sample ID

0926

Sample ID

0926

Sample ID

0926

Sample ID

0926

Sample ID

0926

Sample ID

0926

Sample ID

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Sample ID

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Sample ID

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Sample ID

0926

Sample ID

0926

Sample ID

0926

Sample ID

0926

Chain of Custody Record

Laboratory Project No (for email): 1210020

Page: 1 of 3

Date: 10/10/12

Project Name:

REFUS W/O 11

Location:

SEATTLE, WA

Collected by:

SL

Reports To (PMT):

CHRIS BROWN

Project No.:

20434-201-11

Sample Name	Sample Date	Sample Time	Sample Type (Matrix)	VOC (mg/kg)	SVOC (mg/kg)	Metals (mg/kg)	Trace Metals (mg/kg)	Organics (mg/kg)	Other (mg/kg)	Comments/Details
MW 21-1	10/19/12	0819	S	X	X	X	X	X	X	
		0825								
		0831								
		0835								
		0842								
		0850								
		0855								
		0904								
		0925								
		0926								

*Metals Analysis (Circle): AL AS BA BI BR BU CA CD CO CU FE HI K MG MO NI PN PH SI SO TE TI V Zn

*Anions (Circle): NO3 PO4 SO4 CO3 Cl F Br I OH SCN AsO4 BO3 NO2 PO3 SO3 CO2 ClO4 BrO3 IO3 NO3 PO4 SO4 CO3 Cl F Br I OH SCN AsO4 BO3 NO2 PO3 SO3 CO2 ClO4 BrO3 IO3

Special Remarks: Disposal by Lab (A line may be drawn if samples are increased after 24 days)

Signature: Chris Brown Date/Time: 10/10/12 13:05
Signature: Chris Brown Date/Time: 10/10/12 13:05



Chain of Custody Record



1311 N. 35th Street
Seattle, WA 98103
Tel: 206-352-3790
Fax: 206-352-7178

Client: GREENWEEPS

Address:

City, State, Zip

SEATTLE, WA

Reports To (PMI):

CRIS PROWSE

Facility:

661-6050

Project Name:

SEATTLE, WA

Location:

SEATTLE, WA

Collected by:

516

Object No:

20424-001-1

Sample Name

PMW 21-1

Sample Date

10/10/12

Sample Time

4:00

Sample Type (Material)

NO SAMPLE

Sample ID

1010

Sample ID

1015

Sample ID

1030

Sample ID

NO SAMPLE

Sample ID

1050

Sample ID

1059

Sample ID

1116

Sample ID

NO SAMPLE

Sample ID

1050

Sample ID

1059

Sample ID

1116

Sample ID

NO SAMPLE

Sample ID

1050

Sample ID

1059

Sample ID

1116

Sample ID

NO SAMPLE

Sample ID

1050

Sample ID

1059

Sample ID

1116

Sample ID

NO SAMPLE

Sample ID

1050

Sample ID

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Sample ID

1116

Sample ID

NO SAMPLE

Sample ID

1050

Sample ID

1059

Sample ID

1116

Sample ID

NO SAMPLE

Sample ID

1050

Sample ID

1059

Sample ID

1116

Sample ID

NO SAMPLE

Sample ID

1050

Sample ID

1059

Sample ID

1116

Sample ID

NO SAMPLE

Sample ID

1050

Fremont

1311 N. 35th Street
Seattle, WA 98103
Tel: 206-352-3790
Fax: 206-352-7178

Client: GREENWEEPS

Address:

City, State, Zip

SEATTLE, WA

Reports To (PMI):

CRIS PROWSE

Facility:

661-6050

Project Name:

SEATTLE, WA

Location:

SEATTLE, WA

Collected by:

516

Object No:

20424-001-1

Sample Name

PMW 21-1

Sample Date

10/10/12

Sample Time

4:00

Sample Type (Material)

NO SAMPLE

Sample ID

1010

Sample ID

1015

Sample ID

1030

Sample ID

NO SAMPLE

Sample ID

1050

Sample ID

1059

Sample ID

1116

Sample ID

NO SAMPLE

Sample ID

1050

Sample ID

1059

Sample ID

1116

Sample ID

NO SAMPLE

Sample ID

1050

Sample ID

1059

Sample ID

1116

Sample ID

NO SAMPLE

Sample ID

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Sample ID

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NO SAMPLE

Sample ID

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Sample ID

1059

Sample ID

1116

Sample ID

NO SAMPLE

Sample ID

1050

Sample ID

1059

Sample ID

1116

Sample ID

NO SAMPLE

Sample ID

1050

Fremont

1311 N. 35th Street
Seattle, WA 98103
Tel: 206-352-3790
Fax: 206-352-7178

Client: GREENWEEPS

Address:

City, State, Zip

SEATTLE, WA

Reports To (PMI):

CRIS PROWSE

Facility:

661-6050

Project Name:

SEATTLE, WA

Location:

SEATTLE, WA

Collected by:

516

Object No:

20424-001-1

Sample Name

PMW 21-1

Sample Date

10/10/12

Sample Time

4:00

Sample Type (Material)

NO SAMPLE

Sample ID

1010

Sample ID

1015

Sample ID

1030

Sample ID

NO SAMPLE

Sample ID

1050

Sample ID

1059

Sample ID

1116

Sample ID

NO SAMPLE

Sample ID

1050

Sample ID

1059

Sample ID

1116

Sample ID

NO SAMPLE

Sample ID

1050

Sample ID

1059

Sample ID

1116

Sample ID

NO SAMPLE

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NO SAMPLE

Sample ID

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1059

Sample ID

1116

Sample ID

NO SAMPLE

Sample ID

1050

Sample ID

1059

Sample ID

1116

Sample ID

NO SAMPLE

Sample ID

1050

Fremont

1311 N. 35th Street
Seattle, WA 98103
Tel: 206-352-3790
Fax: 206-352-7178

Client: GREENWEEPS

Address:

City, State, Zip

SEATTLE, WA

Reports To (PMI):

CRIS PROWSE

Facility:

661-6050

Project Name:

SEATTLE, WA

Location:

SEATTLE, WA

Collected by:

516

Object No:



Fremont

1311 N. 35th Street
Seattle, WA 98103

Tel: 206-352-3790
Fax: 206-352-7178

Client:

GREENHILL

Address:

SEATTLE WA 98106-2847

City, State, Zip

Reports To (P/N):

CHAS BROWN 100425-861 6050 Email: CBROWN@GREENHILL.COM

Project Name:

PURUS WPT

Location:

SEATTLE WA

Collected by:

CHAS

Project No: 2042-001-11

Chain of Custody Record

Laboratory Project No (Internal):

3

Page:

3

of:

3

Date: 10/10/12

Sample Name	Sample Date	Sample Time	Sample Type (Matrix)	Comments/Depth
MW 21-1	9/5/10	10/10/12	Water	
2	9/10/10	10/10/12	Water	
3	9/10/10	10/10/12	Water	
4				
5				
6				
7				
8				
9				
10				

Metals Analysis (Circle):	MTGA-5	ACDA-3	Priority Pollutants	TAL	Individual	Ag	Al	As	Ba	Bi	Ca	Co	Cr	Cu	Fe	Hg	Mn	Mo	Ni	Pb	Sb	Se	Si	Sn	Ti	V	Zn
Analysis (Circle):																											
Sample Disposal:																											

Signature: *Chas Brown* Date/Time: 10/10/12 13:05

Signature: *Chas Brown* Date/Time: 10/10/12 13:05

Signature: *Chas Brown* Date/Time: 10/10/12 13:05

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Seattle, WA 98103
Tel: 206-352-3798
Fax: 206-352-1178

Chain of Custody Record

Laboratory Project No (Internal): _____

Page: 2 of 3

Date: 10/9/12

Client: GREENBARKERS Project Name: RUFUS W/11
Address: SEATTLE, WA Location: SEATTLE, WA
City, State, Zip: 98105 Tel: 206-421-7203 Collected by: GLH
Reports To (pm): CHRIS BROWN Fax: 206-421-6050 Email: GREENBARKERS@GEOENGINEERING.COM Project No: 20424-01-11

Sample Name	Sample Date	Sample Time	Sample Type (Initials)	Comments/Path
3 MW 21-3	30.0	10/9/12	0931	5
2	35.0		0942	
3	40.0		1040	ARE
4	45.0		1025	
5	50.0		1040	
6	55.0		1101	
7	60.0		1133	
8	65.0		1144	
9	70.0		1201	
10	75.0		1217	

*Metals Analysis (Circle): Ni-Cr-S N-Cr-S Priority Elements TAL Individual: Ag Al As B Ba Be Ca Cd Co Cr Cu Fe Hg K Mg Mn Mo Ni Pb Sb Se Si Sn Ti U V Zn

**Anions (Circle): Nitrate Nitrite Chloride Sulfate Bromide Iodide Fluoride Nitrite-Nitrate

Sample Disposal: ☐ Return to Client ☐ Disposed by Lab (a fee may be assessed if sample is returned after 30 days)

Signature: [Signature] Date/Time: 10/9/12 1600 Received: [Signature] Date/Time: 10/9/12 1637
Signature: [Signature] Date/Time: 10/9/12 1637 Received: [Signature] Date/Time: 10/9/12 1637

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Seattle, WA 98103

Tel: 206-352-3750
Fax: 206-352-7178

Chain of Custody Record

Laboratory Project No (Internal):

Page: 3 of 3

Date: 10/9/12

Client:

GREENGLASS

Address:

City, State, Zip

SEATTLE, WA

Tel: 206-421-7203

Project Name:

REPAIRS N/11

Location:

SEATTLE, WA

Collected by:

SLK

Reports To (PMMC) IS BROWN

Fax: 425-861-6050

Email: ARMAN@GREENGLASS.COM

Project No:

20434-001-11

Sample No. me	Sample Date	Sample Time	Sample Type (Matrix)	Comments/Details
1	MW 21-3	9:00	10/9/12	Hold
2	85.0	100	100	
3	90.0	1250		
4	95.0	1705		
5	100.0	1720		
6				
7				
8				
9				
10				

Metals Analysis (Circle): As Cd Cr Cu Fe Pb Zn Ag Al Ba Be Ca Cl Co Ni Na Ni Pb Se Si Sn Ti V Zn

Antions (Circle): Nitrate Nitrite Phosphate Fluoride Sulfate Bromide Chloride

Sample Disposition: ☐ Return to Client ☐ Disposal by Lab (is a hazardous waste as determined by State)

Signature: [Signature] Date/Time: 10/9/12 1600 Received: [Signature] Date/Time: 10/9/12 1637

Distributions: White - Lab, Yellow - File, Pink - Originator

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Fremont
 ALL INFORMATION CONTAINED
 HEREIN IS UNCLASSIFIED
 DATE 08-14-2010 BY 60322 UCBAW

1311 N. 35th Street
Seattle, WA 98103
Tel: 206-352-3790
Fax: 206-352-7178

Client: Geeting neers
Address: Seattle WA
City, State, Zip

Reports To (P#): CHS FEB 01 FAX: 425 861 6050 Email: chs@chsevents.net Project No: 20434-001-11

[illegible]

*Metals Analysis (Circle)	MICA-5	RCA8-8
Priority Pollutants:	TAL	Incid./Injrd.: Ag Al As B Ba Be Ca Cd Co Cr Cu F Hg K Mg Mn Mo Na Ni Pb Sb Se Sr Sn Ti Tl U V Zn

Anions	
Formula	Name
NO_3^-	Nitrate
NO_2^-	Nitrite
Cl^-	Chloride
Br^-	Bromide
PO_4^{3-}	Phosphate
F^-	Fluoride
NO_3^-	Nitrate

Sample Disposed: ☐ Return to Client ☐ Disposal by Lab (A line may be entered if samples are retained after 30 days.)

Special Remarks:

Relinquished	Date/Time	Received	Date/Time
<i>[Signature]</i>	10/5/12 1608	<i>[Signature]</i>	10/5/12 16108

FAT -->	Next Day	2 Day	3 Day	STD
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Chain of Custody Record

1311 N. 35th Street
Seattle, WA 98103

Tel: 206-352-3790
Fax: 206-352-7178

Laboratory Project No (Internal): 120020
Page: 1 of: 3

Client: Geotronics

Project Name: Ruys 2.0 2011

Address: Seattle, WA

Location: Seattle, WA

City, State, Zip: Seattle, WA 98103

Collected by: Steve Godes/Claudia DeLaVie

Reports To (PM): Chris Brown

Email: chris.brown@geotronics.com

Project No: 20434-001-11

Sample Name	Sample Date	Sample Time	Sample Type (Matrix)	Comments/Depth
B21-1-2.5	10/4	0832	S	HOLD
-5.0		0837		
-7.5		0843		
-10.0		0846		
-12.5		0850		
-15.0		0855		
-17.5		0900		
-20.0		0905		
-22.5		0910		
-25.0		0911		

*Metals Analysis (Circle): MITCA-5 RCRA-8 Priority Pollutants TAL Individual: Ag Al As B Ba Be Ca Cd Co Cr Cu Fe Hg K Mg Mn Mo Na Ni Pb Sb Se Sr Sn Ti U V Zn

**Anions (Circle): Nitrate Nitrite Sulfate Bromide Fluoride Nitrate-Nitrite

Sample Disposal: ☐ Return to Client ☐ Disposal by Lab (a fee may be assessed if samples are retained after 30 days.)

Relinquished Date/Time: 10/4/12 16:20

Relinquished Date/Time: 10/4/12 16:20

Relinquished Date/Time: 10/4/12 16:20

TAT -> Next Day 2 Day 3 Day STD

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Chain of Custody Record



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Seattle, WA 98103
Tel: 206-352-3790
Fax: 206-352-7178

Laboratory Project No (Internal): 1210020
Page: 2 of: 3
Date: 10/4/12
Project Name: Robus 2.0 10/11
Location: State Garden / Claudio De La V.
Collected by: State Garden / Claudio De La V.
Project No: 20434-001-11

Client: GeoEngineers
Address: Seattle, WA
City, State, Zip: Seattle, WA
Tel: 206 427 7706
Reports To (PM): Chris Brown
Fax:
Email:

Sample Name	Sample Date	Sample Time	Sample Type (Matrix)	Comments (Depth)
1. B21-1-30.0	10/4	0931	S	Hold
2. -35.0		0938		
3. -40.0		0950		
4. -45.0		1000		
5. -50.0		1012		
6. -55.0		1024		
7. -60.0		1035		
8. -65.0		1045		
9. -70.0		1100		
10. -75.0		1117		

**Metals Analysis (Circle): MTCA-5 RCBA-8 Priority Pollutants TAL Analyzed: Ag Al As B Ba Be Ca Cd Co Cr Cu Fe Hg K Mg Mn Mo Na Ni Pb Sb Se Sn T Ti U V Zn

**Anions (Circle): Nitrate Nitrite Chloride Sulfate Bromide Iodide Fluoride Nitrate-Nitrite

Sample Disposal: ☐ Return to Client ☐ Disposal by Lab (a fee may be assessed if samples are retained after 30 days.)

Relinquished Date/Time: 10/4/12 16:20 Received Date/Time: 10/4/12 16:20
Relinquished Signature: [Signature] Received Signature: [Signature]

TAT -> Next Day 2 Day 3 Day STD



1311 N. 35th Street
Seattle, WA 98103

Tel: 206-352-3790
Fax: 206-352-7178

CentEngineers

Client:

Address:

City, State, Zip

Seattle, WA

Tel: 206-427-7706

Location:

Collected by:

Steve Gaskin / Claudia De La Vea

Reports To (PM): Chris Brown

Fax:

Email:

Project No: 20434-001-11

Chain of Custody Record

Laboratory Project No (Internal):

1210020

Page:

3

Date:

10/4/12

Project Name:

Rubus 2.0 W011

Location:

Collected by:

Steve Gaskin / Claudia De La Vea

Email:

Project No: 20434-001-11

Sample Name	Sample Date	Sample Time	Sample Type (Matrix)	Comments/Depth
1. B21-1-800	10/4	1135	S	Hold
2. -85.0		1152		
3. -90.0		1210		
4. -95.0		1220		
5. -100.0		1235		
6. -27.5		0917		
7.				
8.				
9.				
10.				

*Metals Analysis (Circle): MT/CAS RCRA-8 Priority Pollutants TAL Individual: Ag Al As B Ba Be Cd Co Cr Cu Fe Hg K Mg Mn Mo Na Ni Pb Sn S Se Sr Ti U V Zn

**Antions (Circle): Nitrate Nitrite Nitrate-Nitrite

Sample Disposal: ☐ Return to Client ☐ Disposal by Lab (A fee may be assessed if samples are retained after 30 days.)

Refrainish at: 10/4/12 1620 Received: 10/4/12 16:20

Refrainish at: 10/4/12 1620 Received: 10/4/12 16:20

TAT --> Next Day 2 Day 3 Day STD

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Fax: 206-352-7178

Chain of Custody Record

Laboratory Project No. (Internal):
Page: 2 of 6

Project Name: Rufus 2.0 0011
Location: Claudia De La V.
Collected By: 206 4277706

Project No: 20434 - 001-11

Client: GeoEngineers
Address: 206 4277706
City, State, Zip: 206 4277706

Reports To (RM): Chris Brown Email: 206 4277706

Sample Name	Sample Date	Sample Time	Sample Type (Matrix)	Sample	Priority	PCRB	MTCA-5	Nitrate	Chloride	Sulfate	Bromide	Fluoride	Nitrate-Nitrite	Special Remarks
1 B21-11-7.5	10/8	0955	S	X										
2 -10.0	1000			X										
3 -12.5	1002			X										
4 -15.0	1005			X										
5 -17.5	1010			X										
6 -20.0	1015			X										
7 B21-12-2.5	1035			X										
8 -5.0	1040			X										
9 -7.5	1045			X										
10 -10.0	1050			X										
*Metals Analysis (Circle): MTCA-5 (PCRB) Individual: Ag Al As B Ba Be Ca Cd Co Cr Cu Fe Hg K Mg Mn Mo Na Ni Pb Sb Se Si Sn Te Th U V Zn														
**Anions (Circle): Nitrate Chloride Sulfate Bromide Fluoride Nitrate-Nitrite														
Sample Disposal: ☐ Return to Client ☒ Disposal by Lab (Note: sample is issued if sample is maintained for 30 days.)														
Received Date/Time: <u>10/8/12 17:09</u> Received Date/Time: <u>10/8/12 17:09</u>														
Signature: <u>Chris Brown</u> Signature: <u>Chris Brown</u>														
IDAT -> Next Day 2 Day 3 Day 5 Day														

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Seattle, WA 98103
Tel: 206-352-3790
Fax: 206-352-7178

Chain of Custody Record

Laboratory Project No (Internal): 3 of 6
Page: 3

Client: GeoEngineers Project Name: Rufo 20 W.O.I.
Address: Seattle, WA Location: claudia De la v.
City, State, Zip: 98103 Tel: 206 427 7706 Collected by: 206 427 7706
Reports To (PHM): Chris Brown Fax: 206 427 7706 Project No: 206 427 7706

Sample Name	Sample Date	Sample Time	Sample Type (Matrix)	Comments/Depth
B21-12-12.5	10/8	1100	S	HOLD
-15.0		1105		4 VAS + 2.8 AS
-17.5		1110		
-20.0		1115		4 VAS + 2.8 AS
B21-13-2.5		1205		
-5.0		1208		
-7.5		1210		
-10.0		1212		
-12.5		1215		
-15.0		1218		

Sample Name	Sample Date	Sample Time	Sample Type (Matrix)	Comments/Depth
B21-12-12.5	10/8	1100	S	HOLD
-15.0		1105		4 VAS + 2.8 AS
-17.5		1110		
-20.0		1115		4 VAS + 2.8 AS
B21-13-2.5		1205		
-5.0		1208		
-7.5		1210		
-10.0		1212		
-12.5		1215		
-15.0		1218		

Sample Name	Sample Date	Sample Time	Sample Type (Matrix)	Comments/Depth
B21-12-12.5	10/8	1100	S	HOLD
-15.0		1105		4 VAS + 2.8 AS
-17.5		1110		
-20.0		1115		4 VAS + 2.8 AS
B21-13-2.5		1205		
-5.0		1208		
-7.5		1210		
-10.0		1212		
-12.5		1215		
-15.0		1218		

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1311 N. 35th St.
Seattle, WA 98103
T: (206) 352-3790
F: (206) 352-7178
info@fremontanalytical.com

GeoEngineers, Inc. - Redmond
Chris Brown
8410 154th Ave. NE
Redmond, Washington 98052

RE: Rufus
Lab ID: 1210121

October 24, 2012

Attention Chris Brown:

Fremont Analytical, Inc. received 3 sample(s) on 10/15/2012 for the analyses presented in the following report.

Diesel and Heavy Oil by NWTPH-Dx/Dx Ext.
Dissolved Mercury by EPA Method 245.1
Dissolved Metals by EPA Method 200.8
Gasoline by NWTPH-Gx
Volatile Organic Compounds by EPA Method 8260

This report consists of the following:

- Case Narrative
- Analytical Results
- Applicable Quality Control Summary Reports
- Chain of Custody

All analyses were performed consistent with the Quality Assurance program of Fremont Analytical, Inc. Please contact the laboratory if you should have any questions about the results.

Thank you for using Fremont Analytical.

Sincerely,

A handwritten signature in dark ink, appearing to read "M. Dee".

Michael Dee
Sr. Chemist / Principal



Date: 10/24/2012

CLIENT: GeoEngineers, Inc. - Redmond
Project: Rufus
Lab Order: 1210121

Work Order Sample Summary

Lab Sample ID	Client Sample ID	Date/Time Collected	Date/Time Received
1210121-001	MW-21-1	10/15/2012 12:36 PM	10/15/2012 2:05 PM
1210121-002	MW-21-2	10/15/2012 10:10 AM	10/15/2012 2:05 PM
1210121-003	MW-21-3	10/15/2012 11:26 AM	10/15/2012 2:05 PM

Note: If no "Time Collected" is supplied, a default of 12:00AM is assigned

CLIENT: GeoEngineers, Inc. - Redmond**Project:** Rufus

I. SAMPLE RECEIPT:

All samples were received intact. The internal ice chest temperatures were measured on receipt and are recorded on the attached Sample Receipt Checklist.

II. GENERAL REPORTING COMMENTS:

Results are reported on a wet weight basis unless dry-weight correction is denoted in the units field on the analytical report ("mg/kg-dry" or "ug/kg-dry").

Matrix Spike (MS) and MS Duplicate (MSD) samples are tested from an analytical batch of "like" matrix to check for possible matrix effect. The MS and MSD will provide site specific matrix data only for those samples which are spiked by the laboratory. The sample chosen for spike purposes may or may not have been a sample submitted in this sample delivery group. The validity of the analytical procedures for which data is reported in this analytical report is determined by the Laboratory Control Sample (LCS) and the Method Blank (MB). The LCS and the MB are processed with the samples and the MS/MSD to ensure method criteria are achieved throughout the entire analytical process.

III. ANALYSES AND EXCEPTIONS:

Exceptions associated with this report will be footnoted in the analytical results page(s) or the quality control summary page(s) and/or noted below.



Analytical Report

WO#: 1210121

Date Reported: 10/24/2012

Client: GeoEngineers, Inc. - Redmond

Collection Date: 10/15/2012 12:36:00 P

Project: Rufus

Lab ID: 1210121-001

Matrix: Water

Client Sample ID: MW-21-1

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<u>Diesel and Heavy Oil by NWTPH-Dx/Dx Ext.</u>				Batch ID: 3453		Analyst: BR
Diesel (Fuel Oil)	ND	50.0		µg/L	1	10/17/2012 3:02:00 PM
Heavy Oil	ND	100		µg/L	1	10/17/2012 3:02:00 PM
Surr: 2-Fluorobiphenyl	105	50-150		%REC	1	10/17/2012 3:02:00 PM
Surr: o-Terphenyl	105	50-150		%REC	1	10/17/2012 3:02:00 PM

Gasoline by NWTPH-Gx

Batch ID: R6253 Analyst: EM

Gasoline	ND	50.0		µg/L	1	10/18/2012 4:49:00 AM
Surr: 1,2-Dichloroethane-d4	121	65-135		%REC	1	10/18/2012 4:49:00 AM
Surr: Fluorobenzene	103	65-135		%REC	1	10/18/2012 4:49:00 AM

Volatile Organic Compounds by EPA Method 8260

Batch ID: R6252 Analyst: EM

Dichlorodifluoromethane (CFC-12)	ND	1.00		µg/L	1	10/18/2012 4:49:00 AM
Chloromethane	ND	1.00		µg/L	1	10/18/2012 4:49:00 AM
Vinyl chloride	ND	0.200		µg/L	1	10/18/2012 4:49:00 AM
Bromomethane	ND	1.00		µg/L	1	10/18/2012 4:49:00 AM
Trichlorofluoromethane (CFC-11)	ND	1.00		µg/L	1	10/18/2012 4:49:00 AM
Chloroethane	ND	1.00		µg/L	1	10/18/2012 4:49:00 AM
1,1-Dichloroethene	ND	1.00		µg/L	1	10/18/2012 4:49:00 AM
Methylene chloride	ND	1.00		µg/L	1	10/18/2012 4:49:00 AM
trans-1,2-Dichloroethene	ND	1.00		µg/L	1	10/18/2012 4:49:00 AM
Methyl tert-butyl ether (MTBE)	ND	1.00		µg/L	1	10/18/2012 4:49:00 AM
1,1-Dichloroethane	ND	1.00		µg/L	1	10/18/2012 4:49:00 AM
2,2-Dichloropropane	ND	2.00		µg/L	1	10/18/2012 4:49:00 AM
cis-1,2-Dichloroethene	ND	1.00		µg/L	1	10/18/2012 4:49:00 AM
Chloroform	ND	1.00		µg/L	1	10/18/2012 4:49:00 AM
1,1,1-Trichloroethane (TCA)	ND	1.00		µg/L	1	10/18/2012 4:49:00 AM
1,1-Dichloropropene	ND	1.00		µg/L	1	10/18/2012 4:49:00 AM
Carbon tetrachloride	ND	1.00		µg/L	1	10/18/2012 4:49:00 AM
1,2-Dichloroethane (EDC)	ND	1.00		µg/L	1	10/18/2012 4:49:00 AM
Benzene	ND	1.00		µg/L	1	10/18/2012 4:49:00 AM
Trichloroethene (TCE)	ND	1.00		µg/L	1	10/18/2012 4:49:00 AM
1,2-Dichloropropane	ND	1.00		µg/L	1	10/18/2012 4:49:00 AM
Bromodichloromethane	ND	1.00		µg/L	1	10/18/2012 4:49:00 AM

Qualifiers: B Analyte detected in the associated Method Blank
E Value above quantitation range
J Analyte detected below quantitation limits
RL Reporting Limit

D Dilution was required
H Holding times for preparation or analysis exceeded
ND Not detected at the Reporting Limit
S Spike recovery outside accepted recovery limits



Analytical Report

WO#: 1210121

Date Reported: 10/24/2012

Client: GeoEngineers, Inc. - Redmond

Collection Date: 10/15/2012 12:36:00 P

Project: Rufus

Lab ID: 1210121-001

Matrix: Water

Client Sample ID: MW-21-1

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
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Volatile Organic Compounds by EPA Method 8260

Batch ID: R6252

Analyst: EM

Dibromomethane	ND	1.00		µg/L	1	10/18/2012 4:49:00 AM
cis-1,3-Dichloropropene	ND	1.00		µg/L	1	10/18/2012 4:49:00 AM
Toluene	ND	1.00		µg/L	1	10/18/2012 4:49:00 AM
trans-1,3-Dichloropropene	ND	1.00		µg/L	1	10/18/2012 4:49:00 AM
1,1,2-Trichloroethane	ND	1.00		µg/L	1	10/18/2012 4:49:00 AM
1,3-Dichloropropane	ND	1.00		µg/L	1	10/18/2012 4:49:00 AM
Tetrachloroethene (PCE)	ND	1.00		µg/L	1	10/18/2012 4:49:00 AM
Dibromochloromethane	ND	1.00		µg/L	1	10/18/2012 4:49:00 AM
1,2-Dibromoethane (EDB)	ND	0.0100		µg/L	1	10/18/2012 4:49:00 AM
Chlorobenzene	ND	1.00		µg/L	1	10/18/2012 4:49:00 AM
1,1,1,2-Tetrachloroethane	ND	1.00		µg/L	1	10/18/2012 4:49:00 AM
Ethylbenzene	ND	1.00		µg/L	1	10/18/2012 4:49:00 AM
m,p-Xylene	ND	1.00		µg/L	1	10/18/2012 4:49:00 AM
o-Xylene	ND	1.00		µg/L	1	10/18/2012 4:49:00 AM
Styrene	ND	1.00		µg/L	1	10/18/2012 4:49:00 AM
Isopropylbenzene	ND	1.00		µg/L	1	10/18/2012 4:49:00 AM
Bromoform	ND	1.00		µg/L	1	10/18/2012 4:49:00 AM
1,1,2,2-Tetrachloroethane	ND	1.00		µg/L	1	10/18/2012 4:49:00 AM
n-Propylbenzene	ND	1.00		µg/L	1	10/18/2012 4:49:00 AM
Bromobenzene	ND	1.00		µg/L	1	10/18/2012 4:49:00 AM
1,3,5-Trimethylbenzene	ND	1.00		µg/L	1	10/18/2012 4:49:00 AM
2-Chlorotoluene	ND	1.00		µg/L	1	10/18/2012 4:49:00 AM
4-Chlorotoluene	ND	1.00		µg/L	1	10/18/2012 4:49:00 AM
tert-Butylbenzene	ND	1.00		µg/L	1	10/18/2012 4:49:00 AM
1,2,3-Trichloropropane	ND	1.00		µg/L	1	10/18/2012 4:49:00 AM
1,2,4-Trichlorobenzene	ND	2.00		µg/L	1	10/18/2012 4:49:00 AM
sec-Butylbenzene	ND	1.00		µg/L	1	10/18/2012 4:49:00 AM
4-Isopropyltoluene	ND	1.00		µg/L	1	10/18/2012 4:49:00 AM
1,3-Dichlorobenzene	ND	1.00		µg/L	1	10/18/2012 4:49:00 AM
1,4-Dichlorobenzene	ND	1.00		µg/L	1	10/18/2012 4:49:00 AM
n-Butylbenzene	ND	1.00		µg/L	1	10/18/2012 4:49:00 AM
1,2-Dichlorobenzene	ND	1.00		µg/L	1	10/18/2012 4:49:00 AM
1,2-Dibromo-3-chloropropane	ND	1.00		µg/L	1	10/18/2012 4:49:00 AM
1,2,4-Trimethylbenzene	ND	1.00		µg/L	1	10/18/2012 4:49:00 AM
Hexachlorobutadiene	ND	4.00		µg/L	1	10/18/2012 4:49:00 AM

Qualifiers: B Analyte detected in the associated Method Blank
E Value above quantitation range
J Analyte detected below quantitation limits
RL Reporting Limit

D Dilution was required
H Holding times for preparation or analysis exceeded
ND Not detected at the Reporting Limit
S Spike recovery outside accepted recovery limits



Analytical Report

WO#: 1210121

Date Reported: 10/24/2012

Client: GeoEngineers, Inc. - Redmond

Collection Date: 10/15/2012 12:36:00 P

Project: Rufus

Lab ID: 1210121-001

Matrix: Water

Client Sample ID: MW-21-1

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
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Volatile Organic Compounds by EPA Method 8260

Batch ID: R6252

Analyst: EM

Naphthalene	ND	1.00		µg/L	1	10/18/2012 4:49:00 AM
1,2,3-Trichlorobenzene	ND	4.00		µg/L	1	10/18/2012 4:49:00 AM
Surr: 1-Bromo-4-fluorobenzene	90.1	79.2-120		%REC	1	10/18/2012 4:49:00 AM
Surr: Dibromofluoromethane	112	76-114		%REC	1	10/18/2012 4:49:00 AM
Surr: Toluene-d8	96.4	86.8-119		%REC	1	10/18/2012 4:49:00 AM

Dissolved Metals by EPA Method 200.8

Batch ID: 3487

Analyst: SG

Arsenic	ND	1.00		µg/L	1	10/19/2012 8:42:34 PM
Barium	28.3	0.500		µg/L	1	10/23/2012 1:31:27 PM
Cadmium	ND	0.200		µg/L	1	10/19/2012 8:42:34 PM
Chromium	ND	0.500		µg/L	1	10/19/2012 8:42:34 PM
Lead	ND	1.00		µg/L	1	10/19/2012 8:42:34 PM
Selenium	1.30	1.00		µg/L	1	10/19/2012 8:42:34 PM
Silver	0.444	0.200		µg/L	1	10/19/2012 8:42:34 PM

Dissolved Mercury by EPA Method 245.1

Batch ID: 3474

Analyst: MC

Mercury	ND	0.100		µg/L	1	10/19/2012 3:12:41 PM
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Qualifiers: B Analyte detected in the associated Method Blank
E Value above quantitation range
J Analyte detected below quantitation limits
RL Reporting Limit

D Dilution was required
H Holding times for preparation or analysis exceeded
ND Not detected at the Reporting Limit
S Spike recovery outside accepted recovery limits



Analytical Report

WO#: 1210121

Date Reported: 10/24/2012

Client: GeoEngineers, Inc. - Redmond

Collection Date: 10/15/2012 10:10:00 A

Project: Rufus

Lab ID: 1210121-002

Matrix: Water

Client Sample ID: MW-21-2

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
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Diesel and Heavy Oil by NWTPH-Dx/Dx Ext.

Batch ID: 3453

Analyst: BR

Diesel (Fuel Oil)	ND	50.0		µg/L	1	10/17/2012 3:29:00 PM
Heavy Oil	ND	100		µg/L	1	10/17/2012 3:29:00 PM
Surr: 2-Fluorobiphenyl	106	50-150		%REC	1	10/17/2012 3:29:00 PM
Surr: o-Terphenyl	109	50-150		%REC	1	10/17/2012 3:29:00 PM

Gasoline by NWTPH-Gx

Batch ID: R6253

Analyst: EM

Gasoline	ND	50.0		µg/L	1	10/18/2012 5:16:00 AM
Surr: 1,2-Dichloroethane-d4	121	65-135		%REC	1	10/18/2012 5:16:00 AM
Surr: Fluorobenzene	101	65-135		%REC	1	10/18/2012 5:16:00 AM

Volatile Organic Compounds by EPA Method 8260

Batch ID: R6252

Analyst: EM

Dichlorodifluoromethane (CFC-12)	ND	1.00		µg/L	1	10/18/2012 5:16:00 AM
Chloromethane	ND	1.00		µg/L	1	10/18/2012 5:16:00 AM
Vinyl chloride	ND	0.200		µg/L	1	10/18/2012 5:16:00 AM
Bromomethane	ND	1.00		µg/L	1	10/18/2012 5:16:00 AM
Trichlorofluoromethane (CFC-11)	ND	1.00		µg/L	1	10/18/2012 5:16:00 AM
Chloroethane	ND	1.00		µg/L	1	10/18/2012 5:16:00 AM
1,1-Dichloroethene	ND	1.00		µg/L	1	10/18/2012 5:16:00 AM
Methylene chloride	ND	1.00		µg/L	1	10/18/2012 5:16:00 AM
trans-1,2-Dichloroethene	ND	1.00		µg/L	1	10/18/2012 5:16:00 AM
Methyl tert-butyl ether (MTBE)	ND	1.00		µg/L	1	10/18/2012 5:16:00 AM
1,1-Dichloroethane	ND	1.00		µg/L	1	10/18/2012 5:16:00 AM
2,2-Dichloropropane	ND	2.00		µg/L	1	10/18/2012 5:16:00 AM
cis-1,2-Dichloroethene	ND	1.00		µg/L	1	10/18/2012 5:16:00 AM
Chloroform	ND	1.00		µg/L	1	10/18/2012 5:16:00 AM
1,1,1-Trichloroethane (TCA)	ND	1.00		µg/L	1	10/18/2012 5:16:00 AM
1,1-Dichloropropene	ND	1.00		µg/L	1	10/18/2012 5:16:00 AM
Carbon tetrachloride	ND	1.00		µg/L	1	10/18/2012 5:16:00 AM
1,2-Dichloroethane (EDC)	ND	1.00		µg/L	1	10/18/2012 5:16:00 AM
Benzene	ND	1.00		µg/L	1	10/18/2012 5:16:00 AM
Trichloroethene (TCE)	ND	1.00		µg/L	1	10/18/2012 5:16:00 AM
1,2-Dichloropropane	ND	1.00		µg/L	1	10/18/2012 5:16:00 AM
Bromodichloromethane	ND	1.00		µg/L	1	10/18/2012 5:16:00 AM

Qualifiers: B Analyte detected in the associated Method Blank
E Value above quantitation range
J Analyte detected below quantitation limits
RL Reporting Limit

D Dilution was required
H Holding times for preparation or analysis exceeded
ND Not detected at the Reporting Limit
S Spike recovery outside accepted recovery limits



Analytical Report

WO#: 1210121

Date Reported: 10/24/2012

Client: GeoEngineers, Inc. - Redmond

Collection Date: 10/15/2012 10:10:00 A

Project: Rufus

Lab ID: 1210121-002

Matrix: Water

Client Sample ID: MW-21-2

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
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Volatile Organic Compounds by EPA Method 8260

Batch ID: R6252

Analyst: EM

Dibromomethane	ND	1.00		µg/L	1	10/18/2012 5:16:00 AM
cis-1,3-Dichloropropene	ND	1.00		µg/L	1	10/18/2012 5:16:00 AM
Toluene	ND	1.00		µg/L	1	10/18/2012 5:16:00 AM
trans-1,3-Dichloropropene	ND	1.00		µg/L	1	10/18/2012 5:16:00 AM
1,1,2-Trichloroethane	ND	1.00		µg/L	1	10/18/2012 5:16:00 AM
1,3-Dichloropropane	ND	1.00		µg/L	1	10/18/2012 5:16:00 AM
Tetrachloroethene (PCE)	ND	1.00		µg/L	1	10/18/2012 5:16:00 AM
Dibromochloromethane	ND	1.00		µg/L	1	10/18/2012 5:16:00 AM
1,2-Dibromoethane (EDB)	ND	0.0100		µg/L	1	10/18/2012 5:16:00 AM
Chlorobenzene	ND	1.00		µg/L	1	10/18/2012 5:16:00 AM
1,1,1,2-Tetrachloroethane	ND	1.00		µg/L	1	10/18/2012 5:16:00 AM
Ethylbenzene	ND	1.00		µg/L	1	10/18/2012 5:16:00 AM
m,p-Xylene	ND	1.00		µg/L	1	10/18/2012 5:16:00 AM
o-Xylene	ND	1.00		µg/L	1	10/18/2012 5:16:00 AM
Styrene	ND	1.00		µg/L	1	10/18/2012 5:16:00 AM
Isopropylbenzene	ND	1.00		µg/L	1	10/18/2012 5:16:00 AM
Bromoform	ND	1.00		µg/L	1	10/18/2012 5:16:00 AM
1,1,2,2-Tetrachloroethane	ND	1.00		µg/L	1	10/18/2012 5:16:00 AM
n-Propylbenzene	ND	1.00		µg/L	1	10/18/2012 5:16:00 AM
Bromobenzene	ND	1.00		µg/L	1	10/18/2012 5:16:00 AM
1,3,5-Trimethylbenzene	ND	1.00		µg/L	1	10/18/2012 5:16:00 AM
2-Chlorotoluene	ND	1.00		µg/L	1	10/18/2012 5:16:00 AM
4-Chlorotoluene	ND	1.00		µg/L	1	10/18/2012 5:16:00 AM
tert-Butylbenzene	ND	1.00		µg/L	1	10/18/2012 5:16:00 AM
1,2,3-Trichloropropane	ND	1.00		µg/L	1	10/18/2012 5:16:00 AM
1,2,4-Trichlorobenzene	ND	2.00		µg/L	1	10/18/2012 5:16:00 AM
sec-Butylbenzene	ND	1.00		µg/L	1	10/18/2012 5:16:00 AM
4-Isopropyltoluene	ND	1.00		µg/L	1	10/18/2012 5:16:00 AM
1,3-Dichlorobenzene	ND	1.00		µg/L	1	10/18/2012 5:16:00 AM
1,4-Dichlorobenzene	ND	1.00		µg/L	1	10/18/2012 5:16:00 AM
n-Butylbenzene	ND	1.00		µg/L	1	10/18/2012 5:16:00 AM
1,2-Dichlorobenzene	ND	1.00		µg/L	1	10/18/2012 5:16:00 AM
1,2-Dibromo-3-chloropropane	ND	1.00		µg/L	1	10/18/2012 5:16:00 AM
1,2,4-Trimethylbenzene	ND	1.00		µg/L	1	10/18/2012 5:16:00 AM
Hexachlorobutadiene	ND	4.00		µg/L	1	10/18/2012 5:16:00 AM

Qualifiers: B Analyte detected in the associated Method Blank
E Value above quantitation range
J Analyte detected below quantitation limits
RL Reporting Limit

D Dilution was required
H Holding times for preparation or analysis exceeded
ND Not detected at the Reporting Limit
S Spike recovery outside accepted recovery limits



Analytical Report

WO#: 1210121

Date Reported: 10/24/2012

Client: GeoEngineers, Inc. - Redmond

Collection Date: 10/15/2012 10:10:00 A

Project: Rufus

Lab ID: 1210121-002

Matrix: Water

Client Sample ID: MW-21-2

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
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Volatile Organic Compounds by EPA Method 8260

Batch ID: R6252

Analyst: EM

Naphthalene	ND	1.00		µg/L	1	10/18/2012 5:16:00 AM
1,2,3-Trichlorobenzene	ND	4.00		µg/L	1	10/18/2012 5:16:00 AM
Surr: 1-Bromo-4-fluorobenzene	87.8	79.2-120		%REC	1	10/18/2012 5:16:00 AM
Surr: Dibromofluoromethane	114	76-114	S	%REC	1	10/18/2012 5:16:00 AM
Surr: Toluene-d8	96.5	86.8-119		%REC	1	10/18/2012 5:16:00 AM

NOTES:

S - Outlying QC recoveries were associated with this sample (Dibromofluoromethane). The method is in control as indicated by the LCS and Method Blank.

Dissolved Metals by EPA Method 200.8

Batch ID: 3487

Analyst: SG

Arsenic	1.06	1.00		µg/L	1	10/19/2012 9:19:43 PM
Barium	29.3	0.500		µg/L	1	10/23/2012 2:06:57 PM
Cadmium	ND	0.200		µg/L	1	10/19/2012 9:19:43 PM
Chromium	ND	0.500		µg/L	1	10/19/2012 9:19:43 PM
Lead	ND	1.00		µg/L	1	10/19/2012 9:19:43 PM
Selenium	1.19	1.00		µg/L	1	10/19/2012 9:19:43 PM
Silver	0.426	0.200		µg/L	1	10/19/2012 9:19:43 PM

Dissolved Mercury by EPA Method 245.1

Batch ID: 3474

Analyst: MC

Mercury	0.306	0.100		µg/L	1	10/19/2012 3:14:48 PM
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Qualifiers: B Analyte detected in the associated Method Blank
E Value above quantitation range
J Analyte detected below quantitation limits
RL Reporting Limit

D Dilution was required
H Holding times for preparation or analysis exceeded
ND Not detected at the Reporting Limit
S Spike recovery outside accepted recovery limits



Analytical Report

WO#: 1210121

Date Reported: 10/24/2012

Client: GeoEngineers, Inc. - Redmond

Collection Date: 10/15/2012 11:26:00 A

Project: Rufus

Lab ID: 1210121-003

Matrix: Water

Client Sample ID: MW-21-3

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
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Diesel and Heavy Oil by NWTPH-Dx/Dx Ext.

Batch ID: 3453

Analyst: BR

Diesel (Fuel Oil)	ND	50.0		µg/L	1	10/17/2012 3:56:00 PM
Heavy Oil	ND	100		µg/L	1	10/17/2012 3:56:00 PM
Surr: 2-Fluorobiphenyl	94.1	50-150		%REC	1	10/17/2012 3:56:00 PM
Surr: o-Terphenyl	97.2	50-150		%REC	1	10/17/2012 3:56:00 PM

Gasoline by NWTPH-Gx

Batch ID: R6253

Analyst: EM

Gasoline	ND	50.0		µg/L	1	10/18/2012 6:37:00 AM
Surr: 1,2-Dichloroethane-d4	125	65-135		%REC	1	10/18/2012 6:37:00 AM
Surr: Fluorobenzene	102	65-135		%REC	1	10/18/2012 6:37:00 AM

Volatile Organic Compounds by EPA Method 8260

Batch ID: R6252

Analyst: EM

Dichlorodifluoromethane (CFC-12)	ND	1.00		µg/L	1	10/18/2012 6:37:00 AM
Chloromethane	ND	1.00		µg/L	1	10/18/2012 6:37:00 AM
Vinyl chloride	ND	0.200		µg/L	1	10/18/2012 6:37:00 AM
Bromomethane	ND	1.00		µg/L	1	10/18/2012 6:37:00 AM
Trichlorofluoromethane (CFC-11)	ND	1.00		µg/L	1	10/18/2012 6:37:00 AM
Chloroethane	ND	1.00		µg/L	1	10/18/2012 6:37:00 AM
1,1-Dichloroethene	ND	1.00		µg/L	1	10/18/2012 6:37:00 AM
Methylene chloride	ND	1.00		µg/L	1	10/18/2012 6:37:00 AM
trans-1,2-Dichloroethene	ND	1.00		µg/L	1	10/18/2012 6:37:00 AM
Methyl tert-butyl ether (MTBE)	ND	1.00		µg/L	1	10/18/2012 6:37:00 AM
1,1-Dichloroethane	ND	1.00		µg/L	1	10/18/2012 6:37:00 AM
2,2-Dichloropropane	ND	2.00		µg/L	1	10/18/2012 6:37:00 AM
cis-1,2-Dichloroethene	ND	1.00		µg/L	1	10/18/2012 6:37:00 AM
Chloroform	ND	1.00		µg/L	1	10/18/2012 6:37:00 AM
1,1,1-Trichloroethane (TCA)	ND	1.00		µg/L	1	10/18/2012 6:37:00 AM
1,1-Dichloropropene	ND	1.00		µg/L	1	10/18/2012 6:37:00 AM
Carbon tetrachloride	ND	1.00		µg/L	1	10/18/2012 6:37:00 AM
1,2-Dichloroethane (EDC)	ND	1.00		µg/L	1	10/18/2012 6:37:00 AM
Benzene	ND	1.00		µg/L	1	10/18/2012 6:37:00 AM
Trichloroethene (TCE)	ND	1.00		µg/L	1	10/18/2012 6:37:00 AM
1,2-Dichloropropane	ND	1.00		µg/L	1	10/18/2012 6:37:00 AM
Bromodichloromethane	ND	1.00		µg/L	1	10/18/2012 6:37:00 AM

Qualifiers: B Analyte detected in the associated Method Blank
E Value above quantitation range
J Analyte detected below quantitation limits
RL Reporting Limit

D Dilution was required
H Holding times for preparation or analysis exceeded
ND Not detected at the Reporting Limit
S Spike recovery outside accepted recovery limits



Analytical Report

WO#: 1210121

Date Reported: 10/24/2012

Client: GeoEngineers, Inc. - Redmond

Collection Date: 10/15/2012 11:26:00 A

Project: Rufus

Lab ID: 1210121-003

Matrix: Water

Client Sample ID: MW-21-3

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
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Volatile Organic Compounds by EPA Method 8260

Batch ID: R6252

Analyst: EM

Dibromomethane	ND	1.00		µg/L	1	10/18/2012 6:37:00 AM
cis-1,3-Dichloropropene	ND	1.00		µg/L	1	10/18/2012 6:37:00 AM
Toluene	ND	1.00		µg/L	1	10/18/2012 6:37:00 AM
trans-1,3-Dichloropropene	ND	1.00		µg/L	1	10/18/2012 6:37:00 AM
1,1,2-Trichloroethane	ND	1.00		µg/L	1	10/18/2012 6:37:00 AM
1,3-Dichloropropane	ND	1.00		µg/L	1	10/18/2012 6:37:00 AM
Tetrachloroethene (PCE)	ND	1.00		µg/L	1	10/18/2012 6:37:00 AM
Dibromochloromethane	ND	1.00		µg/L	1	10/18/2012 6:37:00 AM
1,2-Dibromoethane (EDB)	ND	0.0100		µg/L	1	10/18/2012 6:37:00 AM
Chlorobenzene	ND	1.00		µg/L	1	10/18/2012 6:37:00 AM
1,1,1,2-Tetrachloroethane	ND	1.00		µg/L	1	10/18/2012 6:37:00 AM
Ethylbenzene	ND	1.00		µg/L	1	10/18/2012 6:37:00 AM
m,p-Xylene	ND	1.00		µg/L	1	10/18/2012 6:37:00 AM
o-Xylene	ND	1.00		µg/L	1	10/18/2012 6:37:00 AM
Styrene	ND	1.00		µg/L	1	10/18/2012 6:37:00 AM
Isopropylbenzene	ND	1.00		µg/L	1	10/18/2012 6:37:00 AM
Bromoform	ND	1.00		µg/L	1	10/18/2012 6:37:00 AM
1,1,2,2-Tetrachloroethane	ND	1.00		µg/L	1	10/18/2012 6:37:00 AM
n-Propylbenzene	ND	1.00		µg/L	1	10/18/2012 6:37:00 AM
Bromobenzene	ND	1.00		µg/L	1	10/18/2012 6:37:00 AM
1,3,5-Trimethylbenzene	ND	1.00		µg/L	1	10/18/2012 6:37:00 AM
2-Chlorotoluene	ND	1.00		µg/L	1	10/18/2012 6:37:00 AM
4-Chlorotoluene	ND	1.00		µg/L	1	10/18/2012 6:37:00 AM
tert-Butylbenzene	ND	1.00		µg/L	1	10/18/2012 6:37:00 AM
1,2,3-Trichloropropane	ND	1.00		µg/L	1	10/18/2012 6:37:00 AM
1,2,4-Trichlorobenzene	ND	2.00		µg/L	1	10/18/2012 6:37:00 AM
sec-Butylbenzene	ND	1.00		µg/L	1	10/18/2012 6:37:00 AM
4-Isopropyltoluene	ND	1.00		µg/L	1	10/18/2012 6:37:00 AM
1,3-Dichlorobenzene	ND	1.00		µg/L	1	10/18/2012 6:37:00 AM
1,4-Dichlorobenzene	ND	1.00		µg/L	1	10/18/2012 6:37:00 AM
n-Butylbenzene	ND	1.00		µg/L	1	10/18/2012 6:37:00 AM
1,2-Dichlorobenzene	ND	1.00		µg/L	1	10/18/2012 6:37:00 AM
1,2-Dibromo-3-chloropropane	ND	1.00		µg/L	1	10/18/2012 6:37:00 AM
1,2,4-Trimethylbenzene	ND	1.00		µg/L	1	10/18/2012 6:37:00 AM
Hexachlorobutadiene	ND	4.00		µg/L	1	10/18/2012 6:37:00 AM

Qualifiers: B Analyte detected in the associated Method Blank
E Value above quantitation range
J Analyte detected below quantitation limits
RL Reporting Limit

D Dilution was required
H Holding times for preparation or analysis exceeded
ND Not detected at the Reporting Limit
S Spike recovery outside accepted recovery limits



Analytical Report

WO#: 1210121

Date Reported: 10/24/2012

Client: GeoEngineers, Inc. - Redmond

Collection Date: 10/15/2012 11:26:00 A

Project: Rufus

Lab ID: 1210121-003

Matrix: Water

Client Sample ID: MW-21-3

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
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Volatile Organic Compounds by EPA Method 8260

Batch ID: R6252

Analyst: EM

Naphthalene	ND	1.00		µg/L	1	10/18/2012 6:37:00 AM
1,2,3-Trichlorobenzene	ND	4.00		µg/L	1	10/18/2012 6:37:00 AM
Surr: 1-Bromo-4-fluorobenzene	90.8	79.2-120		%REC	1	10/18/2012 6:37:00 AM
Surr: Dibromofluoromethane	113	76-114		%REC	1	10/18/2012 6:37:00 AM
Surr: Toluene-d8	97.1	86.8-119		%REC	1	10/18/2012 6:37:00 AM

Dissolved Metals by EPA Method 200.8

Batch ID: 3487

Analyst: SG

Arsenic	ND	1.00		µg/L	1	10/19/2012 9:28:41 PM
Barium	32.4	0.500		µg/L	1	10/23/2012 2:27:42 PM
Cadmium	ND	0.200		µg/L	1	10/19/2012 9:28:41 PM
Chromium	ND	0.500		µg/L	1	10/19/2012 9:28:41 PM
Lead	ND	1.00		µg/L	1	10/19/2012 9:28:41 PM
Selenium	2.09	1.00		µg/L	1	10/19/2012 9:28:41 PM
Silver	ND	0.200		µg/L	1	10/19/2012 9:28:41 PM

Dissolved Mercury by EPA Method 245.1

Batch ID: 3474

Analyst: MC

Mercury	0.349	0.100		µg/L	1	10/19/2012 3:21:10 PM
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Qualifiers: B Analyte detected in the associated Method Blank
E Value above quantitation range
J Analyte detected below quantitation limits
RL Reporting Limit

D Dilution was required
H Holding times for preparation or analysis exceeded
ND Not detected at the Reporting Limit
S Spike recovery outside accepted recovery limits



Date: 10/24/2012

Work Order: 1210121
CLIENT: GeoEngineers, Inc. - Redmond
Project: Rufus

QC SUMMARY REPORT

Dissolved Metals by EPA Method 200.8

Sample ID: MB-3487		SampType: MBLK		Units: µg/L		Prep Date: 10/19/2012			RunNo: 6237		
Client ID: MBLKW		Batch ID: 3487					Analysis Date: 10/19/2012			SeqNo: 123913	
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Arsenic	ND	1.00									
Cadmium	ND	0.200									
Chromium	ND	0.500									
Lead	ND	1.00									
Selenium	ND	1.00									
Silver	ND	0.200									

Sample ID: LCS-3487		SampType: LCS			Units: µg/L		Prep Date: 10/19/2012			RunNo: 6237		
Client ID: LCSW		Batch ID: 3487			Analysis Date: 10/19/2012			SeqNo: 123914				
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual	

Arsenic	99.2	1.00	100.0	0	99.2	85	115				
Cadmium	4.99	0.200	5.000	0	99.9	85	115				
Chromium	99.5	0.500	100.0	0	99.5	85	115				
Lead	52.8	1.00	50.00	0	106	85	115				
Selenium	9.95	1.00	10.00	0	99.5	85	115				
Silver	26.5	0.200	25.00	0	106	85	115				

Sample ID: 1210121-001CDUP		SampType: DUP			Units: µg/L		Prep Date: 10/19/2012		RunNo: 6237		
Client ID: MW-21-1		Batch ID: 3487			Analysis Date: 10/19/2012				SeqNo: 123916		
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Arsenic	ND	1.00						0	200	30	R
Cadmium	ND	0.200						0	0	30	
Chromium	ND	0.500						0	0	30	
Lead	ND	1.00						0	0	30	
Selenium	ND	1.00						1.300	200	30	R
Silver	ND	0.200						0.4440	200	30	R

Qualifiers:

B	Analyte detected in the associated Method Blank	D	Dilution was required	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits	ND	Not detected at the Reporting Limit
R	RPD outside accepted recovery limits	RL	Reporting Limit	S	Spike recovery outside accepted recovery limits



Date: 10/24/2012

Work Order: 1210121

CLIENT: GeoEngineers, Inc. - Redmond

Project: Rufus

QC SUMMARY REPORT**Dissolved Metals by EPA Method 200.8**

Sample ID: 1210121-001CDUP		SampType: DUP			Units: µg/L		Prep Date: 10/19/2012			RunNo: 6237		
Client ID: MW-21-1		Batch ID: 3487			Analysis Date: 10/19/2012			SeqNo: 123916				
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual	

NOTES:

R - High RPD due to low analyte concentration. In this range, high RPD's may be expected.

Sample ID: 1210121-001CMS		SampType: MS		Units: µg/L		Prep Date: 10/19/2012		RunNo: 6237			
Client ID: MW-21-1		Batch ID: 3487				Analysis Date: 10/19/2012		SeqNo: 123917			
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	503	1.00	500.0	0.7395	100	70	130				
Cadmium	25.0	0.200	25.00	0	99.9	70	130				
Chromium	454	0.500	500.0	0	90.7	70	130				
Lead	253	1.00	250.0	0	101	70	130				
Selenium	49.8	1.00	50.00	1.300	97.0	70	130				
Silver	127	0.200	125.0	0.4440	101	70	130				

Sample ID: 1210121-001CMSD	SampType: MSD	Units: µg/L				Prep Date: 10/19/2012			RunNo: 6237		
Client ID: MW-21-1	Batch ID: 3487	Analysis Date: 10/19/2012							SeqNo: 123918		
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	507	1.00	500.0	0.7395	101	70	130	502.7	0.946	30	
Cadmium	25.4	0.200	25.00	0	102	70	130	24.98	1.58	30	
Chromium	456	0.500	500.0	0	91.1	70	130	453.7	0.427	30	
Lead	254	1.00	250.0	0	101	70	130	252.5	0.465	30	
Selenium	49.5	1.00	50.00	1.300	96.3	70	130	49.82	0.721	30	
Silver	123	0.200	125.0	0.4440	97.7	70	130	126.8	3.38	30	

Qualifiers: B Analyte detected in the associated Method Blank
H Holding times for preparation or analysis exceeded
R RPD outside accepted recovery limits

D Dilution was required
J Analyte detected below quantitation limits
RL Reporting Limit

E Value above quantitation range
ND Not detected at the Reporting Limit
S Spike recovery outside accepted recovery limits



Date: 10/24/2012

Work Order: 1210121
CLIENT: GeoEngineers, Inc. - Redmond
Project: Rufus

QC SUMMARY REPORT

Dissolved Metals by EPA Method 200.8

Sample ID: MB-3487		SampType: MBLK		Units: µg/L		Prep Date: 10/19/2012			RunNo: 6274		
Client ID: MBLKW		Batch ID: 3487					Analysis Date: 10/23/2012			SeqNo: 124535	
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Barium ND 0.500

Sample ID: LCS-3487		SampType: LCS			Units: µg/L		Prep Date: 10/19/2012			RunNo: 6274		
Client ID: LCSW		Batch ID: 3487			Analysis Date: 10/23/2012			SeqNo: 124536				
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual	

Barium 97.9 0.500 100.0 0 97.9 85 115

Sample ID: 1210121-001CDUP		SampType: DUP			Units: µg/L		Prep Date: 10/19/2012			RunNo: 6274		
Client ID: MW-21-1		Batch ID: 3487			Analysis Date: 10/23/2012					SeqNo: 124538		
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual	

Barium 30.5 0.500 28.27 7.57 30

Sample ID: 1210121-001CMS		SampType: MS			Units: µg/L		Prep Date: 10/19/2012			RunNo: 6274		
Client ID: MW-21-1		Batch ID: 3487			Analysis Date: 10/23/2012					SeqNo: 124539		
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual	

Barium 511 0.500 500.0 28.27 96.5 70 130

Sample ID: 1210121-001CMSD		SampType: MSD			Units: µg/L		Prep Date: 10/19/2012			RunNo: 6274		
Client ID: MW-21-1		Batch ID: 3487			Analysis Date: 10/23/2012					SeqNo: 124540		
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual	

Barium 508 0.500 500.0 28.27 95.9 70 130 510.8 0.586 30

Qualifiers:

B	Analyte detected in the associated Method Blank	D	Dilution was required	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits	ND	Not detected at the Reporting Limit
R	RPD outside accepted recovery limits	RL	Reporting Limit	S	Spike recovery outside accepted recovery limits



Date: 10/24/2012

Work Order: 1210121
CLIENT: GeoEngineers, Inc. - Redmond
Project: Rufus

QC SUMMARY REPORT

Dissolved Mercury by EPA Method 245.1

Sample ID: MB-3474		SampType: MBLK		Units: µg/L		Prep Date: 10/19/2012			RunNo: 6227		
Client ID: MBLKW		Batch ID: 3474					Analysis Date: 10/19/2012			SeqNo: 123841	
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Mercury ND 0.100

Sample ID: LCS-3474		SampType: LCS			Units: µg/L		Prep Date: 10/19/2012			RunNo: 6227		
Client ID: LCSW		Batch ID: 3474			Analysis Date: 10/19/2012			SeqNo: 123842				
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual	

Mercury 2.09 0.100 2.000 0 104 85 115

Sample ID: 1210099-015BDUP		SampType: DUP		Units: µg/L		Prep Date: 10/19/2012			RunNo: 6227		
Client ID: BATCH		Batch ID: 3474					Analysis Date: 10/19/2012			SeqNo: 123844	
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Mercury ND 0.100 0 0 20

Sample ID: 1210099-015BMS		SampType: MS			Units: µg/L		Prep Date: 10/19/2012			RunNo: 6227		
Client ID: BATCH		Batch ID: 3474			Analysis Date: 10/19/2012			SeqNo: 123845				
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual	

Mercury 2.19 0.100 2.000 0 110 80 120

Sample ID: 1210099-015BMSD		SampType: MSD		Units: µg/L		Prep Date: 10/19/2012			RunNo: 6227		
Client ID: BATCH		Batch ID: 3474					Analysis Date: 10/19/2012			SeqNo: 123846	
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Mercury 2.20 0.100 2.000 0 110 80 120 2.190 0.456 20

Qualifiers:

B	Analyte detected in the associated Method Blank	D	Dilution was required	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits	ND	Not detected at the Reporting Limit
R	RPD outside accepted recovery limits	RL	Reporting Limit	S	Spike recovery outside accepted recovery limits

Work Order: 1210121
CLIENT: GeoEngineers, Inc. - Redmond
Project: Rufus

QC SUMMARY REPORT

Diesel and Heavy Oil by NWTPH-Dx/Dx Ext.

Sample ID: LCS-3453		SampType: LCS			Units: µg/L		Prep Date: 10/16/2012			RunNo: 6175		
Client ID: LCSW		Batch ID: 3453			Analysis Date: 10/17/2012					SeqNo: 122898		
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual	

Diesel (Fuel Oil)	2,360	50.0	2,000	0	118	65	135				
Surr: 2-Fluorobiphenyl	166		160.0		104	50	150				
Surr: o-Terphenyl	172		160.0		107	50	150				

Sample ID: MB-3453		SampType: MBLK		Units: µg/L		Prep Date: 10/16/2012			RunNo: 6175		
Client ID: MBLKW		Batch ID: 3453		Analysis Date: 10/17/2012						SeqNo: 122899	
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Diesel (Fuel Oil)	ND	50.0									
Heavy Oil	ND	100									
Surr: 2-Fluorobiphenyl	162		160.0		101	50	150				
Surr: o-Terphenyl	167		160.0		104	50	150				

Sample ID: 1210121-003BDUP		SampType: DUP			Units: µg/L		Prep Date: 10/16/2012			RunNo: 6175		
Client ID: MW-21-3		Batch ID: 3453			Analysis Date: 10/17/2012			SeqNo: 123274				
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual	

Diesel (Fuel Oil)	ND	50.0						0	0	30	
Heavy Oil	ND	100						0	0	30	
Surr: 2-Fluorobiphenyl	179		160.0		112	50	150		0		
Surr: o-Terphenyl	181		160.0		113	50	150		0		

Qualifiers:
B Analyte detected in the associated Method Blank
D Dilution was required
E Value above quantitation range

H Holding times for preparation or analysis exceeded
J Analyte detected below quantitation limits
ND Not detected at the Reporting Limit

R RPD outside accepted recovery limits
RL Reporting Limit
S Spike recovery outside accepted recovery limits



Date: 10/24/2012

Work Order: 1210121
CLIENT: GeoEngineers, Inc. - Redmond
Project: Rufus

QC SUMMARY REPORT

Gasoline by NWTPH-Gx

Sample ID: 1210141-035ADUP		SampType: DUP			Units: µg/L		Prep Date: 10/18/2012			RunNo: 6253		
Client ID: BATCH		Batch ID: R6253			Analysis Date: 10/18/2012					SeqNo: 124215		
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual	

Gasoline	ND	50.0						0	0	30	
Surr: 1,2-Dichloroethane-d4	11.7		10.00		117	65	135		0		
Surr: Fluorobenzene	9.80		10.00		98.0	65	135		0		

Sample ID: LCS-R6253		SampType: LCS			Units: µg/L		Prep Date: 10/17/2012			RunNo: 6253		
Client ID: LCSW		Batch ID: R6253			Analysis Date: 10/17/2012					SeqNo: 124218		
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual	

Gasoline	503	50.0	500.0	0	101	65	135				
Surr: 1,2-Dichloroethane-d4	12.2		10.00		122	65	135				
Surr: Fluorobenzene	10.0		10.00		100	65	135				

Sample ID: MB-R6253		SampType: MBLK			Units: µg/L		Prep Date: 10/17/2012			RunNo: 6253		
Client ID: MBLKW		Batch ID: R6253			Analysis Date: 10/17/2012					SeqNo: 124219		
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual	

Gasoline	ND	50.0									
Surr: 1,2-Dichloroethane-d4	11.3		10.00		113	65	135				
Surr: Fluorobenzene	11.3		10.00		113	65	135				

Qualifiers:

B	Analyte detected in the associated Method Blank	D	Dilution was required	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits	ND	Not detected at the Reporting Limit
R	RPD outside accepted recovery limits	RL	Reporting Limit	S	Spike recovery outside accepted recovery limits



Date: 10/24/2012

Work Order: 1210121
CLIENT: GeoEngineers, Inc. - Redmond
Project: Rufus

QC SUMMARY REPORT

Volatile Organic Compounds by EPA Method 8260

Sample ID: 1210121-002AMS	SampType: MS	Units: µg/L				Prep Date: 10/18/2012			RunNo: 6252		
Client ID: MW-21-2	Batch ID: R6252	Analysis Date: 10/18/2012							SeqNo: 124201		
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Dichlorodifluoromethane (CFC-12)	16.7	1.00	20.00	0	83.6	33.3	122				
Chloromethane	24.8	0.500	20.00	0	124	48.2	145				
Vinyl chloride	23.8	0.200	20.00	0	119	45.6	149				
Bromomethane	27.8	0.500	20.00	0	139	31.5	135				S
Trichlorofluoromethane (CFC-11)	22.9	0.500	20.00	0	114	54.7	138				
Chloroethane	28.8	0.500	20.00	0	144	52.7	140				S
1,1-Dichloroethene	26.8	0.500	20.00	0	134	58.2	146				
Methylene chloride	24.9	1.00	20.00	0	124	65.1	127				
trans-1,2-Dichloroethene	19.5	0.500	20.00	0	97.4	69	132				
Methyl tert-butyl ether (MTBE)	20.2	1.00	20.00	0	101	70	130				
1,1-Dichloroethane	24.9	0.500	20.00	0	125	74.7	133				
2,2-Dichloropropane	16.5	1.00	20.00	0	82.5	31.5	121				
cis-1,2-Dichloroethene	20.9	0.500	20.00	0	105	67.1	123				
Chloroform	20.1	1.00	20.00	0	100	58.6	123				
1,1,1-Trichloroethane (TCA)	23.2	0.500	20.00	0	116	64.2	146				
1,1-Dichloropropene	21.1	0.500	20.00	0	106	73.8	136				
Carbon tetrachloride	25.5	0.500	20.00	0	128	69.2	141				
1,2-Dichloroethane (EDC)	24.5	0.500	20.00	0	123	62.3	130				
Benzene	20.9	1.00	20.00	0	105	68.7	132				
Trichloroethene (TCE)	18.1	0.500	20.00	0	90.7	65.7	133				
1,2-Dichloropropane	23.9	0.500	20.00	0	119	70	130				
Bromodichloromethane	19.8	0.500	20.00	0	99.1	59.4	139				
Dibromomethane	19.5	0.500	20.00	0	97.6	65.5	130				
cis-1,3-Dichloropropene	19.6	0.500	20.00	0	98.0	63.3	124				
Toluene	19.2	1.00	20.00	0	96.0	68.4	133				
trans-1,3-Dichloropropene	14.6	0.500	20.00	0	72.9	57.7	125				
1,1,2-Trichloroethane	18.3	0.500	20.00	0	91.7	59.4	127				
1,3-Dichloropropane	19.2	0.500	20.00	0	96.1	68.2	134				
Tetrachloroethene (PCE)	14.4	0.500	20.00	0	72.2	51.5	109				

Qualifiers:	B	Analyte detected in the associated Method Blank	D	Dilution was required	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits	ND	Not detected at the Reporting Limit
	R	RPD outside accepted recovery limits	RL	Reporting Limit	S	Spike recovery outside accepted recovery limits



Date: 10/24/2012

Work Order: 1210121

CLIENT: GeoEngineers, Inc. - Redmond

Project: Rufus

QC SUMMARY REPORT

Volatile Organic Compounds by EPA Method 8260

Sample ID: 1210121-002AMS	SampType: MS	Units: µg/L				Prep Date: 10/18/2012			RunNo: 6252		
Client ID: MW-21-2	Batch ID: R6252	Analysis Date: 10/18/2012							SeqNo: 124201		
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Dibromochloromethane	23.4	0.500	20.00	0	117	66.2	138				
1,2-Dibromoethane (EDB)	20.9	0.200	20.00	0	104	68.9	124				
Chlorobenzene	19.0	0.500	20.00	0	95.2	68.9	128				
1,1,1,2-Tetrachloroethane	23.4	0.500	20.00	0	117	67.3	135				
Ethylbenzene	18.0	1.00	20.00	0	90.0	67.3	135				
m,p-Xylene	35.2	1.00	40.00	0	87.9	63.3	135				
o-Xylene	18.2	1.00	20.00	0	90.9	67.8	131				
Styrene	18.2	1.00	20.00	0	90.8	67.2	123				
Isopropylbenzene	19.2	1.00	20.00	0	96.2	56	147				
Bromoform	23.4	0.500	20.00	0	117	61.4	136				
1,1,2,2-Tetrachloroethane	20.0	0.500	20.00	0	99.9	59.1	137				
n-Propylbenzene	17.0	1.00	20.00	0	84.8	57.6	142				
Bromobenzene	22.6	0.500	20.00	0	113	63.6	130				
1,3,5-Trimethylbenzene	18.8	1.00	20.00	0	94.0	59.9	136				
2-Chlorotoluene	17.2	0.500	20.00	0	86.0	63.4	134				
4-Chlorotoluene	16.8	0.500	20.00	0	84.0	58.4	134				
tert-Butylbenzene	25.9	1.00	20.00	0	130	74.2	141				
1,2,3-Trichloropropane	19.5	0.500	20.00	0	97.4	62.4	129				
1,2,4-Trichlorobenzene	18.5	1.00	20.00	0	92.3	53.7	120				
sec-Butylbenzene	18.3	1.00	20.00	0	91.3	56	146				
4-Isopropyltoluene	19.1	1.00	20.00	0	95.3	62.4	134				
1,3-Dichlorobenzene	20.2	0.500	20.00	0	101	58.2	128				
1,4-Dichlorobenzene	19.7	0.500	20.00	0	98.4	60.1	123				
n-Butylbenzene	13.9	1.00	20.00	0	69.6	54.6	135				
1,2-Dichlorobenzene	20.0	0.500	20.00	0	100	62.6	124				
1,2-Dibromo-3-chloropropane	16.8	0.500	20.00	0	84.2	51.8	142				
1,2,4-Trimethylbenzene	18.8	1.00	20.00	0	93.9	63.7	132				
Hexachlorobutadiene	19.3	2.00	20.00	0	96.5	62.1	121				
Naphthalene	19.5	1.00	20.00	0	97.6	58.7	119				

Qualifiers: B Analyte detected in the associated Method Blank
H Holding times for preparation or analysis exceeded
R RPD outside accepted recovery limits

D Dilution was required
J Analyte detected below quantitation limits
RL Reporting Limit

E Value above quantitation range
ND Not detected at the Reporting Limit
S Spike recovery outside accepted recovery limits



Date: 10/24/2012

Work Order: 1210121

CLIENT: GeoEngineers, Inc. - Redmond

Project: Rufus

QC SUMMARY REPORT

Volatile Organic Compounds by EPA Method 8260

Sample ID: 1210121-002AMS	SampType: MS	Units: µg/L			Prep Date: 10/18/2012			RunNo: 6252			
Client ID: MW-21-2	Batch ID: R6252				Analysis Date: 10/18/2012			SeqNo: 124201			
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
1,2,3-Trichlorobenzene	19.3	2.00	20.00	0	96.5	50.7	113				
Surr: 1-Bromo-4-fluorobenzene	9.15		10.00		91.5	79.2	120				
Surr: Dibromofluoromethane	11.1		10.00		111	76	114				
Surr: Toluene-d8	9.71		10.00		97.1	86.8	119				

NOTES:

S - Outlying QC recoveries were associated with this sample. The method is in control as indicated by the LCS.

Sample ID: 1210141-035ADUP	SampType: DUP	Units: µg/L			Prep Date: 10/18/2012			RunNo: 6252			
Client ID: BATCH	Batch ID: R6252				Analysis Date: 10/18/2012			SeqNo: 124204			
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Dichlorodifluoromethane (CFC-12)	ND	1.00						0	0	30	
Chloromethane	ND	0.500						0	0	30	
Vinyl chloride	ND	0.200						0	0	30	
Bromomethane	ND	0.500						0	0	30	
Trichlorofluoromethane (CFC-11)	ND	0.500						0	0	30	
Chloroethane	ND	0.500						0	0	30	
1,1-Dichloroethene	ND	0.500						0	0	30	
Methylene chloride	ND	1.00						0	0	30	
trans-1,2-Dichloroethene	ND	0.500						0	0	30	
Methyl tert-butyl ether (MTBE)	ND	1.00						0	0	30	
1,1-Dichloroethane	ND	0.500						0	0	30	
2,2-Dichloropropane	ND	1.00						0	0	30	
cis-1,2-Dichloroethene	ND	0.500						0	0	30	
Chloroform	ND	1.00						0	0	30	
1,1,1-Trichloroethane (TCA)	ND	0.500						0	0	30	
1,1-Dichloropropene	ND	0.500						0	0	30	
Carbon tetrachloride	ND	0.500						0	0	30	
1,2-Dichloroethane (EDC)	ND	0.500						0	0	30	

Qualifiers: B Analyte detected in the associated Method Blank
H Holding times for preparation or analysis exceeded
R RPD outside accepted recovery limits

D Dilution was required
J Analyte detected below quantitation limits
RL Reporting Limit

E Value above quantitation range
ND Not detected at the Reporting Limit
S Spike recovery outside accepted recovery limits



Date: 10/24/2012

Work Order: 1210121

CLIENT: GeoEngineers, Inc. - Redmond

Project: Rufus

QC SUMMARY REPORT

Volatile Organic Compounds by EPA Method 8260

Sample ID: 1210141-035ADUP	SampType: DUP	Units: µg/L				Prep Date: 10/18/2012			RunNo: 6252		
Client ID: BATCH	Batch ID: R6252					Analysis Date: 10/18/2012			SeqNo: 124204		
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	ND	1.00						0	0	30	
Trichloroethene (TCE)	ND	0.500						0	0	30	
1,2-Dichloropropane	ND	0.500						0	0	30	
Bromodichloromethane	ND	0.500						0	0	30	
Dibromomethane	ND	0.500						0	0	30	
cis-1,3-Dichloropropene	ND	0.500						0	0	30	
Toluene	ND	1.00						0	0	30	
trans-1,3-Dichloropropene	ND	0.500						0	0	30	
1,1,2-Trichloroethane	ND	0.500						0	0	30	
1,3-Dichloropropane	ND	0.500						0	0	30	
Tetrachloroethene (PCE)	ND	0.500						0	0	30	
Dibromochloromethane	ND	0.500						0	0	30	
1,2-Dibromoethane (EDB)	ND	0.200						0	0	30	
Chlorobenzene	ND	0.500						0	0	30	
1,1,1,2-Tetrachloroethane	ND	0.500						0	0	30	
Ethylbenzene	ND	1.00						0	0	30	
m,p-Xylene	ND	1.00						0	0	30	
o-Xylene	ND	1.00						0	0	30	
Styrene	ND	1.00						0	0	30	
Isopropylbenzene	ND	1.00						0	0	30	
Bromoform	ND	0.500						0	0	30	
1,1,2,2-Tetrachloroethane	ND	0.500						0	0	30	
n-Propylbenzene	ND	1.00						0	0	30	
Bromobenzene	ND	0.500						0	0	30	
1,3,5-Trimethylbenzene	ND	1.00						0	0	30	
2-Chlorotoluene	ND	0.500						0	0	30	
4-Chlorotoluene	ND	0.500						0	0	30	
tert-Butylbenzene	ND	1.00						0	0	30	
1,2,3-Trichloropropane	ND	0.500						0	0	30	

Qualifiers: B Analyte detected in the associated Method Blank
H Holding times for preparation or analysis exceeded
R RPD outside accepted recovery limits

D Dilution was required
J Analyte detected below quantitation limits
RL Reporting Limit

E Value above quantitation range
ND Not detected at the Reporting Limit
S Spike recovery outside accepted recovery limits



Date: 10/24/2012

Work Order: 1210121
CLIENT: GeoEngineers, Inc. - Redmond
Project: Rufus

QC SUMMARY REPORT

Volatile Organic Compounds by EPA Method 8260

Sample ID: 1210141-035ADUP		SampType: DUP		Units: µg/L		Prep Date: 10/18/2012			RunNo: 6252		
Client ID: BATCH		Batch ID: R6252					Analysis Date: 10/18/2012			SeqNo: 124204	
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
1,2,4-Trichlorobenzene	ND	1.00						0	0	30	
sec-Butylbenzene	ND	1.00						0	0	30	
4-Isopropyltoluene	ND	1.00						0	0	30	
1,3-Dichlorobenzene	ND	0.500						0	0	30	
1,4-Dichlorobenzene	ND	0.500						0	0	30	
n-Butylbenzene	ND	1.00						0	0	30	
1,2-Dichlorobenzene	ND	0.500						0	0	30	
1,2-Dibromo-3-chloropropane	ND	0.500						0	0	30	
1,2,4-Trimethylbenzene	ND	1.00						0	0	30	
Hexachlorobutadiene	ND	2.00						0	0	30	
Naphthalene	ND	1.00						0	0	30	
1,2,3-Trichlorobenzene	ND	2.00						0	0	30	
Surr: 1-Bromo-4-fluorobenzene	9.06		10.00		90.6	79.2	120		0		
Surr: Dibromofluoromethane	11.4		10.00		114	76	114		0		
Surr: Toluene-d8	9.73		10.00		97.3	86.8	119		0		

Sample ID: LCS-R6252		SampType: LCS		Units: µg/L		Prep Date: 10/17/2012			RunNo: 6252		
Client ID: LCSW		Batch ID: R6252					Analysis Date: 10/17/2012			SeqNo: 124208	
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Dichlorodifluoromethane (CFC-12)	18.7	1.00	20.00	0	93.6	45.1	121				
Chloromethane	20.7	0.500	20.00	0	104	42.5	131				
Vinyl chloride	19.8	0.200	20.00	0	98.8	56.2	130				
Bromomethane	22.8	0.500	20.00	0	114	45.4	138				
Trichlorofluoromethane (CFC-11)	22.1	0.500	20.00	0	110	64.7	129				
Chloroethane	19.2	0.500	20.00	0	96.0	62.5	123				
1,1-Dichloroethene	20.9	0.500	20.00	0	104	60.7	146				
Methylene chloride	20.2	1.00	20.00	0	101	60.3	135				

Qualifiers:

B	Analyte detected in the associated Method Blank	D	Dilution was required	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits	ND	Not detected at the Reporting Limit
R	RPD outside accepted recovery limits	RL	Reporting Limit	S	Spike recovery outside accepted recovery limits



Date: 10/24/2012

Work Order: 1210121

CLIENT: GeoEngineers, Inc. - Redmond

Project: Rufus

QC SUMMARY REPORT

Volatile Organic Compounds by EPA Method 8260

Sample ID: LCS-R6252	SampType: LCS	Units: µg/L				Prep Date: 10/17/2012			RunNo: 6252		
Client ID: LCSW	Batch ID: R6252	Analysis Date: 10/17/2012							SeqNo: 124208		
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
trans-1,2-Dichloroethene	21.0	0.500	20.00	0	105	71.3	129				
Methyl tert-butyl ether (MTBE)	19.8	1.00	20.00	0	99.1	75.4	123				
1,1-Dichloroethane	20.0	0.500	20.00	0	99.8	71.3	129				
2,2-Dichloropropane	18.0	1.00	20.00	0	89.8	37.8	132				
cis-1,2-Dichloroethene	20.0	0.500	20.00	0	100	67.5	127				
Chloroform	20.6	1.00	20.00	0	103	70.3	123				
1,1,1-Trichloroethane (TCA)	20.4	0.500	20.00	0	102	67.9	134				
1,1-Dichloropropene	20.8	0.500	20.00	0	104	72.1	133				
Carbon tetrachloride	20.2	0.500	20.00	0	101	68	136				
1,2-Dichloroethane (EDC)	20.3	0.500	20.00	0	101	65.8	126				
Benzene	20.5	1.00	20.00	0	102	75.2	124				
Trichloroethene (TCE)	21.3	0.500	20.00	0	106	71.9	130				
1,2-Dichloropropane	19.8	0.500	20.00	0	98.8	71.9	131				
Bromodichloromethane	19.8	0.500	20.00	0	99.0	70	130				
Dibromomethane	19.8	0.500	20.00	0	99.1	74.2	125				
cis-1,3-Dichloropropene	19.6	0.500	20.00	0	97.9	62.8	135				
Toluene	19.9	1.00	20.00	0	99.3	75.2	129				
trans-1,3-Dichloropropene	20.8	0.500	20.00	0	104	58.1	138				
1,1,2-Trichloroethane	19.7	0.500	20.00	0	98.6	65.4	128				
1,3-Dichloropropane	19.7	0.500	20.00	0	98.6	71.9	131				
Tetrachloroethene (PCE)	20.4	0.500	20.00	0	102	52.4	140				
Dibromochloromethane	19.6	0.500	20.00	0	98.2	68.7	139				
1,2-Dibromoethane (EDB)	19.7	0.200	20.00	0	98.5	71.2	129				
Chlorobenzene	20.0	0.500	20.00	0	99.8	77.2	122				
1,1,1,2-Tetrachloroethane	19.9	0.500	20.00	0	99.6	76.2	130				
Ethylbenzene	19.9	1.00	20.00	0	99.7	78	127				
m,p-Xylene	40.4	1.00	40.00	0	101	77.5	130				
o-Xylene	20.4	1.00	20.00	0	102	77.6	126				
Styrene	20.4	1.00	20.00	0	102	66.8	137				

Qualifiers: B Analyte detected in the associated Method Blank
H Holding times for preparation or analysis exceeded
R RPD outside accepted recovery limits

D Dilution was required
J Analyte detected below quantitation limits
RL Reporting Limit

E Value above quantitation range
ND Not detected at the Reporting Limit
S Spike recovery outside accepted recovery limits



Date: 10/24/2012

Work Order: 1210121

CLIENT: GeoEngineers, Inc. - Redmond

Project: Rufus

QC SUMMARY REPORT

Volatile Organic Compounds by EPA Method 8260

Sample ID: LCS-R6252	SampType: LCS	Units: µg/L				Prep Date: 10/17/2012			RunNo: 6252		
Client ID: LCSW	Batch ID: R6252					Analysis Date: 10/17/2012			SeqNo: 124208		
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Isopropylbenzene	20.2	1.00	20.00	0	101	75.9	133				
Bromoform	19.8	0.500	20.00	0	99.2	69.9	142				
1,1,2,2-Tetrachloroethane	18.1	0.500	20.00	0	90.4	68	134				
n-Propylbenzene	20.0	1.00	20.00	0	100	77.1	133				
Bromobenzene	20.0	0.500	20.00	0	100	71.1	131				
1,3,5-Trimethylbenzene	19.7	1.00	20.00	0	98.6	76.2	133				
2-Chlorotoluene	20.0	0.500	20.00	0	100	67.1	137				
4-Chlorotoluene	19.7	0.500	20.00	0	98.6	70.7	132				
tert-Butylbenzene	19.4	1.00	20.00	0	96.8	71.3	139				
1,2,3-Trichloropropane	20.4	0.500	20.00	0	102	70.8	132				
1,2,4-Trichlorobenzene	20.5	1.00	20.00	0	103	61.4	139				
sec-Butylbenzene	19.4	1.00	20.00	0	97.1	77.4	136				
4-Isopropyltoluene	20.0	1.00	20.00	0	100	78.1	131				
1,3-Dichlorobenzene	20.7	0.500	20.00	0	104	73.5	125				
1,4-Dichlorobenzene	20.8	0.500	20.00	0	104	71.4	125				
n-Butylbenzene	20.5	1.00	20.00	0	103	69.8	138				
1,2-Dichlorobenzene	20.7	0.500	20.00	0	104	74.2	123				
1,2-Dibromo-3-chloropropane	20.7	0.500	20.00	0	103	66.1	138				
1,2,4-Trimethylbenzene	19.6	1.00	20.00	0	98.2	72.3	133				
Hexachlorobutadiene	19.9	2.00	20.00	0	99.4	60.9	141				
Naphthalene	20.7	1.00	20.00	0	104	58.2	140				
1,2,3-Trichlorobenzene	20.3	2.00	20.00	0	102	61.3	133				
Surr: 1-Bromo-4-fluorobenzene	10.2		10.00		103	79.2	120				
Surr: Dibromofluoromethane	10.0		10.00		100	76	114				
Surr: Toluene-d8	10.0		10.00		101	86.8	119				

Qualifiers: B Analyte detected in the associated Method Blank
H Holding times for preparation or analysis exceeded
R RPD outside accepted recovery limits

D Dilution was required
J Analyte detected below quantitation limits
RL Reporting Limit

E Value above quantitation range
ND Not detected at the Reporting Limit
S Spike recovery outside accepted recovery limits



Date: 10/24/2012

Work Order: 1210121
CLIENT: GeoEngineers, Inc. - Redmond
Project: Rufus

QC SUMMARY REPORT
Volatile Organic Compounds by EPA Method 8260

Sample ID: MB-R6252	SampType: MBLK	Units: µg/L			Prep Date: 10/17/2012			RunNo: 6252			
Client ID: MBLKW	Batch ID: R6252	Analysis Date: 10/17/2012						SeqNo: 124209			
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Dichlorodifluoromethane (CFC-12)	ND	1.00									
Chloromethane	ND	0.500									
Vinyl chloride	ND	0.200									
Bromomethane	ND	0.500									
Trichlorofluoromethane (CFC-11)	ND	0.500									
Chloroethane	ND	0.500									
1,1-Dichloroethene	ND	0.500									
Methylene chloride	ND	1.00									
trans-1,2-Dichloroethene	ND	0.500									
Methyl tert-butyl ether (MTBE)	ND	1.00									
1,1-Dichloroethane	ND	0.500									
2,2-Dichloropropane	ND	1.00									
cis-1,2-Dichloroethene	ND	0.500									
Chloroform	ND	1.00									
1,1,1-Trichloroethane (TCA)	ND	0.500									
1,1-Dichloropropene	ND	0.500									
Carbon tetrachloride	ND	0.500									
1,2-Dichloroethane (EDC)	ND	0.500									
Benzene	ND	1.00									
Trichloroethene (TCE)	ND	0.500									
1,2-Dichloropropane	ND	0.500									
Bromodichloromethane	ND	0.500									
Dibromomethane	ND	0.500									
cis-1,3-Dichloropropene	ND	0.500									
Toluene	ND	1.00									
trans-1,3-Dichloropropene	ND	0.500									
1,1,2-Trichloroethane	ND	0.500									
1,3-Dichloropropane	ND	0.500									
Tetrachloroethene (PCE)	ND	0.500									

Qualifiers:	B	Analyte detected in the associated Method Blank	D	Dilution was required	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits	ND	Not detected at the Reporting Limit
	R	RPD outside accepted recovery limits	RL	Reporting Limit	S	Spike recovery outside accepted recovery limits



Date: 10/24/2012

Work Order: 1210121

CLIENT: GeoEngineers, Inc. - Redmond

Project: Rufus

QC SUMMARY REPORT

Volatile Organic Compounds by EPA Method 8260

Sample ID: MB-R6252	SampType: MBLK	Units: µg/L			Prep Date: 10/17/2012			RunNo: 6252			
Client ID: MBLKW	Batch ID: R6252	Analysis Date: 10/17/2012						SeqNo: 124209			
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Dibromochloromethane	ND	0.500									
1,2-Dibromoethane (EDB)	ND	0.200									
Chlorobenzene	ND	0.500									
1,1,1,2-Tetrachloroethane	ND	0.500									
Ethylbenzene	ND	1.00									
m,p-Xylene	ND	1.00									
o-Xylene	ND	1.00									
Styrene	ND	1.00									
Isopropylbenzene	ND	1.00									
Bromoform	ND	0.500									
1,1,2,2-Tetrachloroethane	ND	0.500									
n-Propylbenzene	ND	1.00									
Bromobenzene	ND	0.500									
1,3,5-Trimethylbenzene	ND	1.00									
2-Chlorotoluene	ND	0.500									
4-Chlorotoluene	ND	0.500									
tert-Butylbenzene	ND	1.00									
1,2,3-Trichloropropane	ND	0.500									
1,2,4-Trichlorobenzene	ND	1.00									
sec-Butylbenzene	ND	1.00									
4-Isopropyltoluene	ND	1.00									
1,3-Dichlorobenzene	ND	0.500									
1,4-Dichlorobenzene	ND	0.500									
n-Butylbenzene	ND	1.00									
1,2-Dichlorobenzene	ND	0.500									
1,2-Dibromo-3-chloropropane	ND	0.500									
1,2,4-Trimethylbenzene	ND	1.00									
Hexachlorobutadiene	ND	2.00									
Naphthalene	ND	1.00									

Qualifiers: B Analyte detected in the associated Method Blank
H Holding times for preparation or analysis exceeded
R RPD outside accepted recovery limits

D Dilution was required
J Analyte detected below quantitation limits
RL Reporting Limit

E Value above quantitation range
ND Not detected at the Reporting Limit
S Spike recovery outside accepted recovery limits

Work Order: 1210121

CLIENT: GeoEngineers, Inc. - Redmond

Project: Rufus

QC SUMMARY REPORT

Volatile Organic Compounds by EPA Method 8260

Sample ID: MB-R6252	SampType: MBLK	Units: µg/L				Prep Date: 10/17/2012			RunNo: 6252		
Client ID: MBLKW	Batch ID: R6252					Analysis Date: 10/17/2012			SeqNo: 124209		
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
1,2,3-Trichlorobenzene	ND	2.00									
Surr: 1-Bromo-4-fluorobenzene	10.0		10.00		100	79.2	120				
Surr: Dibromofluoromethane	10.1		10.00		101	76	114				
Surr: Toluene-d8	9.87		10.00		98.7	86.8	119				

Qualifiers:

B Analyte detected in the associated Method Blank

H Holding times for preparation or analysis exceeded

R RPD outside accepted recovery limits

D Dilution was required

J Analyte detected below quantitation limits

RL Reporting Limit

E Value above quantitation range

ND Not detected at the Reporting Limit

S Spike recovery outside accepted recovery limits

Client Name: **GEI1**

 Work Order Number: **1210121**

 Logged by: **Troy Zehr**

 Date Received: **10/15/2012 2:05:00 PM**

Chain of Custody

1. Were custodial seals present? Yes ☐ No ☐ Not Required ☒
2. Is Chain of Custody complete? Yes ☒ No ☐ Not Present ☐
3. How was the sample delivered? Client

Log In

4. Coolers are present? Yes ☒ No ☐ NA ☐
5. Was an attempt made to cool the samples? Yes ☒ No ☐ NA ☐
6. Were all coolers received at a temperature of >0° C to 10.0°C Yes ☒ No ☐ NA ☐
7. Sample(s) in proper container(s)? Yes ☒ No ☐
8. Sufficient sample volume for indicated test(s)? Yes ☒ No ☐
9. Are samples properly preserved? Yes ☒ No ☐
10. Was preservative added to bottles? Yes ☐ No ☒ NA ☐
11. Is there headspace present in VOA vials? Yes ☐ No ☒ NA ☐
12. Did all sample containers arrive in good condition?(unbroken) Yes ☒ No ☐
13. Does paperwork match bottle labels? Yes ☒ No ☐
14. Are matrices correctly identified on Chain of Custody? Yes ☒ No ☐
15. Is it clear what analyses were requested? Yes ☒ No ☐
16. Were all holding times able to be met? Yes ☒ No ☐

Special Handling (if applicable)

17. Was client notified of all discrepancies with this order? Yes ☐ No ☐ NA ☒

Person Notified:		Date:	
By Whom:		Via:	☐ eMail ☐ Phone ☐ Fax ☐ In Person
Regarding:			
Client Instructions:			

18. Additional remarks/Discrepancies

Item Information

Item #	Temp °C	Condition
Cooler	3.2	Good
Temp Blank	5.9	Good



Fremont
Analytical

3600 Fremont Ave. N.
Seattle, WA 98103
T: (206) 352-3790
F: (206) 352-7178
info@fremontanalytical.com

GeoEngineers

Chris Brown
600 Stewart Street, Suite 1700
Seattle, WA 98101

RE: Block 21-Test Pit Explorations

Work Order Number: 1708281

September 22, 2017

Attention Chris Brown:

Fremont Analytical, Inc. received 15 sample(s) on 8/17/2017 for the analyses presented in the following report.

Diesel and Heavy Oil by NWTPH-Dx/Dx Ext.

Gasoline by NWTPH-Gx

Mercury by EPA Method 7471

Polyaromatic Hydrocarbons by EPA Method 8270 (SIM)

Sample Moisture (Percent Moisture)

Total Metals by EPA Method 6020

Volatile Organic Compounds by EPA Method 8260C

This report consists of the following:

- Case Narrative
- Analytical Results
- Applicable Quality Control Summary Reports
- Chain of Custody

All analyses were performed consistent with the Quality Assurance program of Fremont Analytical, Inc. Please contact the laboratory if you should have any questions about the results.

Thank you for using Fremont Analytical.

Sincerely,

Mike Ridgeway
Laboratory Director

DoD/ELAP Certification #L17-135, ISO/IEC 17025:2005
ORELAP Certification: WA 100009-007 (NELAP Recognized)

CLIENT: GeoEngineers
Project: Block 21-Test Pit Explorations
Work Order: 1708281

Work Order Sample Summary

Lab Sample ID	Client Sample ID	Date/Time Collected	Date/Time Received
1708281-001	TP21-1-5.0	08/17/2017 12:55 PM	08/17/2017 3:54 PM
1708281-002	TP21-1-8.0	08/17/2017 1:10 PM	08/17/2017 3:54 PM
1708281-003	TP21-2-2.5	08/17/2017 1:40 PM	08/17/2017 3:54 PM
1708281-004	TP21-2-5.0	08/17/2017 1:55 PM	08/17/2017 3:54 PM
1708281-005	TP21-3-7.5	08/17/2017 8:20 AM	08/17/2017 3:54 PM
1708281-006	TP21-3-10.0	08/17/2017 8:35 AM	08/17/2017 3:54 PM
1708281-007	TP21-4-5.0	08/17/2017 9:25 AM	08/17/2017 3:54 PM
1708281-008	TP21-4-7.0	08/17/2017 9:35 AM	08/17/2017 3:54 PM
1708281-009	TP21-5-2.5	08/17/2017 10:15 AM	08/17/2017 3:54 PM
1708281-010	TP21-5-7.0	08/17/2017 10:30 AM	08/17/2017 3:54 PM
1708281-011	TP21-8-2.5	08/17/2017 12:00 PM	08/17/2017 3:54 PM
1708281-012	TP21-8-5.0	08/17/2017 12:10 PM	08/17/2017 3:54 PM
1708281-013	TP21-9-2.5	08/17/2017 11:15 AM	08/17/2017 3:54 PM
1708281-014	TP21-9-5.0	08/17/2017 11:30 AM	08/17/2017 3:54 PM
1708281-015	Trip Blank	08/10/2017 10:22 AM	08/17/2017 3:54 PM

CLIENT: GeoEngineers
Project: Block 21-Test Pit Explorations

I. SAMPLE RECEIPT:

Samples receipt information is recorded on the attached Sample Receipt Checklist.

II. GENERAL REPORTING COMMENTS:

Results are reported on a wet weight basis unless dry-weight correction is denoted in the units field on the analytical report ("mg/kg-dry" or "ug/kg-dry").

Matrix Spike (MS) and MS Duplicate (MSD) samples are tested from an analytical batch of "like" matrix to check for possible matrix effect. The MS and MSD will provide site specific matrix data only for those samples which are spiked by the laboratory. The sample chosen for spike purposes may or may not have been a sample submitted in this sample delivery group. The validity of the analytical procedures for which data is reported in this analytical report is determined by the Laboratory Control Sample (LCS) and the Method Blank (MB). The LCS and the MB are processed with the samples and the MS/MSD to ensure method criteria are achieved throughout the entire analytical process.

III. ANALYSES AND EXCEPTIONS:

Exceptions associated with this report will be footnoted in the analytical results page(s) or the quality control summary page(s) and/or noted below.

Qualifiers:

- * - Flagged value is not within established control limits
- B - Analyte detected in the associated Method Blank
- D - Dilution was required
- E - Value above quantitation range
- H - Holding times for preparation or analysis exceeded
- I - Analyte with an internal standard that does not meet established acceptance criteria
- J - Analyte detected below Reporting Limit
- N - Tentatively Identified Compound (TIC)
- Q - Analyte with an initial or continuing calibration that does not meet established acceptance criteria (<20%RSD, <20% Drift or minimum RRF)
- S - Spike recovery outside accepted recovery limits
- ND - Not detected at the Reporting Limit
- R - High relative percent difference observed

Acronyms:

- %Rec - Percent Recovery
- CCB - Continued Calibration Blank
- CCV - Continued Calibration Verification
- DF - Dilution Factor
- HEM - Hexane Extractable Material
- ICV - Initial Calibration Verification
- LCS/LCSD - Laboratory Control Sample / Laboratory Control Sample Duplicate
- MB or MBLANK - Method Blank
- MDL - Method Detection Limit
- MS/MSD - Matrix Spike / Matrix Spike Duplicate
- PDS - Post Digestion Spike
- Ref Val - Reference Value
- RL - Reporting Limit
- RPD - Relative Percent Difference
- SD - Serial Dilution
- SGT - Silica Gel Treatment
- SPK - Spike
- Surr - Surrogate



Analytical Report

Work Order: 1708281

Date Reported: 9/22/2017

Client: GeoEngineers

Collection Date: 8/17/2017 12:55:00 PM

Project: Block 21-Test Pit Explorations

Lab ID: 1708281-001

Matrix: Soil

Client Sample ID: TP21-1-5.0

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
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Diesel and Heavy Oil by NWTPH-Dx/Dx Ext.

Batch ID: 18001

Analyst: SB

Diesel (Fuel Oil)	ND	18.7		mg/Kg-dry	1	8/25/2017 7:39:33 AM
Heavy Oil	ND	46.7		mg/Kg-dry	1	8/25/2017 7:39:33 AM
Surr: 2-Fluorobiphenyl	94.6	50 - 150		%Rec	1	8/25/2017 7:39:33 AM
Surr: o-Terphenyl	101	50 - 150		%Rec	1	8/25/2017 7:39:33 AM

Polyaromatic Hydrocarbons by EPA Method 8270 (SIM)

Batch ID: 18010

Analyst: SG

Naphthalene	ND	38.8		µg/L-dry	1	8/25/2017 12:31:57 AM
2-Methylnaphthalene	ND	38.8		µg/L-dry	1	8/25/2017 12:31:57 AM
1-Methylnaphthalene	ND	38.8		µg/L-dry	1	8/25/2017 12:31:57 AM
Acenaphthylene	ND	38.8		µg/L-dry	1	8/25/2017 12:31:57 AM
Acenaphthene	ND	38.8		µg/L-dry	1	8/25/2017 12:31:57 AM
Fluorene	ND	38.8		µg/L-dry	1	8/25/2017 12:31:57 AM
Phenanthrene	ND	38.8		µg/L-dry	1	8/25/2017 12:31:57 AM
Anthracene	ND	38.8		µg/L-dry	1	8/25/2017 12:31:57 AM
Fluoranthene	ND	38.8		µg/L-dry	1	8/25/2017 12:31:57 AM
Pyrene	ND	38.8		µg/L-dry	1	8/25/2017 12:31:57 AM
Benz(a)anthracene	ND	38.8		µg/L-dry	1	8/25/2017 12:31:57 AM
Chrysene	ND	38.8		µg/L-dry	1	8/25/2017 12:31:57 AM
Benzo(b)fluoranthene	ND	38.8		µg/L-dry	1	8/25/2017 12:31:57 AM
Benzo(j,k)fluoranthene	ND	38.8		µg/L-dry	1	8/25/2017 12:31:57 AM
Benzo(a)pyrene	ND	38.8		µg/L-dry	1	8/25/2017 12:31:57 AM
Indeno(1,2,3-cd)pyrene	ND	38.8	Q	µg/L-dry	1	8/25/2017 12:31:57 AM
Dibenz(a,h)anthracene	ND	38.8	Q	µg/L-dry	1	8/25/2017 12:31:57 AM
Benzo(g,h,i)perylene	ND	38.8	Q	µg/L-dry	1	8/25/2017 12:31:57 AM
Surr: 2-Fluorobiphenyl	67.0	20 - 128		%Rec	1	8/25/2017 12:31:57 AM
Surr: Terphenyl-d14 (surr)	87.3	46.2 - 179		%Rec	1	8/25/2017 12:31:57 AM

NOTES:

Q - Indicates an analyte with a continuing calibration that does not meet established acceptance criteria (<20%RSD, <20% Drift or minimum RRF).

Gasoline by NWTPH-Gx

Batch ID: 18011

Analyst: MW

Gasoline	ND	5.35		mg/Kg-dry	1	8/29/2017 10:22:05 AM
Surr: Toluene-d8	97.3	65 - 135		%Rec	1	8/29/2017 10:22:05 AM
Surr: 4-Bromofluorobenzene	98.1	65 - 135		%Rec	1	8/29/2017 10:22:05 AM



Analytical Report

Work Order: 1708281
Date Reported: 9/22/2017

Client: GeoEngineers
Project: Block 21-Test Pit Explorations
Lab ID: 1708281-001
Client Sample ID: TP21-1-5.0

Collection Date: 8/17/2017 12:55:00 PM

Matrix: Soil

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<u>Volatile Organic Compounds by EPA Method 8260C</u>				Batch ID: 18011		Analyst: MW
Dichlorodifluoromethane (CFC-12)	ND	0.0214		mg/Kg-dry	1	8/29/2017 10:22:05 AM
Chloromethane	ND	0.0535		mg/Kg-dry	1	8/29/2017 10:22:05 AM
Vinyl chloride	ND	0.0267		mg/Kg-dry	1	8/29/2017 10:22:05 AM
Bromomethane	ND	0.0535		mg/Kg-dry	1	8/29/2017 10:22:05 AM
Trichlorofluoromethane (CFC-11)	ND	0.0214		mg/Kg-dry	1	8/29/2017 10:22:05 AM
Chloroethane	ND	0.0535		mg/Kg-dry	1	8/29/2017 10:22:05 AM
1,1-Dichloroethene	ND	0.0214		mg/Kg-dry	1	8/29/2017 10:22:05 AM
Methylene chloride	ND	0.0214		mg/Kg-dry	1	8/29/2017 10:22:05 AM
trans-1,2-Dichloroethene	ND	0.0214		mg/Kg-dry	1	8/29/2017 10:22:05 AM
Methyl tert-butyl ether (MTBE)	ND	0.0535		mg/Kg-dry	1	8/29/2017 10:22:05 AM
1,1-Dichloroethane	ND	0.0214		mg/Kg-dry	1	8/29/2017 10:22:05 AM
2,2-Dichloropropane	ND	0.107	Q	mg/Kg-dry	1	8/29/2017 10:22:05 AM
cis-1,2-Dichloroethene	ND	0.0214		mg/Kg-dry	1	8/29/2017 10:22:05 AM
Chloroform	ND	0.0214		mg/Kg-dry	1	8/29/2017 10:22:05 AM
1,1,1-Trichloroethane (TCA)	ND	0.0267		mg/Kg-dry	1	8/29/2017 10:22:05 AM
1,1-Dichloropropene	ND	0.0214		mg/Kg-dry	1	8/29/2017 10:22:05 AM
Carbon tetrachloride	ND	0.0267		mg/Kg-dry	1	8/29/2017 10:22:05 AM
1,2-Dichloroethane (EDC)	ND	0.0214		mg/Kg-dry	1	8/29/2017 10:22:05 AM
Benzene	ND	0.0214		mg/Kg-dry	1	8/29/2017 10:22:05 AM
Trichloroethene (TCE)	ND	0.0214		mg/Kg-dry	1	8/29/2017 10:22:05 AM
1,2-Dichloropropane	ND	0.0214		mg/Kg-dry	1	8/29/2017 10:22:05 AM
Bromodichloromethane	ND	0.0214		mg/Kg-dry	1	8/29/2017 10:22:05 AM
Dibromomethane	ND	0.0214		mg/Kg-dry	1	8/29/2017 10:22:05 AM
cis-1,3-Dichloropropene	ND	0.0214		mg/Kg-dry	1	8/29/2017 10:22:05 AM
Toluene	ND	0.0214		mg/Kg-dry	1	8/29/2017 10:22:05 AM
trans-1,3-Dichloropropylene	ND	0.0214		mg/Kg-dry	1	8/29/2017 10:22:05 AM
1,1,2-Trichloroethane	ND	0.0214		mg/Kg-dry	1	8/29/2017 10:22:05 AM
1,3-Dichloropropane	ND	0.0267		mg/Kg-dry	1	8/29/2017 10:22:05 AM
Tetrachloroethene (PCE)	ND	0.0267		mg/Kg-dry	1	8/29/2017 10:22:05 AM
Dibromochloromethane	ND	0.0267		mg/Kg-dry	1	8/29/2017 10:22:05 AM
1,2-Dibromoethane (EDB)	ND	0.00535		mg/Kg-dry	1	8/29/2017 10:22:05 AM
Chlorobenzene	ND	0.0267		mg/Kg-dry	1	8/29/2017 10:22:05 AM
1,1,1,2-Tetrachloroethane	ND	0.0267		mg/Kg-dry	1	8/29/2017 10:22:05 AM
Ethylbenzene	ND	0.0267		mg/Kg-dry	1	8/29/2017 10:22:05 AM
m,p-Xylene	ND	0.0535		mg/Kg-dry	1	8/29/2017 10:22:05 AM
o-Xylene	ND	0.0267		mg/Kg-dry	1	8/29/2017 10:22:05 AM
Styrene	ND	0.0267		mg/Kg-dry	1	8/29/2017 10:22:05 AM
Isopropylbenzene	ND	0.0267		mg/Kg-dry	1	8/29/2017 10:22:05 AM
Bromoform	ND	0.0535		mg/Kg-dry	1	8/29/2017 10:22:05 AM



Analytical Report

Work Order: 1708281

Date Reported: 9/22/2017

Client: GeoEngineers

Collection Date: 8/17/2017 12:55:00 PM

Project: Block 21-Test Pit Explorations

Lab ID: 1708281-001

Matrix: Soil

Client Sample ID: TP21-1-5.0

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
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Volatile Organic Compounds by EPA Method 8260C

Batch ID: 18011

Analyst: MW

1,1,2,2-Tetrachloroethane	ND	0.0214		mg/Kg-dry	1	8/29/2017 10:22:05 AM
n-Propylbenzene	ND	0.0267		mg/Kg-dry	1	8/29/2017 10:22:05 AM
Bromobenzene	ND	0.0214		mg/Kg-dry	1	8/29/2017 10:22:05 AM
1,3,5-Trimethylbenzene	ND	0.0267		mg/Kg-dry	1	8/29/2017 10:22:05 AM
2-Chlorotoluene	ND	0.0267		mg/Kg-dry	1	8/29/2017 10:22:05 AM
4-Chlorotoluene	ND	0.0267		mg/Kg-dry	1	8/29/2017 10:22:05 AM
tert-Butylbenzene	ND	0.0267		mg/Kg-dry	1	8/29/2017 10:22:05 AM
1,2,3-Trichloropropane	ND	0.0267		mg/Kg-dry	1	8/29/2017 10:22:05 AM
1,2,4-Trichlorobenzene	ND	0.0267		mg/Kg-dry	1	8/29/2017 10:22:05 AM
sec-Butylbenzene	ND	0.0535		mg/Kg-dry	1	8/29/2017 10:22:05 AM
4-Isopropyltoluene	ND	0.0535		mg/Kg-dry	1	8/29/2017 10:22:05 AM
1,3-Dichlorobenzene	ND	0.0214		mg/Kg-dry	1	8/29/2017 10:22:05 AM
1,4-Dichlorobenzene	ND	0.0214		mg/Kg-dry	1	8/29/2017 10:22:05 AM
n-Butylbenzene	ND	0.0267		mg/Kg-dry	1	8/29/2017 10:22:05 AM
1,2-Dichlorobenzene	ND	0.0214		mg/Kg-dry	1	8/29/2017 10:22:05 AM
1,2-Dibromo-3-chloropropane	ND	0.535		mg/Kg-dry	1	8/29/2017 10:22:05 AM
1,2,4-Trimethylbenzene	ND	0.0214		mg/Kg-dry	1	8/29/2017 10:22:05 AM
Hexachlorobutadiene	ND	0.0535		mg/Kg-dry	1	8/29/2017 10:22:05 AM
Naphthalene	ND	0.0535		mg/Kg-dry	1	8/29/2017 10:22:05 AM
1,2,3-Trichlorobenzene	ND	0.0214		mg/Kg-dry	1	8/29/2017 10:22:05 AM
Surr: Dibromofluoromethane	94.6	56.5 - 129		%Rec	1	8/29/2017 10:22:05 AM
Surr: Toluene-d8	103	64.5 - 151		%Rec	1	8/29/2017 10:22:05 AM
Surr: 1-Bromo-4-fluorobenzene	98.1	63.1 - 141		%Rec	1	8/29/2017 10:22:05 AM

NOTES:

Q - Indicates an analyte with a continuing calibration that does not meet established acceptance criteria (<20%RSD, <20% Drift or minimum RRF).

Mercury by EPA Method 7471

Batch ID: 18003

Analyst: WF

Mercury	ND	0.272		mg/Kg-dry	1	8/24/2017 5:25:02 PM
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Total Metals by EPA Method 6020

Batch ID: 18019

Analyst: TN

Arsenic	2.64	0.0889		mg/Kg-dry	1	8/28/2017 10:41:31 AM
Barium	49.4	0.444		mg/Kg-dry	1	8/28/2017 10:41:31 AM
Cadmium	ND	0.178		mg/Kg-dry	1	8/28/2017 10:41:31 AM
Chromium	34.5	0.0889		mg/Kg-dry	1	8/28/2017 10:41:31 AM
Lead	2.31	0.178		mg/Kg-dry	1	8/28/2017 10:41:31 AM
Selenium	1.06	0.444		mg/Kg-dry	1	8/28/2017 10:41:31 AM



Analytical Report

Work Order: 1708281
Date Reported: 9/22/2017

Client: GeoEngineers

Collection Date: 8/17/2017 12:55:00 PM

Project: Block 21-Test Pit Explorations

Lab ID: 1708281-001

Matrix: Soil

Client Sample ID: TP21-1-5.0

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
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Total Metals by EPA Method 6020

Batch ID: 18019 Analyst: TN

Silver	ND	0.0889		mg/Kg-dry	1	8/28/2017 10:41:31 AM
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Sample Moisture (Percent Moisture)

Batch ID: R38193 Analyst: CG

Percent Moisture	9.97			wt%	1	8/24/2017 9:02:15 AM
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Analytical Report

Work Order: 1708281

Date Reported: 9/22/2017

Client: GeoEngineers

Collection Date: 8/17/2017 1:40:00 PM

Project: Block 21-Test Pit Explorations

Lab ID: 1708281-003

Matrix: Soil

Client Sample ID: TP21-2-2.5

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
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Diesel and Heavy Oil by NWTPH-Dx/Dx Ext.

Batch ID: 18001

Analyst: SB

Diesel (Fuel Oil)	ND	22.2		mg/Kg-dry	1	8/25/2017 8:09:12 AM
Heavy Oil	ND	55.5		mg/Kg-dry	1	8/25/2017 8:09:12 AM
Surr: 2-Fluorobiphenyl	92.4	50 - 150		%Rec	1	8/25/2017 8:09:12 AM
Surr: o-Terphenyl	98.6	50 - 150		%Rec	1	8/25/2017 8:09:12 AM

Polyaromatic Hydrocarbons by EPA Method 8270 (SIM)

Batch ID: 18010

Analyst: SG

Naphthalene	ND	39.6		µg/L-dry	1	8/25/2017 12:54:01 AM
2-Methylnaphthalene	ND	39.6		µg/L-dry	1	8/25/2017 12:54:01 AM
1-Methylnaphthalene	ND	39.6		µg/L-dry	1	8/25/2017 12:54:01 AM
Acenaphthylene	ND	39.6		µg/L-dry	1	8/25/2017 12:54:01 AM
Acenaphthene	ND	39.6		µg/L-dry	1	8/25/2017 12:54:01 AM
Fluorene	ND	39.6		µg/L-dry	1	8/25/2017 12:54:01 AM
Phenanthrene	ND	39.6		µg/L-dry	1	8/25/2017 12:54:01 AM
Anthracene	ND	39.6		µg/L-dry	1	8/25/2017 12:54:01 AM
Fluoranthene	ND	39.6		µg/L-dry	1	8/25/2017 12:54:01 AM
Pyrene	ND	39.6		µg/L-dry	1	8/25/2017 12:54:01 AM
Benz(a)anthracene	ND	39.6		µg/L-dry	1	8/25/2017 12:54:01 AM
Chrysene	ND	39.6		µg/L-dry	1	8/25/2017 12:54:01 AM
Benzo(b)fluoranthene	ND	39.6		µg/L-dry	1	8/25/2017 12:54:01 AM
Benzo(j,k)fluoranthene	ND	39.6		µg/L-dry	1	8/25/2017 12:54:01 AM
Benzo(a)pyrene	ND	39.6		µg/L-dry	1	8/25/2017 12:54:01 AM
Indeno(1,2,3-cd)pyrene	ND	39.6	Q	µg/L-dry	1	8/25/2017 12:54:01 AM
Dibenz(a,h)anthracene	ND	39.6	Q	µg/L-dry	1	8/25/2017 12:54:01 AM
Benzo(g,h,i)perylene	ND	39.6	Q	µg/L-dry	1	8/25/2017 12:54:01 AM
Surr: 2-Fluorobiphenyl	62.2	20 - 128		%Rec	1	8/25/2017 12:54:01 AM
Surr: Terphenyl-d14 (surr)	85.7	46.2 - 179		%Rec	1	8/25/2017 12:54:01 AM

NOTES:

Q - Indicates an analyte with a continuing calibration that does not meet established acceptance criteria (<20%RSD, <20% Drift or minimum RRF).

Gasoline by NWTPH-Gx

Batch ID: 18011

Analyst: MW

Gasoline	ND	5.04		mg/Kg-dry	1	8/29/2017 10:52:07 AM
Surr: Toluene-d8	102	65 - 135		%Rec	1	8/29/2017 10:52:07 AM
Surr: 4-Bromofluorobenzene	94.5	65 - 135		%Rec	1	8/29/2017 10:52:07 AM



Analytical Report

Work Order: 1708281

Date Reported: 9/22/2017

Client: GeoEngineers

Collection Date: 8/17/2017 1:40:00 PM

Project: Block 21-Test Pit Explorations

Lab ID: 1708281-003

Matrix: Soil

Client Sample ID: TP21-2-2.5

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
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Volatile Organic Compounds by EPA Method 8260C

Batch ID: 18011

Analyst: MW

Dichlorodifluoromethane (CFC-12)	ND	0.0202		mg/Kg-dry	1	8/29/2017 10:52:07 AM
Chloromethane	ND	0.0504		mg/Kg-dry	1	8/29/2017 10:52:07 AM
Vinyl chloride	ND	0.0252		mg/Kg-dry	1	8/29/2017 10:52:07 AM
Bromomethane	ND	0.0504		mg/Kg-dry	1	8/29/2017 10:52:07 AM
Trichlorofluoromethane (CFC-11)	ND	0.0202		mg/Kg-dry	1	8/29/2017 10:52:07 AM
Chloroethane	ND	0.0504		mg/Kg-dry	1	8/29/2017 10:52:07 AM
1,1-Dichloroethene	ND	0.0202		mg/Kg-dry	1	8/29/2017 10:52:07 AM
Methylene chloride	ND	0.0202		mg/Kg-dry	1	8/29/2017 10:52:07 AM
trans-1,2-Dichloroethene	ND	0.0202		mg/Kg-dry	1	8/29/2017 10:52:07 AM
Methyl tert-butyl ether (MTBE)	ND	0.0504		mg/Kg-dry	1	8/29/2017 10:52:07 AM
1,1-Dichloroethane	ND	0.0202		mg/Kg-dry	1	8/29/2017 10:52:07 AM
2,2-Dichloropropane	ND	0.101	Q	mg/Kg-dry	1	8/29/2017 10:52:07 AM
cis-1,2-Dichloroethene	ND	0.0202		mg/Kg-dry	1	8/29/2017 10:52:07 AM
Chloroform	ND	0.0202		mg/Kg-dry	1	8/29/2017 10:52:07 AM
1,1,1-Trichloroethane (TCA)	ND	0.0252		mg/Kg-dry	1	8/29/2017 10:52:07 AM
1,1-Dichloropropene	ND	0.0202		mg/Kg-dry	1	8/29/2017 10:52:07 AM
Carbon tetrachloride	ND	0.0252		mg/Kg-dry	1	8/29/2017 10:52:07 AM
1,2-Dichloroethane (EDC)	ND	0.0202		mg/Kg-dry	1	8/29/2017 10:52:07 AM
Benzene	ND	0.0202		mg/Kg-dry	1	8/29/2017 10:52:07 AM
Trichloroethene (TCE)	ND	0.0202		mg/Kg-dry	1	8/29/2017 10:52:07 AM
1,2-Dichloropropane	ND	0.0202		mg/Kg-dry	1	8/29/2017 10:52:07 AM
Bromodichloromethane	ND	0.0202		mg/Kg-dry	1	8/29/2017 10:52:07 AM
Dibromomethane	ND	0.0202		mg/Kg-dry	1	8/29/2017 10:52:07 AM
cis-1,3-Dichloropropene	ND	0.0202		mg/Kg-dry	1	8/29/2017 10:52:07 AM
Toluene	ND	0.0202		mg/Kg-dry	1	8/29/2017 10:52:07 AM
trans-1,3-Dichloropropylene	ND	0.0202		mg/Kg-dry	1	8/29/2017 10:52:07 AM
1,1,2-Trichloroethane	ND	0.0202		mg/Kg-dry	1	8/29/2017 10:52:07 AM
1,3-Dichloropropane	ND	0.0252		mg/Kg-dry	1	8/29/2017 10:52:07 AM
Tetrachloroethene (PCE)	ND	0.0252		mg/Kg-dry	1	8/29/2017 10:52:07 AM
Dibromochloromethane	ND	0.0252		mg/Kg-dry	1	8/29/2017 10:52:07 AM
1,2-Dibromoethane (EDB)	ND	0.00504		mg/Kg-dry	1	8/29/2017 10:52:07 AM
Chlorobenzene	ND	0.0252		mg/Kg-dry	1	8/29/2017 10:52:07 AM
1,1,1,2-Tetrachloroethane	ND	0.0252		mg/Kg-dry	1	8/29/2017 10:52:07 AM
Ethylbenzene	ND	0.0252		mg/Kg-dry	1	8/29/2017 10:52:07 AM
m,p-Xylene	ND	0.0504		mg/Kg-dry	1	8/29/2017 10:52:07 AM
o-Xylene	ND	0.0252		mg/Kg-dry	1	8/29/2017 10:52:07 AM
Styrene	ND	0.0252		mg/Kg-dry	1	8/29/2017 10:52:07 AM
Isopropylbenzene	ND	0.0252		mg/Kg-dry	1	8/29/2017 10:52:07 AM
Bromoform	ND	0.0504		mg/Kg-dry	1	8/29/2017 10:52:07 AM



Analytical Report

Work Order: 1708281

Date Reported: 9/22/2017

Client: GeoEngineers

Collection Date: 8/17/2017 1:40:00 PM

Project: Block 21-Test Pit Explorations

Lab ID: 1708281-003

Matrix: Soil

Client Sample ID: TP21-2-2.5

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
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Volatile Organic Compounds by EPA Method 8260C

Batch ID: 18011

Analyst: MW

1,1,2,2-Tetrachloroethane	ND	0.0202		mg/Kg-dry	1	8/29/2017 10:52:07 AM
n-Propylbenzene	ND	0.0252		mg/Kg-dry	1	8/29/2017 10:52:07 AM
Bromobenzene	ND	0.0202		mg/Kg-dry	1	8/29/2017 10:52:07 AM
1,3,5-Trimethylbenzene	ND	0.0252		mg/Kg-dry	1	8/29/2017 10:52:07 AM
2-Chlorotoluene	ND	0.0252		mg/Kg-dry	1	8/29/2017 10:52:07 AM
4-Chlorotoluene	ND	0.0252		mg/Kg-dry	1	8/29/2017 10:52:07 AM
tert-Butylbenzene	ND	0.0252		mg/Kg-dry	1	8/29/2017 10:52:07 AM
1,2,3-Trichloropropane	ND	0.0252		mg/Kg-dry	1	8/29/2017 10:52:07 AM
1,2,4-Trichlorobenzene	ND	0.0252		mg/Kg-dry	1	8/29/2017 10:52:07 AM
sec-Butylbenzene	ND	0.0504		mg/Kg-dry	1	8/29/2017 10:52:07 AM
4-Isopropyltoluene	ND	0.0504		mg/Kg-dry	1	8/29/2017 10:52:07 AM
1,3-Dichlorobenzene	ND	0.0202		mg/Kg-dry	1	8/29/2017 10:52:07 AM
1,4-Dichlorobenzene	ND	0.0202		mg/Kg-dry	1	8/29/2017 10:52:07 AM
n-Butylbenzene	ND	0.0252		mg/Kg-dry	1	8/29/2017 10:52:07 AM
1,2-Dichlorobenzene	ND	0.0202		mg/Kg-dry	1	8/29/2017 10:52:07 AM
1,2-Dibromo-3-chloropropane	ND	0.504		mg/Kg-dry	1	8/29/2017 10:52:07 AM
1,2,4-Trimethylbenzene	ND	0.0202		mg/Kg-dry	1	8/29/2017 10:52:07 AM
Hexachlorobutadiene	ND	0.0504		mg/Kg-dry	1	8/29/2017 10:52:07 AM
Naphthalene	ND	0.0504		mg/Kg-dry	1	8/29/2017 10:52:07 AM
1,2,3-Trichlorobenzene	ND	0.0202		mg/Kg-dry	1	8/29/2017 10:52:07 AM
Surr: Dibromofluoromethane	94.7	56.5 - 129		%Rec	1	8/29/2017 10:52:07 AM
Surr: Toluene-d8	100	64.5 - 151		%Rec	1	8/29/2017 10:52:07 AM
Surr: 1-Bromo-4-fluorobenzene	94.6	63.1 - 141		%Rec	1	8/29/2017 10:52:07 AM

NOTES:

Q - Indicates an analyte with a continuing calibration that does not meet established acceptance criteria (<20%RSD, <20% Drift or minimum RRF).

Mercury by EPA Method 7471

Batch ID: 18003

Analyst: WF

Mercury	ND	0.255		mg/Kg-dry	1	8/24/2017 5:31:32 PM
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Total Metals by EPA Method 6020

Batch ID: 18019

Analyst: TN

Arsenic	4.42	0.0897		mg/Kg-dry	1	8/28/2017 10:45:32 AM
Barium	72.4	0.449		mg/Kg-dry	1	8/28/2017 10:45:32 AM
Cadmium	ND	0.179		mg/Kg-dry	1	8/28/2017 10:45:32 AM
Chromium	41.7	0.0897		mg/Kg-dry	1	8/28/2017 10:45:32 AM
Lead	4.26	0.179		mg/Kg-dry	1	8/28/2017 10:45:32 AM
Selenium	1.36	0.449		mg/Kg-dry	1	8/28/2017 10:45:32 AM



Analytical Report

Work Order: 1708281
Date Reported: 9/22/2017

Client: GeoEngineers

Collection Date: 8/17/2017 1:40:00 PM

Project: Block 21-Test Pit Explorations

Lab ID: 1708281-003

Matrix: Soil

Client Sample ID: TP21-2-2.5

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
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Total Metals by EPA Method 6020

Batch ID: 18019 Analyst: TN

Silver	ND	0.0897		mg/Kg-dry	1	8/28/2017 10:45:32 AM
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Sample Moisture (Percent Moisture)

Batch ID: R38193 Analyst: CG

Percent Moisture	10.8			wt%	1	8/24/2017 9:02:15 AM
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Analytical Report

Work Order: 1708281

Date Reported: 9/22/2017

Client: GeoEngineers

Collection Date: 8/17/2017 8:20:00 AM

Project: Block 21-Test Pit Explorations

Lab ID: 1708281-005

Matrix: Soil

Client Sample ID: TP21-3-7.5

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<u>Diesel and Heavy Oil by NWTPH-Dx/Dx Ext.</u>				Batch ID: 18001		Analyst: SB
Diesel (Fuel Oil)	ND	20.8		mg/Kg-dry	1	8/29/2017 3:17:50 AM
Heavy Oil	ND	52.1		mg/Kg-dry	1	8/29/2017 3:17:50 AM
Surr: 2-Fluorobiphenyl	93.9	50 - 150		%Rec	1	8/29/2017 3:17:50 AM
Surr: o-Terphenyl	100	50 - 150		%Rec	1	8/29/2017 3:17:50 AM

<u>Polyaromatic Hydrocarbons by EPA Method 8270 (SIM)</u>				Batch ID: 18010		Analyst: SG
Naphthalene	ND	45.9		µg/L-dry	1	8/25/2017 1:16:06 AM
2-Methylnaphthalene	ND	45.9		µg/L-dry	1	8/25/2017 1:16:06 AM
1-Methylnaphthalene	ND	45.9		µg/L-dry	1	8/25/2017 1:16:06 AM
Acenaphthylene	ND	45.9		µg/L-dry	1	8/25/2017 1:16:06 AM
Acenaphthene	ND	45.9		µg/L-dry	1	8/25/2017 1:16:06 AM
Fluorene	ND	45.9		µg/L-dry	1	8/25/2017 1:16:06 AM
Phenanthrene	ND	45.9		µg/L-dry	1	8/25/2017 1:16:06 AM
Anthracene	ND	45.9		µg/L-dry	1	8/25/2017 1:16:06 AM
Fluoranthene	ND	45.9		µg/L-dry	1	8/25/2017 1:16:06 AM
Pyrene	ND	45.9		µg/L-dry	1	8/25/2017 1:16:06 AM
Benz(a)anthracene	ND	45.9		µg/L-dry	1	8/25/2017 1:16:06 AM
Chrysene	ND	45.9		µg/L-dry	1	8/25/2017 1:16:06 AM
Benzo(b)fluoranthene	ND	45.9		µg/L-dry	1	8/25/2017 1:16:06 AM
Benzo(j,k)fluoranthene	ND	45.9		µg/L-dry	1	8/25/2017 1:16:06 AM
Benzo(a)pyrene	ND	45.9		µg/L-dry	1	8/25/2017 1:16:06 AM
Indeno(1,2,3-cd)pyrene	ND	45.9	Q	µg/L-dry	1	8/25/2017 1:16:06 AM
Dibenz(a,h)anthracene	ND	45.9	Q	µg/L-dry	1	8/25/2017 1:16:06 AM
Benzo(g,h,i)perylene	ND	45.9	Q	µg/L-dry	1	8/25/2017 1:16:06 AM
Surr: 2-Fluorobiphenyl	68.3	20 - 128		%Rec	1	8/25/2017 1:16:06 AM
Surr: Terphenyl-d14 (surr)	89.1	46.2 - 179		%Rec	1	8/25/2017 1:16:06 AM

NOTES:

Q - Indicates an analyte with a continuing calibration that does not meet established acceptance criteria (<20%RSD, <20% Drift or minimum RRF).

<u>Gasoline by NWTPH-Gx</u>				Batch ID: 18011		Analyst: MW
Gasoline	ND	4.89		mg/Kg-dry	1	8/29/2017 11:52:00 AM
Surr: Toluene-d8	99.4	65 - 135		%Rec	1	8/29/2017 11:52:00 AM
Surr: 4-Bromofluorobenzene	97.3	65 - 135		%Rec	1	8/29/2017 11:52:00 AM



Analytical Report

Work Order: 1708281

Date Reported: 9/22/2017

Client: GeoEngineers

Collection Date: 8/17/2017 8:20:00 AM

Project: Block 21-Test Pit Explorations

Lab ID: 1708281-005

Matrix: Soil

Client Sample ID: TP21-3-7.5

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<u>Volatile Organic Compounds by EPA Method 8260C</u>				Batch ID: 18011		Analyst: MW
Dichlorodifluoromethane (CFC-12)	ND	0.0196		mg/Kg-dry	1	8/29/2017 11:52:00 AM
Chloromethane	ND	0.0489		mg/Kg-dry	1	8/29/2017 11:52:00 AM
Vinyl chloride	ND	0.0245		mg/Kg-dry	1	8/29/2017 11:52:00 AM
Bromomethane	ND	0.0489		mg/Kg-dry	1	8/29/2017 11:52:00 AM
Trichlorofluoromethane (CFC-11)	ND	0.0196		mg/Kg-dry	1	8/29/2017 11:52:00 AM
Chloroethane	ND	0.0489		mg/Kg-dry	1	8/29/2017 11:52:00 AM
1,1-Dichloroethene	ND	0.0196		mg/Kg-dry	1	8/29/2017 11:52:00 AM
Methylene chloride	ND	0.0196		mg/Kg-dry	1	8/29/2017 11:52:00 AM
trans-1,2-Dichloroethene	ND	0.0196		mg/Kg-dry	1	8/29/2017 11:52:00 AM
Methyl tert-butyl ether (MTBE)	ND	0.0489		mg/Kg-dry	1	8/29/2017 11:52:00 AM
1,1-Dichloroethane	ND	0.0196		mg/Kg-dry	1	8/29/2017 11:52:00 AM
2,2-Dichloropropane	ND	0.0978	Q	mg/Kg-dry	1	8/29/2017 11:52:00 AM
cis-1,2-Dichloroethene	ND	0.0196		mg/Kg-dry	1	8/29/2017 11:52:00 AM
Chloroform	ND	0.0196		mg/Kg-dry	1	8/29/2017 11:52:00 AM
1,1,1-Trichloroethane (TCA)	ND	0.0245		mg/Kg-dry	1	8/29/2017 11:52:00 AM
1,1-Dichloropropene	ND	0.0196		mg/Kg-dry	1	8/29/2017 11:52:00 AM
Carbon tetrachloride	ND	0.0245		mg/Kg-dry	1	8/29/2017 11:52:00 AM
1,2-Dichloroethane (EDC)	ND	0.0196		mg/Kg-dry	1	8/29/2017 11:52:00 AM
Benzene	ND	0.0196		mg/Kg-dry	1	8/29/2017 11:52:00 AM
Trichloroethene (TCE)	ND	0.0196		mg/Kg-dry	1	8/29/2017 11:52:00 AM
1,2-Dichloropropane	ND	0.0196		mg/Kg-dry	1	8/29/2017 11:52:00 AM
Bromodichloromethane	ND	0.0196		mg/Kg-dry	1	8/29/2017 11:52:00 AM
Dibromomethane	ND	0.0196		mg/Kg-dry	1	8/29/2017 11:52:00 AM
cis-1,3-Dichloropropene	ND	0.0196		mg/Kg-dry	1	8/29/2017 11:52:00 AM
Toluene	ND	0.0196		mg/Kg-dry	1	8/29/2017 11:52:00 AM
trans-1,3-Dichloropropylene	ND	0.0196		mg/Kg-dry	1	8/29/2017 11:52:00 AM
1,1,2-Trichloroethane	ND	0.0196		mg/Kg-dry	1	8/29/2017 11:52:00 AM
1,3-Dichloropropane	ND	0.0245		mg/Kg-dry	1	8/29/2017 11:52:00 AM
Tetrachloroethene (PCE)	ND	0.0245		mg/Kg-dry	1	8/29/2017 11:52:00 AM
Dibromochloromethane	ND	0.0245		mg/Kg-dry	1	8/29/2017 11:52:00 AM
1,2-Dibromoethane (EDB)	ND	0.00489		mg/Kg-dry	1	8/29/2017 11:52:00 AM
Chlorobenzene	ND	0.0245		mg/Kg-dry	1	8/29/2017 11:52:00 AM
1,1,1,2-Tetrachloroethane	ND	0.0245		mg/Kg-dry	1	8/29/2017 11:52:00 AM
Ethylbenzene	ND	0.0245		mg/Kg-dry	1	8/29/2017 11:52:00 AM
m,p-Xylene	ND	0.0489		mg/Kg-dry	1	8/29/2017 11:52:00 AM
o-Xylene	ND	0.0245		mg/Kg-dry	1	8/29/2017 11:52:00 AM
Styrene	ND	0.0245		mg/Kg-dry	1	8/29/2017 11:52:00 AM
Isopropylbenzene	ND	0.0245		mg/Kg-dry	1	8/29/2017 11:52:00 AM
Bromoform	ND	0.0489		mg/Kg-dry	1	8/29/2017 11:52:00 AM



Analytical Report

Work Order: 1708281

Date Reported: 9/22/2017

Client: GeoEngineers

Collection Date: 8/17/2017 8:20:00 AM

Project: Block 21-Test Pit Explorations

Lab ID: 1708281-005

Matrix: Soil

Client Sample ID: TP21-3-7.5

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
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Volatile Organic Compounds by EPA Method 8260C

Batch ID: 18011

Analyst: MW

1,1,2,2-Tetrachloroethane	ND	0.0196		mg/Kg-dry	1	8/29/2017 11:52:00 AM
n-Propylbenzene	ND	0.0245		mg/Kg-dry	1	8/29/2017 11:52:00 AM
Bromobenzene	ND	0.0196		mg/Kg-dry	1	8/29/2017 11:52:00 AM
1,3,5-Trimethylbenzene	ND	0.0245		mg/Kg-dry	1	8/29/2017 11:52:00 AM
2-Chlorotoluene	ND	0.0245		mg/Kg-dry	1	8/29/2017 11:52:00 AM
4-Chlorotoluene	ND	0.0245		mg/Kg-dry	1	8/29/2017 11:52:00 AM
tert-Butylbenzene	ND	0.0245		mg/Kg-dry	1	8/29/2017 11:52:00 AM
1,2,3-Trichloropropane	ND	0.0245		mg/Kg-dry	1	8/29/2017 11:52:00 AM
1,2,4-Trichlorobenzene	ND	0.0245		mg/Kg-dry	1	8/29/2017 11:52:00 AM
sec-Butylbenzene	ND	0.0489		mg/Kg-dry	1	8/29/2017 11:52:00 AM
4-Isopropyltoluene	ND	0.0489		mg/Kg-dry	1	8/29/2017 11:52:00 AM
1,3-Dichlorobenzene	ND	0.0196		mg/Kg-dry	1	8/29/2017 11:52:00 AM
1,4-Dichlorobenzene	ND	0.0196		mg/Kg-dry	1	8/29/2017 11:52:00 AM
n-Butylbenzene	ND	0.0245		mg/Kg-dry	1	8/29/2017 11:52:00 AM
1,2-Dichlorobenzene	ND	0.0196		mg/Kg-dry	1	8/29/2017 11:52:00 AM
1,2-Dibromo-3-chloropropane	ND	0.489		mg/Kg-dry	1	8/29/2017 11:52:00 AM
1,2,4-Trimethylbenzene	ND	0.0196		mg/Kg-dry	1	8/29/2017 11:52:00 AM
Hexachlorobutadiene	ND	0.0489		mg/Kg-dry	1	8/29/2017 11:52:00 AM
Naphthalene	ND	0.0489		mg/Kg-dry	1	8/29/2017 11:52:00 AM
1,2,3-Trichlorobenzene	ND	0.0196		mg/Kg-dry	1	8/29/2017 11:52:00 AM
Surr: Dibromofluoromethane	96.2	56.5 - 129		%Rec	1	8/29/2017 11:52:00 AM
Surr: Toluene-d8	101	64.5 - 151		%Rec	1	8/29/2017 11:52:00 AM
Surr: 1-Bromo-4-fluorobenzene	97.2	63.1 - 141		%Rec	1	8/29/2017 11:52:00 AM

NOTES:

Q - Indicates an analyte with a continuing calibration that does not meet established acceptance criteria (<20%RSD, <20% Drift or minimum RRF).

Mercury by EPA Method 7471

Batch ID: 18003

Analyst: WF

Mercury	ND	0.294		mg/Kg-dry	1	8/24/2017 5:33:07 PM
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Total Metals by EPA Method 6020

Batch ID: 18019

Analyst: TN

Arsenic	3.49	0.0937		mg/Kg-dry	1	8/28/2017 10:49:34 AM
Barium	77.7	0.469		mg/Kg-dry	1	8/28/2017 10:49:34 AM
Cadmium	ND	0.187		mg/Kg-dry	1	8/28/2017 10:49:34 AM
Chromium	37.2	0.0937		mg/Kg-dry	1	8/28/2017 10:49:34 AM
Lead	7.67	0.187		mg/Kg-dry	1	8/28/2017 10:49:34 AM
Selenium	1.07	0.469		mg/Kg-dry	1	8/28/2017 10:49:34 AM



Analytical Report

Work Order: 1708281
Date Reported: 9/22/2017

Client: GeoEngineers

Collection Date: 8/17/2017 8:20:00 AM

Project: Block 21-Test Pit Explorations

Lab ID: 1708281-005

Matrix: Soil

Client Sample ID: TP21-3-7.5

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
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Total Metals by EPA Method 6020

Batch ID: 18019 Analyst: TN

Silver	ND	0.0937		mg/Kg-dry	1	8/28/2017 10:49:34 AM
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Sample Moisture (Percent Moisture)

Batch ID: R38193 Analyst: CG

Percent Moisture	16.7			wt%	1	8/24/2017 9:02:15 AM
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Analytical Report

Work Order: 1708281

Date Reported: 9/22/2017

Client: GeoEngineers

Collection Date: 8/17/2017 9:25:00 AM

Project: Block 21-Test Pit Explorations

Lab ID: 1708281-007

Matrix: Soil

Client Sample ID: TP21-4-5.0

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<u>Diesel and Heavy Oil by NWTPH-Dx/Dx Ext.</u>				Batch ID: 18001		Analyst: SB
Diesel (Fuel Oil)	ND	22.1		mg/Kg-dry	1	8/29/2017 3:48:04 AM
Heavy Oil	ND	55.2		mg/Kg-dry	1	8/29/2017 3:48:04 AM
Surr: 2-Fluorobiphenyl	95.4	50 - 150		%Rec	1	8/29/2017 3:48:04 AM
Surr: o-Terphenyl	102	50 - 150		%Rec	1	8/29/2017 3:48:04 AM

Polyaromatic Hydrocarbons by EPA Method 8270 (SIM)

Batch ID: 18010 Analyst: SG

Naphthalene	ND	46.6		µg/L-dry	1	8/25/2017 1:38:06 AM
2-Methylnaphthalene	ND	46.6		µg/L-dry	1	8/25/2017 1:38:06 AM
1-Methylnaphthalene	ND	46.6		µg/L-dry	1	8/25/2017 1:38:06 AM
Acenaphthylene	ND	46.6		µg/L-dry	1	8/25/2017 1:38:06 AM
Acenaphthene	ND	46.6		µg/L-dry	1	8/25/2017 1:38:06 AM
Fluorene	ND	46.6		µg/L-dry	1	8/25/2017 1:38:06 AM
Phenanthrene	49.8	46.6		µg/L-dry	1	8/25/2017 1:38:06 AM
Anthracene	ND	46.6		µg/L-dry	1	8/25/2017 1:38:06 AM
Fluoranthene	76.4	46.6		µg/L-dry	1	8/25/2017 1:38:06 AM
Pyrene	97.8	46.6		µg/L-dry	1	8/25/2017 1:38:06 AM
Benz(a)anthracene	ND	46.6		µg/L-dry	1	8/25/2017 1:38:06 AM
Chrysene	ND	46.6		µg/L-dry	1	8/25/2017 1:38:06 AM
Benzo(b)fluoranthene	ND	46.6		µg/L-dry	1	8/25/2017 1:38:06 AM
Benzo(j,k)fluoranthene	ND	46.6		µg/L-dry	1	8/25/2017 1:38:06 AM
Benzo(a)pyrene	ND	46.6		µg/L-dry	1	8/25/2017 1:38:06 AM
Indeno(1,2,3-cd)pyrene	ND	46.6	Q	µg/L-dry	1	8/25/2017 1:38:06 AM
Dibenz(a,h)anthracene	ND	46.6	Q	µg/L-dry	1	8/25/2017 1:38:06 AM
Benzo(g,h,i)perylene	ND	46.6	Q	µg/L-dry	1	8/25/2017 1:38:06 AM
Surr: 2-Fluorobiphenyl	67.8	20 - 128		%Rec	1	8/25/2017 1:38:06 AM
Surr: Terphenyl-d14 (surr)	86.6	46.2 - 179		%Rec	1	8/25/2017 1:38:06 AM

NOTES:

Q - Indicates an analyte with a continuing calibration that does not meet established acceptance criteria (<20%RSD, <20% Drift or minimum RRF).

Gasoline by NWTPH-Gx

Batch ID: 18011 Analyst: MW

Gasoline	ND	6.11		mg/Kg-dry	1	8/29/2017 12:21:57 PM
Surr: Toluene-d8	97.1	65 - 135		%Rec	1	8/29/2017 12:21:57 PM
Surr: 4-Bromofluorobenzene	98.4	65 - 135		%Rec	1	8/29/2017 12:21:57 PM



Analytical Report

Work Order: 1708281

Date Reported: 9/22/2017

Client: GeoEngineers

Collection Date: 8/17/2017 9:25:00 AM

Project: Block 21-Test Pit Explorations

Lab ID: 1708281-007

Matrix: Soil

Client Sample ID: TP21-4-5.0

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
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Volatile Organic Compounds by EPA Method 8260C

Batch ID: 18011

Analyst: MW

Dichlorodifluoromethane (CFC-12)	ND	0.0244		mg/Kg-dry	1	8/29/2017 12:21:57 PM
Chloromethane	ND	0.0611		mg/Kg-dry	1	8/29/2017 12:21:57 PM
Vinyl chloride	ND	0.0305		mg/Kg-dry	1	8/29/2017 12:21:57 PM
Bromomethane	ND	0.0611		mg/Kg-dry	1	8/29/2017 12:21:57 PM
Trichlorofluoromethane (CFC-11)	ND	0.0244		mg/Kg-dry	1	8/29/2017 12:21:57 PM
Chloroethane	ND	0.0611		mg/Kg-dry	1	8/29/2017 12:21:57 PM
1,1-Dichloroethene	ND	0.0244		mg/Kg-dry	1	8/29/2017 12:21:57 PM
Methylene chloride	ND	0.0244		mg/Kg-dry	1	8/29/2017 12:21:57 PM
trans-1,2-Dichloroethene	ND	0.0244		mg/Kg-dry	1	8/29/2017 12:21:57 PM
Methyl tert-butyl ether (MTBE)	ND	0.0611		mg/Kg-dry	1	8/29/2017 12:21:57 PM
1,1-Dichloroethane	ND	0.0244		mg/Kg-dry	1	8/29/2017 12:21:57 PM
2,2-Dichloropropane	ND	0.122	Q	mg/Kg-dry	1	8/29/2017 12:21:57 PM
cis-1,2-Dichloroethene	ND	0.0244		mg/Kg-dry	1	8/29/2017 12:21:57 PM
Chloroform	ND	0.0244		mg/Kg-dry	1	8/29/2017 12:21:57 PM
1,1,1-Trichloroethane (TCA)	ND	0.0305		mg/Kg-dry	1	8/29/2017 12:21:57 PM
1,1-Dichloropropene	ND	0.0244		mg/Kg-dry	1	8/29/2017 12:21:57 PM
Carbon tetrachloride	ND	0.0305		mg/Kg-dry	1	8/29/2017 12:21:57 PM
1,2-Dichloroethane (EDC)	ND	0.0244		mg/Kg-dry	1	8/29/2017 12:21:57 PM
Benzene	ND	0.0244		mg/Kg-dry	1	8/29/2017 12:21:57 PM
Trichloroethene (TCE)	ND	0.0244		mg/Kg-dry	1	8/29/2017 12:21:57 PM
1,2-Dichloropropane	ND	0.0244		mg/Kg-dry	1	8/29/2017 12:21:57 PM
Bromodichloromethane	ND	0.0244		mg/Kg-dry	1	8/29/2017 12:21:57 PM
Dibromomethane	ND	0.0244		mg/Kg-dry	1	8/29/2017 12:21:57 PM
cis-1,3-Dichloropropene	ND	0.0244		mg/Kg-dry	1	8/29/2017 12:21:57 PM
Toluene	ND	0.0244		mg/Kg-dry	1	8/29/2017 12:21:57 PM
trans-1,3-Dichloropropylene	ND	0.0244		mg/Kg-dry	1	8/29/2017 12:21:57 PM
1,1,2-Trichloroethane	ND	0.0244		mg/Kg-dry	1	8/29/2017 12:21:57 PM
1,3-Dichloropropane	ND	0.0305		mg/Kg-dry	1	8/29/2017 12:21:57 PM
Tetrachloroethene (PCE)	ND	0.0305		mg/Kg-dry	1	8/29/2017 12:21:57 PM
Dibromochloromethane	ND	0.0305		mg/Kg-dry	1	8/29/2017 12:21:57 PM
1,2-Dibromoethane (EDB)	ND	0.00611		mg/Kg-dry	1	8/29/2017 12:21:57 PM
Chlorobenzene	ND	0.0305		mg/Kg-dry	1	8/29/2017 12:21:57 PM
1,1,1,2-Tetrachloroethane	ND	0.0305		mg/Kg-dry	1	8/29/2017 12:21:57 PM
Ethylbenzene	ND	0.0305		mg/Kg-dry	1	8/29/2017 12:21:57 PM
m,p-Xylene	ND	0.0611		mg/Kg-dry	1	8/29/2017 12:21:57 PM
o-Xylene	ND	0.0305		mg/Kg-dry	1	8/29/2017 12:21:57 PM
Styrene	ND	0.0305		mg/Kg-dry	1	8/29/2017 12:21:57 PM
Isopropylbenzene	ND	0.0305		mg/Kg-dry	1	8/29/2017 12:21:57 PM
Bromoform	ND	0.0611		mg/Kg-dry	1	8/29/2017 12:21:57 PM



Analytical Report

Work Order: 1708281

Date Reported: 9/22/2017

Client: GeoEngineers

Collection Date: 8/17/2017 9:25:00 AM

Project: Block 21-Test Pit Explorations

Lab ID: 1708281-007

Matrix: Soil

Client Sample ID: TP21-4-5.0

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
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Volatile Organic Compounds by EPA Method 8260C

Batch ID: 18011

Analyst: MW

1,1,2,2-Tetrachloroethane	ND	0.0244		mg/Kg-dry	1	8/29/2017 12:21:57 PM
n-Propylbenzene	ND	0.0305		mg/Kg-dry	1	8/29/2017 12:21:57 PM
Bromobenzene	ND	0.0244		mg/Kg-dry	1	8/29/2017 12:21:57 PM
1,3,5-Trimethylbenzene	ND	0.0305		mg/Kg-dry	1	8/29/2017 12:21:57 PM
2-Chlorotoluene	ND	0.0305		mg/Kg-dry	1	8/29/2017 12:21:57 PM
4-Chlorotoluene	ND	0.0305		mg/Kg-dry	1	8/29/2017 12:21:57 PM
tert-Butylbenzene	ND	0.0305		mg/Kg-dry	1	8/29/2017 12:21:57 PM
1,2,3-Trichloropropane	ND	0.0305		mg/Kg-dry	1	8/29/2017 12:21:57 PM
1,2,4-Trichlorobenzene	ND	0.0305		mg/Kg-dry	1	8/29/2017 12:21:57 PM
sec-Butylbenzene	ND	0.0611		mg/Kg-dry	1	8/29/2017 12:21:57 PM
4-Isopropyltoluene	ND	0.0611		mg/Kg-dry	1	8/29/2017 12:21:57 PM
1,3-Dichlorobenzene	ND	0.0244		mg/Kg-dry	1	8/29/2017 12:21:57 PM
1,4-Dichlorobenzene	ND	0.0244		mg/Kg-dry	1	8/29/2017 12:21:57 PM
n-Butylbenzene	ND	0.0305		mg/Kg-dry	1	8/29/2017 12:21:57 PM
1,2-Dichlorobenzene	ND	0.0244		mg/Kg-dry	1	8/29/2017 12:21:57 PM
1,2-Dibromo-3-chloropropane	ND	0.611		mg/Kg-dry	1	8/29/2017 12:21:57 PM
1,2,4-Trimethylbenzene	ND	0.0244		mg/Kg-dry	1	8/29/2017 12:21:57 PM
Hexachlorobutadiene	ND	0.0611		mg/Kg-dry	1	8/29/2017 12:21:57 PM
Naphthalene	ND	0.0611		mg/Kg-dry	1	8/29/2017 12:21:57 PM
1,2,3-Trichlorobenzene	ND	0.0244		mg/Kg-dry	1	8/29/2017 12:21:57 PM
Surr: Dibromofluoromethane	95.3	56.5 - 129		%Rec	1	8/29/2017 12:21:57 PM
Surr: Toluene-d8	104	64.5 - 151		%Rec	1	8/29/2017 12:21:57 PM
Surr: 1-Bromo-4-fluorobenzene	98.4	63.1 - 141		%Rec	1	8/29/2017 12:21:57 PM

NOTES:

Q - Indicates an analyte with a continuing calibration that does not meet established acceptance criteria (<20%RSD, <20% Drift or minimum RRF).

Mercury by EPA Method 7471

Batch ID: 18003

Analyst: WF

Mercury	ND	0.296		mg/Kg-dry	1	8/24/2017 5:34:43 PM
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Total Metals by EPA Method 6020

Batch ID: 18019

Analyst: TN

Arsenic	3.16	0.0898		mg/Kg-dry	1	8/28/2017 10:53:35 AM
Barium	73.4	0.449		mg/Kg-dry	1	8/28/2017 10:53:35 AM
Cadmium	ND	0.180		mg/Kg-dry	1	8/28/2017 10:53:35 AM
Chromium	44.9	0.0898		mg/Kg-dry	1	8/28/2017 10:53:35 AM
Lead	5.25	0.180		mg/Kg-dry	1	8/28/2017 10:53:35 AM
Selenium	1.12	0.449		mg/Kg-dry	1	8/28/2017 10:53:35 AM



Analytical Report

Work Order: 1708281
Date Reported: 9/22/2017

Client: GeoEngineers

Collection Date: 8/17/2017 9:25:00 AM

Project: Block 21-Test Pit Explorations

Lab ID: 1708281-007

Matrix: Soil

Client Sample ID: TP21-4-5.0

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
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Total Metals by EPA Method 6020

Batch ID: 18019 Analyst: TN

Silver	ND	0.0898		mg/Kg-dry	1	8/28/2017 10:53:35 AM
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Sample Moisture (Percent Moisture)

Batch ID: R38193 Analyst: CG

Percent Moisture	15.7			wt%	1	8/24/2017 9:02:15 AM
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Analytical Report

Work Order: 1708281

Date Reported: 9/22/2017

Client: GeoEngineers

Collection Date: 8/17/2017 9:35:00 AM

Project: Block 21-Test Pit Explorations

Lab ID: 1708281-008

Matrix: Soil

Client Sample ID: TP21-4-7.0

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
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Polyaromatic Hydrocarbons by EPA Method 8270 (SIM)

Batch ID: 18269

Analyst: BT

Naphthalene	ND	40.0	H	µg/Kg-dry	1	9/21/2017 7:58:37 PM
2-Methylnaphthalene	ND	40.0	H	µg/Kg-dry	1	9/21/2017 7:58:37 PM
1-Methylnaphthalene	ND	40.0	H	µg/Kg-dry	1	9/21/2017 7:58:37 PM
Acenaphthylene	ND	40.0	H	µg/Kg-dry	1	9/21/2017 7:58:37 PM
Acenaphthene	ND	40.0	H	µg/Kg-dry	1	9/21/2017 7:58:37 PM
Fluorene	ND	40.0	H	µg/Kg-dry	1	9/21/2017 7:58:37 PM
Phenanthrene	ND	40.0	H	µg/Kg-dry	1	9/21/2017 7:58:37 PM
Anthracene	ND	40.0	H	µg/Kg-dry	1	9/21/2017 7:58:37 PM
Fluoranthene	ND	40.0	H	µg/Kg-dry	1	9/21/2017 7:58:37 PM
Pyrene	ND	40.0	H	µg/Kg-dry	1	9/21/2017 7:58:37 PM
Benz(a)anthracene	ND	40.0	H	µg/Kg-dry	1	9/21/2017 7:58:37 PM
Chrysene	ND	40.0	H	µg/Kg-dry	1	9/21/2017 7:58:37 PM
Benzo(b)fluoranthene	ND	40.0	H	µg/Kg-dry	1	9/21/2017 7:58:37 PM
Benzo(j,k)fluoranthene	ND	40.0	H	µg/Kg-dry	1	9/21/2017 7:58:37 PM
Benzo(a)pyrene	ND	40.0	H	µg/Kg-dry	1	9/21/2017 7:58:37 PM
Indeno(1,2,3-cd)pyrene	ND	40.0	H	µg/Kg-dry	1	9/21/2017 7:58:37 PM
Dibenz(a,h)anthracene	ND	40.0	H	µg/Kg-dry	1	9/21/2017 7:58:37 PM
Benzo(g,h,i)perylene	ND	40.0	H	µg/Kg-dry	1	9/21/2017 7:58:37 PM
Surr: 2-Fluorobiphenyl	16.0	10 - 123	H	%Rec	1	9/21/2017 7:58:37 PM
Surr: Terphenyl-d14 (surr)	104	46.2 - 179	H	%Rec	1	9/21/2017 7:58:37 PM

Sample Moisture (Percent Moisture)

Batch ID: R38704

Analyst: CO

Percent Moisture	5.83	0.500	wt%	1	9/20/2017 9:29:45 AM
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Analytical Report

Work Order: 1708281

Date Reported: 9/22/2017

Client: GeoEngineers

Collection Date: 8/17/2017 10:15:00 AM

Project: Block 21-Test Pit Explorations

Lab ID: 1708281-009

Matrix: Soil

Client Sample ID: TP21-5-2.5

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
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Diesel and Heavy Oil by NWTPH-Dx/Dx Ext.

Batch ID: 18001

Analyst: SB

Diesel (Fuel Oil)	ND	21.5		mg/Kg-dry	1	8/29/2017 4:18:10 AM
Heavy Oil	ND	53.8		mg/Kg-dry	1	8/29/2017 4:18:10 AM
Surr: 2-Fluorobiphenyl	77.6	50 - 150		%Rec	1	8/29/2017 4:18:10 AM
Surr: o-Terphenyl	82.5	50 - 150		%Rec	1	8/29/2017 4:18:10 AM

Polyaromatic Hydrocarbons by EPA Method 8270 (SIM)

Batch ID: 18010

Analyst: SG

Naphthalene	ND	40.9		µg/L-dry	1	8/25/2017 2:00:05 AM
2-Methylnaphthalene	ND	40.9		µg/L-dry	1	8/25/2017 2:00:05 AM
1-Methylnaphthalene	ND	40.9		µg/L-dry	1	8/25/2017 2:00:05 AM
Acenaphthylene	ND	40.9		µg/L-dry	1	8/25/2017 2:00:05 AM
Acenaphthene	ND	40.9		µg/L-dry	1	8/25/2017 2:00:05 AM
Fluorene	ND	40.9		µg/L-dry	1	8/25/2017 2:00:05 AM
Phenanthrene	ND	40.9		µg/L-dry	1	8/25/2017 2:00:05 AM
Anthracene	ND	40.9		µg/L-dry	1	8/25/2017 2:00:05 AM
Fluoranthene	ND	40.9		µg/L-dry	1	8/25/2017 2:00:05 AM
Pyrene	ND	40.9		µg/L-dry	1	8/25/2017 2:00:05 AM
Benz(a)anthracene	ND	40.9		µg/L-dry	1	8/25/2017 2:00:05 AM
Chrysene	ND	40.9		µg/L-dry	1	8/25/2017 2:00:05 AM
Benzo(b)fluoranthene	ND	40.9		µg/L-dry	1	8/25/2017 2:00:05 AM
Benzo(j,k)fluoranthene	ND	40.9		µg/L-dry	1	8/25/2017 2:00:05 AM
Benzo(a)pyrene	ND	40.9		µg/L-dry	1	8/25/2017 2:00:05 AM
Indeno(1,2,3-cd)pyrene	ND	40.9	Q	µg/L-dry	1	8/25/2017 2:00:05 AM
Dibenz(a,h)anthracene	ND	40.9	Q	µg/L-dry	1	8/25/2017 2:00:05 AM
Benzo(g,h,i)perylene	ND	40.9	Q	µg/L-dry	1	8/25/2017 2:00:05 AM
Surr: 2-Fluorobiphenyl	67.4	20 - 128		%Rec	1	8/25/2017 2:00:05 AM
Surr: Terphenyl-d14 (surr)	82.1	46.2 - 179		%Rec	1	8/25/2017 2:00:05 AM

NOTES:

Q - Indicates an analyte with a continuing calibration that does not meet established acceptance criteria (<20%RSD, <20% Drift or minimum RRF).

Gasoline by NWTPH-Gx

Batch ID: 18011

Analyst: MW

Gasoline	ND	5.54		mg/Kg-dry	1	8/29/2017 12:51:59 PM
Surr: Toluene-d8	96.1	65 - 135		%Rec	1	8/29/2017 12:51:59 PM
Surr: 4-Bromofluorobenzene	98.3	65 - 135		%Rec	1	8/29/2017 12:51:59 PM



Analytical Report

Work Order: 1708281

Date Reported: 9/22/2017

Client: GeoEngineers

Collection Date: 8/17/2017 10:15:00 AM

Project: Block 21-Test Pit Explorations

Lab ID: 1708281-009

Matrix: Soil

Client Sample ID: TP21-5-2.5

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
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Volatile Organic Compounds by EPA Method 8260C

Batch ID: 18011

Analyst: MW

Dichlorodifluoromethane (CFC-12)	ND	0.0222		mg/Kg-dry	1	8/29/2017 12:51:59 PM
Chloromethane	ND	0.0554		mg/Kg-dry	1	8/29/2017 12:51:59 PM
Vinyl chloride	ND	0.0277		mg/Kg-dry	1	8/29/2017 12:51:59 PM
Bromomethane	ND	0.0554		mg/Kg-dry	1	8/29/2017 12:51:59 PM
Trichlorofluoromethane (CFC-11)	ND	0.0222		mg/Kg-dry	1	8/29/2017 12:51:59 PM
Chloroethane	ND	0.0554		mg/Kg-dry	1	8/29/2017 12:51:59 PM
1,1-Dichloroethene	ND	0.0222		mg/Kg-dry	1	8/29/2017 12:51:59 PM
Methylene chloride	ND	0.0222		mg/Kg-dry	1	8/29/2017 12:51:59 PM
trans-1,2-Dichloroethene	ND	0.0222		mg/Kg-dry	1	8/29/2017 12:51:59 PM
Methyl tert-butyl ether (MTBE)	ND	0.0554		mg/Kg-dry	1	8/29/2017 12:51:59 PM
1,1-Dichloroethane	ND	0.0222		mg/Kg-dry	1	8/29/2017 12:51:59 PM
2,2-Dichloropropane	ND	0.111	Q	mg/Kg-dry	1	8/29/2017 12:51:59 PM
cis-1,2-Dichloroethene	ND	0.0222		mg/Kg-dry	1	8/29/2017 12:51:59 PM
Chloroform	ND	0.0222		mg/Kg-dry	1	8/29/2017 12:51:59 PM
1,1,1-Trichloroethane (TCA)	ND	0.0277		mg/Kg-dry	1	8/29/2017 12:51:59 PM
1,1-Dichloropropene	ND	0.0222		mg/Kg-dry	1	8/29/2017 12:51:59 PM
Carbon tetrachloride	ND	0.0277		mg/Kg-dry	1	8/29/2017 12:51:59 PM
1,2-Dichloroethane (EDC)	ND	0.0222		mg/Kg-dry	1	8/29/2017 12:51:59 PM
Benzene	ND	0.0222		mg/Kg-dry	1	8/29/2017 12:51:59 PM
Trichloroethene (TCE)	ND	0.0222		mg/Kg-dry	1	8/29/2017 12:51:59 PM
1,2-Dichloropropane	ND	0.0222		mg/Kg-dry	1	8/29/2017 12:51:59 PM
Bromodichloromethane	ND	0.0222		mg/Kg-dry	1	8/29/2017 12:51:59 PM
Dibromomethane	ND	0.0222		mg/Kg-dry	1	8/29/2017 12:51:59 PM
cis-1,3-Dichloropropene	ND	0.0222		mg/Kg-dry	1	8/29/2017 12:51:59 PM
Toluene	ND	0.0222		mg/Kg-dry	1	8/29/2017 12:51:59 PM
trans-1,3-Dichloropropylene	ND	0.0222		mg/Kg-dry	1	8/29/2017 12:51:59 PM
1,1,2-Trichloroethane	ND	0.0222		mg/Kg-dry	1	8/29/2017 12:51:59 PM
1,3-Dichloropropane	ND	0.0277		mg/Kg-dry	1	8/29/2017 12:51:59 PM
Tetrachloroethene (PCE)	ND	0.0277		mg/Kg-dry	1	8/29/2017 12:51:59 PM
Dibromochloromethane	ND	0.0277		mg/Kg-dry	1	8/29/2017 12:51:59 PM
1,2-Dibromoethane (EDB)	ND	0.00554		mg/Kg-dry	1	8/29/2017 12:51:59 PM
Chlorobenzene	ND	0.0277		mg/Kg-dry	1	8/29/2017 12:51:59 PM
1,1,1,2-Tetrachloroethane	ND	0.0277		mg/Kg-dry	1	8/29/2017 12:51:59 PM
Ethylbenzene	ND	0.0277		mg/Kg-dry	1	8/29/2017 12:51:59 PM
m,p-Xylene	ND	0.0554		mg/Kg-dry	1	8/29/2017 12:51:59 PM
o-Xylene	ND	0.0277		mg/Kg-dry	1	8/29/2017 12:51:59 PM
Styrene	ND	0.0277		mg/Kg-dry	1	8/29/2017 12:51:59 PM
Isopropylbenzene	ND	0.0277		mg/Kg-dry	1	8/29/2017 12:51:59 PM
Bromoform	ND	0.0554		mg/Kg-dry	1	8/29/2017 12:51:59 PM



Analytical Report

Work Order: 1708281

Date Reported: 9/22/2017

Client: GeoEngineers

Collection Date: 8/17/2017 10:15:00 AM

Project: Block 21-Test Pit Explorations

Lab ID: 1708281-009

Matrix: Soil

Client Sample ID: TP21-5-2.5

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
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Volatile Organic Compounds by EPA Method 8260C

Batch ID: 18011

Analyst: MW

1,1,2,2-Tetrachloroethane	ND	0.0222		mg/Kg-dry	1	8/29/2017 12:51:59 PM
n-Propylbenzene	ND	0.0277		mg/Kg-dry	1	8/29/2017 12:51:59 PM
Bromobenzene	ND	0.0222		mg/Kg-dry	1	8/29/2017 12:51:59 PM
1,3,5-Trimethylbenzene	ND	0.0277		mg/Kg-dry	1	8/29/2017 12:51:59 PM
2-Chlorotoluene	ND	0.0277		mg/Kg-dry	1	8/29/2017 12:51:59 PM
4-Chlorotoluene	ND	0.0277		mg/Kg-dry	1	8/29/2017 12:51:59 PM
tert-Butylbenzene	ND	0.0277		mg/Kg-dry	1	8/29/2017 12:51:59 PM
1,2,3-Trichloropropane	ND	0.0277		mg/Kg-dry	1	8/29/2017 12:51:59 PM
1,2,4-Trichlorobenzene	ND	0.0277		mg/Kg-dry	1	8/29/2017 12:51:59 PM
sec-Butylbenzene	ND	0.0554		mg/Kg-dry	1	8/29/2017 12:51:59 PM
4-Isopropyltoluene	ND	0.0554		mg/Kg-dry	1	8/29/2017 12:51:59 PM
1,3-Dichlorobenzene	ND	0.0222		mg/Kg-dry	1	8/29/2017 12:51:59 PM
1,4-Dichlorobenzene	ND	0.0222		mg/Kg-dry	1	8/29/2017 12:51:59 PM
n-Butylbenzene	ND	0.0277		mg/Kg-dry	1	8/29/2017 12:51:59 PM
1,2-Dichlorobenzene	ND	0.0222		mg/Kg-dry	1	8/29/2017 12:51:59 PM
1,2-Dibromo-3-chloropropane	ND	0.554		mg/Kg-dry	1	8/29/2017 12:51:59 PM
1,2,4-Trimethylbenzene	ND	0.0222		mg/Kg-dry	1	8/29/2017 12:51:59 PM
Hexachlorobutadiene	ND	0.0554		mg/Kg-dry	1	8/29/2017 12:51:59 PM
Naphthalene	ND	0.0554		mg/Kg-dry	1	8/29/2017 12:51:59 PM
1,2,3-Trichlorobenzene	ND	0.0222		mg/Kg-dry	1	8/29/2017 12:51:59 PM
Surr: Dibromofluoromethane	94.0	56.5 - 129		%Rec	1	8/29/2017 12:51:59 PM
Surr: Toluene-d8	105	64.5 - 151		%Rec	1	8/29/2017 12:51:59 PM
Surr: 1-Bromo-4-fluorobenzene	98.3	63.1 - 141		%Rec	1	8/29/2017 12:51:59 PM

NOTES:

Q - Indicates an analyte with a continuing calibration that does not meet established acceptance criteria (<20%RSD, <20% Drift or minimum RRF).

Mercury by EPA Method 7471

Batch ID: 18003

Analyst: WF

Mercury	ND	0.284		mg/Kg-dry	1	8/24/2017 5:36:19 PM
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Total Metals by EPA Method 6020

Batch ID: 18019

Analyst: TN

Arsenic	4.33	0.0873		mg/Kg-dry	1	8/28/2017 11:05:42 AM
Barium	65.6	0.436		mg/Kg-dry	1	8/28/2017 11:05:42 AM
Cadmium	ND	0.175		mg/Kg-dry	1	8/28/2017 11:05:42 AM
Chromium	40.2	0.0873		mg/Kg-dry	1	8/28/2017 11:05:42 AM
Lead	4.73	0.175		mg/Kg-dry	1	8/28/2017 11:05:42 AM
Selenium	1.16	0.436		mg/Kg-dry	1	8/28/2017 11:05:42 AM



Analytical Report

Work Order: 1708281
Date Reported: 9/22/2017

Client: GeoEngineers

Collection Date: 8/17/2017 10:15:00 AM

Project: Block 21-Test Pit Explorations

Lab ID: 1708281-009

Matrix: Soil

Client Sample ID: TP21-5-2.5

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
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Total Metals by EPA Method 6020

Batch ID: 18019 Analyst: TN

Silver	ND	0.0873		mg/Kg-dry	1	8/28/2017 11:05:42 AM
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Sample Moisture (Percent Moisture)

Batch ID: R38193 Analyst: CG

Percent Moisture	11.9			wt%	1	8/24/2017 9:02:15 AM
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Analytical Report

Work Order: 1708281

Date Reported: 9/22/2017

Client: GeoEngineers

Collection Date: 8/17/2017 12:00:00 PM

Project: Block 21-Test Pit Explorations

Lab ID: 1708281-011

Matrix: Soil

Client Sample ID: TP21-8-2.5

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
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Diesel and Heavy Oil by NWTPH-Dx/Dx Ext.

Batch ID: 18001

Analyst: SB

Diesel (Fuel Oil)	ND	23.7		mg/Kg-dry	1	8/29/2017 4:48:25 AM
Heavy Oil	ND	59.2		mg/Kg-dry	1	8/29/2017 4:48:25 AM
Surr: 2-Fluorobiphenyl	72.4	50 - 150		%Rec	1	8/29/2017 4:48:25 AM
Surr: o-Terphenyl	76.2	50 - 150		%Rec	1	8/29/2017 4:48:25 AM

Polyaromatic Hydrocarbons by EPA Method 8270 (SIM)

Batch ID: 18010

Analyst: SG

Naphthalene	ND	51.2		µg/L-dry	1	8/25/2017 2:22:07 AM
2-Methylnaphthalene	ND	51.2		µg/L-dry	1	8/25/2017 2:22:07 AM
1-Methylnaphthalene	ND	51.2		µg/L-dry	1	8/25/2017 2:22:07 AM
Acenaphthylene	ND	51.2		µg/L-dry	1	8/25/2017 2:22:07 AM
Acenaphthene	ND	51.2		µg/L-dry	1	8/25/2017 2:22:07 AM
Fluorene	ND	51.2		µg/L-dry	1	8/25/2017 2:22:07 AM
Phenanthrene	ND	51.2		µg/L-dry	1	8/25/2017 2:22:07 AM
Anthracene	ND	51.2		µg/L-dry	1	8/25/2017 2:22:07 AM
Fluoranthene	ND	51.2		µg/L-dry	1	8/25/2017 2:22:07 AM
Pyrene	ND	51.2		µg/L-dry	1	8/25/2017 2:22:07 AM
Benz(a)anthracene	ND	51.2		µg/L-dry	1	8/25/2017 2:22:07 AM
Chrysene	ND	51.2		µg/L-dry	1	8/25/2017 2:22:07 AM
Benzo(b)fluoranthene	ND	51.2		µg/L-dry	1	8/25/2017 2:22:07 AM
Benzo(j,k)fluoranthene	ND	51.2		µg/L-dry	1	8/25/2017 2:22:07 AM
Benzo(a)pyrene	ND	51.2		µg/L-dry	1	8/25/2017 2:22:07 AM
Indeno(1,2,3-cd)pyrene	ND	51.2	Q	µg/L-dry	1	8/25/2017 2:22:07 AM
Dibenz(a,h)anthracene	ND	51.2	Q	µg/L-dry	1	8/25/2017 2:22:07 AM
Benzo(g,h,i)perylene	ND	51.2	Q	µg/L-dry	1	8/25/2017 2:22:07 AM
Surr: 2-Fluorobiphenyl	48.3	20 - 128		%Rec	1	8/25/2017 2:22:07 AM
Surr: Terphenyl-d14 (surr)	71.4	46.2 - 179		%Rec	1	8/25/2017 2:22:07 AM

NOTES:

Q - Indicates an analyte with a continuing calibration that does not meet established acceptance criteria (<20%RSD, <20% Drift or minimum RRF).

Gasoline by NWTPH-Gx

Batch ID: 18011

Analyst: MW

Gasoline	ND	5.98		mg/Kg-dry	1	8/29/2017 1:21:55 PM
Surr: Toluene-d8	97.8	65 - 135		%Rec	1	8/29/2017 1:21:55 PM
Surr: 4-Bromofluorobenzene	98.5	65 - 135		%Rec	1	8/29/2017 1:21:55 PM



Analytical Report

Work Order: 1708281
Date Reported: 9/22/2017

Client: GeoEngineers

Collection Date: 8/17/2017 12:00:00 PM

Project: Block 21-Test Pit Explorations

Lab ID: 1708281-011

Matrix: Soil

Client Sample ID: TP21-8-2.5

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<u>Volatile Organic Compounds by EPA Method 8260C</u>				Batch ID: 18011		Analyst: MW
Dichlorodifluoromethane (CFC-12)	ND	0.0239		mg/Kg-dry	1	8/29/2017 1:21:55 PM
Chloromethane	ND	0.0598		mg/Kg-dry	1	8/29/2017 1:21:55 PM
Vinyl chloride	ND	0.0299		mg/Kg-dry	1	8/29/2017 1:21:55 PM
Bromomethane	ND	0.0598		mg/Kg-dry	1	8/29/2017 1:21:55 PM
Trichlorofluoromethane (CFC-11)	ND	0.0239		mg/Kg-dry	1	8/29/2017 1:21:55 PM
Chloroethane	ND	0.0598		mg/Kg-dry	1	8/29/2017 1:21:55 PM
1,1-Dichloroethene	ND	0.0239		mg/Kg-dry	1	8/29/2017 1:21:55 PM
Methylene chloride	ND	0.0239		mg/Kg-dry	1	8/29/2017 1:21:55 PM
trans-1,2-Dichloroethene	ND	0.0239		mg/Kg-dry	1	8/29/2017 1:21:55 PM
Methyl tert-butyl ether (MTBE)	ND	0.0598		mg/Kg-dry	1	8/29/2017 1:21:55 PM
1,1-Dichloroethane	ND	0.0239		mg/Kg-dry	1	8/29/2017 1:21:55 PM
2,2-Dichloropropane	ND	0.120	Q	mg/Kg-dry	1	8/29/2017 1:21:55 PM
cis-1,2-Dichloroethene	ND	0.0239		mg/Kg-dry	1	8/29/2017 1:21:55 PM
Chloroform	ND	0.0239		mg/Kg-dry	1	8/29/2017 1:21:55 PM
1,1,1-Trichloroethane (TCA)	ND	0.0299		mg/Kg-dry	1	8/29/2017 1:21:55 PM
1,1-Dichloropropene	ND	0.0239		mg/Kg-dry	1	8/29/2017 1:21:55 PM
Carbon tetrachloride	ND	0.0299		mg/Kg-dry	1	8/29/2017 1:21:55 PM
1,2-Dichloroethane (EDC)	ND	0.0239		mg/Kg-dry	1	8/29/2017 1:21:55 PM
Benzene	ND	0.0239		mg/Kg-dry	1	8/29/2017 1:21:55 PM
Trichloroethene (TCE)	ND	0.0239		mg/Kg-dry	1	8/29/2017 1:21:55 PM
1,2-Dichloropropane	ND	0.0239		mg/Kg-dry	1	8/29/2017 1:21:55 PM
Bromodichloromethane	ND	0.0239		mg/Kg-dry	1	8/29/2017 1:21:55 PM
Dibromomethane	ND	0.0239		mg/Kg-dry	1	8/29/2017 1:21:55 PM
cis-1,3-Dichloropropene	ND	0.0239		mg/Kg-dry	1	8/29/2017 1:21:55 PM
Toluene	ND	0.0239		mg/Kg-dry	1	8/29/2017 1:21:55 PM
trans-1,3-Dichloropropylene	ND	0.0239		mg/Kg-dry	1	8/29/2017 1:21:55 PM
1,1,2-Trichloroethane	ND	0.0239		mg/Kg-dry	1	8/29/2017 1:21:55 PM
1,3-Dichloropropane	ND	0.0299		mg/Kg-dry	1	8/29/2017 1:21:55 PM
Tetrachloroethene (PCE)	ND	0.0299		mg/Kg-dry	1	8/29/2017 1:21:55 PM
Dibromochloromethane	ND	0.0299		mg/Kg-dry	1	8/29/2017 1:21:55 PM
1,2-Dibromoethane (EDB)	ND	0.00598		mg/Kg-dry	1	8/29/2017 1:21:55 PM
Chlorobenzene	ND	0.0299		mg/Kg-dry	1	8/29/2017 1:21:55 PM
1,1,1,2-Tetrachloroethane	ND	0.0299		mg/Kg-dry	1	8/29/2017 1:21:55 PM
Ethylbenzene	ND	0.0299		mg/Kg-dry	1	8/29/2017 1:21:55 PM
m,p-Xylene	ND	0.0598		mg/Kg-dry	1	8/29/2017 1:21:55 PM
o-Xylene	ND	0.0299		mg/Kg-dry	1	8/29/2017 1:21:55 PM
Styrene	ND	0.0299		mg/Kg-dry	1	8/29/2017 1:21:55 PM
Isopropylbenzene	ND	0.0299		mg/Kg-dry	1	8/29/2017 1:21:55 PM
Bromoform	ND	0.0598		mg/Kg-dry	1	8/29/2017 1:21:55 PM



Analytical Report

Work Order: 1708281

Date Reported: 9/22/2017

Client: GeoEngineers

Collection Date: 8/17/2017 12:00:00 PM

Project: Block 21-Test Pit Explorations

Lab ID: 1708281-011

Matrix: Soil

Client Sample ID: TP21-8-2.5

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
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Volatile Organic Compounds by EPA Method 8260C

Batch ID: 18011

Analyst: MW

1,1,2,2-Tetrachloroethane	ND	0.0239		mg/Kg-dry	1	8/29/2017 1:21:55 PM
n-Propylbenzene	ND	0.0299		mg/Kg-dry	1	8/29/2017 1:21:55 PM
Bromobenzene	ND	0.0239		mg/Kg-dry	1	8/29/2017 1:21:55 PM
1,3,5-Trimethylbenzene	ND	0.0299		mg/Kg-dry	1	8/29/2017 1:21:55 PM
2-Chlorotoluene	ND	0.0299		mg/Kg-dry	1	8/29/2017 1:21:55 PM
4-Chlorotoluene	ND	0.0299		mg/Kg-dry	1	8/29/2017 1:21:55 PM
tert-Butylbenzene	ND	0.0299		mg/Kg-dry	1	8/29/2017 1:21:55 PM
1,2,3-Trichloropropane	ND	0.0299		mg/Kg-dry	1	8/29/2017 1:21:55 PM
1,2,4-Trichlorobenzene	ND	0.0299		mg/Kg-dry	1	8/29/2017 1:21:55 PM
sec-Butylbenzene	ND	0.0598		mg/Kg-dry	1	8/29/2017 1:21:55 PM
4-Isopropyltoluene	ND	0.0598		mg/Kg-dry	1	8/29/2017 1:21:55 PM
1,3-Dichlorobenzene	ND	0.0239		mg/Kg-dry	1	8/29/2017 1:21:55 PM
1,4-Dichlorobenzene	ND	0.0239		mg/Kg-dry	1	8/29/2017 1:21:55 PM
n-Butylbenzene	ND	0.0299		mg/Kg-dry	1	8/29/2017 1:21:55 PM
1,2-Dichlorobenzene	ND	0.0239		mg/Kg-dry	1	8/29/2017 1:21:55 PM
1,2-Dibromo-3-chloropropane	ND	0.598		mg/Kg-dry	1	8/29/2017 1:21:55 PM
1,2,4-Trimethylbenzene	ND	0.0239		mg/Kg-dry	1	8/29/2017 1:21:55 PM
Hexachlorobutadiene	ND	0.0598		mg/Kg-dry	1	8/29/2017 1:21:55 PM
Naphthalene	ND	0.0598		mg/Kg-dry	1	8/29/2017 1:21:55 PM
1,2,3-Trichlorobenzene	ND	0.0239		mg/Kg-dry	1	8/29/2017 1:21:55 PM
Surr: Dibromofluoromethane	96.3	56.5 - 129		%Rec	1	8/29/2017 1:21:55 PM
Surr: Toluene-d8	103	64.5 - 151		%Rec	1	8/29/2017 1:21:55 PM
Surr: 1-Bromo-4-fluorobenzene	98.5	63.1 - 141		%Rec	1	8/29/2017 1:21:55 PM

NOTES:

Q - Indicates an analyte with a continuing calibration that does not meet established acceptance criteria (<20%RSD, <20% Drift or minimum RRF).

Mercury by EPA Method 7471

Batch ID: 18003

Analyst: WF

Mercury	ND	0.306		mg/Kg-dry	1	8/24/2017 5:41:47 PM
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Total Metals by EPA Method 6020

Batch ID: 18019

Analyst: TN

Arsenic	5.97	0.103		mg/Kg-dry	1	8/28/2017 11:09:43 AM
Barium	104	0.513		mg/Kg-dry	1	8/28/2017 11:09:43 AM
Cadmium	ND	0.205		mg/Kg-dry	1	8/28/2017 11:09:43 AM
Chromium	78.5	0.103		mg/Kg-dry	1	8/28/2017 11:09:43 AM
Lead	6.16	0.205		mg/Kg-dry	1	8/28/2017 11:09:43 AM
Selenium	2.18	0.513		mg/Kg-dry	1	8/28/2017 11:09:43 AM



Analytical Report

Work Order: 1708281
Date Reported: 9/22/2017

Client: GeoEngineers

Collection Date: 8/17/2017 12:00:00 PM

Project: Block 21-Test Pit Explorations

Lab ID: 1708281-011

Matrix: Soil

Client Sample ID: TP21-8-2.5

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
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Total Metals by EPA Method 6020

Batch ID: 18019 Analyst: TN

Silver	ND	0.103		mg/Kg-dry	1	8/28/2017 11:09:43 AM
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Sample Moisture (Percent Moisture)

Batch ID: R38193 Analyst: CG

Percent Moisture	24.4			wt%	1	8/24/2017 9:02:15 AM
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Analytical Report

Work Order: 1708281

Date Reported: 9/22/2017

Client: GeoEngineers

Collection Date: 8/17/2017 11:15:00 AM

Project: Block 21-Test Pit Explorations

Lab ID: 1708281-013

Matrix: Soil

Client Sample ID: TP21-9-2.5

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
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Diesel and Heavy Oil by NWTPH-Dx/Dx Ext.

Batch ID: 18001

Analyst: SB

Diesel (Fuel Oil)	ND	22.4		mg/Kg-dry	1	8/29/2017 5:18:31 AM
Heavy Oil	ND	56.0		mg/Kg-dry	1	8/29/2017 5:18:31 AM
Surr: 2-Fluorobiphenyl	83.9	50 - 150		%Rec	1	8/29/2017 5:18:31 AM
Surr: o-Terphenyl	93.4	50 - 150		%Rec	1	8/29/2017 5:18:31 AM

Polyaromatic Hydrocarbons by EPA Method 8270 (SIM)

Batch ID: 18010

Analyst: SG

Naphthalene	ND	46.2		µg/L-dry	1	8/25/2017 2:44:07 AM
2-Methylnaphthalene	ND	46.2		µg/L-dry	1	8/25/2017 2:44:07 AM
1-Methylnaphthalene	ND	46.2		µg/L-dry	1	8/25/2017 2:44:07 AM
Acenaphthylene	ND	46.2		µg/L-dry	1	8/25/2017 2:44:07 AM
Acenaphthene	ND	46.2		µg/L-dry	1	8/25/2017 2:44:07 AM
Fluorene	ND	46.2		µg/L-dry	1	8/25/2017 2:44:07 AM
Phenanthrene	86.3	46.2		µg/L-dry	1	8/25/2017 2:44:07 AM
Anthracene	ND	46.2		µg/L-dry	1	8/25/2017 2:44:07 AM
Fluoranthene	146	46.2		µg/L-dry	1	8/25/2017 2:44:07 AM
Pyrene	125	46.2		µg/L-dry	1	8/25/2017 2:44:07 AM
Benz(a)anthracene	65.8	46.2		µg/L-dry	1	8/25/2017 2:44:07 AM
Chrysene	60.1	46.2		µg/L-dry	1	8/25/2017 2:44:07 AM
Benzo(b)fluoranthene	ND	46.2		µg/L-dry	1	8/25/2017 2:44:07 AM
Benzo(j,k)fluoranthene	52.2	46.2		µg/L-dry	1	8/25/2017 2:44:07 AM
Benzo(a)pyrene	55.4	46.2		µg/L-dry	1	8/25/2017 2:44:07 AM
Indeno(1,2,3-cd)pyrene	ND	46.2	Q	µg/L-dry	1	8/25/2017 2:44:07 AM
Dibenz(a,h)anthracene	ND	46.2	Q	µg/L-dry	1	8/25/2017 2:44:07 AM
Benzo(g,h,i)perylene	ND	46.2	Q	µg/L-dry	1	8/25/2017 2:44:07 AM
Surr: 2-Fluorobiphenyl	57.6	20 - 128		%Rec	1	8/25/2017 2:44:07 AM
Surr: Terphenyl-d14 (surr)	72.3	46.2 - 179		%Rec	1	8/25/2017 2:44:07 AM

NOTES:

Q - Indicates an analyte with a continuing calibration that does not meet established acceptance criteria (<20%RSD, <20% Drift or minimum RRF).

Gasoline by NWTPH-Gx

Batch ID: 18011

Analyst: MW

Gasoline	ND	5.14		mg/Kg-dry	1	8/29/2017 1:52:01 PM
Surr: Toluene-d8	96.6	65 - 135		%Rec	1	8/29/2017 1:52:01 PM
Surr: 4-Bromofluorobenzene	98.1	65 - 135		%Rec	1	8/29/2017 1:52:01 PM



Analytical Report

Work Order: 1708281

Date Reported: 9/22/2017

Client: GeoEngineers

Collection Date: 8/17/2017 11:15:00 AM

Project: Block 21-Test Pit Explorations

Lab ID: 1708281-013

Matrix: Soil

Client Sample ID: TP21-9-2.5

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
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Volatile Organic Compounds by EPA Method 8260C

Batch ID: 18011

Analyst: MW

Dichlorodifluoromethane (CFC-12)	ND	0.0205		mg/Kg-dry	1	8/29/2017 1:52:01 PM
Chloromethane	ND	0.0514		mg/Kg-dry	1	8/29/2017 1:52:01 PM
Vinyl chloride	ND	0.0257		mg/Kg-dry	1	8/29/2017 1:52:01 PM
Bromomethane	ND	0.0514		mg/Kg-dry	1	8/29/2017 1:52:01 PM
Trichlorofluoromethane (CFC-11)	ND	0.0205		mg/Kg-dry	1	8/29/2017 1:52:01 PM
Chloroethane	ND	0.0514		mg/Kg-dry	1	8/29/2017 1:52:01 PM
1,1-Dichloroethene	ND	0.0205		mg/Kg-dry	1	8/29/2017 1:52:01 PM
Methylene chloride	ND	0.0205		mg/Kg-dry	1	8/29/2017 1:52:01 PM
trans-1,2-Dichloroethene	ND	0.0205		mg/Kg-dry	1	8/29/2017 1:52:01 PM
Methyl tert-butyl ether (MTBE)	ND	0.0514		mg/Kg-dry	1	8/29/2017 1:52:01 PM
1,1-Dichloroethane	ND	0.0205		mg/Kg-dry	1	8/29/2017 1:52:01 PM
2,2-Dichloropropane	ND	0.103	Q	mg/Kg-dry	1	8/29/2017 1:52:01 PM
cis-1,2-Dichloroethene	ND	0.0205		mg/Kg-dry	1	8/29/2017 1:52:01 PM
Chloroform	ND	0.0205		mg/Kg-dry	1	8/29/2017 1:52:01 PM
1,1,1-Trichloroethane (TCA)	ND	0.0257		mg/Kg-dry	1	8/29/2017 1:52:01 PM
1,1-Dichloropropene	ND	0.0205		mg/Kg-dry	1	8/29/2017 1:52:01 PM
Carbon tetrachloride	ND	0.0257		mg/Kg-dry	1	8/29/2017 1:52:01 PM
1,2-Dichloroethane (EDC)	ND	0.0205		mg/Kg-dry	1	8/29/2017 1:52:01 PM
Benzene	ND	0.0205		mg/Kg-dry	1	8/29/2017 1:52:01 PM
Trichloroethene (TCE)	ND	0.0205		mg/Kg-dry	1	8/29/2017 1:52:01 PM
1,2-Dichloropropane	ND	0.0205		mg/Kg-dry	1	8/29/2017 1:52:01 PM
Bromodichloromethane	ND	0.0205		mg/Kg-dry	1	8/29/2017 1:52:01 PM
Dibromomethane	ND	0.0205		mg/Kg-dry	1	8/29/2017 1:52:01 PM
cis-1,3-Dichloropropene	ND	0.0205		mg/Kg-dry	1	8/29/2017 1:52:01 PM
Toluene	ND	0.0205		mg/Kg-dry	1	8/29/2017 1:52:01 PM
trans-1,3-Dichloropropylene	ND	0.0205		mg/Kg-dry	1	8/29/2017 1:52:01 PM
1,1,2-Trichloroethane	ND	0.0205		mg/Kg-dry	1	8/29/2017 1:52:01 PM
1,3-Dichloropropane	ND	0.0257		mg/Kg-dry	1	8/29/2017 1:52:01 PM
Tetrachloroethene (PCE)	ND	0.0257		mg/Kg-dry	1	8/29/2017 1:52:01 PM
Dibromochloromethane	ND	0.0257		mg/Kg-dry	1	8/29/2017 1:52:01 PM
1,2-Dibromoethane (EDB)	ND	0.00514		mg/Kg-dry	1	8/29/2017 1:52:01 PM
Chlorobenzene	ND	0.0257		mg/Kg-dry	1	8/29/2017 1:52:01 PM
1,1,1,2-Tetrachloroethane	ND	0.0257		mg/Kg-dry	1	8/29/2017 1:52:01 PM
Ethylbenzene	ND	0.0257		mg/Kg-dry	1	8/29/2017 1:52:01 PM
m,p-Xylene	ND	0.0514		mg/Kg-dry	1	8/29/2017 1:52:01 PM
o-Xylene	ND	0.0257		mg/Kg-dry	1	8/29/2017 1:52:01 PM
Styrene	ND	0.0257		mg/Kg-dry	1	8/29/2017 1:52:01 PM
Isopropylbenzene	ND	0.0257		mg/Kg-dry	1	8/29/2017 1:52:01 PM
Bromoform	ND	0.0514		mg/Kg-dry	1	8/29/2017 1:52:01 PM



Analytical Report

Work Order: 1708281

Date Reported: 9/22/2017

Client: GeoEngineers

Collection Date: 8/17/2017 11:15:00 AM

Project: Block 21-Test Pit Explorations

Lab ID: 1708281-013

Matrix: Soil

Client Sample ID: TP21-9-2.5

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
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Volatile Organic Compounds by EPA Method 8260C

Batch ID: 18011

Analyst: MW

1,1,2,2-Tetrachloroethane	ND	0.0205		mg/Kg-dry	1	8/29/2017 1:52:01 PM
n-Propylbenzene	ND	0.0257		mg/Kg-dry	1	8/29/2017 1:52:01 PM
Bromobenzene	ND	0.0205		mg/Kg-dry	1	8/29/2017 1:52:01 PM
1,3,5-Trimethylbenzene	ND	0.0257		mg/Kg-dry	1	8/29/2017 1:52:01 PM
2-Chlorotoluene	ND	0.0257		mg/Kg-dry	1	8/29/2017 1:52:01 PM
4-Chlorotoluene	ND	0.0257		mg/Kg-dry	1	8/29/2017 1:52:01 PM
tert-Butylbenzene	ND	0.0257		mg/Kg-dry	1	8/29/2017 1:52:01 PM
1,2,3-Trichloropropane	ND	0.0257		mg/Kg-dry	1	8/29/2017 1:52:01 PM
1,2,4-Trichlorobenzene	ND	0.0257		mg/Kg-dry	1	8/29/2017 1:52:01 PM
sec-Butylbenzene	ND	0.0514		mg/Kg-dry	1	8/29/2017 1:52:01 PM
4-Isopropyltoluene	ND	0.0514		mg/Kg-dry	1	8/29/2017 1:52:01 PM
1,3-Dichlorobenzene	ND	0.0205		mg/Kg-dry	1	8/29/2017 1:52:01 PM
1,4-Dichlorobenzene	ND	0.0205		mg/Kg-dry	1	8/29/2017 1:52:01 PM
n-Butylbenzene	ND	0.0257		mg/Kg-dry	1	8/29/2017 1:52:01 PM
1,2-Dichlorobenzene	ND	0.0205		mg/Kg-dry	1	8/29/2017 1:52:01 PM
1,2-Dibromo-3-chloropropane	ND	0.514		mg/Kg-dry	1	8/29/2017 1:52:01 PM
1,2,4-Trimethylbenzene	ND	0.0205		mg/Kg-dry	1	8/29/2017 1:52:01 PM
Hexachlorobutadiene	ND	0.0514		mg/Kg-dry	1	8/29/2017 1:52:01 PM
Naphthalene	ND	0.0514		mg/Kg-dry	1	8/29/2017 1:52:01 PM
1,2,3-Trichlorobenzene	ND	0.0205		mg/Kg-dry	1	8/29/2017 1:52:01 PM
Surr: Dibromofluoromethane	95.1	56.5 - 129		%Rec	1	8/29/2017 1:52:01 PM
Surr: Toluene-d8	105	64.5 - 151		%Rec	1	8/29/2017 1:52:01 PM
Surr: 1-Bromo-4-fluorobenzene	98.1	63.1 - 141		%Rec	1	8/29/2017 1:52:01 PM

NOTES:

Q - Indicates an analyte with a continuing calibration that does not meet established acceptance criteria (<20%RSD, <20% Drift or minimum RRF).

Mercury by EPA Method 7471

Batch ID: 18003

Analyst: WF

Mercury	ND	0.306		mg/Kg-dry	1	8/24/2017 5:43:25 PM
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Total Metals by EPA Method 6020

Batch ID: 18019

Analyst: TN

Arsenic	5.95	0.0972		mg/Kg-dry	1	8/28/2017 11:13:44 AM
Barium	125	0.486		mg/Kg-dry	1	8/28/2017 11:13:44 AM
Cadmium	0.208	0.194		mg/Kg-dry	1	8/28/2017 11:13:44 AM
Chromium	48.9	0.0972		mg/Kg-dry	1	8/28/2017 11:13:44 AM
Lead	73.7	0.194		mg/Kg-dry	1	8/28/2017 11:13:44 AM
Selenium	1.58	0.486		mg/Kg-dry	1	8/28/2017 11:13:44 AM



Analytical Report

Work Order: 1708281
Date Reported: 9/22/2017

Client: GeoEngineers

Collection Date: 8/17/2017 11:15:00 AM

Project: Block 21-Test Pit Explorations

Lab ID: 1708281-013

Matrix: Soil

Client Sample ID: TP21-9-2.5

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
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Total Metals by EPA Method 6020

Batch ID: 18019 Analyst: TN

Silver	ND	0.0972		mg/Kg-dry	1	8/28/2017 11:13:44 AM
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Sample Moisture (Percent Moisture)

Batch ID: R38193 Analyst: CG

Percent Moisture	18.4			wt%	1	8/24/2017 9:02:15 AM
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Analytical Report

Work Order: 1708281

Date Reported: 9/22/2017

Client: GeoEngineers

Collection Date: 8/17/2017 11:30:00 AM

Project: Block 21-Test Pit Explorations

Lab ID: 1708281-014

Matrix: Soil

Client Sample ID: TP21-9-5.0

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
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Polyaromatic Hydrocarbons by EPA Method 8270 (SIM)

Batch ID: 18269

Analyst: BT

Naphthalene	ND	40.6	H	µg/Kg-dry	1	9/21/2017 9:25:54 PM
2-Methylnaphthalene	ND	40.6	H	µg/Kg-dry	1	9/21/2017 9:25:54 PM
1-Methylnaphthalene	ND	40.6	H	µg/Kg-dry	1	9/21/2017 9:25:54 PM
Acenaphthylene	ND	40.6	H	µg/Kg-dry	1	9/21/2017 9:25:54 PM
Acenaphthene	ND	40.6	H	µg/Kg-dry	1	9/21/2017 9:25:54 PM
Fluorene	ND	40.6	H	µg/Kg-dry	1	9/21/2017 9:25:54 PM
Phenanthrene	ND	40.6	H	µg/Kg-dry	1	9/21/2017 9:25:54 PM
Anthracene	ND	40.6	H	µg/Kg-dry	1	9/21/2017 9:25:54 PM
Fluoranthene	ND	40.6	H	µg/Kg-dry	1	9/21/2017 9:25:54 PM
Pyrene	ND	40.6	H	µg/Kg-dry	1	9/21/2017 9:25:54 PM
Benz(a)anthracene	ND	40.6	H	µg/Kg-dry	1	9/21/2017 9:25:54 PM
Chrysene	ND	40.6	H	µg/Kg-dry	1	9/21/2017 9:25:54 PM
Benzo(b)fluoranthene	ND	40.6	H	µg/Kg-dry	1	9/21/2017 9:25:54 PM
Benzo(j,k)fluoranthene	ND	40.6	H	µg/Kg-dry	1	9/21/2017 9:25:54 PM
Benzo(a)pyrene	ND	40.6	H	µg/Kg-dry	1	9/21/2017 9:25:54 PM
Indeno(1,2,3-cd)pyrene	ND	40.6	H	µg/Kg-dry	1	9/21/2017 9:25:54 PM
Dibenz(a,h)anthracene	ND	40.6	H	µg/Kg-dry	1	9/21/2017 9:25:54 PM
Benzo(g,h,i)perylene	ND	40.6	H	µg/Kg-dry	1	9/21/2017 9:25:54 PM
Surr: 2-Fluorobiphenyl	41.5	10 - 123	H	%Rec	1	9/21/2017 9:25:54 PM
Surr: Terphenyl-d14 (surr)	106	46.2 - 179	H	%Rec	1	9/21/2017 9:25:54 PM

Sample Moisture (Percent Moisture)

Batch ID: R38704

Analyst: CO

Percent Moisture	5.67	0.500	wt%	1	9/20/2017 9:29:45 AM
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Work Order: 1708281
CLIENT: GeoEngineers
Project: Block 21-Test Pit Explorations

QC SUMMARY REPORT

Diesel and Heavy Oil by NWTPH-Dx/Dx Ext.

Sample ID	MB-18001	SampType:	MBLK		Units:	mg/Kg		Prep Date:	8/24/2017		RunNo:	38205	
Client ID:	MBLKS	Batch ID:	18001		Analysis Date:				8/24/2017		SeqNo:	734151	
Analyte		Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual	
Diesel (Fuel Oil)		ND	20.0										
Heavy Oil		ND	50.0										
Surr: 2-Fluorobiphenyl		17.8		20.00		89.2	50	150					
Surr: o-Terphenyl		18.7		20.00		93.5	50	150					

Sample ID	LCS-18001	SampType:	LCS		Units:	mg/Kg		Prep Date:	8/24/2017		RunNo:	38205	
Client ID:	LCSS	Batch ID:	18001		Analysis Date:				8/24/2017		SeqNo:	734152	
Analyte		Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual	
Diesel (Fuel Oil)		497	20.0	500.0	0	99.5	65	135					
Surr: 2-Fluorobiphenyl		18.5		20.00		92.4	50	150					
Surr: o-Terphenyl		21.2		20.00		106	50	150					

Sample ID	1708196-012ADUP	SampType:	DUP		Units:	mg/Kg-dry		Prep Date:	8/24/2017		RunNo:	38205	
Client ID:	BATCH	Batch ID:	18001		Analysis Date:				8/24/2017		SeqNo:	734543	
Analyte		Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual	
Diesel (Fuel Oil)		ND	18.7						0		30		
Heavy Oil		ND	46.7						0		30		
Surr: 2-Fluorobiphenyl		36.3		37.40		97.1	50	150		0			
Surr: o-Terphenyl		38.0		37.40		102	50	150		0			

Sample ID	1708196-012AMS	SampType:	MS		Units:	mg/Kg-dry		Prep Date:	8/24/2017		RunNo:	38205	
Client ID:	BATCH	Batch ID:	18001		Analysis Date:				8/24/2017		SeqNo:	734546	
Analyte		Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual	
Diesel (Fuel Oil)		503	19.5	486.5	0	103	65	135					
Surr: 2-Fluorobiphenyl		18.5		19.46		95.2	50	150					
Surr: o-Terphenyl		21.0		19.46		108	50	150					

Work Order: 1708281
CLIENT: GeoEngineers
Project: Block 21-Test Pit Explorations

QC SUMMARY REPORT

Diesel and Heavy Oil by NWTPH-Dx/Dx Ext.

Sample ID	1708196-012AMS	SampType:	MS	Units:	mg/Kg-dry	Prep Date:	8/24/2017	RunNo:	38205		
Client ID:	BATCH	Batch ID:	18001	Analysis Date:				8/24/2017	SeqNo:	734546	
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Sample ID	1708196-012AMSD	SampType:	MSD	Units:	mg/Kg-dry	Prep Date:	8/24/2017	RunNo:	38205		
Client ID:	BATCH	Batch ID:	18001			Analysis Date:	8/24/2017	SeqNo:	734547		
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Diesel (Fuel Oil)	449	18.2	455.7	0	98.5	65	135	503.1	11.4	30	
Surr: 2-Fluorobiphenyl	16.3		18.23		89.4	50	150		0		
Surr: o-Terphenyl	19.1		18.23		105	50	150		0		

Sample ID	1708285-001ADUP	SampType:	DUP	Units:	mg/Kg-dry	Prep Date:	8/24/2017	RunNo:	38205		
Client ID:	BATCH	Batch ID:	18001			Analysis Date:	8/29/2017	SeqNo:	735578		
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Diesel (Fuel Oil)	ND	20.9						0		30	
Heavy Oil	ND	52.3						0		30	
Surr: 2-Fluorobiphenyl	21.4		20.91		102	50	150		0		
Surr: o-Terphenyl	22.1		20.91		106	50	150		0		

Work Order: 1708281
CLIENT: GeoEngineers
Project: Block 21-Test Pit Explorations

QC SUMMARY REPORT

Gasoline by NWTPH-Gx

Sample ID	LCS-18011	SampType: LCS		Units: mg/Kg		Prep Date: 8/24/2017		RunNo: 38315			
Client ID:	LCSS	Batch ID: 18011				Analysis Date: 8/25/2017		SeqNo: 736216			
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Gasoline	20.5	5.00	25.00	0	82.2	65	135				
Surr: Toluene-d8	1.19		1.250		95.1	65	135				
Surr: 4-Bromofluorobenzene	1.27		1.250		102	65	135				

Sample ID	MB-18011	SampType: MBLK		Units: mg/Kg		Prep Date: 8/24/2017		RunNo: 38315			
Client ID:	MBLKS	Batch ID: 18011				Analysis Date: 8/25/2017		SeqNo: 736217			
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Gasoline	ND	5.00									
Surr: Toluene-d8	1.19		1.250		95.3	65	135				
Surr: 4-Bromofluorobenzene	1.26		1.250		101	65	135				

Sample ID	1708196-021BDUP	SampType:	DUP	Units:	mg/Kg-dry	Prep Date:	8/24/2017	RunNo:	38315		
Client ID:	BATCH	Batch ID:	18011			Analysis Date:	8/29/2017	SeqNo:	736220		
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Gasoline	ND	3.28						0		30	
Surr: Toluene-d8	0.832		0.8202		101	65	135		0		
Surr: 4-Bromofluorobenzene	0.780		0.8202		95.1	65	135		0		

Sample ID	1708281-005BMS	SampType:	MS	Units:	mg/Kg-dry	Prep Date:	8/24/2017	RunNo:	38315		
Client ID:	TP21-3-7.5	Batch ID:	18011			Analysis Date:	8/29/2017	SeqNo:	736224		
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Gasoline	11.9	4.89	24.46	0	48.5	65	135				S
Surr: Toluene-d8	1.16		1.223		94.8	65	135				
Surr: 4-Bromofluorobenzene	1.24		1.223		101	65	135				

NOTES:

S - Outlying spike recovery(ies) observed. A duplicate analysis was performed with similar results indicating a possible matrix effect.



Work Order: 1708281
CLIENT: GeoEngineers
Project: Block 21-Test Pit Explorations

QC SUMMARY REPORT

Gasoline by NWTPH-Gx

Sample ID	1708281-005BMSD	SampType:	MSD	Units:	mg/Kg-dry	Prep Date:	8/24/2017	RunNo:	38315		
Client ID:	TP21-3-7.5	Batch ID:	18011			Analysis Date:	8/29/2017	SeqNo:	736225		
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Gasoline	10.1	4.89	24.46	0	41.1	65	135	11.87	16.5	30	S
Surr: Toluene-d8	1.17		1.223		95.3	65	135		0		
Surr: 4-Bromofluorobenzene	1.24		1.223		102	65	135		0		

NOTES:

S - Outlying spike recovery(ies) observed. A duplicate analysis was performed with similar results indicating a possible matrix effect.

Work Order: 1708281
CLIENT: GeoEngineers
Project: Block 21-Test Pit Explorations

QC SUMMARY REPORT

Mercury by EPA Method 7471

Sample ID MB-18003	SampType: MBLK	Units: mg/Kg		Prep Date: 8/24/2017	RunNo: 38195
Client ID: MBLKS	Batch ID: 18003	Analysis Date: 8/24/2017		SeqNo: 734381	
Analyte	Result	RL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual

Mercury ND 0.240

Sample ID LCS-18003	SampType: LCS	Units: mg/Kg		Prep Date: 8/24/2017	RunNo: 38195
Client ID: LCSS	Batch ID: 18003	Analysis Date: 8/24/2017		SeqNo: 734382	
Analyte	Result	RL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual

Mercury 0.496 0.240 0.4808 0 103 80 120

Sample ID 1708281-001ADUP	SampType: DUP	Units: mg/Kg-dry		Prep Date: 8/24/2017	RunNo: 38195
Client ID: TP21-1-5.0	Batch ID: 18003	Analysis Date: 8/24/2017		SeqNo: 734384	
Analyte	Result	RL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual

Mercury ND 0.278 0 20

Sample ID 1708281-001AMS	SampType: MS	Units: mg/Kg-dry		Prep Date: 8/24/2017	RunNo: 38195
Client ID: TP21-1-5.0	Batch ID: 18003	Analysis Date: 8/24/2017		SeqNo: 734385	
Analyte	Result	RL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual

Mercury 0.568 0.267 0.5340 0.01830 103 70 130

Sample ID 1708281-001AMSD	SampType: MSD	Units: mg/Kg-dry		Prep Date: 8/24/2017	RunNo: 38195
Client ID: TP21-1-5.0	Batch ID: 18003	Analysis Date: 8/24/2017		SeqNo: 734386	
Analyte	Result	RL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual

Mercury 0.538 0.252 0.5049 0.01830 103 70 130 0.5682 5.42 20

Work Order: 1708281
CLIENT: GeoEngineers
Project: Block 21-Test Pit Explorations

QC SUMMARY REPORT

Polyaromatic Hydrocarbons by EPA Method 8270 (SIM)

Sample ID	MB-18269	SampType:	MBLK		Units:	µg/Kg		Prep Date:	9/21/2017		RunNo:	38769	
Client ID:	MBLKS	Batch ID:	18269					Analysis Date:	9/21/2017		SeqNo:	745041	
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual		
Naphthalene	ND	40.0											
2-Methylnaphthalene	ND	40.0											
1-Methylnaphthalene	ND	40.0											
Acenaphthylene	ND	40.0											
Acenaphthene	ND	40.0											
Fluorene	ND	40.0											
Phenanthrene	ND	40.0											
Anthracene	ND	40.0											
Fluoranthene	ND	40.0											
Pyrene	ND	40.0											
Benz(a)anthracene	ND	40.0											
Chrysene	ND	40.0											
Benzo(b)fluoranthene	ND	40.0											
Benzo(j,k)fluoranthene	ND	40.0											
Benzo(a)pyrene	ND	40.0											
Indeno(1,2,3-cd)pyrene	ND	40.0											
Dibenz(a,h)anthracene	ND	40.0											
Benzo(g,h,i)perylene	ND	40.0											
Surr: 2-Fluorobiphenyl	121		500.0		24.2	10	123						
Surr: Terphenyl-d14 (surr)	601		500.0		120	46.2	179						

Sample ID	LCS-18269	SampType:	LCS	Units:	µg/Kg	Prep Date:	9/21/2017	RunNo:	38769		
Client ID:	LCSS	Batch ID:	18269			Analysis Date:	9/21/2017	SeqNo:	745042		
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Naphthalene	954	40.0	1,000	0	95.4	46.4	125				
2-Methylnaphthalene	1,050	40.0	1,000	0	105	45.1	135				
1-Methylnaphthalene	1,030	40.0	1,000	0	103	46.2	133				
Acenaphthylene	1,100	40.0	1,000	0	110	32.8	136				
Acenaphthene	1,110	40.0	1,000	0	111	38.7	129				

Work Order: 1708281
CLIENT: GeoEngineers
Project: Block 21-Test Pit Explorations

QC SUMMARY REPORT

Polyaromatic Hydrocarbons by EPA Method 8270 (SIM)

Sample ID	LCS-18269	SampType: LCS		Units: µg/Kg		Prep Date: 9/21/2017			RunNo: 38769		
Client ID:	LCSS	Batch ID: 18269					Analysis Date: 9/21/2017			SeqNo: 745042	
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Fluorene	1,140	40.0	1,000	0	114	41.4	144				
Phenanthrene	1,140	40.0	1,000	0	114	43.9	133				
Anthracene	1,130	40.0	1,000	0	113	44.2	136				
Fluoranthene	1,190	40.0	1,000	0	119	45.9	137				
Pyrene	1,030	40.0	1,000	0	103	46.2	137				
Benz(a)anthracene	1,170	40.0	1,000	0	117	41.2	141				
Chrysene	1,200	40.0	1,000	0	120	46.9	138				
Benzo(b)fluoranthene	1,200	40.0	1,000	0	120	41	155				
Benzo(j,k)fluoranthene	1,170	40.0	1,000	0	117	41.8	153				
Benzo(a)pyrene	1,190	40.0	1,000	0	119	30.2	171				
Indeno(1,2,3-cd)pyrene	1,180	40.0	1,000	0	118	31.3	159				
Dibenz(a,h)anthracene	1,180	40.0	1,000	0	118	28	158				
Benzo(g,h,i)perylene	1,160	40.0	1,000	0	116	32.4	144				
Surr: 2-Fluorobiphenyl	138		500.0		27.6	10	123				
Surr: Terphenyl-d14 (surr)	596		500.0		119	46.2	179				

Sample ID	1708281-008AMS	SampType:	MS	Units:	µg/Kg-dry	Prep Date:	9/21/2017	RunNo:	38769		
Client ID:	TP21-4-7.0	Batch ID:	18269			Analysis Date:	9/21/2017	SeqNo:	745044		
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Naphthalene	782	39.9	998.1	0	78.4	42.9	138				H
2-Methylnaphthalene	881	39.9	998.1	0	88.3	42.8	151				H
1-Methylnaphthalene	865	39.9	998.1	0	86.6	41.6	148				H
Acenaphthylene	929	39.9	998.1	0	93.0	32.6	160				H
Acenaphthene	934	39.9	998.1	0	93.6	46.3	142				H
Fluorene	949	39.9	998.1	0	95.1	43.4	153				H
Phenanthrene	969	39.9	998.1	0	97.1	45.5	140				H
Anthracene	950	39.9	998.1	0	95.2	32.6	160				H
Fluoranthene	1,040	39.9	998.1	0	104	44.6	161				H
Pyrene	930	39.9	998.1	0	93.2	48.3	158				H

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Polyaromatic Hydrocarbons by EPA Method 8270 (SIM)

Sample ID	1708281-008AMS	SampType:	MS	Units:	µg/Kg-dry	Prep Date:	9/21/2017	RunNo:	38769		
Client ID:	TP21-4-7.0	Batch ID:	18269			Analysis Date:	9/21/2017	SeqNo:	745044		
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benz(a)anthracene	1,080	39.9	998.1	0	108	34.9	139				H
Chrysene	1,040	39.9	998.1	0	104	45.2	146				H
Benzo(b)fluoranthene	1,060	39.9	998.1	0	106	42.2	168				H
Benzo(j,k)fluoranthene	1,010	39.9	998.1	0	102	34.8	147				H
Benzo(a)pyrene	1,030	39.9	998.1	0	103	34.4	179				H
Indeno(1,2,3-cd)pyrene	979	39.9	998.1	0	98.1	5	113				H
Dibenz(a,h)anthracene	977	39.9	998.1	0	97.9	17.3	156				H
Benzo(g,h,i)perylene	949	39.9	998.1	0	95.0	24.9	119				H
Surr: 2-Fluorobiphenyl	119		499.0		23.8	10	123				H
Surr: Terphenyl-d14 (surr)	564		499.0		113	46.2	179				H

Sample ID	1708281-008AMSD	SampType: MSD	Units: µg/Kg-dry			Prep Date: 9/21/2017			RunNo: 38769		
Client ID:	TP21-4-7.0	Batch ID: 18269	Analysis Date: 9/21/2017						SeqNo: 745045		
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Naphthalene	860	38.3	958.4	0	89.7	42.9	138	782.0	9.48	30	H
2-Methylnaphthalene	910	38.3	958.4	0	94.9	42.8	151	881.4	3.14	30	H
1-Methylnaphthalene	660	38.3	958.4	0	68.8	41.6	148	864.7	26.9	30	H
Acenaphthylene	960	38.3	958.4	0	100	32.6	160	928.5	3.32	30	H
Acenaphthene	951	38.3	958.4	0	99.3	46.3	142	934.2	1.83	30	H
Fluorene	973	38.3	958.4	0	102	43.4	153	949.3	2.47	30	H
Phenanthrene	996	38.3	958.4	0	104	45.5	140	969.5	2.70	30	H
Anthracene	976	38.3	958.4	0	102	32.6	160	950.4	2.64	30	H
Fluoranthene	1,060	38.3	958.4	0	110	44.6	161	1,037	2.01	30	H
Pyrene	932	38.3	958.4	0	97.2	48.3	158	930.4	0.182	30	H
Benz(a)anthracene	1,090	38.3	958.4	0	114	34.9	139	1,080	0.771	30	H
Chrysene	1,070	38.3	958.4	0	111	45.2	146	1,041	2.62	30	H
Benzo(b)fluoranthene	1,040	38.3	958.4	0	109	42.2	168	1,061	1.65	30	H
Benzo(j,k)fluoranthene	1,070	38.3	958.4	0	111	34.8	147	1,014	5.22	30	H
Benzo(a)pyrene	1,050	38.3	958.4	0	109	34.4	179	1,029	1.89	30	H

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Polyaromatic Hydrocarbons by EPA Method 8270 (SIM)

Sample ID	1708281-008AMSD	SampType: MSD	Units: µg/Kg-dry			Prep Date: 9/21/2017			RunNo: 38769		
Client ID:	TP21-4-7.0	Batch ID:	18269				Analysis Date: 9/21/2017			SeqNo: 745045	
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Indeno(1,2,3-cd)pyrene	1,000	38.3	958.4	0	104	5	113	979.1	2.20	30	H
Dibenz(a,h)anthracene	1,000	38.3	958.4	0	104	17.3	156	976.8	2.43	30	H
Benzo(g,h,i)perylene	962	38.3	958.4	0	100	24.9	119	948.5	1.40	30	H
Surr: 2-Fluorobiphenyl	206		479.2		43.0	10	123		0		H
Surr: Terphenyl-d14 (surr)	549		479.2		115	46.2	179		0		H

Sample ID	1708281-008ADUP	SampType:	DUP	Units:	µg/Kg-dry	Prep Date:	9/21/2017	RunNo:	38769		
Client ID:	TP21-4-7.0	Batch ID:	18269			Analysis Date:	9/21/2017	SeqNo:	745046		
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Naphthalene	ND	39.9						0		30	H
2-Methylnaphthalene	ND	39.9						0		30	H
1-Methylnaphthalene	ND	39.9						0		30	H
Acenaphthylene	ND	39.9						0		30	H
Acenaphthene	ND	39.9						0		30	H
Fluorene	ND	39.9						0		30	H
Phenanthrene	ND	39.9						0		30	H
Anthracene	ND	39.9						0		30	H
Fluoranthene	ND	39.9						0		30	H
Pyrene	ND	39.9						0		30	H
Benz(a)anthracene	ND	39.9						0		30	H
Chrysene	ND	39.9						0		30	H
Benzo(b)fluoranthene	ND	39.9						0		30	H
Benzo(j,k)fluoranthene	ND	39.9						0		30	H
Benzo(a)pyrene	ND	39.9						0		30	H
Indeno(1,2,3-cd)pyrene	ND	39.9						0		30	H
Dibenz(a,h)anthracene	ND	39.9						0		30	H
Benzo(g,h,i)perylene	ND	39.9						0		30	H
Surr: 2-Fluorobiphenyl	75.0		499.0		15.0	10	123		0		H
Surr: Terphenyl-d14 (surr)	520		499.0		104	46.2	179		0		H



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Polyaromatic Hydrocarbons by EPA Method 8270 (SIM)

Sample ID	1708281-008ADUP	SampType:	DUP	Units:	µg/Kg-dry	Prep Date:	9/21/2017	RunNo:	38769		
Client ID:	TP21-4-7.0	Batch ID:	18269			Analysis Date:	9/21/2017	SeqNo:	745046		
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

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CLIENT: GeoEngineers
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QC SUMMARY REPORT

Polyaromatic Hydrocarbons by EPA Method 8270 (SIM)

Sample ID	MB-18010	SampType:	MBLK		Units:	µg/L		Prep Date:	8/24/2017		RunNo:	38225	
Client ID:	MBLKS	Batch ID:	18010					Analysis Date:	8/24/2017		SeqNo:	734527	
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual		
Naphthalene	ND	40.0											
2-Methylnaphthalene	ND	40.0											
1-Methylnaphthalene	ND	40.0											
Acenaphthylene	ND	40.0											
Acenaphthene	ND	40.0											
Fluorene	ND	40.0											
Phenanthrene	ND	40.0											
Anthracene	ND	40.0											
Fluoranthene	ND	40.0											
Pyrene	ND	40.0											
Benz(a)anthracene	ND	40.0											
Chrysene	ND	40.0											
Benzo(b)fluoranthene	ND	40.0											
Benzo(j,k)fluoranthene	ND	40.0											
Benzo(a)pyrene	ND	40.0											
Indeno(1,2,3-cd)pyrene	ND	40.0											Q
Dibenz(a,h)anthracene	ND	40.0											Q
Benzo(g,h,i)perylene	ND	40.0											Q
Surr: 2-Fluorobiphenyl	463		500.0		92.5	20	128						
Surr: Terphenyl-d14 (surr)	516		500.0		103	46.2	179						

NOTES:

Q - Indicates an analyte with a continuing calibration that does not meet established acceptance criteria (<20%RSD, <20% Drift or minimum RRF).

Sample ID	LCS-18010	SampType:	LCS	Units:	µg/L	Prep Date:	8/24/2017	RunNo:	38225		
Client ID:	LCSS	Batch ID:	18010			Analysis Date:	8/24/2017	SeqNo:	734528		
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Naphthalene	868	40.0	1,000	0	86.8	46.4	125				
2-Methylnaphthalene	878	40.0	1,000	0	87.8	45.1	135				
1-Methylnaphthalene	841	40.0	1,000	0	84.1	46.2	133				
Acenaphthylene	933	40.0	1,000	0	93.3	32.8	136				

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Polyaromatic Hydrocarbons by EPA Method 8270 (SIM)

Sample ID	LCS-18010	SampType: LCS		Units: µg/L		Prep Date: 8/24/2017			RunNo: 38225		
Client ID:	LCSS	Batch ID: 18010					Analysis Date: 8/24/2017			SeqNo: 734528	
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Acenaphthene	876	40.0	1,000	0	87.6	38.7	129				
Fluorene	901	40.0	1,000	0	90.1	41.4	144				
Phenanthrene	860	40.0	1,000	0	86.0	43.9	133				
Anthracene	980	40.0	1,000	0	98.0	44.2	136				
Fluoranthene	927	40.0	1,000	0	92.7	45.9	137				
Pyrene	892	40.0	1,000	0	89.2	46.2	137				
Benz(a)anthracene	890	40.0	1,000	0	89.0	41.2	141				
Chrysene	891	40.0	1,000	0	89.1	46.9	138				
Benzo(b)fluoranthene	815	40.0	1,000	0	81.5	41	155				
Benzo(j,k)fluoranthene	960	40.0	1,000	0	96.0	41.8	153				
Benzo(a)pyrene	901	40.0	1,000	0	90.1	30.2	171				
Indeno(1,2,3-cd)pyrene	739	40.0	1,000	0	73.9	31.3	159				
Dibenz(a,h)anthracene	734	40.0	1,000	0	73.4	28	158				
Benzo(g,h,i)perylene	684	40.0	1,000	0	68.4	32.4	144				
Surr: 2-Fluorobiphenyl	487		500.0		97.4	20	128				
Surr: Terphenyl-d14 (surr)	517		500.0		103	46.2	179				

Sample ID	1708240-001ADUP	SampType:	DUP	Units:	µg/L-dry	Prep Date:	8/24/2017	RunNo:	38225		
Client ID:	BATCH	Batch ID:	18010			Analysis Date:	8/24/2017	SeqNo:	734530		
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Naphthalene	ND	38.4						0		30	
2-Methylnaphthalene	ND	38.4						0		30	
1-Methylnaphthalene	ND	38.4						0		30	
Acenaphthylene	ND	38.4						0		30	
Acenaphthene	ND	38.4						0		30	
Fluorene	ND	38.4						0		30	
Phenanthrene	68.6	38.4						56.92	18.6	30	
Anthracene	ND	38.4						0		30	
Fluoranthene	59.9	38.4						53.06	12.0	30	

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Polyaromatic Hydrocarbons by EPA Method 8270 (SIM)

Sample ID	1708240-001ADUP	SampType:	DUP	Units:	µg/L-dry	Prep Date:	8/24/2017	RunNo:	38225		
Client ID:	BATCH	Batch ID:	18010			Analysis Date:	8/24/2017	SeqNo:	734530		
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Pyrene	62.4	38.4						55.18	12.2	30	
Benz(a)anthracene	ND	38.4						0		30	
Chrysene	ND	38.4						0		30	
Benzo(b)fluoranthene	ND	38.4						0		30	
Benzo(j,k)fluoranthene	ND	38.4						0		30	
Benzo(a)pyrene	ND	38.4						0		30	
Indeno(1,2,3-cd)pyrene	ND	38.4						0		30	Q
Dibenz(a,h)anthracene	ND	38.4						0		30	Q
Benzo(g,h,i)perylene	ND	38.4						0		30	Q
Surr: 2-Fluorobiphenyl	354		479.6		73.9	20	128		0		
Surr: Terphenyl-d14 (surr)	379		479.6		79.1	46.2	179		0		

NOTES:

Q - Indicates an analyte with a continuing calibration that does not meet established acceptance criteria (<20%RSD, <20% Drift or minimum RRF).

Sample ID	1708240-001AMS	SampType:	MS	Units:	µg/L-dry	Prep Date:	8/24/2017	RunNo:	38225		
Client ID:	BATCH	Batch ID:	18010			Analysis Date:	8/24/2017	SeqNo:	734531		
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Naphthalene	774	40.3	1,007	13.96	75.5	42.9	138				
2-Methylnaphthalene	788	40.3	1,007	18.63	76.4	42.8	151				
1-Methylnaphthalene	762	40.3	1,007	13.75	74.3	41.6	148				
Acenaphthylene	847	40.3	1,007	4.701	83.6	32.6	160				
Acenaphthene	785	40.3	1,007	18.28	76.1	46.3	142				
Fluorene	827	40.3	1,007	19.97	80.1	43.4	153				
Phenanthrene	808	40.3	1,007	56.92	74.5	45.5	140				
Anthracene	892	40.3	1,007	9.507	87.6	32.6	160				
Fluoranthene	880	40.3	1,007	53.06	82.1	44.6	161				
Pyrene	847	40.3	1,007	55.18	78.6	48.3	158				
Benz(a)anthracene	799	40.3	1,007	19.59	77.4	34.9	139				
Chrysene	797	40.3	1,007	29.26	76.2	45.2	146				
Benzo(b)fluoranthene	744	40.3	1,007	0	73.8	42.2	168				

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Polyaromatic Hydrocarbons by EPA Method 8270 (SIM)

Sample ID	1708240-001AMS	SampType:	MS	Units:	µg/L-dry	Prep Date:	8/24/2017	RunNo:	38225		
Client ID:	BATCH	Batch ID:	18010	Analysis Date:				8/24/2017	SeqNo:	734531	
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzo(j,k)fluoranthene	814	40.3	1,007	0	80.8	34.8	147				
Benzo(a)pyrene	813	40.3	1,007	29.78	77.8	34.4	179				
Indeno(1,2,3-cd)pyrene	576	40.3	1,007	16.66	55.5	5	113				
Dibenz(a,h)anthracene	572	40.3	1,007	11.27	55.7	17.3	156				
Benzo(g,h,i)perylene	485	40.3	1,007	19.06	46.3	24.9	119				
Surr: 2-Fluorobiphenyl	419		503.7		83.2	20	128				
Surr: Terphenyl-d14 (surr)	438		503.7		86.9	46.2	179				

Sample ID	1708240-001AMSD	SampType:	MSD		Units:	µg/L-dry		Prep Date:	8/24/2017		RunNo:	38225	
Client ID:	BATCH	Batch ID:	18010		Analysis Date:				8/24/2017		SeqNo:	734532	
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual		
Naphthalene	761	41.1	1,028	13.96	72.6	42.9	138	774.3	1.77	30			
2-Methylnaphthalene	780	41.1	1,028	18.63	74.0	42.8	151	788.2	1.07	30			
1-Methylnaphthalene	741	41.1	1,028	13.75	70.7	41.6	148	762.2	2.83	30			
Acenaphthylene	819	41.1	1,028	4.701	79.1	32.6	160	847.4	3.47	30			
Acenaphthene	756	41.1	1,028	18.28	71.7	46.3	142	784.9	3.75	30			
Fluorene	803	41.1	1,028	19.97	76.1	43.4	153	826.6	2.92	30			
Phenanthrene	795	41.1	1,028	56.92	71.8	45.5	140	807.5	1.50	30			
Anthracene	869	41.1	1,028	9.507	83.6	32.6	160	892.4	2.64	30			
Fluoranthene	865	41.1	1,028	53.06	79.0	44.6	161	880.1	1.72	30			
Pyrene	831	41.1	1,028	55.18	75.5	48.3	158	847.3	1.93	30			
Benz(a)anthracene	761	41.1	1,028	19.59	72.1	34.9	139	799.5	4.96	30			
Chrysene	780	41.1	1,028	29.26	73.0	45.2	146	796.7	2.09	30			
Benzo(b)fluoranthene	717	41.1	1,028	0	69.7	42.2	168	743.9	3.75	30			
Benzo(j,k)fluoranthene	783	41.1	1,028	0	76.2	34.8	147	813.7	3.81	30			
Benzo(a)pyrene	782	41.1	1,028	29.78	73.2	34.4	179	813.2	3.92	30			
Indeno(1,2,3-cd)pyrene	556	41.1	1,028	16.66	52.5	5	113	576.2	3.55	30			
Dibenz(a,h)anthracene	555	41.1	1,028	11.27	52.9	17.3	156	572.3	3.08	30			
Benzo(g,h,i)perylene	498	41.1	1,028	19.06	46.5	24.9	119	485.4	2.50	30			



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Polyaromatic Hydrocarbons by EPA Method 8270 (SIM)

Sample ID	1708240-001AMSD	SampType:	MSD		Units:	µg/L-dry		Prep Date:	8/24/2017		RunNo:	38225
Client ID:	BATCH	Batch ID:	18010					Analysis Date:	8/24/2017		SeqNo:	734532
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual	
Surr: 2-Fluorobiphenyl	435		514.1		84.7	20	128		0			
Surr: Terphenyl-d14 (surr)	444		514.1		86.4	46.2	179		0			



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QC SUMMARY REPORT

Sample Moisture (Percent Moisture)

Sample ID	1709184-001ADUP	SampType: DUP			Units: wt%	Prep Date: 9/20/2017			RunNo: 38704		
Client ID:	BATCH	Batch ID: R38704			Analysis Date: 9/20/2017			SeqNo: 743669			
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Percent Moisture	8.74	0.500						8.008	8.76	20	



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Sample Moisture (Percent Moisture)

Sample ID	1708196-034ADUP			SampType:	DUP		Units:	wt%		Prep Date:	8/24/2017		RunNo:	38193	
Client ID:	BATCH			Batch ID:	R38193					Analysis Date:	8/24/2017		SeqNo:	733856	
Analyte		Result	RL	SPK value	SPK Ref Val		%REC	LowLimit	HighLimit	RPD Ref Val		%RPD	RPDLimit	Qual	
Percent Moisture		9.20	0.500							9.830		6.57	20		



Date: 9/22/2017

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Total Metals by EPA Method 6020

Sample ID	MB-18019	SampType:	MBLK		Units:	mg/Kg		Prep Date:	8/25/2017		RunNo:	38245	
Client ID:	MBLKS	Batch ID:	18019		Analysis Date:				8/25/2017		SeqNo:	734975	
Analyte		Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val		%RPD	RPDLimit	Qual
Arsenic		ND	0.0800										
Barium		ND	0.400										
Cadmium		ND	0.160										
Chromium		ND	0.0800										
Lead		ND	0.160										
Selenium		ND	0.400										
Silver		ND	0.0800										

Sample ID	LCS-18019	SampType:	LCS	Units:	mg/Kg	Prep Date:	8/25/2017			RunNo:	38245	
Client ID:	LCSS	Batch ID:	18019				Analysis Date:	8/25/2017			SeqNo:	734976
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual	
Arsenic	39.6	0.0806	40.32	0	98.1	80	120					
Barium	39.4	0.403	40.32	0	97.7	80	120					
Cadmium	2.10	0.161	2.016	0	104	80	120					
Chromium	43.2	0.0806	40.32	0	107	80	120					
Lead	20.6	0.161	20.16	0	102	80	120					
Selenium	3.90	0.403	4.032	0	96.8	80	120					
Silver	10.2	0.0806	10.08	0	101	80	120					

Sample ID	1708264-001ADUP	SampType:	DUP	Units:	mg/Kg-dry	Prep Date:	8/25/2017	RunNo:	38245		
Client ID:	BATCH	Batch ID:	18019	Analysis Date:				8/25/2017	SeqNo:	734978	
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	8.52	0.147						10.90	24.5	20	R
Barium	156	0.737						185.8	17.7	20	
Cadmium	2.67	0.295						2.775	3.74	20	
Chromium	53.8	0.147						166.8	102	20	R
Lead	72.3	0.295						87.19	18.7	20	
Selenium	1.32	0.737						1.378	4.18	20	

Work Order: 1708281
CLIENT: GeoEngineers
Project: Block 21-Test Pit Explorations

QC SUMMARY REPORT

Total Metals by EPA Method 6020

Sample ID	1708264-001ADUP	SampType:	DUP	Units:	mg/Kg-dry	Prep Date:	8/25/2017	RunNo:	38245		
Client ID:	BATCH	Batch ID:	18019			Analysis Date:	8/25/2017	SeqNo:	734978		
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Silver	ND	0.147						0.2118	70.6	20	

NOTES:

R - High RPD observed. The method is in control as indicated by the LCS.

Sample ID	1708264-001AMS	SampType: MS		Units: mg/Kg-dry		Prep Date: 8/25/2017		RunNo: 38245			
Client ID:	BATCH	Batch ID: 18019				Analysis Date: 8/25/2017		SeqNo: 734980			
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	78.2	0.142	71.05	10.90	94.7	75	125				
Barium	236	0.711	71.05	185.8	70.5	75	125				S
Cadmium	6.77	0.284	3.553	2.775	113	75	125				
Chromium	138	0.142	71.05	166.8	-40.6	75	125				S
Lead	106	0.284	35.53	87.19	53.2	75	125				S
Selenium	8.49	0.711	7.105	1.378	100	75	125				
Silver	14.6	0.142	17.76	0.2118	81.2	75	125				

NOTES:

S - Outlying spike recovery(ies) observed. A duplicate analysis was performed with similar results indicating a possible matrix effect.

S - Outlying spike recovery(ies) observed. A duplicate analysis was performed and recovered within range.

Sample ID	1708264-001AMSD	SampType:	MSD		Units:	mg/Kg-dry		Prep Date:	8/25/2017		RunNo:	38245		
Client ID:	BATCH	Batch ID:	18019		Analysis Date:					8/25/2017		SeqNo:	734981	
Analyte		Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val		%RPD	RPDLimit	Qual	
Arsenic		84.8	0.148	74.21	10.90	99.5	75	125	78.17		8.08	20		
Barium		285	0.742	74.21	185.8	134	75	125	235.9		18.9	20	S	
Cadmium		6.69	0.297	3.711	2.775	105	75	125	6.773		1.30	20		
Chromium		220	0.148	74.21	166.8	71.8	75	125	138.0		45.9	20	RS	
Lead		118	0.297	37.11	87.19	82.2	75	125	106.1		10.4	20		
Selenium		8.37	0.742	7.421	1.378	94.2	75	125	8.490		1.42	20		
Silver		15.7	0.148	18.55	0.2118	83.4	75	125	14.63		7.00	20		

Work Order: 1708281
CLIENT: GeoEngineers
Project: Block 21-Test Pit Explorations

QC SUMMARY REPORT

Total Metals by EPA Method 6020

Sample ID	1708264-001AMSD	SampType: MSD			Units: mg/Kg-dry		Prep Date: 8/25/2017			RunNo: 38245		
Client ID:	BATCH	Batch ID: 18019			Analysis Date: 8/25/2017					SeqNo: 734981		
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual	

NOTES:

S - Outlying spike recovery(ies) observed. A duplicate analysis was performed with similar results indicating a possible matrix effect.
 R - High RPD observed. The method is in control as indicated by the LCS.

Sample ID	1708264-001APDS	SampType:	PDS	Units:			mg/Kg-dry	Prep Date:	8/25/2017	RunNo:	38245	
Client ID:	BATCH	Batch ID:	18019					Analysis Date:	8/25/2017	SeqNo:	734982	
Analyte		Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Barium		256	0.731	73.1	186	96.0	80	120				
Chromium		262	0.146	73.1	167	130	80	120				S

NOTES:

S - Spike recovery indicates a possible matrix effect. The method is in control as indicated by the Laboratory Control Sample (LCS).

Work Order: 1708281
CLIENT: GeoEngineers
Project: Block 21-Test Pit Explorations

QC SUMMARY REPORT

Volatile Organic Compounds by EPA Method 8260C

Sample ID	LCS-18011	SampType:	LCS	Units:	mg/Kg	Prep Date:	8/24/2017	RunNo:	38236		
Client ID:	LCSS	Batch ID:	18011			Analysis Date:	8/25/2017	SeqNo:	734810		
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Dichlorodifluoromethane (CFC-12)	0.786	0.0200	1.000	0	78.6	14.3	167				
Chloromethane	0.879	0.0500	1.000	0	87.9	46	144				
Vinyl chloride	0.896	0.0250	1.000	0	89.6	43.4	151				
Bromomethane	0.366	0.0500	1.000	0	36.6	35	155				
Trichlorofluoromethane (CFC-11)	0.536	0.0200	1.000	0	53.6	33.8	156				
Chloroethane	0.433	0.0500	1.000	0	43.3	33.1	147				
1,1-Dichloroethene	1.08	0.0200	1.000	0	108	39	144				
Methylene chloride	0.958	0.0200	1.000	0	95.8	46.3	140				
trans-1,2-Dichloroethene	1.04	0.0200	1.000	0	104	68	130				
Methyl tert-butyl ether (MTBE)	1.11	0.0500	1.000	0	111	66.3	145				
1,1-Dichloroethane	1.05	0.0200	1.000	0	105	61.9	137				
2,2-Dichloropropane	1.35	0.100	1.000	0	135	35.5	186				
cis-1,2-Dichloroethene	1.03	0.0200	1.000	0	103	71.3	135				
Chloroform	1.01	0.0200	1.000	0	101	69	145				
1,1,1-Trichloroethane (TCA)	0.961	0.0250	1.000	0	96.1	69	132				
1,1-Dichloropropene	1.01	0.0200	1.000	0	101	72.7	131				
Carbon tetrachloride	0.920	0.0250	1.000	0	92.0	63.4	137				
1,2-Dichloroethane (EDC)	1.01	0.0200	1.000	0	101	50.9	162				
Benzene	1.03	0.0200	1.000	0	103	64.3	133				
Trichloroethene (TCE)	1.01	0.0200	1.000	0	101	65.5	137				
1,2-Dichloropropane	1.01	0.0200	1.000	0	101	63.2	142				
Bromodichloromethane	0.958	0.0200	1.000	0	95.8	53.4	131				
Dibromomethane	0.986	0.0200	1.000	0	98.6	60.1	146				
cis-1,3-Dichloropropene	1.10	0.0200	1.000	0	110	59.1	143				
Toluene	0.993	0.0200	1.000	0	99.3	67.3	138				
trans-1,3-Dichloropropylene	1.12	0.0200	1.000	0	112	49.2	149				
1,1,2-Trichloroethane	0.963	0.0200	1.000	0	96.3	56.9	147				
1,3-Dichloropropane	0.998	0.0250	1.000	0	99.8	56.1	153				
Tetrachloroethene (PCE)	1.01	0.0250	1.000	0	101	52.7	150				
Dibromochloromethane	0.884	0.0250	1.000	0	88.4	70.6	144				
1,2-Dibromoethane (EDB)	0.963	0.00500	1.000	0	96.3	50.5	154				

Work Order: 1708281
CLIENT: GeoEngineers
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QC SUMMARY REPORT

Volatile Organic Compounds by EPA Method 8260C

Sample ID	LCS-18011	SampType:	LCS	Units:	mg/Kg	Prep Date:	8/24/2017	RunNo:	38236		
Client ID:	LCSS	Batch ID:	18011			Analysis Date:	8/25/2017	SeqNo:	734810		
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chlorobenzene	1.01	0.0250	1.000	0	101	76.1	123				
1,1,1,2-Tetrachloroethane	0.995	0.0250	1.000	0	99.5	65.9	141				
Ethylbenzene	1.09	0.0250	1.000	0	109	74	129				
m,p-Xylene	2.10	0.0500	2.000	0	105	70	124				
o-Xylene	0.998	0.0250	1.000	0	99.8	68.1	139				
Styrene	1.00	0.0250	1.000	0	100	73.3	146				
Isopropylbenzene	0.959	0.0250	1.000	0	95.9	70	130				
Bromoform	0.828	0.0500	1.000	0	82.8	67	154				
1,1,2,2-Tetrachloroethane	0.877	0.0200	1.000	0	87.7	44.8	165				
n-Propylbenzene	1.01	0.0250	1.000	0	101	74.8	125				
Bromobenzene	0.945	0.0200	1.000	0	94.5	49.2	144				
1,3,5-Trimethylbenzene	0.995	0.0250	1.000	0	99.5	74.6	123				
2-Chlorotoluene	0.913	0.0250	1.000	0	91.3	76.7	129				
4-Chlorotoluene	0.955	0.0250	1.000	0	95.5	77.5	125				
tert-Butylbenzene	1.00	0.0250	1.000	0	100	66.2	130				
1,2,3-Trichloropropane	0.943	0.0250	1.000	0	94.3	67.9	136				
1,2,4-Trichlorobenzene	1.19	0.0250	1.000	0	119	62.6	143				
sec-Butylbenzene	1.05	0.0500	1.000	0	105	75.6	133				
4-Isopropyltoluene	1.03	0.0500	1.000	0	103	76.8	131				
1,3-Dichlorobenzene	1.03	0.0200	1.000	0	103	72.8	128				
1,4-Dichlorobenzene	1.03	0.0200	1.000	0	103	72.6	126				
n-Butylbenzene	1.13	0.0250	1.000	0	113	65.3	136				
1,2-Dichlorobenzene	1.03	0.0200	1.000	0	103	72.8	126				
1,2-Dibromo-3-chloropropane	0.973	0.500	1.000	0	97.3	40.2	155				
1,2,4-Trimethylbenzene	0.999	0.0200	1.000	0	99.9	77.5	129				
Hexachlorobutadiene	1.16	0.0500	1.000	0	116	42	151				
Naphthalene	1.12	0.0500	1.000	0	112	58.4	160				
1,2,3-Trichlorobenzene	1.18	0.0200	1.000	0	118	54.8	143				
Surr: Dibromofluoromethane	1.29		1.250		103	56.5	129				
Surr: Toluene-d8	1.26		1.250		101	64.5	151				
Surr: 1-Bromo-4-fluorobenzene	1.26		1.250		101	63.1	141				



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QC SUMMARY REPORT

Volatile Organic Compounds by EPA Method 8260C

Sample ID	LCS-18011	SampType:	LCS	Units:	mg/Kg	Prep Date:	8/24/2017	RunNo:	38236		
Client ID:	LCSS	Batch ID:	18011	Analysis Date:				8/25/2017	SeqNo:	734810	
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Sample ID	MB-18011	SampType:	MBLK	Units:	mg/Kg	Prep Date:	8/24/2017	RunNo:	38236		
Client ID:	MBLKS	Batch ID:	18011	Analysis Date:				8/25/2017	SeqNo:	734811	
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Dichlorodifluoromethane (CFC-12)	ND	0.0200
Chloromethane	ND	0.0500
Vinyl chloride	ND	0.0250
Bromomethane	ND	0.0500
Trichlorofluoromethane (CFC-11)	ND	0.0200
Chloroethane	ND	0.0500
1,1-Dichloroethene	ND	0.0200
Methylene chloride	ND	0.0200
trans-1,2-Dichloroethene	ND	0.0200
Methyl tert-butyl ether (MTBE)	ND	0.0500
1,1-Dichloroethane	ND	0.0200
2,2-Dichloropropane	ND	0.100
cis-1,2-Dichloroethene	ND	0.0200
Chloroform	ND	0.0200
1,1,1-Trichloroethane (TCA)	ND	0.0250
1,1-Dichloropropene	ND	0.0200
Carbon tetrachloride	ND	0.0250
1,2-Dichloroethane (EDC)	ND	0.0200
Benzene	ND	0.0200
Trichloroethene (TCE)	ND	0.0200
1,2-Dichloropropane	ND	0.0200
Bromodichloromethane	ND	0.0200
Dibromomethane	ND	0.0200
cis-1,3-Dichloropropene	ND	0.0200
Toluene	ND	0.0200

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CLIENT: GeoEngineers
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QC SUMMARY REPORT

Volatile Organic Compounds by EPA Method 8260C

Sample ID	MB-18011	SampType:	MBLK		Units:	mg/Kg			Prep Date:	8/24/2017		RunNo:	38236	
Client ID:	MBLKS	Batch ID:	18011						Analysis Date:	8/25/2017		SeqNo:	734811	
Analyte		Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val		%RPD	RPDLimit	Qual	
trans-1,3-Dichloropropylene		ND	0.0200											
1,1,2-Trichloroethane		ND	0.0200											
1,3-Dichloropropane		ND	0.0250											
Tetrachloroethene (PCE)		ND	0.0250											
Dibromochloromethane		ND	0.0250											
1,2-Dibromoethane (EDB)		ND	0.00500											
Chlorobenzene		ND	0.0250											
1,1,1,2-Tetrachloroethane		ND	0.0250											
Ethylbenzene		ND	0.0250											
m,p-Xylene		ND	0.0500											
o-Xylene		ND	0.0250											
Styrene		ND	0.0250											
Isopropylbenzene		ND	0.0250											
Bromoform		ND	0.0500											
1,1,2,2-Tetrachloroethane		ND	0.0200											
n-Propylbenzene		ND	0.0250											
Bromobenzene		ND	0.0200											
1,3,5-Trimethylbenzene		ND	0.0250											
2-Chlorotoluene		ND	0.0250											
4-Chlorotoluene		ND	0.0250											
tert-Butylbenzene		ND	0.0250											
1,2,3-Trichloropropane		ND	0.0250											
1,2,4-Trichlorobenzene		ND	0.0250											
sec-Butylbenzene		ND	0.0500											
4-Isopropyltoluene		ND	0.0500											
1,3-Dichlorobenzene		ND	0.0200											
1,4-Dichlorobenzene		ND	0.0200											
n-Butylbenzene		ND	0.0250											
1,2-Dichlorobenzene		ND	0.0200											
1,2-Dibromo-3-chloropropane		ND	0.500											
1,2,4-Trimethylbenzene		ND	0.0200											

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CLIENT: GeoEngineers
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QC SUMMARY REPORT

Volatile Organic Compounds by EPA Method 8260C

Sample ID	MB-18011	SampType: MBLK		Units: mg/Kg		Prep Date: 8/24/2017		RunNo: 38236			
Client ID:	MBLKS	Batch ID: 18011				Analysis Date: 8/25/2017		SeqNo: 734811			
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Hexachlorobutadiene	ND	0.0500									
Naphthalene	ND	0.0500									
1,2,3-Trichlorobenzene	ND	0.0200									
Surr: Dibromofluoromethane	1.16		1.250		93.0	56.5	129				
Surr: Toluene-d8	1.24		1.250		98.9	64.5	151				
Surr: 1-Bromo-4-fluorobenzene	1.26		1.250		101	63.1	141				

Sample ID	1708286-001BDUP	SampType:	DUP	Units:	mg/Kg-dry	Prep Date:	8/24/2017	RunNo:	38236		
Client ID:	BATCH	Batch ID:	18011			Analysis Date:	8/25/2017	SeqNo:	734813		
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Dichlorodifluoromethane (CFC-12)	ND	0.0196						0		30	
Chloromethane	ND	0.0489						0		30	
Vinyl chloride	ND	0.0244						0		30	
Bromomethane	ND	0.0489						0		30	
Trichlorofluoromethane (CFC-11)	ND	0.0196						0		30	
Chloroethane	ND	0.0489						0		30	
1,1-Dichloroethene	ND	0.0196						0		30	
Methylene chloride	ND	0.0196						0		30	
trans-1,2-Dichloroethene	ND	0.0196						0		30	
Methyl tert-butyl ether (MTBE)	ND	0.0489						0		30	
1,1-Dichloroethane	ND	0.0196						0		30	
2,2-Dichloropropane	ND	0.0978						0		30	Q
cis-1,2-Dichloroethene	ND	0.0196						0		30	
Chloroform	ND	0.0196						0		30	
1,1,1-Trichloroethane (TCA)	ND	0.0244						0		30	
1,1-Dichloropropene	ND	0.0196						0		30	
Carbon tetrachloride	ND	0.0244						0		30	
1,2-Dichloroethane (EDC)	ND	0.0196						0		30	
Benzene	ND	0.0196						0		30	

Work Order: 1708281
CLIENT: GeoEngineers
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QC SUMMARY REPORT

Volatile Organic Compounds by EPA Method 8260C

Sample ID	1708286-001BDUP	SampType:	DUP	Units:	mg/Kg-dry	Prep Date:	8/24/2017	RunNo:	38236		
Client ID:	BATCH	Batch ID:	18011			Analysis Date:	8/25/2017	SeqNo:	734813		
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Trichloroethene (TCE)	ND	0.0196						0		30	
1,2-Dichloropropane	ND	0.0196						0		30	
Bromodichloromethane	ND	0.0196						0		30	
Dibromomethane	ND	0.0196						0		30	
cis-1,3-Dichloropropene	ND	0.0196						0		30	
Toluene	ND	0.0196						0		30	
trans-1,3-Dichloropropylene	ND	0.0196						0		30	
1,1,2-Trichloroethane	ND	0.0196						0		30	
1,3-Dichloropropane	ND	0.0244						0		30	
Tetrachloroethene (PCE)	0.310	0.0244						0.3135	1.27	30	
Dibromochloromethane	ND	0.0244						0		30	
1,2-Dibromoethane (EDB)	ND	0.00489						0		30	
Chlorobenzene	ND	0.0244						0		30	
1,1,1,2-Tetrachloroethane	ND	0.0244						0		30	
Ethylbenzene	ND	0.0244						0		30	
m,p-Xylene	ND	0.0489						0		30	
o-Xylene	ND	0.0244						0		30	
Styrene	ND	0.0244						0		30	
Isopropylbenzene	ND	0.0244						0		30	
Bromoform	ND	0.0489						0		30	
1,1,2,2-Tetrachloroethane	ND	0.0196						0		30	
n-Propylbenzene	ND	0.0244						0		30	
Bromobenzene	ND	0.0196						0		30	
1,3,5-Trimethylbenzene	ND	0.0244						0		30	
2-Chlorotoluene	ND	0.0244						0		30	
4-Chlorotoluene	ND	0.0244						0		30	
tert-Butylbenzene	ND	0.0244						0		30	
1,2,3-Trichloropropane	ND	0.0244						0		30	
1,2,4-Trichlorobenzene	ND	0.0244						0		30	
sec-Butylbenzene	ND	0.0489						0		30	
4-Isopropyltoluene	ND	0.0489						0		30	

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CLIENT: GeoEngineers
Project: Block 21-Test Pit Explorations

QC SUMMARY REPORT

Volatile Organic Compounds by EPA Method 8260C

Sample ID	1708286-001BDUP	SampType:	DUP	Units:	mg/Kg-dry	Prep Date:	8/24/2017	RunNo:	38236		
Client ID:	BATCH	Batch ID:	18011			Analysis Date:	8/25/2017	SeqNo:	734813		
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
1,3-Dichlorobenzene	ND	0.0196						0		30	
1,4-Dichlorobenzene	ND	0.0196						0		30	
n-Butylbenzene	ND	0.0244						0		30	
1,2-Dichlorobenzene	ND	0.0196						0		30	
1,2-Dibromo-3-chloropropane	ND	0.489						0		30	
1,2,4-Trimethylbenzene	ND	0.0196						0		30	
Hexachlorobutadiene	ND	0.0489						0		30	
Naphthalene	ND	0.0489						0		30	
1,2,3-Trichlorobenzene	ND	0.0196						0		30	
Surr: Dibromofluoromethane	1.17		1.222		95.4	56.5	129		0		
Surr: Toluene-d8	1.16		1.222		95.1	64.5	151		0		
Surr: 1-Bromo-4-fluorobenzene	1.19		1.222		97.0	63.1	141		0		

Sample ID	1708196-021BDUP	SampType:	DUP	Units:	mg/Kg-dry	Prep Date:	8/24/2017	RunNo:	38236		
Client ID:	BATCH	Batch ID:	18011	Analysis Date:				8/29/2017	SeqNo:	736196	
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Dichlorodifluoromethane (CFC-12)	ND	0.0131						0		30	
Chloromethane	ND	0.0328						0		30	
Vinyl chloride	ND	0.0164						0		30	
Bromomethane	ND	0.0328						0		30	
Trichlorofluoromethane (CFC-11)	ND	0.0131						0		30	
Chloroethane	ND	0.0328						0		30	
1,1-Dichloroethene	ND	0.0131						0		30	
Methylene chloride	ND	0.0131						0		30	
trans-1,2-Dichloroethene	ND	0.0131						0		30	
Methyl tert-butyl ether (MTBE)	ND	0.0328						0		30	
1,1-Dichloroethane	ND	0.0131						0		30	
2,2-Dichloropropane	ND	0.0656						0		30	Q
cis-1,2-Dichloroethene	ND	0.0131						0		30	

Work Order: 1708281
CLIENT: GeoEngineers
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QC SUMMARY REPORT

Volatile Organic Compounds by EPA Method 8260C

Sample ID	1708196-021BDUP	SampType:	DUP	Units:	mg/Kg-dry	Prep Date:	8/24/2017	RunNo:	38236		
Client ID:	BATCH	Batch ID:	18011	Analysis Date:				8/29/2017	SeqNo:	736196	
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloroform	ND	0.0131						0		30	
1,1,1-Trichloroethane (TCA)	ND	0.0164						0		30	
1,1-Dichloropropene	ND	0.0131						0		30	
Carbon tetrachloride	ND	0.0164						0		30	
1,2-Dichloroethane (EDC)	ND	0.0131						0		30	
Benzene	ND	0.0131						0		30	
Trichloroethene (TCE)	ND	0.0131						0		30	
1,2-Dichloropropane	ND	0.0131						0		30	
Bromodichloromethane	ND	0.0131						0		30	
Dibromomethane	ND	0.0131						0		30	
cis-1,3-Dichloropropene	ND	0.0131						0		30	
Toluene	ND	0.0131						0		30	
trans-1,3-Dichloropropylene	ND	0.0131						0		30	
1,1,2-Trichloroethane	ND	0.0131						0		30	
1,3-Dichloropropane	ND	0.0164						0		30	
Tetrachloroethene (PCE)	0.0259	0.0164						0.02581	0.180	30	
Dibromochloromethane	ND	0.0164						0		30	
1,2-Dibromoethane (EDB)	ND	0.00328						0		30	
Chlorobenzene	ND	0.0164						0		30	
1,1,1,2-Tetrachloroethane	ND	0.0164						0		30	
Ethylbenzene	ND	0.0164						0		30	
m,p-Xylene	ND	0.0328						0		30	
o-Xylene	ND	0.0164						0		30	
Styrene	ND	0.0164						0		30	
Isopropylbenzene	ND	0.0164						0		30	
Bromoform	ND	0.0328						0		30	
1,1,2,2-Tetrachloroethane	ND	0.0131						0		30	
n-Propylbenzene	0.0223	0.0164						0.02291	2.71	30	
Bromobenzene	ND	0.0131						0		30	
1,3,5-Trimethylbenzene	ND	0.0164						0		30	
2-Chlorotoluene	ND	0.0164						0		30	



Date: 9/22/2017

Work Order: 1708281
CLIENT: GeoEngineers
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QC SUMMARY REPORT**Volatile Organic Compounds by EPA Method 8260C**

Sample ID	1708196-021BDUP	SampType:	DUP	Units:	mg/Kg-dry	Prep Date:	8/24/2017	RunNo:	38236		
Client ID:	BATCH	Batch ID:	18011			Analysis Date:	8/29/2017	SeqNo:	736196		
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
4-Chlorotoluene	ND	0.0164						0		30	
tert-Butylbenzene	ND	0.0164						0		30	
1,2,3-Trichloropropane	ND	0.0164						0		30	
1,2,4-Trichlorobenzene	ND	0.0164						0		30	
sec-Butylbenzene	ND	0.0328						0		30	
4-Isopropyltoluene	ND	0.0328						0		30	
1,3-Dichlorobenzene	ND	0.0131						0		30	
1,4-Dichlorobenzene	ND	0.0131						0		30	
n-Butylbenzene	ND	0.0164						0		30	
1,2-Dichlorobenzene	ND	0.0131						0		30	
1,2-Dibromo-3-chloropropane	ND	0.328						0		30	
1,2,4-Trimethylbenzene	ND	0.0131						0		30	
Hexachlorobutadiene	ND	0.0328						0		30	
Naphthalene	ND	0.0328						0		30	
1,2,3-Trichlorobenzene	ND	0.0131						0		30	
Surr: Dibromofluoromethane	0.795		0.8202		96.9	56.5	129		0		
Surr: Toluene-d8	0.817		0.8202		99.6	64.5	151		0		
Surr: 1-Bromo-4-fluorobenzene	0.780		0.8202		95.1	63.1	141		0		

Sample ID	1708196-028BMS	SampType: MS			Units: mg/Kg-dry	Prep Date: 8/24/2017			RunNo: 38236		
Client ID:	BATCH	Batch ID: 18011			Analysis Date: 8/29/2017			SeqNo: 736199			
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Dichlorodifluoromethane (CFC-12)	0.926	0.0210	1.051	0	88.1	43.5	121				
Chloromethane	1.10	0.0525	1.051	0	104	45	130				
Vinyl chloride	1.03	0.0263	1.051	0	98.1	43.6	150				
Bromomethane	0.284	0.0525	1.051	0	27.0	21.3	120				
Trichlorofluoromethane (CFC-11)	0.360	0.0210	1.051	0	34.2	35	131				S
Chloroethane	0.244	0.0525	1.051	0	23.2	31.9	123				S
1,1-Dichloroethene	1.03	0.0210	1.051	0	98.2	47.3	147				

Work Order: 1708281
CLIENT: GeoEngineers
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QC SUMMARY REPORT

Volatile Organic Compounds by EPA Method 8260C

Sample ID	1708196-028BMS	SampType: MS	Units: mg/Kg-dry			Prep Date: 8/24/2017			RunNo: 38236		
Client ID:	BATCH	Batch ID:	18011	Analysis Date: 8/29/2017					SeqNo: 736199		
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Methylene chloride	1.07	0.0210	1.051	0	102	54.7	142				
trans-1,2-Dichloroethene	1.08	0.0210	1.051	0	103	52	136				
Methyl tert-butyl ether (MTBE)	1.26	0.0525	1.051	0	120	58.5	167				
1,1-Dichloroethane	1.12	0.0210	1.051	0	107	51.8	141				
2,2-Dichloropropane	1.55	0.105	1.051	0	148	36	123				S
cis-1,2-Dichloroethene	1.11	0.0210	1.051	0	106	58.6	136				
Chloroform	1.08	0.0210	1.051	0	103	53.2	129				
1,1,1-Trichloroethane (TCA)	0.980	0.0263	1.051	0	93.2	58.3	145				
1,1-Dichloropropene	1.07	0.0210	1.051	0	102	55.1	138				
Carbon tetrachloride	0.910	0.0263	1.051	0	86.6	53.3	144				
1,2-Dichloroethane (EDC)	1.11	0.0210	1.051	0	106	51.3	139				
Benzene	1.12	0.0210	1.051	0	107	63.5	133				
Trichloroethene (TCE)	1.14	0.0210	1.051	0	108	61.6	147				
1,2-Dichloropropane	1.11	0.0210	1.051	0	105	59	136				
Bromodichloromethane	0.978	0.0210	1.051	0	93.1	50.7	141				
Dibromomethane	1.13	0.0210	1.051	0	108	50.6	137				
cis-1,3-Dichloropropene	1.14	0.0210	1.051	0	109	50.4	138				
Toluene	1.06	0.0210	1.051	0	101	63.4	132				
trans-1,3-Dichloropropylene	1.15	0.0210	1.051	0	109	44.1	147				
1,1,2-Trichloroethane	1.14	0.0210	1.051	0	109	51.6	137				
1,3-Dichloropropane	1.19	0.0263	1.051	0	113	53.1	134				
Tetrachloroethene (PCE)	1.07	0.0263	1.051	0.03785	98.3	35.6	158				
Dibromochloromethane	0.881	0.0263	1.051	0	83.8	55.3	140				
1,2-Dibromoethane (EDB)	1.15	0.00525	1.051	0	110	50.4	136				
Chlorobenzene	1.04	0.0263	1.051	0	98.5	60	133				
1,1,1,2-Tetrachloroethane	0.925	0.0263	1.051	0	88.0	53.1	142				
Ethylbenzene	1.11	0.0263	1.051	0	105	54.5	134				
m,p-Xylene	2.12	0.0525	2.102	0	101	53.1	132				
o-Xylene	1.02	0.0263	1.051	0	96.8	53.3	139				
Styrene	1.06	0.0263	1.051	0	101	51.1	132				
Isopropylbenzene	0.998	0.0263	1.051	0	95.0	58.9	138				

Work Order: 1708281
CLIENT: GeoEngineers
Project: Block 21-Test Pit Explorations

QC SUMMARY REPORT

Volatile Organic Compounds by EPA Method 8260C

Sample ID	1708196-028BMS	SampType: MS	Units: mg/Kg-dry			Prep Date: 8/24/2017			RunNo: 38236		
Client ID:	BATCH	Batch ID:	18011	Analysis Date: 8/29/2017					SeqNo: 736199		
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Bromoform	0.771	0.0525	1.051	0	73.4	57.9	130				
1,1,2,2-Tetrachloroethane	1.05	0.0210	1.051	0	99.5	51.9	131				
n-Propylbenzene	1.08	0.0263	1.051	0	103	53.6	140				
Bromobenzene	1.01	0.0210	1.051	0	96.5	54.2	140				
1,3,5-Trimethylbenzene	1.07	0.0263	1.051	0	102	51.8	136				
2-Chlorotoluene	0.986	0.0263	1.051	0	93.8	51.6	136				
4-Chlorotoluene	1.04	0.0263	1.051	0	98.8	50.1	139				
tert-Butylbenzene	1.07	0.0263	1.051	0	102	50.5	135				
1,2,3-Trichloropropane	1.18	0.0263	1.051	0	113	50.5	131				
1,2,4-Trichlorobenzene	1.28	0.0263	1.051	0	122	50.8	130				
sec-Butylbenzene	1.13	0.0525	1.051	0	107	52.6	141				
4-Isopropyltoluene	1.11	0.0525	1.051	0	106	52.9	134				
1,3-Dichlorobenzene	1.08	0.0210	1.051	0	103	52.6	131				
1,4-Dichlorobenzene	1.08	0.0210	1.051	0	103	52.9	129				
n-Butylbenzene	1.17	0.0263	1.051	0	111	52.6	130				
1,2-Dichlorobenzene	1.11	0.0210	1.051	0	106	55.8	129				
1,2-Dibromo-3-chloropropane	1.08	0.525	1.051	0	103	40.5	131				
1,2,4-Trimethylbenzene	1.08	0.0210	1.051	0	103	50.6	137				
Hexachlorobutadiene	1.25	0.0525	1.051	0	119	40.6	158				
Naphthalene	1.37	0.0525	1.051	0	131	52.3	124				S
1,2,3-Trichlorobenzene	1.37	0.0210	1.051	0	130	54.4	124				S
Surr: Dibromofluoromethane	1.34		1.314		102	56.5	129				
Surr: Toluene-d8	1.38		1.314		105	64.5	151				
Surr: 1-Bromo-4-fluorobenzene	1.37		1.314		105	63.1	141				

NOTES:

S - Outlying spike recovery(ies) observed.

Work Order: 1708281
CLIENT: GeoEngineers
Project: Block 21-Test Pit Explorations

QC SUMMARY REPORT

Volatile Organic Compounds by EPA Method 8260C

Sample ID	1708196-028BMSD	SampType:	MSD		Units:	mg/Kg-dry		Prep Date:	8/24/2017		RunNo:	38236		
Client ID:	BATCH	Batch ID:	18011						Analysis Date:	8/29/2017		SeqNo:	736200	
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual			
Dichlorodifluoromethane (CFC-12)	0.963	0.0210	1.051	0	91.6	43.5	121	0.9259	3.93	30				
Chloromethane	1.15	0.0525	1.051	0	110	45	130	1.095	5.28	30				
Vinyl chloride	1.06	0.0263	1.051	0	101	43.6	150	1.031	2.85	30				
Bromomethane	0.285	0.0525	1.051	0	27.2	21.3	120	0.2840	0.485	30				
Trichlorofluoromethane (CFC-11)	0.430	0.0210	1.051	0	41.0	35	131	0.3596	17.9	30				
Chloroethane	0.342	0.0525	1.051	0	32.5	31.9	123	0.2442	33.2	30	R			
1,1-Dichloroethene	1.11	0.0210	1.051	0	106	47.3	147	1.032	7.47	30				
Methylene chloride	1.04	0.0210	1.051	0	98.9	54.7	142	1.068	2.67	30				
trans-1,2-Dichloroethene	1.09	0.0210	1.051	0	104	52	136	1.078	1.58	30				
Methyl tert-butyl ether (MTBE)	1.28	0.0525	1.051	0	122	58.5	167	1.264	1.23	30				
1,1-Dichloroethane	1.13	0.0210	1.051	0	107	51.8	141	1.122	0.555	30				
2,2-Dichloropropane	1.57	0.105	1.051	0	149	36	123	1.552	0.917	30	S			
cis-1,2-Dichloroethene	1.10	0.0210	1.051	0	105	58.6	136	1.110	0.883	30				
Chloroform	1.09	0.0210	1.051	0	104	53.2	129	1.084	0.465	30				
1,1,1-Trichloroethane (TCA)	1.01	0.0263	1.051	0	96.0	58.3	145	0.9798	2.92	30				
1,1-Dichloropropene	1.09	0.0210	1.051	0	103	55.1	138	1.069	1.62	30				
Carbon tetrachloride	0.940	0.0263	1.051	0	89.5	53.3	144	0.9099	3.29	30				
1,2-Dichloroethane (EDC)	1.09	0.0210	1.051	0	104	51.3	139	1.110	1.98	30				
Benzene	1.10	0.0210	1.051	0	105	63.5	133	1.121	1.63	30				
Trichloroethene (TCE)	1.12	0.0210	1.051	0	107	61.6	147	1.139	1.68	30				
1,2-Dichloropropane	1.09	0.0210	1.051	0	103	59	136	1.108	1.89	30				
Bromodichloromethane	0.973	0.0210	1.051	0	92.6	50.7	141	0.9784	0.550	30				
Dibromomethane	1.12	0.0210	1.051	0	106	50.6	137	1.132	1.49	30				
cis-1,3-Dichloropropene	1.15	0.0210	1.051	0	109	50.4	138	1.145	0.351	30				
Toluene	1.06	0.0210	1.051	0	101	63.4	132	1.057	0.0596	30				
trans-1,3-Dichloropropylene	1.15	0.0210	1.051	0	109	44.1	147	1.147	0.0679	30				
1,1,2-Trichloroethane	1.12	0.0210	1.051	0	107	51.6	137	1.144	1.88	30				
1,3-Dichloropropane	1.18	0.0263	1.051	0	112	53.1	134	1.193	1.29	30				
Tetrachloroethene (PCE)	1.06	0.0263	1.051	0.03785	97.7	35.6	158	1.071	0.631	30				
Dibromochloromethane	0.876	0.0263	1.051	0	83.3	55.3	140	0.8805	0.544	30				
1,2-Dibromoethane (EDB)	1.13	0.00525	1.051	0	108	50.4	136	1.155	2.09	30				



Date: 9/22/2017

Work Order: 1708281
CLIENT: GeoEngineers
Project: Block 21-Test Pit Explorations

QC SUMMARY REPORT

Volatile Organic Compounds by EPA Method 8260C

Sample ID	1708196-028BMSD	SampType:	MSD	Units:	mg/Kg-dry	Prep Date:	8/24/2017	RunNo:	38236		
Client ID:	BATCH	Batch ID:	18011			Analysis Date:	8/29/2017	SeqNo:	736200		
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chlorobenzene	1.04	0.0263	1.051	0	98.7	60	133	1.035	0.181	30	
1,1,1,2-Tetrachloroethane	0.925	0.0263	1.051	0	88.0	53.1	142	0.9245	0.0521	30	
Ethylbenzene	1.12	0.0263	1.051	0	106	54.5	134	1.108	0.816	30	
m,p-Xylene	2.13	0.0525	2.102	0	101	53.1	132	2.116	0.574	30	
o-Xylene	1.02	0.0263	1.051	0	97.2	53.3	139	1.018	0.371	30	
Styrene	1.07	0.0263	1.051	0	102	51.1	132	1.056	1.15	30	
Isopropylbenzene	1.01	0.0263	1.051	0	95.8	58.9	138	0.9983	0.816	30	
Bromoform	0.769	0.0525	1.051	0	73.2	57.9	130	0.7709	0.263	30	
1,1,2,2-Tetrachloroethane	1.08	0.0210	1.051	0	103	51.9	131	1.046	3.03	30	
n-Propylbenzene	1.10	0.0263	1.051	0	104	53.6	140	1.085	1.08	30	
Bromobenzene	1.02	0.0210	1.051	0	96.6	54.2	140	1.014	0.138	30	
1,3,5-Trimethylbenzene	1.07	0.0263	1.051	0	102	51.8	136	1.070	0.121	30	
2-Chlorotoluene	0.981	0.0263	1.051	0	93.3	51.6	136	0.9861	0.541	30	
4-Chlorotoluene	1.04	0.0263	1.051	0	98.8	50.1	139	1.038	0.0429	30	
tert-Butylbenzene	1.09	0.0263	1.051	0	104	50.5	135	1.075	1.27	30	
1,2,3-Trichloropropane	1.18	0.0263	1.051	0	113	50.5	131	1.185	0.116	30	
1,2,4-Trichlorobenzene	1.32	0.0263	1.051	0	126	50.8	130	1.280	3.18	30	
sec-Butylbenzene	1.15	0.0525	1.051	0	110	52.6	141	1.129	1.89	30	
4-Isopropyltoluene	1.11	0.0525	1.051	0	106	52.9	134	1.110	0.393	30	
1,3-Dichlorobenzene	1.08	0.0210	1.051	0	102	52.6	131	1.084	0.819	30	
1,4-Dichlorobenzene	1.07	0.0210	1.051	0	102	52.9	129	1.082	0.828	30	
n-Butylbenzene	1.17	0.0263	1.051	0	111	52.6	130	1.170	0.0497	30	
1,2-Dichlorobenzene	1.10	0.0210	1.051	0	105	55.8	129	1.110	0.911	30	
1,2-Dibromo-3-chloropropane	1.11	0.525	1.051	0	106	40.5	131	1.078	3.10	30	
1,2,4-Trimethylbenzene	1.09	0.0210	1.051	0	103	50.6	137	1.085	0.147	30	
Hexachlorobutadiene	1.28	0.0525	1.051	0	122	40.6	158	1.254	2.31	30	
Naphthalene	1.53	0.0525	1.051	0	146	52.3	124	1.372	11.1	30	S
1,2,3-Trichlorobenzene	1.43	0.0210	1.051	0	136	54.4	124	1.367	4.79	30	S
Surr: Dibromofluoromethane	1.36		1.314		104	56.5	129		0		
Surr: Toluene-d8	1.36		1.314		104	64.5	151		0		
Surr: 1-Bromo-4-fluorobenzene	1.38		1.314		105	63.1	141		0		



Work Order: 1708281
CLIENT: GeoEngineers
Project: Block 21-Test Pit Explorations

QC SUMMARY REPORT

Volatile Organic Compounds by EPA Method 8260C

Sample ID	1708196-028BMSD	SampType:	MSD	Units:	mg/Kg-dry	Prep Date:	8/24/2017	RunNo:	38236		
Client ID:	BATCH	Batch ID:	18011			Analysis Date:	8/29/2017	SeqNo:	736200		
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

NOTES:

S - Outlying spike recovery(ies) observed.

Client Name: **GEI**
 Logged by: **Clare Griggs**

Work Order Number: **1708281**
 Date Received: **8/17/2017 3:54:00 PM**

Chain of Custody

1. Is Chain of Custody complete? Yes ☒ No ☐ Not Present ☐
 2. How was the sample delivered? Client

Log In

3. Coolers are present? Yes ☒ No ☐ NA ☐
 4. Shipping container/cooler in good condition? Yes ☒ No ☐
 5. Custody Seals present on shipping container/cooler?
 (Refer to comments for Custody Seals not intact) Yes ☐ No ☐ Not Required ☒
 6. Was an attempt made to cool the samples? Yes ☐ No ☒ NA ☐
Unknown prior to receipt.
 7. Were all items received at a temperature of >0°C to 10.0°C* Yes ☐ No ☒ NA ☐
Please refer to item information.
 8. Sample(s) in proper container(s)? Yes ☒ No ☐
 9. Sufficient sample volume for indicated test(s)? Yes ☒ No ☐
 10. Are samples properly preserved? Yes ☒ No ☐
 11. Was preservative added to bottles? Yes ☐ No ☒ NA ☐
 12. Is there headspace in the VOA vials? Yes ☐ No ☐ NA ☒
 13. Did all samples containers arrive in good condition(unbroken)? Yes ☒ No ☐
 14. Does paperwork match bottle labels? Yes ☒ No ☐
 15. Are matrices correctly identified on Chain of Custody? Yes ☒ No ☐
 16. Is it clear what analyses were requested? Yes ☒ No ☐
 17. Were all holding times able to be met? Yes ☒ No ☐

Special Handling (if applicable)

18. Was client notified of all discrepancies with this order? Yes ☐ No ☐ NA ☒

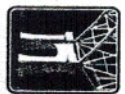
Person Notified: Date
 By Whom: Via: ☐ eMail ☐ Phone ☐ Fax ☐ In Person
 Regarding:
 Client Instructions:

19. Additional remarks:

Item Information

Item #	Temp °C
Cooler	29.4
Sample	30.1

* Note: DoD/ELAP and TNI require items to be received at 4°C +/- 2°C



Fremont
ANALYTICAL

3600 Fremont Ave N.
Seattle, WA 98103
Tel: 206-352-3790
Fax: 206-352-7178

Chain of Custody Record & Laboratory Services Agreement

Date: 8.17.17 Page: 1 of 2

Project Name: Block 21 - Test Pit Excavations

Project No: 20434-001-30 Task 1000

Collected by: Arthur Claus

Location: 7th Ave & Bell Street (Block 21)

Report To (PM): Chris Brown

PM Email: cbrown@geoenvironmental.com

Laboratory Project No (Internal): 1708281

Special Remarks:

Analysis requested 8/24/17 by CTB cr

Sample Disposal: ☐ Return to client ☐ Disposal by lab (after 30 days)

Sample Name	Sample Date	Sample Time	Sample Type (Matrix)*	VOCS (EPA 8260 / 624)	GX/BTEX	BTEX	Gasoline Range Organics (GX)	Hydrocarbon Identification (HCID)	Diesel/Heavy Oil Range Organics (DH)	SVOCs (EPA 8270 / 625)	PAHs (EPA 8270 - SIM)	PCBs (EPA 8082 / 608)	Metals** (EPA 6020 / 200.8)	Total (T) Dissolved (D)	Anions (C)***	EDB (801)	Hold	Comments
1 TP21-1-5.0	8.17.17	12:55	Soil	X	X	X	X	X	X	X	X	X	X	X	X	X	X	2 VOAs 3 1402 Jar
2 TP21-1-8.0		13:10	Soil	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
3 TP21-2-2.5		13:40	Soil	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
4 TP21-2-5.0		13:55	Soil	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
5 TP21-3-7.5		08:20	Soil	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
6 TP21-3-10.0		08:35	Soil	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
7 TP21-4-5.0		09:25	Soil	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
8 TP21-4-7.0		09:35	Soil	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
9 TP21-5-2.5		10:15	Soil	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
10 TP21-5-7.0		10:30	Soil	X	X	X	X	X	X	X	X	X	X	X	X	X	X	

*Matrix: A = Air, AQ = Aqueous, B = Bulk, O = Other, P = Product, S = Soil, SD = Sediment, SL = Solid, W = Water, DW = Drinking Water, GW = Ground Water, SW = Storm Water, WW = Waste Water

**Metals (Circle): MTCA-5 RCB-8 Priority Pollutants TAL Individual: Ag Al As B Ba Be Ca Cd Co Cr Cu Fe Hg K Mg Mn Mo Na Ni Pb Sb Se Sr Sn Ti Tl U V Zn

***Anions (Circle): Nitrate Nitrite Chloride Sulfate Bromide O-Phosphate Fluoride Nitrate+Nitrite

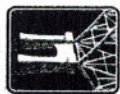
I represent that I am authorized to enter into this Agreement with Fremont Analytical on behalf of the Client named above and that I have verified Client's agreement to each of the terms on the front and backside of this Agreement.

Relinquished	Date/Time	Received	Date/Time
x	8.17.17 15:54	x	8.17.2017 15:54

Reinquinshed Date/Time

Received Date/Time

Same Day ☐ Next Day ☐ 2 Day ☐ 3 Day ☐ Standard ☒ Turn-around Time: (specify)



Fremont

Analytical

3600 Fremont Ave N.
Seattle, WA 98103
Tel: 206-352-3790
Fax: 206-352-7178

Client: **GEI**

Address: **8410 154th Ave NE**

City/State/Zip: **Redmond WA 98052**

Telephone: **(425) 861-6000**

Fax:

Chain of Custody Record & Laboratory Services Agreement

Date: **8.17.17** Page: **2** of **2**

Project Name: **Block 21 - Test Pit Excavations**

Project No: **20434 - 001 - 30 Task 1000**

Collected by: **Arthur Claus**

Location: **7th Ave & Bell St. (Block 21)**

Report To (PM): **Chris Brown**

PM Email: **cbrown@geoengineers.com**

Laboratory Project No (Internal):

Special Remarks:

Sample Disposal: ☐ Return to client ☐ Disposal by lab (after 30 days)

Sample Name	Sample Date	Sample Time	Sample Type (Matrix)*	VOCS (EPA 8260 / 624)	GX/BTEX	BTEX	Gasoline Range Organics (GX)	Hydrocarbon Identification (HCID)	SVOCS (EPA 8270 / 625)	PAHs (EPA 8270 / 625)	PCBs (EPA 8270 - SIM)	Metals** (EPA 6020 / 200.8)	Total (T) Dissolved (D)	Anions (IC)***	EDB (8011)	Hold	Comments
1 TP21-8-2.5	8.17.17	1200	Soil	X	X	X	X	X	X	X	X	X	X	X	X	X	2 VOA's & 1402 jar
2 TP21-8-5.0		1210	Soil														
3 TP21-9-2.5		1115	Soil	X	X	X	X	X	X	X	X	X	X	X	X		
4 TP21-9-5.0		1130	Soil														
5																	
6																	
7																	
8																	
9																	
10																	

*Matrix: A = Air, AQ = Aqueous, B = Bulk, O = Other, P = Product, S = Soil, SD = Sediment, SI = Solid, W = Water, DW = Drinking Water, GW = Ground Water, SW = Storm Water, WW = Waste Water

Metals (Circle): MTCA-5 **RCRA-8 Priority Pollutants TAL Individual: Ag Al As B Ba Be Ca Cd Co Cr Cu Fe Hg K Mg Mn Mo Na Ni Pb Sn Se Sr Ti U V Zn

***Anions (Circle): Nitrate Nitrite Chloride Sulfate Bromide O-Phosphate Fluoride Nitrate+Nitrite

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Relinquished Date/Time

Relinquished **8.17.17 / 1554**

Relinquished Date/Time

Relinquished **8.17.17 / 1554**

Received Date/Time

Received **8/17/2017 1554**

Received Date/Time

Received **8/17/2017 1554**

Turn-around Time:
☒ Standard
☐ 3 Day
☐ 2 Day
☐ Next Day
☐ Same Day (specify)



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Seattle, WA 98103
Tel: 206-352-3790
Fax: 206-352-7178

Chain of Custody Record & Laboratory Services Agreement

Date: 8.17.17 Page: 1 of 2

Project Name: Block 21 - Test Pit Exploration

Project No: 20434-001-30 Task 1000

Collected by: Arthur Claus

Location: 7th Ave & Bell Street (Block 2)

Report To (PM): Chris Brown

PM Email: cbrown@geoengineers.com

Laboratory Project No (Internal): 1708281

Special Remarks:

Analysis requested 8/21/17 by
CIB or

Sample Disposal: ☐ Return to client ☐ Disposal by lab (after 30 days)

Sample Name	Sample Date	Sample Time	Sample Type (Matrix)	VOCs (EPA 8260 / 624)	GV/BTEX	BTEX	Gasoline Range Organics (GX)	Hydrocarbon Identification (HCID)	Diesel/Heavy Oil Range Organics (DH)	SVOCs (EPA 8270 / 525)	PAHs (EPA 8270 - SIM)	PCBs (EPA 8082 / 608)	Metals** (EPA 6020 / 200.8)	Total (T) Dissolved (D)	Anions (IC)***	EDB (801.1)	Hold	Comments
TP21-1-5.0	8.17.17	12:55	Soil	X	X	X	X	X	X	X	X	X	X	X	X	X	X	2 VOCs 3 1405 Jar
TP21-1-8.0		13:10	Soil	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
TP21-2-2.5		13:40	Soil	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
TP21-2-5.0		13:55	Soil	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
TP21-3-7.5		08:20	Soil	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
TP21-3-10.0		08:35	Soil	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
TP21-4-5.0		09:25	Soil	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
TP21-4-7.0		09:35	Soil	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
TP21-5-2.5		10:15	Soil	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
TP21-5-7.0		10:30	Soil	X	X	X	X	X	X	X	X	X	X	X	X	X	X	

Matrix: A = Air, AQ = Aqueous, B = Bulk, O = Other, P = Product, S = Soil, SD = Sediment, SL = Solid, W = Water, DW = Drinking Water, GW = Ground Water, SW = Storm Water, WW = Waste Water

Metals (Circle): MTCA-5 RCRA-8 Priority Pollutants TAL Individual: Ag Al Ar B Ba Be Ca Cd Co Cr Cu Fe Hg K Mg Mn Mo Na Ni Pb Sb Se Si Sn Ti U V Zn

Anions (Circle): Nitrate Nitrite Chloride Sulfate Bromide Iodide Fluoride Nitrate+Nitrite

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Relinquished: 8.17.17 / 15:54 Date/Time

Received: 8/17/2017 15:54 Date/Time

Turn-around Time: ☒ Standard ☐ 3 Day ☐ 2 Day ☐ Next Day ☐ Same Day (specify)



Fremont
Analytical

3600 Fremont Ave N.
Seattle, WA 98103
Tel: 206-352-3790
Fax: 206-352-7178

Chain of Custody Record & Laboratory Services Agreement

Date: 8.17.17 Page: 2 of 2

Project Name: Block 21 - Test Pit Excavations

Project No: 20434-001-30 Task 1000

Collected by: Arthur Claus

Location: 7th Ave & Bell St. (Block 21)

Report to (PM): Chris Brown

PM Email: chbrown@geoanalytical.com

Laboratory Project No (Internal):
Special Remarks:

Sample Disposal: ☐ Return to client ☐ Disposal by lab (after 30 days)

Client: GEI

Address: 8410 154th Ave NE

City, State, Zip: Redmond WA 98052

Telephone: (425) 861-6000

Fax:

Sample Name	Sample Date	Sample Time	Sample Type (Matrix)	VOCs (EPA 8260 / 624)	GV/BTEX	BTEX	Gasoline Range Organics (GX)	Hydrocarbon Identification (HCID)	Diesel/Heavy Oil Range Organics (HX)	SVOCs (EPA 8270 / 625)	PAHs (EPA 8270 - SIM)	PCBs (EPA 8082 / 608)	Metals** (EPA 6020 / 200.8)	Total (T) / Dissolved (D)	Anions (IC)***	EDB (8011)	Hold	Comments
-------------	-------------	-------------	----------------------	-----------------------	---------	------	------------------------------	-----------------------------------	--------------------------------------	------------------------	-----------------------	-----------------------	-----------------------------	---------------------------	----------------	------------	------	----------

1 TP21-8-2.5

8.17.17

1200

Soil

X

X

X

X

X

X

X

X

X

X

X

X

X

X

X

X

X

X

X

X

X

X

X

X

2 TP21-8-5.0

1210

Soil

X

X

X

X

X

X

X

X

X

X

X

X

X

X

X

X

X

X

X

X

X

X

X

X

3 TP21-9-2.5

1115

Soil

X

X

X

X

X

X

X

X

X

X

X

X

X

X

X

X

X

X

X

X

X

X

X

X

4 TP21-9-5.0

1130

Soil

X

X

X

X

X

X

X

X

X

X

X

X

X

X

X

X

X

X

X

X

X

X

X

X

Pump out 3 day 9/19/17

Matrix: A = Air, AQ = Aqueous, B = Bulk, O = Other, P = Product, S = Soil, SD = Sediment, SL = Solid, W = Water, DW = Drinking Water, GW = Ground Water, SW = Storm Water, WW = Waste Water

**Metals (Circle): MTCA-5 RCRA-8 Priority Pollutants TAL Individual: Ag Al As B Ba Be Ca Cd Co Cr Cu Fe Hg K Mg Mn Mo Na Ni Pb Sn S Se Sr Ti Tl U V Zn

**Anions (Circle): Nitrate Nitrite Chloride Sulfate Bromide O Phosphate Fluoride Nitrate-Nitrite

I represent that I am authorized to enter into this Agreement with Fremont Analytical on behalf of the Client named above and that I have verified Client's agreement to each of the terms on the front and backside of this Agreement.

Relinquished Date/Time 8.17.17 1554

Received

Date/Time

8/17/2017 1554

Relinquished Date/Time

Received

Date/Time

8/17/2017 1554

Same Day

Next Day

2 Day

3 Day

Standard

Turn-around Time:

**GeoEngineers**

Chris Brown
600 Stewart Street, Suite 1700
Seattle, WA 98101

RE: Block 21
Work Order Number: 1709342

October 02, 2017

Attention Chris Brown:

Fremont Analytical, Inc. received 6 sample(s) on 9/27/2017 for the analyses presented in the following report.

Diesel and Heavy Oil by NWTPH-Dx/Dx Ext.
Gasoline by NWTPH-Gx
Hexavalent Chromium by EPA Method 7196
Mercury by EPA Method 7471
Polyaromatic Hydrocarbons by EPA Method 8270 (SIM)
Sample Moisture (Percent Moisture)
Total Metals by EPA Method 6020
Volatile Organic Compounds by EPA Method 8260C

This report consists of the following:

- Case Narrative
- Analytical Results
- Applicable Quality Control Summary Reports
- Chain of Custody

All analyses were performed consistent with the Quality Assurance program of Fremont Analytical, Inc. Please contact the laboratory if you should have any questions about the results.

Thank you for using Fremont Analytical.

Sincerely,

Mike Ridgeway
Laboratory Director

CLIENT: GeoEngineers
Project: Block 21
Work Order: 1709342

Work Order Sample Summary

Lab Sample ID	Client Sample ID	Date/Time Collected	Date/Time Received
1709342-001	TP21-6-2.5	09/27/2017 1:15 PM	09/27/2017 3:58 PM
1709342-002	TP21-6-6.0	09/27/2017 1:50 PM	09/27/2017 3:58 PM
1709342-003	TP21-7-2.5	09/27/2017 2:20 PM	09/27/2017 3:58 PM
1709342-004	TP21-7-5.5	09/27/2017 2:30 PM	09/27/2017 3:58 PM
1709342-005	TP21-10-3.0	09/27/2017 2:10 PM	09/27/2017 3:58 PM
1709342-006	Trip Blank	09/26/2017 10:15 AM	09/27/2017 3:58 PM

CLIENT: GeoEngineers**Project:** Block 21

I. SAMPLE RECEIPT:

Samples receipt information is recorded on the attached Sample Receipt Checklist.

II. GENERAL REPORTING COMMENTS:

Results are reported on a wet weight basis unless dry-weight correction is denoted in the units field on the analytical report ("mg/kg-dry" or "ug/kg-dry").

Matrix Spike (MS) and MS Duplicate (MSD) samples are tested from an analytical batch of "like" matrix to check for possible matrix effect. The MS and MSD will provide site specific matrix data only for those samples which are spiked by the laboratory. The sample chosen for spike purposes may or may not have been a sample submitted in this sample delivery group. The validity of the analytical procedures for which data is reported in this analytical report is determined by the Laboratory Control Sample (LCS) and the Method Blank (MB). The LCS and the MB are processed with the samples and the MS/MSD to ensure method criteria are achieved throughout the entire analytical process.

III. ANALYSES AND EXCEPTIONS:

Exceptions associated with this report will be footnoted in the analytical results page(s) or the quality control summary page(s) and/or noted below.

Qualifiers:

- * - Flagged value is not within established control limits
- B - Analyte detected in the associated Method Blank
- D - Dilution was required
- E - Value above quantitation range
- H - Holding times for preparation or analysis exceeded
- I - Analyte with an internal standard that does not meet established acceptance criteria
- J - Analyte detected below Reporting Limit
- N - Tentatively Identified Compound (TIC)
- Q - Analyte with an initial or continuing calibration that does not meet established acceptance criteria (<20%RSD, <20% Drift or minimum RRF)
- S - Spike recovery outside accepted recovery limits
- ND - Not detected at the Reporting Limit
- R - High relative percent difference observed

Acronyms:

- %Rec - Percent Recovery
- CCB - Continued Calibration Blank
- CCV - Continued Calibration Verification
- DF - Dilution Factor
- HEM - Hexane Extractable Material
- ICV - Initial Calibration Verification
- LCS/LCSD - Laboratory Control Sample / Laboratory Control Sample Duplicate
- MB or MBLANK - Method Blank
- MDL - Method Detection Limit
- MS/MSD - Matrix Spike / Matrix Spike Duplicate
- PDS - Post Digestion Spike
- Ref Val - Reference Value
- RL - Reporting Limit
- RPD - Relative Percent Difference
- SD - Serial Dilution
- SGT - Silica Gel Treatment
- SPK - Spike
- Surr - Surrogate



Analytical Report

Work Order: 1709342

Date Reported: 10/2/2017

Client: GeoEngineers

Collection Date: 9/27/2017 1:15:00 PM

Project: Block 21

Lab ID: 1709342-001

Matrix: Soil

Client Sample ID: TP21-6-2.5

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
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Diesel and Heavy Oil by NWTPH-Dx/Dx Ext.

Batch ID: 18328

Analyst: SB

Diesel (Fuel Oil)	ND	20.6		mg/Kg-dry	1	9/28/2017 3:12:41 AM
Heavy Oil	171	51.5		mg/Kg-dry	1	9/28/2017 3:12:41 AM
Surr: 2-Fluorobiphenyl	90.4	50 - 150		%Rec	1	9/28/2017 3:12:41 AM
Surr: o-Terphenyl	96.5	50 - 150		%Rec	1	9/28/2017 3:12:41 AM

Polyaromatic Hydrocarbons by EPA Method 8270 (SIM)

Batch ID: 18347

Analyst: SG

Naphthalene	ND	40.8		µg/Kg-dry	1	9/28/2017 2:38:50 PM
2-Methylnaphthalene	ND	40.8		µg/Kg-dry	1	9/28/2017 2:38:50 PM
1-Methylnaphthalene	ND	40.8		µg/Kg-dry	1	9/28/2017 2:38:50 PM
Acenaphthylene	ND	40.8		µg/Kg-dry	1	9/28/2017 2:38:50 PM
Acenaphthene	ND	40.8		µg/Kg-dry	1	9/28/2017 2:38:50 PM
Fluorene	ND	40.8		µg/Kg-dry	1	9/28/2017 2:38:50 PM
Phenanthrene	ND	40.8		µg/Kg-dry	1	9/28/2017 2:38:50 PM
Anthracene	ND	40.8		µg/Kg-dry	1	9/28/2017 2:38:50 PM
Fluoranthene	ND	40.8		µg/Kg-dry	1	9/28/2017 2:38:50 PM
Pyrene	ND	40.8		µg/Kg-dry	1	9/28/2017 2:38:50 PM
Benz(a)anthracene	ND	40.8		µg/Kg-dry	1	9/28/2017 2:38:50 PM
Chrysene	ND	40.8		µg/Kg-dry	1	9/28/2017 2:38:50 PM
Benzo(b)fluoranthene	ND	40.8		µg/Kg-dry	1	9/28/2017 2:38:50 PM
Benzo(j,k)fluoranthene	ND	40.8		µg/Kg-dry	1	9/28/2017 2:38:50 PM
Benzo(a)pyrene	ND	40.8		µg/Kg-dry	1	9/28/2017 2:38:50 PM
Indeno(1,2,3-cd)pyrene	ND	40.8		µg/Kg-dry	1	9/28/2017 2:38:50 PM
Dibenz(a,h)anthracene	ND	40.8		µg/Kg-dry	1	9/28/2017 2:38:50 PM
Benzo(g,h,i)perylene	ND	40.8		µg/Kg-dry	1	9/28/2017 2:38:50 PM
Surr: 2-Fluorobiphenyl	55.9	10 - 123		%Rec	1	9/28/2017 2:38:50 PM
Surr: Terphenyl-d14 (surr)	127	46.2 - 179		%Rec	1	9/28/2017 2:38:50 PM

Gasoline by NWTPH-Gx

Batch ID: 18337

Analyst: NG

Gasoline	ND	5.00		mg/Kg-dry	1	9/28/2017 2:02:43 PM
Surr: Toluene-d8	97.1	65 - 135		%Rec	1	9/28/2017 2:02:43 PM
Surr: 4-Bromofluorobenzene	103	65 - 135		%Rec	1	9/28/2017 2:02:43 PM

Volatile Organic Compounds by EPA Method 8260C

Batch ID: 18337

Analyst: NG

Dichlorodifluoromethane (CFC-12)	ND	0.0200		mg/Kg-dry	1	9/28/2017 2:02:43 PM
Chloromethane	ND	0.0500		mg/Kg-dry	1	9/28/2017 2:02:43 PM
Vinyl chloride	ND	0.0250		mg/Kg-dry	1	9/28/2017 2:02:43 PM

Original



Analytical Report

Work Order: 1709342

Date Reported: 10/2/2017

Client: GeoEngineers

Collection Date: 9/27/2017 1:15:00 PM

Project: Block 21

Lab ID: 1709342-001

Matrix: Soil

Client Sample ID: TP21-6-2.5

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
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Volatile Organic Compounds by EPA Method 8260C

Batch ID: 18337

Analyst: NG

Bromomethane	ND	0.0500	*	mg/Kg-dry	1	9/28/2017 2:02:43 PM
Trichlorofluoromethane (CFC-11)	ND	0.0200		mg/Kg-dry	1	9/28/2017 2:02:43 PM
Chloroethane	ND	0.0500	*	mg/Kg-dry	1	9/28/2017 2:02:43 PM
1,1-Dichloroethene	ND	0.0200		mg/Kg-dry	1	9/28/2017 2:02:43 PM
Methylene chloride	ND	0.0200		mg/Kg-dry	1	9/28/2017 2:02:43 PM
trans-1,2-Dichloroethene	ND	0.0200		mg/Kg-dry	1	9/28/2017 2:02:43 PM
Methyl tert-butyl ether (MTBE)	ND	0.0500		mg/Kg-dry	1	9/28/2017 2:02:43 PM
1,1-Dichloroethane	ND	0.0200		mg/Kg-dry	1	9/28/2017 2:02:43 PM
2,2-Dichloropropane	ND	0.100		mg/Kg-dry	1	9/28/2017 2:02:43 PM
cis-1,2-Dichloroethene	ND	0.0200		mg/Kg-dry	1	9/28/2017 2:02:43 PM
Chloroform	ND	0.0200		mg/Kg-dry	1	9/28/2017 2:02:43 PM
1,1,1-Trichloroethane (TCA)	ND	0.0250		mg/Kg-dry	1	9/28/2017 2:02:43 PM
1,1-Dichloropropene	ND	0.0200		mg/Kg-dry	1	9/28/2017 2:02:43 PM
Carbon tetrachloride	ND	0.0250		mg/Kg-dry	1	9/28/2017 2:02:43 PM
1,2-Dichloroethane (EDC)	ND	0.0200		mg/Kg-dry	1	9/28/2017 2:02:43 PM
Benzene	ND	0.0200		mg/Kg-dry	1	9/28/2017 2:02:43 PM
Trichloroethene (TCE)	ND	0.0200		mg/Kg-dry	1	9/28/2017 2:02:43 PM
1,2-Dichloropropane	ND	0.0200		mg/Kg-dry	1	9/28/2017 2:02:43 PM
Bromodichloromethane	ND	0.0200		mg/Kg-dry	1	9/28/2017 2:02:43 PM
Dibromomethane	ND	0.0200		mg/Kg-dry	1	9/28/2017 2:02:43 PM
cis-1,3-Dichloropropene	ND	0.0200		mg/Kg-dry	1	9/28/2017 2:02:43 PM
Toluene	ND	0.0200		mg/Kg-dry	1	9/28/2017 2:02:43 PM
trans-1,3-Dichloropropylene	ND	0.0200		mg/Kg-dry	1	9/28/2017 2:02:43 PM
1,1,2-Trichloroethane	ND	0.0200		mg/Kg-dry	1	9/28/2017 2:02:43 PM
1,3-Dichloropropane	ND	0.0250		mg/Kg-dry	1	9/28/2017 2:02:43 PM
Tetrachloroethene (PCE)	ND	0.0250		mg/Kg-dry	1	9/28/2017 2:02:43 PM
Dibromochloromethane	ND	0.0250		mg/Kg-dry	1	9/28/2017 2:02:43 PM
1,2-Dibromoethane (EDB)	ND	0.00500		mg/Kg-dry	1	9/28/2017 2:02:43 PM
Chlorobenzene	ND	0.0250		mg/Kg-dry	1	9/28/2017 2:02:43 PM
1,1,1,2-Tetrachloroethane	ND	0.0250		mg/Kg-dry	1	9/28/2017 2:02:43 PM
Ethylbenzene	ND	0.0250		mg/Kg-dry	1	9/28/2017 2:02:43 PM
m,p-Xylene	ND	0.0500		mg/Kg-dry	1	9/28/2017 2:02:43 PM
o-Xylene	ND	0.0250		mg/Kg-dry	1	9/28/2017 2:02:43 PM
Styrene	ND	0.0250		mg/Kg-dry	1	9/28/2017 2:02:43 PM
Isopropylbenzene	ND	0.0250		mg/Kg-dry	1	9/28/2017 2:02:43 PM
Bromoform	ND	0.0500		mg/Kg-dry	1	9/28/2017 2:02:43 PM
1,1,2,2-Tetrachloroethane	ND	0.0200		mg/Kg-dry	1	9/28/2017 2:02:43 PM
n-Propylbenzene	ND	0.0250		mg/Kg-dry	1	9/28/2017 2:02:43 PM
Bromobenzene	ND	0.0200		mg/Kg-dry	1	9/28/2017 2:02:43 PM

Original



Analytical Report

Work Order: 1709342

Date Reported: 10/2/2017

Client: GeoEngineers

Collection Date: 9/27/2017 1:15:00 PM

Project: Block 21

Lab ID: 1709342-001

Matrix: Soil

Client Sample ID: TP21-6-2.5

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
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Volatile Organic Compounds by EPA Method 8260C

Batch ID: 18337

Analyst: NG

1,3,5-Trimethylbenzene	ND	0.0250		mg/Kg-dry	1	9/28/2017 2:02:43 PM
2-Chlorotoluene	ND	0.0250		mg/Kg-dry	1	9/28/2017 2:02:43 PM
4-Chlorotoluene	ND	0.0250		mg/Kg-dry	1	9/28/2017 2:02:43 PM
tert-Butylbenzene	ND	0.0250		mg/Kg-dry	1	9/28/2017 2:02:43 PM
1,2,3-Trichloropropane	ND	0.0250		mg/Kg-dry	1	9/28/2017 2:02:43 PM
1,2,4-Trichlorobenzene	ND	0.0250		mg/Kg-dry	1	9/28/2017 2:02:43 PM
sec-Butylbenzene	ND	0.0500		mg/Kg-dry	1	9/28/2017 2:02:43 PM
4-Isopropyltoluene	ND	0.0500		mg/Kg-dry	1	9/28/2017 2:02:43 PM
1,3-Dichlorobenzene	ND	0.0200		mg/Kg-dry	1	9/28/2017 2:02:43 PM
1,4-Dichlorobenzene	ND	0.0200		mg/Kg-dry	1	9/28/2017 2:02:43 PM
n-Butylbenzene	ND	0.0250		mg/Kg-dry	1	9/28/2017 2:02:43 PM
1,2-Dichlorobenzene	ND	0.0200		mg/Kg-dry	1	9/28/2017 2:02:43 PM
1,2-Dibromo-3-chloropropane	ND	0.500		mg/Kg-dry	1	9/28/2017 2:02:43 PM
1,2,4-Trimethylbenzene	ND	0.0200		mg/Kg-dry	1	9/28/2017 2:02:43 PM
Hexachlorobutadiene	ND	0.0500		mg/Kg-dry	1	9/28/2017 2:02:43 PM
Naphthalene	ND	0.0500		mg/Kg-dry	1	9/28/2017 2:02:43 PM
1,2,3-Trichlorobenzene	ND	0.0200		mg/Kg-dry	1	9/28/2017 2:02:43 PM
Surr: Dibromofluoromethane	94.1	56.5 - 129		%Rec	1	9/28/2017 2:02:43 PM
Surr: Toluene-d8	91.9	64.5 - 151		%Rec	1	9/28/2017 2:02:43 PM
Surr: 1-Bromo-4-fluorobenzene	98.7	43.2 - 143		%Rec	1	9/28/2017 2:02:43 PM

NOTES:

* - Flagged value is not within established control limits.

Mercury by EPA Method 7471

Batch ID: 18349

Analyst: WF

Mercury	ND	0.268		mg/Kg-dry	1	9/28/2017 2:19:08 PM
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Total Metals by EPA Method 6020

Batch ID: 18346

Analyst: TN

Arsenic	3.39	0.0813		mg/Kg-dry	1	9/28/2017 3:25:49 PM
Barium	56.2	0.407		mg/Kg-dry	1	9/28/2017 3:25:49 PM
Cadmium	ND	0.163		mg/Kg-dry	1	9/28/2017 3:25:49 PM
Chromium	26.9	0.0813		mg/Kg-dry	1	9/28/2017 3:25:49 PM
Lead	5.93	0.163	B	mg/Kg-dry	1	9/28/2017 3:25:49 PM
Selenium	0.711	0.407		mg/Kg-dry	1	9/28/2017 3:25:49 PM
Silver	ND	0.0813		mg/Kg-dry	1	9/28/2017 3:25:49 PM



Analytical Report

Work Order: 1709342
Date Reported: 10/2/2017

Client: GeoEngineers

Collection Date: 9/27/2017 1:15:00 PM

Project: Block 21

Lab ID: 1709342-001

Matrix: Soil

Client Sample ID: TP21-6-2.5

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
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Sample Moisture (Percent Moisture)

Batch ID: R38876 Analyst: CG

Percent Moisture	10.2			wt%	1	9/28/2017 9:30:34 AM
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Analytical Report

Work Order: 1709342

Date Reported: 10/2/2017

Client: GeoEngineers

Collection Date: 9/27/2017 1:50:00 PM

Project: Block 21

Lab ID: 1709342-002

Matrix: Soil

Client Sample ID: TP21-6-6.0

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
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Diesel and Heavy Oil by NWTPH-Dx/Dx Ext.

Batch ID: 18328

Analyst: SB

Diesel (Fuel Oil)	ND	21.5		mg/Kg-dry	1	9/28/2017 4:12:16 AM
Heavy Oil	ND	53.7		mg/Kg-dry	1	9/28/2017 4:12:16 AM
Surr: 2-Fluorobiphenyl	93.6	50 - 150		%Rec	1	9/28/2017 4:12:16 AM
Surr: o-Terphenyl	99.0	50 - 150		%Rec	1	9/28/2017 4:12:16 AM

Polyaromatic Hydrocarbons by EPA Method 8270 (SIM)

Batch ID: 18347

Analyst: SG

Naphthalene	ND	45.4		µg/Kg-dry	1	9/28/2017 6:12:37 PM
2-Methylnaphthalene	ND	45.4		µg/Kg-dry	1	9/28/2017 6:12:37 PM
1-Methylnaphthalene	ND	45.4		µg/Kg-dry	1	9/28/2017 6:12:37 PM
Acenaphthylene	ND	45.4		µg/Kg-dry	1	9/28/2017 6:12:37 PM
Acenaphthene	ND	45.4		µg/Kg-dry	1	9/28/2017 6:12:37 PM
Fluorene	ND	45.4		µg/Kg-dry	1	9/28/2017 6:12:37 PM
Phenanthrene	ND	45.4		µg/Kg-dry	1	9/28/2017 6:12:37 PM
Anthracene	ND	45.4		µg/Kg-dry	1	9/28/2017 6:12:37 PM
Fluoranthene	ND	45.4		µg/Kg-dry	1	9/28/2017 6:12:37 PM
Pyrene	66.5	45.4		µg/Kg-dry	1	9/28/2017 6:12:37 PM
Benz(a)anthracene	ND	45.4		µg/Kg-dry	1	9/28/2017 6:12:37 PM
Chrysene	ND	45.4		µg/Kg-dry	1	9/28/2017 6:12:37 PM
Benzo(b)fluoranthene	ND	45.4		µg/Kg-dry	1	9/28/2017 6:12:37 PM
Benzo(j,k)fluoranthene	ND	45.4		µg/Kg-dry	1	9/28/2017 6:12:37 PM
Benzo(a)pyrene	ND	45.4		µg/Kg-dry	1	9/28/2017 6:12:37 PM
Indeno(1,2,3-cd)pyrene	ND	45.4		µg/Kg-dry	1	9/28/2017 6:12:37 PM
Dibenz(a,h)anthracene	ND	45.4		µg/Kg-dry	1	9/28/2017 6:12:37 PM
Benzo(g,h,i)perylene	ND	45.4		µg/Kg-dry	1	9/28/2017 6:12:37 PM
Surr: 2-Fluorobiphenyl	49.6	10 - 123		%Rec	1	9/28/2017 6:12:37 PM
Surr: Terphenyl-d14 (surr)	123	46.2 - 179		%Rec	1	9/28/2017 6:12:37 PM

Gasoline by NWTPH-Gx

Batch ID: 18337

Analyst: NG

Gasoline	ND	3.70		mg/Kg-dry	1	9/28/2017 2:32:43 PM
Surr: Toluene-d8	97.1	65 - 135		%Rec	1	9/28/2017 2:32:43 PM
Surr: 4-Bromofluorobenzene	103	65 - 135		%Rec	1	9/28/2017 2:32:43 PM

Volatile Organic Compounds by EPA Method 8260C

Batch ID: 18337

Analyst: NG

Dichlorodifluoromethane (CFC-12)	ND	0.0148		mg/Kg-dry	1	9/28/2017 2:32:43 PM
Chloromethane	ND	0.0370		mg/Kg-dry	1	9/28/2017 2:32:43 PM
Vinyl chloride	ND	0.0185		mg/Kg-dry	1	9/28/2017 2:32:43 PM

Original



Analytical Report

Work Order: 1709342

Date Reported: 10/2/2017

Client: GeoEngineers

Collection Date: 9/27/2017 1:50:00 PM

Project: Block 21

Lab ID: 1709342-002

Matrix: Soil

Client Sample ID: TP21-6-6.0

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
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Volatile Organic Compounds by EPA Method 8260C

Batch ID: 18337

Analyst: NG

Bromomethane	ND	0.0370	*	mg/Kg-dry	1	9/28/2017 2:32:43 PM
Trichlorofluoromethane (CFC-11)	ND	0.0148		mg/Kg-dry	1	9/28/2017 2:32:43 PM
Chloroethane	ND	0.0370	*	mg/Kg-dry	1	9/28/2017 2:32:43 PM
1,1-Dichloroethene	ND	0.0148		mg/Kg-dry	1	9/28/2017 2:32:43 PM
Methylene chloride	ND	0.0148		mg/Kg-dry	1	9/28/2017 2:32:43 PM
trans-1,2-Dichloroethene	ND	0.0148		mg/Kg-dry	1	9/28/2017 2:32:43 PM
Methyl tert-butyl ether (MTBE)	ND	0.0370		mg/Kg-dry	1	9/28/2017 2:32:43 PM
1,1-Dichloroethane	ND	0.0148		mg/Kg-dry	1	9/28/2017 2:32:43 PM
2,2-Dichloropropane	ND	0.0740		mg/Kg-dry	1	9/28/2017 2:32:43 PM
cis-1,2-Dichloroethene	ND	0.0148		mg/Kg-dry	1	9/28/2017 2:32:43 PM
Chloroform	ND	0.0148		mg/Kg-dry	1	9/28/2017 2:32:43 PM
1,1,1-Trichloroethane (TCA)	ND	0.0185		mg/Kg-dry	1	9/28/2017 2:32:43 PM
1,1-Dichloropropene	ND	0.0148		mg/Kg-dry	1	9/28/2017 2:32:43 PM
Carbon tetrachloride	ND	0.0185		mg/Kg-dry	1	9/28/2017 2:32:43 PM
1,2-Dichloroethane (EDC)	ND	0.0148		mg/Kg-dry	1	9/28/2017 2:32:43 PM
Benzene	ND	0.0148		mg/Kg-dry	1	9/28/2017 2:32:43 PM
Trichloroethene (TCE)	ND	0.0148		mg/Kg-dry	1	9/28/2017 2:32:43 PM
1,2-Dichloropropane	ND	0.0148		mg/Kg-dry	1	9/28/2017 2:32:43 PM
Bromodichloromethane	ND	0.0148		mg/Kg-dry	1	9/28/2017 2:32:43 PM
Dibromomethane	ND	0.0148		mg/Kg-dry	1	9/28/2017 2:32:43 PM
cis-1,3-Dichloropropene	ND	0.0148		mg/Kg-dry	1	9/28/2017 2:32:43 PM
Toluene	ND	0.0148		mg/Kg-dry	1	9/28/2017 2:32:43 PM
trans-1,3-Dichloropropylene	ND	0.0148		mg/Kg-dry	1	9/28/2017 2:32:43 PM
1,1,2-Trichloroethane	ND	0.0148		mg/Kg-dry	1	9/28/2017 2:32:43 PM
1,3-Dichloropropane	ND	0.0185		mg/Kg-dry	1	9/28/2017 2:32:43 PM
Tetrachloroethene (PCE)	ND	0.0185		mg/Kg-dry	1	9/28/2017 2:32:43 PM
Dibromochloromethane	ND	0.0185		mg/Kg-dry	1	9/28/2017 2:32:43 PM
1,2-Dibromoethane (EDB)	ND	0.00370		mg/Kg-dry	1	9/28/2017 2:32:43 PM
Chlorobenzene	ND	0.0185		mg/Kg-dry	1	9/28/2017 2:32:43 PM
1,1,1,2-Tetrachloroethane	ND	0.0185		mg/Kg-dry	1	9/28/2017 2:32:43 PM
Ethylbenzene	ND	0.0185		mg/Kg-dry	1	9/28/2017 2:32:43 PM
m,p-Xylene	ND	0.0370		mg/Kg-dry	1	9/28/2017 2:32:43 PM
o-Xylene	ND	0.0185		mg/Kg-dry	1	9/28/2017 2:32:43 PM
Styrene	ND	0.0185		mg/Kg-dry	1	9/28/2017 2:32:43 PM
Isopropylbenzene	ND	0.0185		mg/Kg-dry	1	9/28/2017 2:32:43 PM
Bromoform	ND	0.0370		mg/Kg-dry	1	9/28/2017 2:32:43 PM
1,1,2,2-Tetrachloroethane	ND	0.0148		mg/Kg-dry	1	9/28/2017 2:32:43 PM
n-Propylbenzene	ND	0.0185		mg/Kg-dry	1	9/28/2017 2:32:43 PM
Bromobenzene	ND	0.0148		mg/Kg-dry	1	9/28/2017 2:32:43 PM

Original



Analytical Report

Work Order: 1709342

Date Reported: 10/2/2017

Client: GeoEngineers

Collection Date: 9/27/2017 1:50:00 PM

Project: Block 21

Lab ID: 1709342-002

Matrix: Soil

Client Sample ID: TP21-6-6.0

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
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Volatile Organic Compounds by EPA Method 8260C

Batch ID: 18337

Analyst: NG

1,3,5-Trimethylbenzene	ND	0.0185		mg/Kg-dry	1	9/28/2017 2:32:43 PM
2-Chlorotoluene	ND	0.0185		mg/Kg-dry	1	9/28/2017 2:32:43 PM
4-Chlorotoluene	ND	0.0185		mg/Kg-dry	1	9/28/2017 2:32:43 PM
tert-Butylbenzene	ND	0.0185		mg/Kg-dry	1	9/28/2017 2:32:43 PM
1,2,3-Trichloropropane	ND	0.0185		mg/Kg-dry	1	9/28/2017 2:32:43 PM
1,2,4-Trichlorobenzene	ND	0.0185		mg/Kg-dry	1	9/28/2017 2:32:43 PM
sec-Butylbenzene	ND	0.0370		mg/Kg-dry	1	9/28/2017 2:32:43 PM
4-Isopropyltoluene	ND	0.0370		mg/Kg-dry	1	9/28/2017 2:32:43 PM
1,3-Dichlorobenzene	ND	0.0148		mg/Kg-dry	1	9/28/2017 2:32:43 PM
1,4-Dichlorobenzene	ND	0.0148		mg/Kg-dry	1	9/28/2017 2:32:43 PM
n-Butylbenzene	ND	0.0185		mg/Kg-dry	1	9/28/2017 2:32:43 PM
1,2-Dichlorobenzene	ND	0.0148		mg/Kg-dry	1	9/28/2017 2:32:43 PM
1,2-Dibromo-3-chloropropane	ND	0.370		mg/Kg-dry	1	9/28/2017 2:32:43 PM
1,2,4-Trimethylbenzene	ND	0.0148		mg/Kg-dry	1	9/28/2017 2:32:43 PM
Hexachlorobutadiene	ND	0.0370		mg/Kg-dry	1	9/28/2017 2:32:43 PM
Naphthalene	ND	0.0370		mg/Kg-dry	1	9/28/2017 2:32:43 PM
1,2,3-Trichlorobenzene	ND	0.0148		mg/Kg-dry	1	9/28/2017 2:32:43 PM
Surr: Dibromofluoromethane	94.4	56.5 - 129		%Rec	1	9/28/2017 2:32:43 PM
Surr: Toluene-d8	93.8	64.5 - 151		%Rec	1	9/28/2017 2:32:43 PM
Surr: 1-Bromo-4-fluorobenzene	98.0	43.2 - 143		%Rec	1	9/28/2017 2:32:43 PM

NOTES:

* - Flagged value is not within established control limits.

Mercury by EPA Method 7471

Batch ID: 18349

Analyst: WF

Mercury	ND	0.274		mg/Kg-dry	1	9/28/2017 2:25:38 PM
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Total Metals by EPA Method 6020

Batch ID: 18346

Analyst: TN

Arsenic	2.00	0.0904		mg/Kg-dry	1	9/28/2017 3:29:50 PM
Barium	44.1	0.452		mg/Kg-dry	1	9/28/2017 3:29:50 PM
Cadmium	ND	0.181		mg/Kg-dry	1	9/28/2017 3:29:50 PM
Chromium	26.9	0.0904		mg/Kg-dry	1	9/28/2017 3:29:50 PM
Lead	3.22	0.181	B	mg/Kg-dry	1	9/28/2017 3:29:50 PM
Selenium	0.931	0.452		mg/Kg-dry	1	9/28/2017 3:29:50 PM
Silver	ND	0.0904		mg/Kg-dry	1	9/28/2017 3:29:50 PM



Analytical Report

Work Order: 1709342
Date Reported: 10/2/2017

Client: GeoEngineers

Collection Date: 9/27/2017 1:50:00 PM

Project: Block 21

Lab ID: 1709342-002

Matrix: Soil

Client Sample ID: TP21-6-6.0

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
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Sample Moisture (Percent Moisture)

Batch ID: R38876 Analyst: CG

Percent Moisture	12.2			wt%	1	9/28/2017 9:30:34 AM
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Analytical Report

Work Order: 1709342
Date Reported: 10/2/2017

Client: GeoEngineers

Collection Date: 9/27/2017 2:20:00 PM

Project: Block 21

Lab ID: 1709342-003

Matrix: Soil

Client Sample ID: TP21-7-2.5

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
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Diesel and Heavy Oil by NWTPH-Dx/Dx Ext.

Batch ID: 18328

Analyst: SB

Diesel (Fuel Oil)	ND	25.1		mg/Kg-dry	1	9/28/2017 4:42:03 AM
Heavy Oil	ND	62.7		mg/Kg-dry	1	9/28/2017 4:42:03 AM
Surr: 2-Fluorobiphenyl	94.1	50 - 150		%Rec	1	9/28/2017 4:42:03 AM
Surr: o-Terphenyl	99.9	50 - 150		%Rec	1	9/28/2017 4:42:03 AM

Polyaromatic Hydrocarbons by EPA Method 8270 (SIM)

Batch ID: 18347

Analyst: SG

Naphthalene	ND	50.1		µg/Kg-dry	1	9/28/2017 6:35:43 PM
2-Methylnaphthalene	ND	50.1		µg/Kg-dry	1	9/28/2017 6:35:43 PM
1-Methylnaphthalene	ND	50.1		µg/Kg-dry	1	9/28/2017 6:35:43 PM
Acenaphthylene	ND	50.1		µg/Kg-dry	1	9/28/2017 6:35:43 PM
Acenaphthene	ND	50.1		µg/Kg-dry	1	9/28/2017 6:35:43 PM
Fluorene	ND	50.1		µg/Kg-dry	1	9/28/2017 6:35:43 PM
Phenanthrene	ND	50.1		µg/Kg-dry	1	9/28/2017 6:35:43 PM
Anthracene	ND	50.1		µg/Kg-dry	1	9/28/2017 6:35:43 PM
Fluoranthene	ND	50.1		µg/Kg-dry	1	9/28/2017 6:35:43 PM
Pyrene	ND	50.1		µg/Kg-dry	1	9/28/2017 6:35:43 PM
Benz(a)anthracene	ND	50.1		µg/Kg-dry	1	9/28/2017 6:35:43 PM
Chrysene	ND	50.1		µg/Kg-dry	1	9/28/2017 6:35:43 PM
Benzo(b)fluoranthene	ND	50.1		µg/Kg-dry	1	9/28/2017 6:35:43 PM
Benzo(j,k)fluoranthene	ND	50.1		µg/Kg-dry	1	9/28/2017 6:35:43 PM
Benzo(a)pyrene	ND	50.1		µg/Kg-dry	1	9/28/2017 6:35:43 PM
Indeno(1,2,3-cd)pyrene	ND	50.1		µg/Kg-dry	1	9/28/2017 6:35:43 PM
Dibenz(a,h)anthracene	ND	50.1		µg/Kg-dry	1	9/28/2017 6:35:43 PM
Benzo(g,h,i)perylene	ND	50.1		µg/Kg-dry	1	9/28/2017 6:35:43 PM
Surr: 2-Fluorobiphenyl	56.4	10 - 123		%Rec	1	9/28/2017 6:35:43 PM
Surr: Terphenyl-d14 (surr)	134	46.2 - 179		%Rec	1	9/28/2017 6:35:43 PM

Gasoline by NWTPH-Gx

Batch ID: 18337

Analyst: NG

Gasoline	ND	6.78		mg/Kg-dry	1	9/28/2017 3:02:51 PM
Surr: Toluene-d8	99.8	65 - 135		%Rec	1	9/28/2017 3:02:51 PM
Surr: 4-Bromofluorobenzene	102	65 - 135		%Rec	1	9/28/2017 3:02:51 PM

Volatile Organic Compounds by EPA Method 8260C

Batch ID: 18337

Analyst: NG

Dichlorodifluoromethane (CFC-12)	ND	0.0271		mg/Kg-dry	1	9/28/2017 3:02:51 PM
Chloromethane	ND	0.0678		mg/Kg-dry	1	9/28/2017 3:02:51 PM
Vinyl chloride	ND	0.0339		mg/Kg-dry	1	9/28/2017 3:02:51 PM

Original



Analytical Report

Work Order: 1709342

Date Reported: 10/2/2017

Client: GeoEngineers

Collection Date: 9/27/2017 2:20:00 PM

Project: Block 21

Lab ID: 1709342-003

Matrix: Soil

Client Sample ID: TP21-7-2.5

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
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Volatile Organic Compounds by EPA Method 8260C

Batch ID: 18337

Analyst: NG

Bromomethane	ND	0.0678	*	mg/Kg-dry	1	9/28/2017 3:02:51 PM
Trichlorofluoromethane (CFC-11)	ND	0.0271		mg/Kg-dry	1	9/28/2017 3:02:51 PM
Chloroethane	ND	0.0678	*	mg/Kg-dry	1	9/28/2017 3:02:51 PM
1,1-Dichloroethene	ND	0.0271		mg/Kg-dry	1	9/28/2017 3:02:51 PM
Methylene chloride	ND	0.0271		mg/Kg-dry	1	9/28/2017 3:02:51 PM
trans-1,2-Dichloroethene	ND	0.0271		mg/Kg-dry	1	9/28/2017 3:02:51 PM
Methyl tert-butyl ether (MTBE)	ND	0.0678		mg/Kg-dry	1	9/28/2017 3:02:51 PM
1,1-Dichloroethane	ND	0.0271		mg/Kg-dry	1	9/28/2017 3:02:51 PM
2,2-Dichloropropane	ND	0.136		mg/Kg-dry	1	9/28/2017 3:02:51 PM
cis-1,2-Dichloroethene	ND	0.0271		mg/Kg-dry	1	9/28/2017 3:02:51 PM
Chloroform	ND	0.0271		mg/Kg-dry	1	9/28/2017 3:02:51 PM
1,1,1-Trichloroethane (TCA)	ND	0.0339		mg/Kg-dry	1	9/28/2017 3:02:51 PM
1,1-Dichloropropene	ND	0.0271		mg/Kg-dry	1	9/28/2017 3:02:51 PM
Carbon tetrachloride	ND	0.0339		mg/Kg-dry	1	9/28/2017 3:02:51 PM
1,2-Dichloroethane (EDC)	ND	0.0271		mg/Kg-dry	1	9/28/2017 3:02:51 PM
Benzene	ND	0.0271		mg/Kg-dry	1	9/28/2017 3:02:51 PM
Trichloroethene (TCE)	ND	0.0271		mg/Kg-dry	1	9/28/2017 3:02:51 PM
1,2-Dichloropropane	ND	0.0271		mg/Kg-dry	1	9/28/2017 3:02:51 PM
Bromodichloromethane	ND	0.0271		mg/Kg-dry	1	9/28/2017 3:02:51 PM
Dibromomethane	ND	0.0271		mg/Kg-dry	1	9/28/2017 3:02:51 PM
cis-1,3-Dichloropropene	ND	0.0271		mg/Kg-dry	1	9/28/2017 3:02:51 PM
Toluene	ND	0.0271		mg/Kg-dry	1	9/28/2017 3:02:51 PM
trans-1,3-Dichloropropylene	ND	0.0271		mg/Kg-dry	1	9/28/2017 3:02:51 PM
1,1,2-Trichloroethane	ND	0.0271		mg/Kg-dry	1	9/28/2017 3:02:51 PM
1,3-Dichloropropane	ND	0.0339		mg/Kg-dry	1	9/28/2017 3:02:51 PM
Tetrachloroethene (PCE)	ND	0.0339		mg/Kg-dry	1	9/28/2017 3:02:51 PM
Dibromochloromethane	ND	0.0339		mg/Kg-dry	1	9/28/2017 3:02:51 PM
1,2-Dibromoethane (EDB)	ND	0.00678		mg/Kg-dry	1	9/28/2017 3:02:51 PM
Chlorobenzene	ND	0.0339		mg/Kg-dry	1	9/28/2017 3:02:51 PM
1,1,1,2-Tetrachloroethane	ND	0.0339		mg/Kg-dry	1	9/28/2017 3:02:51 PM
Ethylbenzene	ND	0.0339		mg/Kg-dry	1	9/28/2017 3:02:51 PM
m,p-Xylene	ND	0.0678		mg/Kg-dry	1	9/28/2017 3:02:51 PM
o-Xylene	ND	0.0339		mg/Kg-dry	1	9/28/2017 3:02:51 PM
Styrene	ND	0.0339		mg/Kg-dry	1	9/28/2017 3:02:51 PM
Isopropylbenzene	ND	0.0339		mg/Kg-dry	1	9/28/2017 3:02:51 PM
Bromoform	ND	0.0678		mg/Kg-dry	1	9/28/2017 3:02:51 PM
1,1,2,2-Tetrachloroethane	ND	0.0271		mg/Kg-dry	1	9/28/2017 3:02:51 PM
n-Propylbenzene	ND	0.0339		mg/Kg-dry	1	9/28/2017 3:02:51 PM
Bromobenzene	ND	0.0271		mg/Kg-dry	1	9/28/2017 3:02:51 PM

Original



Analytical Report

Work Order: 1709342

Date Reported: 10/2/2017

Client: GeoEngineers

Collection Date: 9/27/2017 2:20:00 PM

Project: Block 21

Lab ID: 1709342-003

Matrix: Soil

Client Sample ID: TP21-7-2.5

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
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Volatile Organic Compounds by EPA Method 8260C

Batch ID: 18337

Analyst: NG

1,3,5-Trimethylbenzene	ND	0.0339		mg/Kg-dry	1	9/28/2017 3:02:51 PM
2-Chlorotoluene	ND	0.0339		mg/Kg-dry	1	9/28/2017 3:02:51 PM
4-Chlorotoluene	ND	0.0339		mg/Kg-dry	1	9/28/2017 3:02:51 PM
tert-Butylbenzene	ND	0.0339		mg/Kg-dry	1	9/28/2017 3:02:51 PM
1,2,3-Trichloropropane	ND	0.0339		mg/Kg-dry	1	9/28/2017 3:02:51 PM
1,2,4-Trichlorobenzene	ND	0.0339		mg/Kg-dry	1	9/28/2017 3:02:51 PM
sec-Butylbenzene	ND	0.0678		mg/Kg-dry	1	9/28/2017 3:02:51 PM
4-Isopropyltoluene	ND	0.0678		mg/Kg-dry	1	9/28/2017 3:02:51 PM
1,3-Dichlorobenzene	ND	0.0271		mg/Kg-dry	1	9/28/2017 3:02:51 PM
1,4-Dichlorobenzene	ND	0.0271		mg/Kg-dry	1	9/28/2017 3:02:51 PM
n-Butylbenzene	ND	0.0339		mg/Kg-dry	1	9/28/2017 3:02:51 PM
1,2-Dichlorobenzene	ND	0.0271		mg/Kg-dry	1	9/28/2017 3:02:51 PM
1,2-Dibromo-3-chloropropane	ND	0.678		mg/Kg-dry	1	9/28/2017 3:02:51 PM
1,2,4-Trimethylbenzene	ND	0.0271		mg/Kg-dry	1	9/28/2017 3:02:51 PM
Hexachlorobutadiene	ND	0.0678		mg/Kg-dry	1	9/28/2017 3:02:51 PM
Naphthalene	ND	0.0678		mg/Kg-dry	1	9/28/2017 3:02:51 PM
1,2,3-Trichlorobenzene	ND	0.0271		mg/Kg-dry	1	9/28/2017 3:02:51 PM
Surr: Dibromofluoromethane	94.3	56.5 - 129		%Rec	1	9/28/2017 3:02:51 PM
Surr: Toluene-d8	95.1	64.5 - 151		%Rec	1	9/28/2017 3:02:51 PM
Surr: 1-Bromo-4-fluorobenzene	97.5	43.2 - 143		%Rec	1	9/28/2017 3:02:51 PM

NOTES:

* - Flagged value is not within established control limits.

Mercury by EPA Method 7471

Batch ID: 18349

Analyst: WF

Mercury	ND	0.314		mg/Kg-dry	1	9/28/2017 2:27:14 PM
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Total Metals by EPA Method 6020

Batch ID: 18346

Analyst: TN

Arsenic	5.99	0.104		mg/Kg-dry	1	9/28/2017 3:33:52 PM
Barium	143	0.521		mg/Kg-dry	1	9/28/2017 3:33:52 PM
Cadmium	ND	0.208		mg/Kg-dry	1	9/28/2017 3:33:52 PM
Chromium	59.7	0.104		mg/Kg-dry	1	9/28/2017 3:33:52 PM
Lead	20.2	0.208		mg/Kg-dry	1	9/28/2017 3:33:52 PM
Selenium	1.78	0.521		mg/Kg-dry	1	9/28/2017 3:33:52 PM
Silver	ND	0.104		mg/Kg-dry	1	9/29/2017 11:14:43 AM



Client: GeoEngineers

Collection Date: 9/27/2017 2:20:00 PM

Project: Block 21

Lab ID: 1709342-003

Matrix: Soil

Client Sample ID: TP21-7-2.5

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
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Sample Moisture (Percent Moisture)

Batch ID: R38876 Analyst: CG

Percent Moisture	25.0			wt%	1	9/28/2017 9:30:34 AM
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Hexavalent Chromium by EPA Method 7196

Batch ID: 18375 Analyst: KT

Chromium, Hexavalent	ND	0.663		mg/Kg-dry	1	10/2/2017 12:32:00 PM
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Analytical Report

Work Order: 1709342

Date Reported: 10/2/2017

Client: GeoEngineers

Collection Date: 9/27/2017 2:30:00 PM

Project: Block 21

Lab ID: 1709342-004

Matrix: Soil

Client Sample ID: TP21-7-5.5

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
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Diesel and Heavy Oil by NWTPH-Dx/Dx Ext.

Batch ID: 18328

Analyst: SB

Diesel (Fuel Oil)	ND	29.2		mg/Kg-dry	1	9/28/2017 5:11:56 AM
Heavy Oil	ND	72.9		mg/Kg-dry	1	9/28/2017 5:11:56 AM
Surr: 2-Fluorobiphenyl	93.6	50 - 150		%Rec	1	9/28/2017 5:11:56 AM
Surr: o-Terphenyl	99.1	50 - 150		%Rec	1	9/28/2017 5:11:56 AM

Polyaromatic Hydrocarbons by EPA Method 8270 (SIM)

Batch ID: 18347

Analyst: SG

Naphthalene	ND	57.8		µg/Kg-dry	1	9/28/2017 6:58:44 PM
2-Methylnaphthalene	ND	57.8		µg/Kg-dry	1	9/28/2017 6:58:44 PM
1-Methylnaphthalene	ND	57.8		µg/Kg-dry	1	9/28/2017 6:58:44 PM
Acenaphthylene	ND	57.8		µg/Kg-dry	1	9/28/2017 6:58:44 PM
Acenaphthene	ND	57.8		µg/Kg-dry	1	9/28/2017 6:58:44 PM
Fluorene	ND	57.8		µg/Kg-dry	1	9/28/2017 6:58:44 PM
Phenanthrene	ND	57.8		µg/Kg-dry	1	9/28/2017 6:58:44 PM
Anthracene	ND	57.8		µg/Kg-dry	1	9/28/2017 6:58:44 PM
Fluoranthene	ND	57.8		µg/Kg-dry	1	9/28/2017 6:58:44 PM
Pyrene	ND	57.8		µg/Kg-dry	1	9/28/2017 6:58:44 PM
Benz(a)anthracene	ND	57.8		µg/Kg-dry	1	9/28/2017 6:58:44 PM
Chrysene	ND	57.8		µg/Kg-dry	1	9/28/2017 6:58:44 PM
Benzo(b)fluoranthene	ND	57.8		µg/Kg-dry	1	9/28/2017 6:58:44 PM
Benzo(j,k)fluoranthene	ND	57.8		µg/Kg-dry	1	9/28/2017 6:58:44 PM
Benzo(a)pyrene	ND	57.8		µg/Kg-dry	1	9/28/2017 6:58:44 PM
Indeno(1,2,3-cd)pyrene	ND	57.8		µg/Kg-dry	1	9/28/2017 6:58:44 PM
Dibenz(a,h)anthracene	ND	57.8		µg/Kg-dry	1	9/28/2017 6:58:44 PM
Benzo(g,h,i)perylene	ND	57.8		µg/Kg-dry	1	9/28/2017 6:58:44 PM
Surr: 2-Fluorobiphenyl	52.3	10 - 123		%Rec	1	9/28/2017 6:58:44 PM
Surr: Terphenyl-d14 (surr)	119	46.2 - 179		%Rec	1	9/28/2017 6:58:44 PM

Gasoline by NWTPH-Gx

Batch ID: 18337

Analyst: NG

Gasoline	ND	10.7		mg/Kg-dry	1	9/28/2017 3:32:52 PM
Surr: Toluene-d8	99.7	65 - 135		%Rec	1	9/28/2017 3:32:52 PM
Surr: 4-Bromofluorobenzene	101	65 - 135		%Rec	1	9/28/2017 3:32:52 PM

Volatile Organic Compounds by EPA Method 8260C

Batch ID: 18337

Analyst: NG

Dichlorodifluoromethane (CFC-12)	ND	0.0428		mg/Kg-dry	1	9/28/2017 3:32:52 PM
Chloromethane	ND	0.107		mg/Kg-dry	1	9/28/2017 3:32:52 PM
Vinyl chloride	ND	0.0535		mg/Kg-dry	1	9/28/2017 3:32:52 PM

Original



Analytical Report

Work Order: 1709342

Date Reported: 10/2/2017

Client: GeoEngineers

Collection Date: 9/27/2017 2:30:00 PM

Project: Block 21

Lab ID: 1709342-004

Matrix: Soil

Client Sample ID: TP21-7-5.5

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
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Volatile Organic Compounds by EPA Method 8260C

Batch ID: 18337

Analyst: NG

Bromomethane	ND	0.107	*	mg/Kg-dry	1	9/28/2017 3:32:52 PM
Trichlorofluoromethane (CFC-11)	ND	0.0428		mg/Kg-dry	1	9/28/2017 3:32:52 PM
Chloroethane	ND	0.107	*	mg/Kg-dry	1	9/28/2017 3:32:52 PM
1,1-Dichloroethene	ND	0.0428		mg/Kg-dry	1	9/28/2017 3:32:52 PM
Methylene chloride	ND	0.0428		mg/Kg-dry	1	9/28/2017 3:32:52 PM
trans-1,2-Dichloroethene	ND	0.0428		mg/Kg-dry	1	9/28/2017 3:32:52 PM
Methyl tert-butyl ether (MTBE)	ND	0.107		mg/Kg-dry	1	9/28/2017 3:32:52 PM
1,1-Dichloroethane	ND	0.0428		mg/Kg-dry	1	9/28/2017 3:32:52 PM
2,2-Dichloropropane	ND	0.214		mg/Kg-dry	1	9/28/2017 3:32:52 PM
cis-1,2-Dichloroethene	ND	0.0428		mg/Kg-dry	1	9/28/2017 3:32:52 PM
Chloroform	ND	0.0428		mg/Kg-dry	1	9/28/2017 3:32:52 PM
1,1,1-Trichloroethane (TCA)	ND	0.0535		mg/Kg-dry	1	9/28/2017 3:32:52 PM
1,1-Dichloropropene	ND	0.0428		mg/Kg-dry	1	9/28/2017 3:32:52 PM
Carbon tetrachloride	ND	0.0535		mg/Kg-dry	1	9/28/2017 3:32:52 PM
1,2-Dichloroethane (EDC)	ND	0.0428		mg/Kg-dry	1	9/28/2017 3:32:52 PM
Benzene	ND	0.0428		mg/Kg-dry	1	9/28/2017 3:32:52 PM
Trichloroethene (TCE)	ND	0.0428		mg/Kg-dry	1	9/28/2017 3:32:52 PM
1,2-Dichloropropane	ND	0.0428		mg/Kg-dry	1	9/28/2017 3:32:52 PM
Bromodichloromethane	ND	0.0428		mg/Kg-dry	1	9/28/2017 3:32:52 PM
Dibromomethane	ND	0.0428		mg/Kg-dry	1	9/28/2017 3:32:52 PM
cis-1,3-Dichloropropene	ND	0.0428		mg/Kg-dry	1	9/28/2017 3:32:52 PM
Toluene	ND	0.0428		mg/Kg-dry	1	9/28/2017 3:32:52 PM
trans-1,3-Dichloropropylene	ND	0.0428		mg/Kg-dry	1	9/28/2017 3:32:52 PM
1,1,2-Trichloroethane	ND	0.0428		mg/Kg-dry	1	9/28/2017 3:32:52 PM
1,3-Dichloropropane	ND	0.0535		mg/Kg-dry	1	9/28/2017 3:32:52 PM
Tetrachloroethene (PCE)	ND	0.0535		mg/Kg-dry	1	9/28/2017 3:32:52 PM
Dibromochloromethane	ND	0.0535		mg/Kg-dry	1	9/28/2017 3:32:52 PM
1,2-Dibromoethane (EDB)	ND	0.0107		mg/Kg-dry	1	9/28/2017 3:32:52 PM
Chlorobenzene	ND	0.0535		mg/Kg-dry	1	9/28/2017 3:32:52 PM
1,1,1,2-Tetrachloroethane	ND	0.0535		mg/Kg-dry	1	9/28/2017 3:32:52 PM
Ethylbenzene	ND	0.0535		mg/Kg-dry	1	9/28/2017 3:32:52 PM
m,p-Xylene	ND	0.107		mg/Kg-dry	1	9/28/2017 3:32:52 PM
o-Xylene	ND	0.0535		mg/Kg-dry	1	9/28/2017 3:32:52 PM
Styrene	ND	0.0535		mg/Kg-dry	1	9/28/2017 3:32:52 PM
Isopropylbenzene	ND	0.0535		mg/Kg-dry	1	9/28/2017 3:32:52 PM
Bromoform	ND	0.107		mg/Kg-dry	1	9/28/2017 3:32:52 PM
1,1,2,2-Tetrachloroethane	ND	0.0428		mg/Kg-dry	1	9/28/2017 3:32:52 PM
n-Propylbenzene	ND	0.0535		mg/Kg-dry	1	9/28/2017 3:32:52 PM
Bromobenzene	ND	0.0428		mg/Kg-dry	1	9/28/2017 3:32:52 PM

Original



Analytical Report

Work Order: 1709342

Date Reported: 10/2/2017

Client: GeoEngineers

Collection Date: 9/27/2017 2:30:00 PM

Project: Block 21

Lab ID: 1709342-004

Matrix: Soil

Client Sample ID: TP21-7-5.5

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
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Volatile Organic Compounds by EPA Method 8260C

Batch ID: 18337

Analyst: NG

1,3,5-Trimethylbenzene	ND	0.0535		mg/Kg-dry	1	9/28/2017 3:32:52 PM
2-Chlorotoluene	ND	0.0535		mg/Kg-dry	1	9/28/2017 3:32:52 PM
4-Chlorotoluene	ND	0.0535		mg/Kg-dry	1	9/28/2017 3:32:52 PM
tert-Butylbenzene	ND	0.0535		mg/Kg-dry	1	9/28/2017 3:32:52 PM
1,2,3-Trichloropropane	ND	0.0535		mg/Kg-dry	1	9/28/2017 3:32:52 PM
1,2,4-Trichlorobenzene	ND	0.0535		mg/Kg-dry	1	9/28/2017 3:32:52 PM
sec-Butylbenzene	ND	0.107		mg/Kg-dry	1	9/28/2017 3:32:52 PM
4-Isopropyltoluene	ND	0.107		mg/Kg-dry	1	9/28/2017 3:32:52 PM
1,3-Dichlorobenzene	ND	0.0428		mg/Kg-dry	1	9/28/2017 3:32:52 PM
1,4-Dichlorobenzene	ND	0.0428		mg/Kg-dry	1	9/28/2017 3:32:52 PM
n-Butylbenzene	ND	0.0535		mg/Kg-dry	1	9/28/2017 3:32:52 PM
1,2-Dichlorobenzene	ND	0.0428		mg/Kg-dry	1	9/28/2017 3:32:52 PM
1,2-Dibromo-3-chloropropane	ND	1.07		mg/Kg-dry	1	9/28/2017 3:32:52 PM
1,2,4-Trimethylbenzene	ND	0.0428		mg/Kg-dry	1	9/28/2017 3:32:52 PM
Hexachlorobutadiene	ND	0.107		mg/Kg-dry	1	9/28/2017 3:32:52 PM
Naphthalene	ND	0.107		mg/Kg-dry	1	9/28/2017 3:32:52 PM
1,2,3-Trichlorobenzene	ND	0.0428		mg/Kg-dry	1	9/28/2017 3:32:52 PM
Surr: Dibromofluoromethane	94.4	56.5 - 129		%Rec	1	9/28/2017 3:32:52 PM
Surr: Toluene-d8	95.7	64.5 - 151		%Rec	1	9/28/2017 3:32:52 PM
Surr: 1-Bromo-4-fluorobenzene	95.9	43.2 - 143		%Rec	1	9/28/2017 3:32:52 PM

NOTES:

* - Flagged value is not within established control limits.

Mercury by EPA Method 7471

Batch ID: 18349

Analyst: WF

Mercury	ND	0.364		mg/Kg-dry	1	9/28/2017 2:28:50 PM
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Total Metals by EPA Method 6020

Batch ID: 18346

Analyst: TN

Arsenic	8.05	0.121		mg/Kg-dry	1	9/28/2017 3:37:53 PM
Barium	259	0.606		mg/Kg-dry	1	9/28/2017 3:37:53 PM
Cadmium	ND	0.242		mg/Kg-dry	1	9/28/2017 3:37:53 PM
Chromium	91.4	0.121		mg/Kg-dry	1	9/28/2017 3:37:53 PM
Lead	8.11	0.242		mg/Kg-dry	1	9/28/2017 3:37:53 PM
Selenium	2.42	0.606		mg/Kg-dry	1	9/28/2017 3:37:53 PM
Silver	ND	0.121		mg/Kg-dry	1	9/29/2017 11:18:44 AM



Analytical Report

Work Order: 1709342
Date Reported: 10/2/2017

Client: GeoEngineers

Collection Date: 9/27/2017 2:30:00 PM

Project: Block 21

Lab ID: 1709342-004

Matrix: Soil

Client Sample ID: TP21-7-5.5

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
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Sample Moisture (Percent Moisture)

Batch ID: R38876 Analyst: CG

Percent Moisture	34.0			wt%	1	9/28/2017 9:30:34 AM
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Hexavalent Chromium by EPA Method 7196

Batch ID: 18375 Analyst: KT

Chromium, Hexavalent	ND	0.718		mg/Kg-dry	1	10/2/2017 12:36:00 PM
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Analytical Report

Work Order: 1709342

Date Reported: 10/2/2017

Client: GeoEngineers

Collection Date: 9/27/2017 2:10:00 PM

Project: Block 21

Lab ID: 1709342-005

Matrix: Soil

Client Sample ID: TP21-10-3.0

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
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Diesel and Heavy Oil by NWTPH-Dx/Dx Ext.

Batch ID: 18328

Analyst: SB

Diesel (Fuel Oil)	ND	18.8		mg/Kg-dry	1	9/28/2017 5:41:43 AM
Heavy Oil	ND	47.1		mg/Kg-dry	1	9/28/2017 5:41:43 AM
Surr: 2-Fluorobiphenyl	95.1	50 - 150		%Rec	1	9/28/2017 5:41:43 AM
Surr: o-Terphenyl	98.2	50 - 150		%Rec	1	9/28/2017 5:41:43 AM

Polyaromatic Hydrocarbons by EPA Method 8270 (SIM)

Batch ID: 18347

Analyst: SG

Naphthalene	ND	40.2		µg/Kg-dry	1	9/28/2017 7:21:35 PM
2-Methylnaphthalene	ND	40.2		µg/Kg-dry	1	9/28/2017 7:21:35 PM
1-Methylnaphthalene	ND	40.2		µg/Kg-dry	1	9/28/2017 7:21:35 PM
Acenaphthylene	ND	40.2		µg/Kg-dry	1	9/28/2017 7:21:35 PM
Acenaphthene	ND	40.2		µg/Kg-dry	1	9/28/2017 7:21:35 PM
Fluorene	ND	40.2		µg/Kg-dry	1	9/28/2017 7:21:35 PM
Phenanthrene	ND	40.2		µg/Kg-dry	1	9/28/2017 7:21:35 PM
Anthracene	ND	40.2		µg/Kg-dry	1	9/28/2017 7:21:35 PM
Fluoranthene	ND	40.2		µg/Kg-dry	1	9/28/2017 7:21:35 PM
Pyrene	ND	40.2		µg/Kg-dry	1	9/28/2017 7:21:35 PM
Benz(a)anthracene	ND	40.2		µg/Kg-dry	1	9/28/2017 7:21:35 PM
Chrysene	ND	40.2		µg/Kg-dry	1	9/28/2017 7:21:35 PM
Benzo(b)fluoranthene	ND	40.2		µg/Kg-dry	1	9/28/2017 7:21:35 PM
Benzo(j,k)fluoranthene	ND	40.2		µg/Kg-dry	1	9/28/2017 7:21:35 PM
Benzo(a)pyrene	ND	40.2		µg/Kg-dry	1	9/28/2017 7:21:35 PM
Indeno(1,2,3-cd)pyrene	ND	40.2		µg/Kg-dry	1	9/28/2017 7:21:35 PM
Dibenz(a,h)anthracene	ND	40.2		µg/Kg-dry	1	9/28/2017 7:21:35 PM
Benzo(g,h,i)perylene	ND	40.2		µg/Kg-dry	1	9/28/2017 7:21:35 PM
Surr: 2-Fluorobiphenyl	33.2	10 - 123		%Rec	1	9/28/2017 7:21:35 PM
Surr: Terphenyl-d14 (surr)	124	46.2 - 179		%Rec	1	9/28/2017 7:21:35 PM

Gasoline by NWTPH-Gx

Batch ID: 18337

Analyst: NG

Gasoline	ND	5.23		mg/Kg-dry	1	9/28/2017 4:02:54 PM
Surr: Toluene-d8	98.4	65 - 135		%Rec	1	9/28/2017 4:02:54 PM
Surr: 4-Bromofluorobenzene	102	65 - 135		%Rec	1	9/28/2017 4:02:54 PM

Volatile Organic Compounds by EPA Method 8260C

Batch ID: 18337

Analyst: NG

Dichlorodifluoromethane (CFC-12)	ND	0.0209		mg/Kg-dry	1	9/28/2017 4:02:54 PM
Chloromethane	ND	0.0523		mg/Kg-dry	1	9/28/2017 4:02:54 PM
Vinyl chloride	ND	0.0261		mg/Kg-dry	1	9/28/2017 4:02:54 PM

Original



Analytical Report

Work Order: 1709342

Date Reported: 10/2/2017

Client: GeoEngineers

Collection Date: 9/27/2017 2:10:00 PM

Project: Block 21

Lab ID: 1709342-005

Matrix: Soil

Client Sample ID: TP21-10-3.0

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
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Volatile Organic Compounds by EPA Method 8260C

Batch ID: 18337

Analyst: NG

Bromomethane	ND	0.0523	*	mg/Kg-dry	1	9/28/2017 4:02:54 PM
Trichlorofluoromethane (CFC-11)	ND	0.0209		mg/Kg-dry	1	9/28/2017 4:02:54 PM
Chloroethane	ND	0.0523	*	mg/Kg-dry	1	9/28/2017 4:02:54 PM
1,1-Dichloroethene	ND	0.0209		mg/Kg-dry	1	9/28/2017 4:02:54 PM
Methylene chloride	ND	0.0209		mg/Kg-dry	1	9/28/2017 4:02:54 PM
trans-1,2-Dichloroethene	ND	0.0209		mg/Kg-dry	1	9/28/2017 4:02:54 PM
Methyl tert-butyl ether (MTBE)	ND	0.0523		mg/Kg-dry	1	9/28/2017 4:02:54 PM
1,1-Dichloroethane	ND	0.0209		mg/Kg-dry	1	9/28/2017 4:02:54 PM
2,2-Dichloropropane	ND	0.105		mg/Kg-dry	1	9/28/2017 4:02:54 PM
cis-1,2-Dichloroethene	ND	0.0209		mg/Kg-dry	1	9/28/2017 4:02:54 PM
Chloroform	ND	0.0209		mg/Kg-dry	1	9/28/2017 4:02:54 PM
1,1,1-Trichloroethane (TCA)	ND	0.0261		mg/Kg-dry	1	9/28/2017 4:02:54 PM
1,1-Dichloropropene	ND	0.0209		mg/Kg-dry	1	9/28/2017 4:02:54 PM
Carbon tetrachloride	ND	0.0261		mg/Kg-dry	1	9/28/2017 4:02:54 PM
1,2-Dichloroethane (EDC)	ND	0.0209		mg/Kg-dry	1	9/28/2017 4:02:54 PM
Benzene	ND	0.0209		mg/Kg-dry	1	9/28/2017 4:02:54 PM
Trichloroethene (TCE)	ND	0.0209		mg/Kg-dry	1	9/28/2017 4:02:54 PM
1,2-Dichloropropane	ND	0.0209		mg/Kg-dry	1	9/28/2017 4:02:54 PM
Bromodichloromethane	ND	0.0209		mg/Kg-dry	1	9/28/2017 4:02:54 PM
Dibromomethane	ND	0.0209		mg/Kg-dry	1	9/28/2017 4:02:54 PM
cis-1,3-Dichloropropene	ND	0.0209		mg/Kg-dry	1	9/28/2017 4:02:54 PM
Toluene	ND	0.0209		mg/Kg-dry	1	9/28/2017 4:02:54 PM
trans-1,3-Dichloropropylene	ND	0.0209		mg/Kg-dry	1	9/28/2017 4:02:54 PM
1,1,2-Trichloroethane	ND	0.0209		mg/Kg-dry	1	9/28/2017 4:02:54 PM
1,3-Dichloropropane	ND	0.0261		mg/Kg-dry	1	9/28/2017 4:02:54 PM
Tetrachloroethene (PCE)	ND	0.0261		mg/Kg-dry	1	9/28/2017 4:02:54 PM
Dibromochloromethane	ND	0.0261		mg/Kg-dry	1	9/28/2017 4:02:54 PM
1,2-Dibromoethane (EDB)	ND	0.00523		mg/Kg-dry	1	9/28/2017 4:02:54 PM
Chlorobenzene	ND	0.0261		mg/Kg-dry	1	9/28/2017 4:02:54 PM
1,1,1,2-Tetrachloroethane	ND	0.0261		mg/Kg-dry	1	9/28/2017 4:02:54 PM
Ethylbenzene	ND	0.0261		mg/Kg-dry	1	9/28/2017 4:02:54 PM
m,p-Xylene	ND	0.0523		mg/Kg-dry	1	9/28/2017 4:02:54 PM
o-Xylene	ND	0.0261		mg/Kg-dry	1	9/28/2017 4:02:54 PM
Styrene	ND	0.0261		mg/Kg-dry	1	9/28/2017 4:02:54 PM
Isopropylbenzene	ND	0.0261		mg/Kg-dry	1	9/28/2017 4:02:54 PM
Bromoform	ND	0.0523		mg/Kg-dry	1	9/28/2017 4:02:54 PM
1,1,2,2-Tetrachloroethane	ND	0.0209		mg/Kg-dry	1	9/28/2017 4:02:54 PM
n-Propylbenzene	ND	0.0261		mg/Kg-dry	1	9/28/2017 4:02:54 PM
Bromobenzene	ND	0.0209		mg/Kg-dry	1	9/28/2017 4:02:54 PM

Original



Analytical Report

Work Order: 1709342

Date Reported: 10/2/2017

Client: GeoEngineers

Collection Date: 9/27/2017 2:10:00 PM

Project: Block 21

Lab ID: 1709342-005

Matrix: Soil

Client Sample ID: TP21-10-3.0

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
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Volatile Organic Compounds by EPA Method 8260C

Batch ID: 18337

Analyst: NG

1,3,5-Trimethylbenzene	ND	0.0261		mg/Kg-dry	1	9/28/2017 4:02:54 PM
2-Chlorotoluene	ND	0.0261		mg/Kg-dry	1	9/28/2017 4:02:54 PM
4-Chlorotoluene	ND	0.0261		mg/Kg-dry	1	9/28/2017 4:02:54 PM
tert-Butylbenzene	ND	0.0261		mg/Kg-dry	1	9/28/2017 4:02:54 PM
1,2,3-Trichloropropane	ND	0.0261		mg/Kg-dry	1	9/28/2017 4:02:54 PM
1,2,4-Trichlorobenzene	ND	0.0261		mg/Kg-dry	1	9/28/2017 4:02:54 PM
sec-Butylbenzene	ND	0.0523		mg/Kg-dry	1	9/28/2017 4:02:54 PM
4-Isopropyltoluene	ND	0.0523		mg/Kg-dry	1	9/28/2017 4:02:54 PM
1,3-Dichlorobenzene	ND	0.0209		mg/Kg-dry	1	9/28/2017 4:02:54 PM
1,4-Dichlorobenzene	ND	0.0209		mg/Kg-dry	1	9/28/2017 4:02:54 PM
n-Butylbenzene	ND	0.0261		mg/Kg-dry	1	9/28/2017 4:02:54 PM
1,2-Dichlorobenzene	ND	0.0209		mg/Kg-dry	1	9/28/2017 4:02:54 PM
1,2-Dibromo-3-chloropropane	ND	0.523		mg/Kg-dry	1	9/28/2017 4:02:54 PM
1,2,4-Trimethylbenzene	ND	0.0209		mg/Kg-dry	1	9/28/2017 4:02:54 PM
Hexachlorobutadiene	ND	0.0523		mg/Kg-dry	1	9/28/2017 4:02:54 PM
Naphthalene	ND	0.0523		mg/Kg-dry	1	9/28/2017 4:02:54 PM
1,2,3-Trichlorobenzene	ND	0.0209		mg/Kg-dry	1	9/28/2017 4:02:54 PM
Surr: Dibromofluoromethane	93.0	56.5 - 129		%Rec	1	9/28/2017 4:02:54 PM
Surr: Toluene-d8	94.2	64.5 - 151		%Rec	1	9/28/2017 4:02:54 PM
Surr: 1-Bromo-4-fluorobenzene	97.0	43.2 - 143		%Rec	1	9/28/2017 4:02:54 PM

NOTES:

* - Flagged value is not within established control limits.

Mercury by EPA Method 7471

Batch ID: 18349

Analyst: WF

Mercury	ND	0.271		mg/Kg-dry	1	9/28/2017 2:30:27 PM
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Total Metals by EPA Method 6020

Batch ID: 18346

Analyst: TN

Arsenic	5.85	0.0885		mg/Kg-dry	1	9/28/2017 3:41:55 PM
Barium	74.0	0.443		mg/Kg-dry	1	9/28/2017 3:41:55 PM
Cadmium	ND	0.177		mg/Kg-dry	1	9/28/2017 3:41:55 PM
Chromium	40.7	0.0885		mg/Kg-dry	1	9/28/2017 3:41:55 PM
Lead	5.84	0.177	B	mg/Kg-dry	1	9/28/2017 3:41:55 PM
Selenium	0.955	0.443		mg/Kg-dry	1	9/28/2017 3:41:55 PM
Silver	ND	0.0885		mg/Kg-dry	1	9/29/2017 11:22:46 AM



Analytical Report

Work Order: 1709342
Date Reported: 10/2/2017

Client: GeoEngineers

Collection Date: 9/27/2017 2:10:00 PM

Project: Block 21

Lab ID: 1709342-005

Matrix: Soil

Client Sample ID: TP21-10-3.0

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed
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Sample Moisture (Percent Moisture)

Batch ID: R38876 Analyst: CG

Percent Moisture	9.64			wt%	1	9/28/2017 9:30:34 AM
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Work Order: 1709342
CLIENT: GeoEngineers
Project: Block 21

QC SUMMARY REPORT

Diesel and Heavy Oil by NWTPH-Dx/Dx Ext.

Sample ID	MB-18328	SampType:	MBLK			Units:	mg/Kg			Prep Date:	9/27/2017		RunNo:	38869	
Client ID:	MBLKS	Batch ID:	18328			Analysis Date:					9/27/2017		SeqNo:	747335	
Analyte		Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val		%RPD	RPDLimit	Qual		

Diesel (Fuel Oil)	ND	20.0									
Heavy Oil	ND	50.0									
Surr: 2-Fluorobiphenyl	17.4		20.00		86.9	50	150				
Surr: o-Terphenyl	18.1		20.00		90.6	50	150				

Sample ID	LCS-18328	SampType:	LCS	Units:	mg/Kg	Prep Date:	9/27/2017	RunNo:	38869		
Client ID:	LCSS	Batch ID:	18328	Analysis Date:	9/27/2017	SeqNo:	747336				
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Diesel (Fuel Oil)	479	20.0	500.0	0	95.9	65	135				
Surr: 2-Fluorobiphenyl	18.1		20.00		90.4	50	150				
Surr: o-Terphenyl	20.0		20.00		100	50	150				

Sample ID	1709328-001ADUP	SampType:	DUP	Units:	mg/Kg-dry	Prep Date:	9/27/2017	RunNo:	38869		
Client ID:	BATCH	Batch ID:	18328			Analysis Date:	9/27/2017	SeqNo:	747576		
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Diesel (Fuel Oil)	ND	18.1						0		30	
Heavy Oil	ND	45.3						0		30	
Surr: 2-Fluorobiphenyl	15.8		18.13		87.0	50	150		0		
Surr: o-Terphenyl	16.5		18.13		90.8	50	150		0		

Sample ID	1709328-001AMS	SampType:	MS	Units:	mg/Kg-dry	Prep Date:	9/27/2017	RunNo:	38869		
Client ID:	BATCH	Batch ID:	18328	Analysis Date:	9/27/2017	SeqNo:	747577				
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Diesel (Fuel Oil)	462	20.1	501.8	3.861	91.3	65	135				
Surr: 2-Fluorobiphenyl	17.5		20.07		87.3	50	150				
Surr: o-Terphenyl	19.7		20.07		98.3	50	150				

Work Order: 1709342
CLIENT: GeoEngineers
Project: Block 21

QC SUMMARY REPORT

Diesel and Heavy Oil by NWTPH-Dx/Dx Ext.

Sample ID 1709328-001AMS	SampType: MS	Units: mg/Kg-dry		Prep Date: 9/27/2017	RunNo: 38869
Client ID: BATCH	Batch ID: 18328	Analysis Date: 9/27/2017		SeqNo: 747577	
Analyte	Result	RL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual

Sample ID 1709328-001AMSD	SampType: MSD	Units: mg/Kg-dry		Prep Date: 9/27/2017	RunNo: 38869
Client ID: BATCH	Batch ID: 18328	Analysis Date: 9/27/2017		SeqNo: 747578	
Analyte	Result	RL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Diesel (Fuel Oil)	483	19.8	493.9	3.861	96.9 65 135 462.0 4.35 30
Surr: 2-Fluorobiphenyl	17.5		19.76		88.4 50 150 0
Surr: o-Terphenyl	19.8		19.76		100 50 150 0

Sample ID 1709342-001ADUP	SampType: DUP	Units: mg/Kg-dry		Prep Date: 9/27/2017	RunNo: 38869
Client ID: TP21-6-2.5	Batch ID: 18328	Analysis Date: 9/28/2017		SeqNo: 747588	
Analyte	Result	RL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Diesel (Fuel Oil)	ND	21.1			0 30
Heavy Oil	175	52.7			170.9 2.17 30
Surr: 2-Fluorobiphenyl	19.6		21.08		92.9 50 150 0
Surr: o-Terphenyl	21.3		21.08		101 50 150 0



Work Order: 1709342
CLIENT: GeoEngineers
Project: Block 21

QC SUMMARY REPORT

Gasoline by NWTPH-Gx

Sample ID	MB-18337	SampType:	MBLK		Units:	mg/Kg		Prep Date:	9/27/2017		RunNo:	38906	
Client ID:	MBLKS	Batch ID:	18337		Analysis Date:				9/28/2017		SeqNo:	748079	
Analyte		Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual	
Gasoline		ND	5.00										
Surr: Toluene-d8		1.17		1.250		93.2	65	135					
Surr: 4-Bromofluorobenzene		1.30		1.250		104	65	135					

Sample ID	LCS-18337	SampType:	LCS		Units:	mg/Kg		Prep Date:	9/27/2017		RunNo:	38906	
Client ID:	LCSS	Batch ID:	18337		Analysis Date:				9/28/2017		SeqNo:	748078	
Analyte		Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual	
Gasoline		21.8	5.00	25.00	0	87.1	65	135					
Surr: Toluene-d8		1.18		1.250		94.7	65	135					
Surr: 4-Bromofluorobenzene		1.24		1.250		99.2	65	135					

Sample ID	1709342-002BDUP	SampType:	DUP		Units:	mg/Kg-dry		Prep Date:	9/27/2017		RunNo:	38906	
Client ID:	TP21-6-6.0	Batch ID:	18337		Analysis Date:				9/28/2017		SeqNo:	748072	
Analyte		Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual	
Gasoline		ND	3.70						0		30		
Surr: Toluene-d8		0.902		0.9247		97.5	65	135		0			
Surr: 4-Bromofluorobenzene		0.954		0.9247		103	65	135		0			

Work Order: 1709342
CLIENT: GeoEngineers
Project: Block 21

QC SUMMARY REPORT

Hexavalent Chromium by EPA Method 7196

Sample ID	MB-18375	SampType:	MBLK	Units:	mg/Kg	Prep Date:	10/2/2017	RunNo:	38959		
Client ID:	MBLKS	Batch ID:	18375			Analysis Date:	10/2/2017	SeqNo:	749012		
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Chromium, Hexavalent ND 0.500

Sample ID	LCS-18375	SampType: LCS			Units: mg/Kg		Prep Date: 10/2/2017			RunNo: 38959		
Client ID:	LCSS	Batch ID: 18375			Analysis Date: 10/2/2017					SeqNo: 749013		
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual	

Chromium, Hexavalent 2.44 0.500 2.500 0 97.6 65 135

Sample ID	1709342-004ADUP	SampType:	DUP	Units:	mg/Kg-dry	Prep Date:	10/2/2017	RunNo:	38959		
Client ID:	TP21-7-5.5	Batch ID:	18375	Analysis Date:	10/2/2017	SeqNo:	749017				
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Chromium, Hexavalent ND 0.752 0 30

Sample ID	1709342-004AMS	SampType:	MS	Units:	mg/Kg-dry	Prep Date:	10/2/2017	RunNo:	38959		
Client ID:	TP21-7-5.5	Batch ID:	18375	Analysis Date:				10/2/2017	SeqNo:	749018	
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Chromium, Hexavalent 3.38 0.756 3.780 0 89.5 65 135

Sample ID	1709342-004AMSD	SampType:	MSD	Units:	mg/Kg-dry	Prep Date:	10/2/2017	RunNo:	38959		
Client ID:	TP21-7-5.5	Batch ID:	18375	Analysis Date:				10/2/2017	SeqNo:	749019	
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Chromium, Hexavalent 3.35 0.754 3.772 0 88.9 65 135 3.382 0.833 30

Work Order: 1709342
CLIENT: GeoEngineers
Project: Block 21

QC SUMMARY REPORT

Mercury by EPA Method 7471

Sample ID MB-18349	SampType: MBLK	Units: mg/Kg		Prep Date: 9/28/2017	RunNo: 38884
Client ID: MBLKS	Batch ID: 18349	Analysis Date: 9/28/2017		SeqNo: 747854	
Analyte	Result	RL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual

Mercury ND 0.250

Sample ID LCS-18349	SampType: LCS	Units: mg/Kg		Prep Date: 9/28/2017	RunNo: 38884
Client ID: LCSS	Batch ID: 18349	Analysis Date: 9/28/2017		SeqNo: 747855	
Analyte	Result	RL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual

Mercury 0.509 0.250 0.5000 0 102 80 120

Sample ID 1709342-001ADUP	SampType: DUP	Units: mg/Kg-dry		Prep Date: 9/28/2017	RunNo: 38884
Client ID: TP21-6-2.5	Batch ID: 18349	Analysis Date: 9/28/2017		SeqNo: 747857	
Analyte	Result	RL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual

Mercury ND 0.273 0 20

Sample ID 1709342-001AMS	SampType: MS	Units: mg/Kg-dry		Prep Date: 9/28/2017	RunNo: 38884
Client ID: TP21-6-2.5	Batch ID: 18349	Analysis Date: 9/28/2017		SeqNo: 747858	
Analyte	Result	RL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual

Mercury 0.560 0.268 0.5357 0.01736 101 70 130

Sample ID 1709342-001AMSD	SampType: MSD	Units: mg/Kg-dry		Prep Date: 9/28/2017	RunNo: 38884
Client ID: TP21-6-2.5	Batch ID: 18349	Analysis Date: 9/28/2017		SeqNo: 747859	
Analyte	Result	RL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual

Mercury 0.536 0.258 0.5158 0.01736 101 70 130 0.5603 4.35 20

Work Order: 1709342
CLIENT: GeoEngineers
Project: Block 21

QC SUMMARY REPORT

Polyaromatic Hydrocarbons by EPA Method 8270 (SIM)

Sample ID	MB-18347	SampType:	MBLK		Units:	µg/Kg		Prep Date:	9/28/2017		RunNo:	38913	
Client ID:	MBLKS	Batch ID:	18347					Analysis Date:	9/28/2017		SeqNo:	748146	
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual		
Naphthalene	ND	40.0											
2-Methylnaphthalene	ND	40.0											
1-Methylnaphthalene	ND	40.0											
Acenaphthylene	ND	40.0											
Acenaphthene	ND	40.0											
Fluorene	ND	40.0											
Phenanthrene	ND	40.0											
Anthracene	ND	40.0											
Fluoranthene	ND	40.0											
Pyrene	ND	40.0											
Benz(a)anthracene	ND	40.0											
Chrysene	ND	40.0											
Benzo(b)fluoranthene	ND	40.0											
Benzo(j,k)fluoranthene	ND	40.0											
Benzo(a)pyrene	ND	40.0											
Indeno(1,2,3-cd)pyrene	ND	40.0											
Dibenz(a,h)anthracene	ND	40.0											
Benzo(g,h,i)perylene	ND	40.0											
Surr: 2-Fluorobiphenyl	200		500.0		40.0	10	123						
Surr: Terphenyl-d14 (surr)	670		500.0		134	46.2	179						

Sample ID	LCS-18347	SampType:	LCS	Units:	µg/Kg	Prep Date:	9/28/2017	RunNo:	38913		
Client ID:	LCSS	Batch ID:	18347			Analysis Date:	9/28/2017	SeqNo:	748147		
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Naphthalene	922	40.0	1,000	0	92.2	46.4	125				
2-Methylnaphthalene	997	40.0	1,000	0	99.7	45.1	135				
1-Methylnaphthalene	923	40.0	1,000	0	92.3	46.2	133				
Acenaphthylene	1,090	40.0	1,000	0	109	32.8	136				
Acenaphthene	963	40.0	1,000	0	96.3	38.7	129				

Work Order: 1709342
CLIENT: GeoEngineers
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QC SUMMARY REPORT

Polyaromatic Hydrocarbons by EPA Method 8270 (SIM)

Sample ID	LCS-18347	SampType:	LCS	Units:	µg/Kg	Prep Date:	9/28/2017	RunNo:	38913		
Client ID:	LCSS	Batch ID:	18347			Analysis Date:	9/28/2017	SeqNo:	748147		
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Fluorene	1,010	40.0	1,000	0	101	41.4	144				
Phenanthrene	978	40.0	1,000	0	97.8	43.9	133				
Anthracene	992	40.0	1,000	0	99.2	44.2	136				
Fluoranthene	1,070	40.0	1,000	0	107	45.9	137				
Pyrene	1,090	40.0	1,000	0	109	46.2	137				
Benz(a)anthracene	1,130	40.0	1,000	0	113	41.2	141				
Chrysene	1,110	40.0	1,000	0	111	46.9	138				
Benzo(b)fluoranthene	1,130	40.0	1,000	0	113	41	155				
Benzo(j,k)fluoranthene	1,070	40.0	1,000	0	107	41.8	153				
Benzo(a)pyrene	1,100	40.0	1,000	0	110	30.2	171				
Indeno(1,2,3-cd)pyrene	1,070	40.0	1,000	0	107	31.3	159				
Dibenz(a,h)anthracene	1,080	40.0	1,000	0	108	28	158				
Benzo(g,h,i)perylene	1,030	40.0	1,000	0	103	32.4	144				
Surr: 2-Fluorobiphenyl	216		500.0		43.2	10	123				
Surr: Terphenyl-d14 (surr)	578		500.0		116	46.2	179				

Sample ID	1709342-001ADUP	SampType:	DUP	Units:	µg/Kg-dry	Prep Date:	9/28/2017	RunNo:	38913		
Client ID:	TP21-6-2.5	Batch ID:	18347			Analysis Date:	9/28/2017	SeqNo:	748149		
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Naphthalene	ND	41.0						0		30	
2-Methylnaphthalene	ND	41.0						0		30	
1-Methylnaphthalene	ND	41.0						0		30	
Acenaphthylene	ND	41.0						0		30	
Acenaphthene	ND	41.0						0		30	
Fluorene	ND	41.0						0		30	
Phenanthrene	ND	41.0						0		30	
Anthracene	ND	41.0						0		30	
Fluoranthene	ND	41.0						0		30	
Pyrene	ND	41.0						0		30	

Work Order: 1709342
CLIENT: GeoEngineers
Project: Block 21

QC SUMMARY REPORT

Polyaromatic Hydrocarbons by EPA Method 8270 (SIM)

Sample ID	1709342-001ADUP	SampType:	DUP	Units:	µg/Kg-dry	Prep Date:	9/28/2017	RunNo:	38913		
Client ID:	TP21-6-2.5	Batch ID:	18347			Analysis Date:	9/28/2017	SeqNo:	748149		
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benz(a)anthracene	ND	41.0						0		30	
Chrysene	ND	41.0						0		30	
Benzo(b)fluoranthene	ND	41.0						0		30	
Benzo(j,k)fluoranthene	ND	41.0						0		30	
Benzo(a)pyrene	ND	41.0						0		30	
Indeno(1,2,3-cd)pyrene	ND	41.0						0		30	
Dibenz(a,h)anthracene	ND	41.0						0		30	
Benzo(g,h,i)perylene	ND	41.0						0		30	
Surr: 2-Fluorobiphenyl	292		513.0		56.8	10	123		0		
Surr: Terphenyl-d14 (surr)	633		513.0		123	46.2	179		0		

Sample ID	1709342-001AMS	SampType:	MS	Units:	µg/Kg-dry	Prep Date:	9/28/2017	RunNo:	38913		
Client ID:	TP21-6-2.5	Batch ID:	18347			Analysis Date:	9/28/2017	SeqNo:	748150		
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Naphthalene	1,030	41.5	1,037	0	99.7	42.9	138				
2-Methylnaphthalene	1,140	41.5	1,037	0	110	42.8	151				
1-Methylnaphthalene	1,050	41.5	1,037	0	101	41.6	148				
Acenaphthylene	1,190	41.5	1,037	0	115	32.6	160				
Acenaphthene	1,070	41.5	1,037	0	103	46.3	142				
Fluorene	1,120	41.5	1,037	0	108	43.4	153				
Phenanthrene	1,140	41.5	1,037	0	110	45.5	140				
Anthracene	1,200	41.5	1,037	0	116	32.6	160				
Fluoranthene	1,290	41.5	1,037	0	124	44.6	161				
Pyrene	1,290	41.5	1,037	0	125	48.3	158				
Benz(a)anthracene	1,250	41.5	1,037	0	121	34.9	139				
Chrysene	1,290	41.5	1,037	5.142	124	45.2	146				
Benzo(b)fluoranthene	1,210	41.5	1,037	0	116	42.2	168				
Benzo(j,k)fluoranthene	1,340	41.5	1,037	0	129	34.8	147				
Benzo(a)pyrene	1,290	41.5	1,037	0	124	34.4	179				

Work Order: 1709342
CLIENT: GeoEngineers
Project: Block 21

QC SUMMARY REPORT

Polyaromatic Hydrocarbons by EPA Method 8270 (SIM)

Sample ID	1709342-001AMS	SampType: MS	Units: µg/Kg-dry			Prep Date: 9/28/2017			RunNo: 38913		
Client ID:	TP21-6-2.5	Batch ID:	18347			Analysis Date: 9/28/2017			SeqNo: 748150		
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Indeno(1,2,3-cd)pyrene	1,200	41.5	1,037	0	116	11.8	140				
Dibenz(a,h)anthracene	1,210	41.5	1,037	0	117	17.3	156				
Benzo(g,h,i)perylene	1,150	41.5	1,037	0	111	24.9	119				
Surr: 2-Fluorobiphenyl	349		518.7		67.3	10	123				
Surr: Terphenyl-d14 (surr)	667		518.7		129	46.2	179				

Sample ID	1709342-001AMSD	SampType:	MSD	Units:	µg/Kg-dry	Prep Date:	9/28/2017	RunNo:	38913		
Client ID:	TP21-6-2.5	Batch ID:	18347			Analysis Date:	9/28/2017	SeqNo:	748151		
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Naphthalene	1,040	43.0	1,075	0	96.3	42.9	138	1,034	0.150	30	
2-Methylnaphthalene	1,100	43.0	1,075	0	102	42.8	151	1,139	3.35	30	
1-Methylnaphthalene	1,010	43.0	1,075	0	94.0	41.6	148	1,052	3.96	30	
Acenaphthylene	1,200	43.0	1,075	0	111	32.6	160	1,195	0.299	30	
Acenaphthene	1,080	43.0	1,075	0	101	46.3	142	1,074	0.924	30	
Fluorene	1,130	43.0	1,075	0	105	43.4	153	1,117	0.753	30	
Phenanthrene	1,110	43.0	1,075	0	103	45.5	140	1,142	3.19	30	
Anthracene	1,120	43.0	1,075	0	104	32.6	160	1,204	6.91	30	
Fluoranthene	1,240	43.0	1,075	0	115	44.6	161	1,288	3.85	30	
Pyrene	1,250	43.0	1,075	0	116	48.3	158	1,292	3.32	30	
Benz(a)anthracene	1,220	43.0	1,075	0	113	34.9	139	1,250	2.58	30	
Chrysene	1,270	43.0	1,075	5.142	118	45.2	146	1,293	1.73	30	
Benzo(b)fluoranthene	1,170	43.0	1,075	0	109	42.2	168	1,208	3.17	30	
Benzo(j,k)fluoranthene	1,380	43.0	1,075	0	129	34.8	147	1,336	3.40	30	
Benzo(a)pyrene	1,290	43.0	1,075	0	120	34.4	179	1,289	0.287	30	
Indeno(1,2,3-cd)pyrene	1,200	43.0	1,075	0	112	11.8	140	1,201	0.165	30	
Dibenz(a,h)anthracene	1,210	43.0	1,075	0	113	17.3	156	1,209	0.308	30	
Benzo(g,h,i)perylene	1,150	43.0	1,075	0	107	24.9	119	1,152	0.235	30	
Surr: 2-Fluorobiphenyl	334		537.7		62.1	10	123		0		
Surr: Terphenyl-d14 (surr)	679		537.7		126	46.2	179		0		



Work Order: 1709342
CLIENT: GeoEngineers
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QC SUMMARY REPORT

Polyaromatic Hydrocarbons by EPA Method 8270 (SIM)

Sample ID	1709342-001AMSD	SampType:	MSD	Units:	µg/Kg-dry	Prep Date:	9/28/2017	RunNo:	38913		
Client ID:	TP21-6-2.5	Batch ID:	18347			Analysis Date:	9/28/2017	SeqNo:	748151		
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual



Work Order: 1709342
CLIENT: GeoEngineers
Project: Block 21

QC SUMMARY REPORT

Sample Moisture (Percent Moisture)

Sample ID	1709344-006ADUP			SampType:	DUP		Units:	wt%		Prep Date:	9/28/2017		RunNo:	38876	
Client ID:	BATCH			Batch ID:	R38876					Analysis Date:	9/28/2017		SeqNo:	747548	
Analyte		Result	RL	SPK value	SPK Ref Val		%REC	LowLimit	HighLimit	RPD Ref Val		%RPD	RPDLimit	Qual	
Percent Moisture		12.1	0.500							12.74		5.25	20		

Work Order: 1709342
CLIENT: GeoEngineers
Project: Block 21

QC SUMMARY REPORT

Total Metals by EPA Method 6020

Sample ID	MB-18346	SampType:	MBLK			Units:	mg/Kg			Prep Date:	9/28/2017		RunNo:	38898	
Client ID:	MBLKS	Batch ID:	18346			Analysis Date:					9/28/2017		SeqNo:	747973	
Analyte		Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val		%RPD	RPDLimit	Qual		

Arsenic	ND	0.0763									
Barium	ND	0.382									
Cadmium	ND	0.153									
Chromium	ND	0.0763									
Lead	0.201	0.153									
Selenium	ND	0.382									

Sample ID	LCS-18346	SampType: LCS			Units: mg/Kg		Prep Date: 9/28/2017			RunNo: 38898		
Client ID:	LCSS	Batch ID: 18346			Analysis Date: 9/28/2017					SeqNo: 747974		
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual	

Arsenic	40.8	0.0800	40.00	0	102	80	120				
Barium	45.5	0.400	40.00	0	114	80	120				
Cadmium	2.16	0.160	2.000	0	108	80	120				
Chromium	39.2	0.0800	40.00	0	97.9	80	120				
Lead	21.7	0.160	20.00	0	109	80	120				B
Selenium	3.82	0.400	4.000	0	95.6	80	120				

Sample ID	1709282-001ADUP	SampType:	DUP	Units:	mg/Kg-dry	Prep Date:	9/28/2017	RunNo:	38898		
Client ID:	BATCH	Batch ID:	18346	Analysis Date:	9/28/2017	SeqNo:	747976				
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Arsenic	2.66	0.0869						2.488	6.72	20	
Barium	44.7	0.434						49.16	9.46	20	
Cadmium	ND	0.174						0		20	
Chromium	30.7	0.0869						37.94	21.2	20	R
Lead	2.62	0.174						2.770	5.48	20	B
Selenium	1.22	0.434						1.110	9.01	20	

Work Order: 1709342
CLIENT: GeoEngineers
Project: Block 21

QC SUMMARY REPORT

Total Metals by EPA Method 6020

Sample ID	1709282-001AMS	SampType:	MS			Units:	mg/Kg-dry			Prep Date:	9/28/2017			RunNo:	38898			
Client ID:	BATCH	Batch ID:	18346			Analysis Date:						9/28/2017			SeqNo:	747978		
Analyte		Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val		%RPD	RPDLimit	Qual					
Arsenic		44.8	0.0869	43.44	2.488	97.3	75	125										
Barium		97.3	0.434	43.44	49.16	111	75	125										
Cadmium		2.29	0.174	2.172	0.07594	102	75	125										
Chromium		73.7	0.0869	43.44	37.94	82.2	75	125										
Lead		22.6	0.174	21.72	2.770	91.5	75	125					B					
Selenium		5.30	0.434	4.344	1.110	96.5	75	125										

Sample ID	1709282-001AMSD	SampType:	MSD		Units:	mg/Kg-dry		Prep Date:	9/28/2017		RunNo:	38898	
Client ID:	BATCH	Batch ID:	18346		Analysis Date:				9/28/2017		SeqNo:	747979	
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual		
Arsenic	47.2	0.0876	43.80	2.488	102	75	125	44.76	5.36	20			
Barium	97.4	0.438	43.80	49.16	110	75	125	97.35	0.0806	20			
Cadmium	2.51	0.175	2.190	0.07594	111	75	125	2.286	9.29	20			
Chromium	83.5	0.0876	43.80	37.94	104	75	125	73.66	12.5	20			
Lead	22.6	0.175	21.90	2.770	90.6	75	125	22.64	0.159	20			B
Selenium	5.16	0.438	4.380	1.110	92.4	75	125	5.301	2.77	20			

Sample ID	MB-18346	SampType:	MBLK	Units:	mg/Kg	Prep Date:	9/28/2017	RunNo:	38898		
Client ID:	MBLKS	Batch ID:	18346			Analysis Date:	9/29/2017	SeqNo:	748430		
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Silver	ND	0.0763									

Sample ID	LCS-18346	SampType:	LCS	Units:	mg/Kg	Prep Date:	9/28/2017	RunNo:	38898		
Client ID:	LCSS	Batch ID:	18346	Analysis Date:				9/29/2017	SeqNo:	748431	
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Silver	8.70	0.0800	10.00	0	87.0	80	120				

Work Order: 1709342
CLIENT: GeoEngineers
Project: Block 21

QC SUMMARY REPORT

Total Metals by EPA Method 6020

Sample ID LCS-18346	SampType: LCS	Units: mg/Kg		Prep Date: 9/28/2017	RunNo: 38898
Client ID: LCSS	Batch ID: 18346	Analysis Date: 9/29/2017		SeqNo: 748431	
Analyte	Result	RL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual

Sample ID 1709282-001ADUP	SampType: DUP	Units: mg/Kg-dry		Prep Date: 9/28/2017	RunNo: 38898
Client ID: BATCH	Batch ID: 18346	Analysis Date: 9/29/2017		SeqNo: 748435	
Analyte	Result	RL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Silver	ND	0.0869			0 20

Sample ID 1709282-001AMS	SampType: MS	Units: mg/Kg-dry		Prep Date: 9/28/2017	RunNo: 38898
Client ID: BATCH	Batch ID: 18346	Analysis Date: 9/29/2017		SeqNo: 748437	
Analyte	Result	RL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Silver	8.84	0.0869	10.86	0.03543	81.1 75 125

Sample ID 1709282-001AMSD	SampType: MSD	Units: mg/Kg-dry		Prep Date: 9/28/2017	RunNo: 38898
Client ID: BATCH	Batch ID: 18346	Analysis Date: 9/29/2017		SeqNo: 748438	
Analyte	Result	RL	SPK value	SPK Ref Val	%REC LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
Silver	8.85	0.0876	10.95	0.03543	80.5 75 125 8.843 0.0745 20

Work Order: 1709342
CLIENT: GeoEngineers
Project: Block 21

QC SUMMARY REPORT

Volatile Organic Compounds by EPA Method 8260C

Sample ID	MB-18337	SampType:	MBLK	Units:	mg/Kg	Prep Date:	9/27/2017	RunNo:	38905		
Client ID:	MBLKS	Batch ID:	18337			Analysis Date:	9/28/2017	SeqNo:	748069		
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Dichlorodifluoromethane (CFC-12)	ND	0.0200									
Chloromethane	ND	0.0500									
Vinyl chloride	ND	0.0250									
Bromomethane	ND	0.0500									
Trichlorofluoromethane (CFC-11)	ND	0.0200									
Chloroethane	ND	0.0500									
1,1-Dichloroethene	ND	0.0200									
Methylene chloride	ND	0.0200									
trans-1,2-Dichloroethene	ND	0.0200									
Methyl tert-butyl ether (MTBE)	ND	0.0500									
1,1-Dichloroethane	ND	0.0200									
2,2-Dichloropropane	ND	0.100									
cis-1,2-Dichloroethene	ND	0.0200									
Chloroform	ND	0.0200									
1,1,1-Trichloroethane (TCA)	ND	0.0250									
1,1-Dichloropropene	ND	0.0200									
Carbon tetrachloride	ND	0.0250									
1,2-Dichloroethane (EDC)	ND	0.0200									
Benzene	ND	0.0200									
Trichloroethene (TCE)	ND	0.0200									
1,2-Dichloropropane	ND	0.0200									
Bromodichloromethane	ND	0.0200									
Dibromomethane	ND	0.0200									
cis-1,3-Dichloropropene	ND	0.0200									
Toluene	ND	0.0200									
trans-1,3-Dichloropropylene	ND	0.0200									
1,1,2-Trichloroethane	ND	0.0200									
1,3-Dichloropropane	ND	0.0250									
Tetrachloroethene (PCE)	ND	0.0250									
Dibromochloromethane	ND	0.0250									
1,2-Dibromoethane (EDB)	ND	0.00500									

Work Order: 1709342
CLIENT: GeoEngineers
Project: Block 21

QC SUMMARY REPORT

Volatile Organic Compounds by EPA Method 8260C

Sample ID	MB-18337	SampType:	MBLK		Units:	mg/Kg		Prep Date:	9/27/2017		RunNo:	38905	
Client ID:	MBLKS	Batch ID:	18337					Analysis Date:	9/28/2017		SeqNo:	748069	
Analyte		Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val		%RPD	RPDLimit	Qual
Chlorobenzene		ND	0.0250										
1,1,1,2-Tetrachloroethane		ND	0.0250										
Ethylbenzene		ND	0.0250										
m,p-Xylene		ND	0.0500										
o-Xylene		ND	0.0250										
Styrene		ND	0.0250										
Isopropylbenzene		ND	0.0250										
Bromoform		ND	0.0500										
1,1,2,2-Tetrachloroethane		ND	0.0200										
n-Propylbenzene		ND	0.0250										
Bromobenzene		ND	0.0200										
1,3,5-Trimethylbenzene		ND	0.0250										
2-Chlorotoluene		ND	0.0250										
4-Chlorotoluene		ND	0.0250										
tert-Butylbenzene		ND	0.0250										
1,2,3-Trichloropropane		ND	0.0250										
1,2,4-Trichlorobenzene		ND	0.0250										
sec-Butylbenzene		ND	0.0500										
4-Isopropyltoluene		ND	0.0500										
1,3-Dichlorobenzene		ND	0.0200										
1,4-Dichlorobenzene		ND	0.0200										
n-Butylbenzene		ND	0.0250										
1,2-Dichlorobenzene		ND	0.0200										
1,2-Dibromo-3-chloropropane		ND	0.500										
1,2,4-Trimethylbenzene		ND	0.0200										
Hexachlorobutadiene		ND	0.0500										
Naphthalene		ND	0.0500										
1,2,3-Trichlorobenzene		ND	0.0200										
Surr: Dibromofluoromethane		1.10		1.250		87.6	56.5	129					
Surr: Toluene-d8		1.22		1.250		97.2	64.5	151					
Surr: 1-Bromo-4-fluorobenzene		1.24		1.250		99.4	43.2	143					

Work Order: 1709342
CLIENT: GeoEngineers
Project: Block 21

QC SUMMARY REPORT

Volatile Organic Compounds by EPA Method 8260C

Sample ID	MB-18337	SampType:	MBLK			Units:	mg/Kg			Prep Date:	9/27/2017			RunNo:	38905		
Client ID:	MBLKS	Batch ID:	18337			Analysis Date:					9/28/2017			SeqNo:	748069		
Analyte		Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val		%RPD	RPDLimit	Qual				

Sample ID	LCS-18337	SampType: LCS			Units: mg/Kg		Prep Date: 9/27/2017			RunNo: 38905		
Client ID:	LCSS	Batch ID: 18337			Analysis Date: 9/28/2017					SeqNo: 748068		
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual	

Dichlorodifluoromethane (CFC-12)	0.567	0.0200	1.000	0	56.7	14.3	167				
Chloromethane	0.797	0.0500	1.000	0	79.7	46	144				
Vinyl chloride	0.767	0.0250	1.000	0	76.7	43.4	151				
Bromomethane	0.319	0.0500	1.000	0	31.9	35	155				S
Trichlorofluoromethane (CFC-11)	0.396	0.0200	1.000	0	39.6	33.8	156				
Chloroethane	0.269	0.0500	1.000	0	26.9	33.1	147				S
1,1-Dichloroethene	0.912	0.0200	1.000	0	91.2	39	144				
Methylene chloride	1.00	0.0200	1.000	0	100	46.3	140				
trans-1,2-Dichloroethene	0.960	0.0200	1.000	0	96.0	68	130				
Methyl tert-butyl ether (MTBE)	1.17	0.0500	1.000	0	117	66.3	145				
1,1-Dichloroethane	1.00	0.0200	1.000	0	100	61.9	137				
2,2-Dichloropropane	1.27	0.100	1.000	0	127	35.5	186				
cis-1,2-Dichloroethene	1.02	0.0200	1.000	0	102	71.3	135				
Chloroform	0.997	0.0200	1.000	0	99.7	69	145				
1,1,1-Trichloroethane (TCA)	0.876	0.0250	1.000	0	87.6	69	132				
1,1-Dichloropropene	0.936	0.0200	1.000	0	93.6	72.7	131				
Carbon tetrachloride	0.907	0.0250	1.000	0	90.7	63.4	137				
1,2-Dichloroethane (EDC)	1.02	0.0200	1.000	0	102	50.9	162				
Benzene	1.00	0.0200	1.000	0	100	64.3	133				
Trichloroethene (TCE)	1.07	0.0200	1.000	0	107	65.5	137				
1,2-Dichloropropane	1.01	0.0200	1.000	0	101	63.2	142				
Bromodichloromethane	0.936	0.0200	1.000	0	93.6	53.4	131				
Dibromomethane	1.07	0.0200	1.000	0	107	60.1	146				
cis-1,3-Dichloropropene	1.09	0.0200	1.000	0	109	59.1	143				
Toluene	0.979	0.0200	1.000	0	97.9	67.3	138				

Work Order: 1709342
CLIENT: GeoEngineers
Project: Block 21

QC SUMMARY REPORT

Volatile Organic Compounds by EPA Method 8260C

Sample ID	LCS-18337	SampType:	LCS	Units:	mg/Kg	Prep Date:	9/27/2017	RunNo:	38905		
Client ID:	LCSS	Batch ID:	18337			Analysis Date:	9/28/2017	SeqNo:	748068		
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
trans-1,3-Dichloropropylene	1.14	0.0200	1.000	0	114	49.2	149				
1,1,2-Trichloroethane	1.05	0.0200	1.000	0	105	56.9	147				
1,3-Dichloropropane	1.08	0.0250	1.000	0	108	56.1	153				
Tetrachloroethene (PCE)	0.938	0.0250	1.000	0	93.8	52.7	150				
Dibromochloromethane	0.896	0.0250	1.000	0	89.6	70.6	144				
1,2-Dibromoethane (EDB)	1.06	0.00500	1.000	0	106	50.5	154				
Chlorobenzene	0.980	0.0250	1.000	0	98.0	76.1	123				
1,1,1,2-Tetrachloroethane	0.915	0.0250	1.000	0	91.5	65.9	141				
Ethylbenzene	1.05	0.0250	1.000	0	105	74	129				
m,p-Xylene	1.99	0.0500	2.000	0	99.7	70	124				
o-Xylene	0.965	0.0250	1.000	0	96.5	68.1	139				
Styrene	0.950	0.0250	1.000	0	95.0	73.3	146				
Isopropylbenzene	1.01	0.0250	1.000	0	101	70	130				
Bromoform	0.816	0.0500	1.000	0	81.6	44.3	130				
1,1,2,2-Tetrachloroethane	0.813	0.0200	1.000	0	81.3	44.8	165				
n-Propylbenzene	1.00	0.0250	1.000	0	100	74.8	125				
Bromobenzene	0.932	0.0200	1.000	0	93.2	49.2	144				
1,3,5-Trimethylbenzene	0.922	0.0250	1.000	0	92.2	74.6	123				
2-Chlorotoluene	0.897	0.0250	1.000	0	89.7	76.7	129				
4-Chlorotoluene	0.898	0.0250	1.000	0	89.8	77.5	125				
tert-Butylbenzene	0.903	0.0250	1.000	0	90.3	66.2	130				
1,2,3-Trichloropropane	0.982	0.0250	1.000	0	98.2	67.9	136				
1,2,4-Trichlorobenzene	1.13	0.0250	1.000	0	113	62.6	143				
sec-Butylbenzene	0.941	0.0500	1.000	0	94.1	75.6	133				
4-Isopropyltoluene	0.909	0.0500	1.000	0	90.9	76.8	131				
1,3-Dichlorobenzene	1.04	0.0200	1.000	0	104	72.8	128				
1,4-Dichlorobenzene	1.02	0.0200	1.000	0	102	72.6	126				
n-Butylbenzene	1.02	0.0250	1.000	0	102	65.3	136				
1,2-Dichlorobenzene	1.05	0.0200	1.000	0	105	72.8	126				
1,2-Dibromo-3-chloropropane	1.02	0.500	1.000	0	102	40.2	155				
1,2,4-Trimethylbenzene	0.919	0.0200	1.000	0	91.9	77.5	129				

Work Order: 1709342
CLIENT: GeoEngineers
Project: Block 21

QC SUMMARY REPORT

Volatile Organic Compounds by EPA Method 8260C

Sample ID	LCS-18337	SampType:	LCS	Units:	mg/Kg	Prep Date:	9/27/2017			RunNo:	38905	
Client ID:	LCSS	Batch ID:	18337				Analysis Date:	9/28/2017			SeqNo:	748068
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual	
Hexachlorobutadiene	1.10	0.0500	1.000	0	110	42	151					
Naphthalene	1.24	0.0500	1.000	0	124	58.4	160					
1,2,3-Trichlorobenzene	1.16	0.0200	1.000	0	116	54.8	143					
Surr: Dibromofluoromethane	1.26		1.250		101	56.5	129					
Surr: Toluene-d8	1.29		1.250		103	64.5	151					
Surr: 1-Bromo-4-fluorobenzene	1.28		1.250		103	43.2	143					

NOTES:

S - Outlying spike recovery observed (low bias). Samples will be qualified with a *.

Sample ID	1709342-002BDUP	SampType:	DUP	Units:	mg/Kg-dry	Prep Date:	9/27/2017	RunNo:	38905		
Client ID:	TP21-6-6.0	Batch ID:	18337			Analysis Date:	9/28/2017	SeqNo:	748062		
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Dichlorodifluoromethane (CFC-12)	ND	0.0148						0		30	
Chloromethane	ND	0.0370						0		30	
Vinyl chloride	ND	0.0185						0		30	
Bromomethane	ND	0.0370						0		30	*
Trichlorofluoromethane (CFC-11)	ND	0.0148						0		30	
Chloroethane	ND	0.0370						0		30	*
1,1-Dichloroethene	ND	0.0148						0		30	
Methylene chloride	ND	0.0148						0		30	
trans-1,2-Dichloroethene	ND	0.0148						0		30	
Methyl tert-butyl ether (MTBE)	ND	0.0370						0		30	
1,1-Dichloroethane	ND	0.0148						0		30	
2,2-Dichloropropane	ND	0.0740						0		30	
cis-1,2-Dichloroethene	ND	0.0148						0		30	
Chloroform	ND	0.0148						0		30	
1,1,1-Trichloroethane (TCA)	ND	0.0185						0		30	
1,1-Dichloropropene	ND	0.0148						0		30	
Carbon tetrachloride	ND	0.0185						0		30	
1,2-Dichloroethane (EDC)	ND	0.0148						0		30	



Date: 10/2/2017

Work Order: 1709342
CLIENT: GeoEngineers
Project: Block 21

QC SUMMARY REPORT

Volatile Organic Compounds by EPA Method 8260C

Sample ID	1709342-002BDUP	SampType:	DUP			Units:	mg/Kg-dry			Prep Date:	9/27/2017			RunNo:	38905		
Client ID:	TP21-6-6.0	Batch ID:	18337							Analysis Date:	9/28/2017			SeqNo:	748062		
Analyte		Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val				%RPD	RPDLimit	Qual		
Benzene		ND	0.0148						0					30			
Trichloroethene (TCE)		ND	0.0148						0					30			
1,2-Dichloropropane		ND	0.0148						0					30			
Bromodichloromethane		ND	0.0148						0					30			
Dibromomethane		ND	0.0148						0					30			
cis-1,3-Dichloropropene		ND	0.0148						0					30			
Toluene		ND	0.0148						0					30			
trans-1,3-Dichloropropylene		ND	0.0148						0					30			
1,1,2-Trichloroethane		ND	0.0148						0					30			
1,3-Dichloropropane		ND	0.0185						0					30			
Tetrachloroethene (PCE)		ND	0.0185						0					30			
Dibromochloromethane		ND	0.0185						0					30			
1,2-Dibromoethane (EDB)		ND	0.00370						0					30			
Chlorobenzene		ND	0.0185						0					30			
1,1,1,2-Tetrachloroethane		ND	0.0185						0					30			
Ethylbenzene		ND	0.0185						0					30			
m,p-Xylene		ND	0.0370						0					30			
o-Xylene		ND	0.0185						0					30			
Styrene		ND	0.0185						0					30			
Isopropylbenzene		ND	0.0185						0					30			
Bromoform		ND	0.0370						0					30			
1,1,2,2-Tetrachloroethane		ND	0.0148						0					30			
n-Propylbenzene		ND	0.0185						0					30			
Bromobenzene		ND	0.0148						0					30			
1,3,5-Trimethylbenzene		ND	0.0185						0					30			
2-Chlorotoluene		ND	0.0185						0					30			
4-Chlorotoluene		ND	0.0185						0					30			
tert-Butylbenzene		ND	0.0185						0					30			
1,2,3-Trichloropropane		ND	0.0185						0					30			
1,2,4-Trichlorobenzene		ND	0.0185						0					30			
sec-Butylbenzene		ND	0.0370						0					30			

Work Order: 1709342
CLIENT: GeoEngineers
Project: Block 21

QC SUMMARY REPORT
Volatile Organic Compounds by EPA Method 8260C

Sample ID	1709342-002BDUP	SampType:	DUP	Units:	mg/Kg-dry	Prep Date:	9/27/2017	RunNo:	38905		
Client ID:	TP21-6-6.0	Batch ID:	18337			Analysis Date:	9/28/2017	SeqNo:	748062		
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
4-Isopropyltoluene	ND	0.0370						0		30	
1,3-Dichlorobenzene	ND	0.0148						0		30	
1,4-Dichlorobenzene	ND	0.0148						0		30	
n-Butylbenzene	ND	0.0185						0		30	
1,2-Dichlorobenzene	ND	0.0148						0		30	
1,2-Dibromo-3-chloropropane	ND	0.370						0		30	
1,2,4-Trimethylbenzene	ND	0.0148						0		30	
Hexachlorobutadiene	ND	0.0370						0		30	
Naphthalene	ND	0.0370						0		30	
1,2,3-Trichlorobenzene	ND	0.0148						0		30	
Surr: Dibromofluoromethane	0.861		0.9247		93.2	56.5	129		0		
Surr: Toluene-d8	0.862		0.9247		93.2	64.5	151		0		
Surr: 1-Bromo-4-fluorobenzene	0.909		0.9247		98.3	43.2	143		0		

NOTES:

* - Flagged value is not within established control limits.

Client Name: **GEI**
 Logged by: **Brianna Barnes**

Work Order Number: **1709342**
 Date Received: **9/27/2017 3:58:00 PM**

Chain of Custody

1. Is Chain of Custody complete? Yes ☒ No ☐ Not Present ☐
 2. How was the sample delivered? Client

Log In

3. Coolers are present? Yes ☐ No ☒ NA ☐

Received straight from field

4. Shipping container/cooler in good condition? Yes ☒ No ☐
 5. Custody Seals present on shipping container/cooler?
 (Refer to comments for Custody Seals not intact) Yes ☐ No ☐ Not Required ☒
 6. Was an attempt made to cool the samples? Yes ☐ No ☐ NA ☒
 7. Were all items received at a temperature of >0°C to 10.0°C* Yes ☐ No ☐ NA ☒
 8. Sample(s) in proper container(s)? Yes ☒ No ☐
 9. Sufficient sample volume for indicated test(s)? Yes ☒ No ☐
 10. Are samples properly preserved? Yes ☒ No ☐
 11. Was preservative added to bottles? Yes ☐ No ☒ NA ☐
 12. Is there headspace in the VOA vials? Yes ☐ No ☐ NA ☒
 13. Did all samples containers arrive in good condition(unbroken)? Yes ☒ No ☐
 14. Does paperwork match bottle labels? Yes ☒ No ☐
 15. Are matrices correctly identified on Chain of Custody? Yes ☒ No ☐
 16. Is it clear what analyses were requested? Yes ☒ No ☐
 17. Were all holding times able to be met? Yes ☒ No ☐

Special Handling (if applicable)

18. Was client notified of all discrepancies with this order? Yes ☐ No ☐ NA ☒

Person Notified: Date
 By Whom: Via: ☐ eMail ☐ Phone ☐ Fax ☐ In Person
 Regarding:
 Client Instructions:

19. Additional remarks:

Item Information

Item #	Temp °C
Sample	24.5

* Note: DoD/ELAP and TNI require items to be received at 4°C +/- 2°C



Fremont

Analytical

3600 Fremont Ave N.
Seattle, WA 98103

Tel: 206-352-3790
Fax: 206-352-7178

Chain of Custody Record and Laboratory Services Agreement

Date: 9/27/17

Laboratory Project No (internal): 1709342

Page: 1 of 1

Client: GeoSingers

Address: _____

City, State, Zip: _____

Telephone: _____

Fax: _____

Project Name: Block 21

Project No: _____

Location: Seattle, WA

Report To (PM): Chris Brown

PM Email: chris.brown@geosingers.com

Collected by: CND

*Matrix Codes: A = Air, AQ = Aqueous, B = Bulk, O = Other, P = Product, S = Soil, SD = Sediment, SL = Solid, W = Water, DW = Drinking Water, GW = Ground Water, SW = Storm Water, WW = Waste Water

Sample Name	Sample Date	Sample Time	Sample Type (Matrix)*	VOCs (EPA 8260 / 624)	GX/BTEX	BTEX	Gasoline Range Organics (GX)	Hydrocarbon Identification (HCID)	Diesel/Heavy Oil Range Organics (DHO)	SVOCS (EPA 8270 / 625)	PAHs (EPA 8270 - SIM / 625)	PCBs (EPA 8082 / 608)	Metals** (EPA 6020 / 200.8)	Total (T) Dissolved (D)	Anions (IC)***	EDB (8011)	Comments
-------------	-------------	-------------	-----------------------	-----------------------	---------	------	------------------------------	-----------------------------------	---------------------------------------	------------------------	-----------------------------	-----------------------	-----------------------------	---------------------------	----------------	------------	----------

1	TP 21-6-2.5	9/27/17	1315	5	X	X	X	X	X	X	X	X	X	X	X	X		Cell & metals
2	TP 21-6-6.0		1350		X	X	X	X	X	X	X	X	X	X	X	X		
3	TP 21-7-2.5		1420		X	X	X	X	X	X	X	X	X	X	X	X		
4	TP 21-7-5.5		1430		X	X	X	X	X	X	X	X	X	X	X	X		
5	TP 21-10-3.0		1410		X	X	X	X	X	X	X	X	X	X	X	X		
6																		
7																		
8																		
9																		
10																		

**Metals Analysis (Circle): MTCA-5 RCRA-8 Priority Pollutants TAL Individual: Ag Al As B Ba Be Ca Cd Co Cr Cu Fe Hg K Mg Mn Mo Na Ni Pb Sb Se Sr Sn Tl U V Zn

**Anions (Circle): Nitrate Nitrite Chloride Sulfate Bromide O-Phosphate Fluoride Nitrate+Nitrite Turn-around times for samples received after 4:00pm will begin on the following business day.

Sample Disposal: ☐ Return to Client ☐ Disposal by Lab (Samples will be held for 30 days unless otherwise noted. A fee may be assessed if samples are retained after 30 days.)

I represent that I am authorized to enter into this Agreement with Fremont Analytical on behalf of the Client named above, that I have verified Client's agreement to each of the terms on the front and backside of this Agreement.

Relinquished Date/Time 9/27/17 1558 Received Date/Time 9/27/17 1558

Relinquished Date/Time 9/27/17 1558 Received Date/Time 9/27/17 1558

TAT -> SameDay^ NextDay^ 2 Day 3 Day STD
Please coordinate with the lab in advance



Fremont

3600 Fremont Ave N.
Seattle, WA 98103

Tel: 206-352-3790
Fax: 206-352-7178

Chain of Custody Record and Laboratory Services Agreement

Date: 9/27/17

Laboratory Project No (Internal): 1709342

Page: 1 of 1

Client: Geology.MRS
Address: _____
City, State, Zip: _____
Telephone: _____

Project Name: Block 21
Project No: _____
Location: Seattle, WA
Report To (PM): Chris Brown
PM Email: cbrown@geology.mrs.com

Collected by: CND

*Matrix Codes: A = Air, AQ = Aqueous, B = Bulk, O = Other, P = Product, S = Soil, SD = Sediment, SL = Solid, W = Water, DW = Drinking Water, GW = Ground Water, SW = Storm Water, WW = Waste Water

Sample Name	Sample Date	Sample Time	Sample Type (Matrix)*	VOCS (EPA 8260 / 624)	GV/BTEX	BTEX	Gasoline Range Organics (GX)	Hydrocarbon Identification (HCID)	Diesel/Heavy Oil Range Organics (DX)	SVOCs (EPA 8270 / 625)	PAHs (EPA 8270 - SIM / 625)	PCBs (EPA 8082 / 608)	Metals** (EPA 6020 / 200.8)	Total (T) Dissolved (D)	Anions (IC)***	EDB (8011)	Hex (8011)	Comments
1 TP 21-6-2.5	9/27/17	1415	S	X	X	X	X	X	X	X	X	X	X	X	X	X	X	ACPA & metals
2 TP 21-6-6.0		1350	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	Add Analysis per C.B.
3 TP 21-7-2.5		1420	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	Next Day TAT and 9/29/17
4 TP 21-7-5.5		1430	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
5 TP 21-10-3.0		1410	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
6																		
7																		
8																		
9																		
10																		

**Metals Analysis (Circle): MTCA-5 RCA-8 Priority Pollutants TAL Individual: Ag Al As B Ba Be Ca Cd Co Cr Cu Fe Hg K Mg Mn Mo Na Ni Pb Sb Se Sr Sn Tl U V Zn

***Anions (Circle): Nitrate Nitrite Chloride Sulfate Bromide O-Phosphate Fluoride Nitrate+Nitrite

Sample Disposal: ☐ Return to Client ☐ Disposal by Lab (Samples will be held for 30 days unless otherwise noted. A fee may be assessed if samples are retained after 30 days.)

I represent that I am authorized to enter into this Agreement with Fremont Analytical on behalf of the Client named above, that I have verified Client's agreement to each of the terms on the front and backside of this Agreement.

Relinquished: Chris Brown Date/Time: 9/27/17 1558 Received: Chris Brown Date/Time: 9/27/17 1558

Relinquished: Chris Brown Date/Time: 9/27/17 1558 Received: Chris Brown Date/Time: 9/27/17 1558

TAT → SameDay NextDay 2 Day 3 Day STD

*Please coordinate with the lab in advance

APPENDIX D

Report Limitations and Guidelines for Use

APPENDIX D

REPORT LIMITATIONS AND GUIDELINES FOR USE¹

This Appendix provides information to help you manage your risks with respect to the use of this report.

Read These Provisions Closely

Some clients, design professionals and contractors may not recognize that the geoscience practices (geotechnical engineering, geology and environmental science) are far less exact than other engineering and natural science disciplines. This lack of understanding can create unrealistic 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 are unclear how these “Report Limitations and Guidelines for Use” apply to your project or site.

Environmental Services Are Performed for Specific Purposes, Persons and Projects

This report has been prepared for the exclusive use of Acorn Development, LLC 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 sites.

GeoEngineers structures our services to meet the specific needs of our clients. For example, an environmental site assessment or remedial action 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 project site. No one except Acorn Development, LLC should rely on this plan without first conferring with GeoEngineers. This report should not be applied 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 applies to Block 21 in the Denny Triangle neighborhood of Seattle, 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, do not 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 after the date of this remedial action plan, GeoEngineers should be given the opportunity to review our interpretations and recommendations and provide written modifications or confirmation, as appropriate.

¹ Developed based on material provided by ASFE, Professional Firms Practicing in the Geosciences; www.asfe.org.

Reliance Conditions for Third Parties

No third party may rely on the product of our services unless GeoEngineers agrees in advance, and in writing to such reliance. 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.

Environmental Regulations Are Always Evolving

Some substances may be present in the site vicinity in quantities or under conditions that may have led, or may lead, to contamination of the subject site, 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 substance, change or if more stringent environmental standards are developed in the future.

Uncertainty May Remain after Completion of Remedial Activities

Remediation activity completed in a portion of a site cannot wholly eliminate uncertainty regarding the potential for contamination in connection with a property. 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 manmade events such as construction on or adjacent to the site, by new releases of hazardous substances, or by natural events such as floods, earthquakes, slope instability or groundwater fluctuations. Always contact GeoEngineers before applying this report to determine if it is still applicable.

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 sites or for other on-site uses of the affected media (soil and/or groundwater). Note that hazardous substances may be present in some of the 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 site or reuse of the affected media on site to evaluate the potential for associated environmental liabilities. We cannot be responsible for potential environmental liability arising out of the transfer of soil and/or groundwater from the subject site to another location or its reuse on site in instances that we were not aware of 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 site. 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 opinion about subsurface conditions throughout the site. 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.

Geotechnical, Geologic and Geoenvironmental Reports Should Not Be Interchanged

The equipment, techniques and personnel used to perform an environmental study differ significantly from those used to perform a geotechnical or geologic study and vice versa. For that reason, a geotechnical engineering or geologic report does not usually relate any environmental findings, conclusions or recommendations; e.g., about the likelihood of encountering underground storage tanks or regulated contaminants. Similarly, environmental reports are not used to address geotechnical or geologic concerns regarding a specific project.

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.

If the client desires these specialized services, they should be obtained 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).

