APPENDIX C
Supplemental Site Characterization Study

GeoEngineers
Plaza 600 Building
600 Stewart Street, Suite 1700
Seattle, Washington 98101
206.728.2674

July 18, 2013

Port of Anacortes
PO Box 297
Anacortes, Washington 98221

Attention: Jenkins Dossen

Subject: Soil Characterization Study
Wyman's Property
Anacortes, Washington
File No. 5147-019-05

INTRODUCTION

This letter presents GeoEngineers' results of the soil characterization field study completed for the Wyman's Property (Site) located at 202 U Avenue in Anacortes, Washington (Figure 1). Historic studies of the Site have identified limited areas of soil contamination where concentrations exceed applicable Model Toxics Control Act (MTCA) cleanup levels. As a result, the property has been listed on Ecology's known or suspected cleanup site list (Facility Site Identification No. 2821735).

To support construction of a proposed habitat mitigation area at the Site, supplemental soil sampling activities were completed to: 1) further evaluate the vertical and lateral extent of previously documented shallow soil contamination associated with historic Site use and deeper soil contamination associated with historic underground storage tanks (USTs; now removed); 2) characterize the general soil quality within the proposed excavation prism outside of the historical contamination areas to serve as a basis for evaluating soil disposal options; and 3) characterize soil conditions at the final proposed cut surface elevation that will exposed to marine waters following construction.

Results of this site investigation and previous investigations are summarized below.

BACKGROUND INFORMATION

Site Description

The Site is located approximately ½ mile northeast of downtown Anacortes, Washington, on the southern shoreline of Guemes Channel between industrial and residential areas (Figure 1). The Site is bordered by

Guemes Channel to the north, residential homes to the east and south, and Randy's Pier 61 restaurant to the west.

Currently, the Site consists of a vacated wooden and sheet metal building (Wyman's Building) with gravel parking areas to the east and south. A concrete ramp leading to the water and bedrock outcroppings are located to the west of the Wyman's Building. Wooden piles, a fuel float, dock and associated structures are located north of the Wyman's Building. A concrete pad for a former "pole" building is located immediately south of the Wyman's Building. The western, southern and eastern portions of the Site are separated from the adjacent properties by a metal fence.

Site History

Initial property development occurred after 1944 with a dock structure in place by 1956. The property was initially operated by Robinson Marine Works, later known as USCG Mooring and Robinson Anacortes Marina. In 1983, pilings in the dock and marina areas were reportedly replaced and maintenance dredging completed by the Port of Anacortes (Port). Until 1998 Donald and Rayetta Wyman operated the Site for boat servicing and maintenance on a continuous basis. At this time, marina and boat maintenance and server operations ceased and two USTs associated with marine fueling operations were decommissioned and removed from the property. The access ramp located west of the Wyman's Building was replaced by the Port in 2010 and continues to remain in service.

Previous Investigations

Three previous environmental investigations have been completed at the Site, including:

- Environmental Site Assessment in 1997 (Otten, 1997);
- Underground Storage Tank Closure in 1985 (Otten, 1998); and
- Soil and Sediment investigation in 2004 (Landau, 2004).

The results of these previous environmental studies are briefly discussed in the following sections. Chemical analytical results for historic soil and sediment samples obtained during previous environmental studies are summarized in Tables 1 and 2, respectively. Historic sample locations are shown relative to the Site on Figure 2.

Summary of Previous Soil Investigations and Results

Surface soil samples (up to 1-foot below ground surface [bgs]) were obtained by Otten Engineering in 1997 at fifteen locations (WY-UPLD-SS-1 through WY-UPLD-SS-15) at the Site in areas with visible oil staining, paint chip fragments, and/or sandblast grit. Contaminants of concern including gasoline-, diesel- and heavy oil-range petroleum hydrocarbons, metals (arsenic, cadmium, copper, lead and mercury) and/or pesticides (DDD) were detected at concentrations exceeding Model Toxics Control Act (MTCA) cleanup levels at seven of the fifteen locations sampled.

During UST decommissioning and removal activities in 1998, gasoline-range petroleum hydrocarbons and benzene were detected at concentrations exceeding MTCA cleanup levels in soil samples obtained from the north and northwest sidewalls of the UST removal excavation at approximately 5 feet bgs. However, it was reported that soil represented by these samples were subsequently excavated and removed from the Site (Otten, 1998). Contaminants of concern including petroleum hydrocarbons, benzene, ethylbenzene,

toluene and xylenes (BETX) and metals (lead) either were not detected or were detected at concentrations less than MTCA cleanup levels in confirmation soil samples obtained from the southern and eastern UST excavation sidewalls and base of the UST excavation.

In 2004, Landau Associates completed supplemental sampling activities at five locations (MSI-4-1 through MSI-4-5) in areas where historic operations were considered most likely to impact surface soil or groundwater. Contaminants of concern including gasoline-, diesel- and heavy oil-range petroleum hydrocarbons, BETX, and metals (arsenic, cadmium, chromium, copper, lead, mercury, nickel and zinc) either were not detected or were detected at concentrations less than MTCA cleanup levels.

Summary of Previous Sediment Investigations and Results

Surface sediment grab samples (above 10 centimeters [cm]) were obtained by Otten Engineering in 1997 at five locations (WY-SED-1 through WY-SED-5) to evaluate sediment conditions at the Site. Samples were submitted for Sediment Management Standard (SMS) analytes from each of the locations sampled. In addition, pore water samples for tributyltin (TBT) were obtained from four of these locations. Contaminants either were not detected or were detected at concentrations less than the Sediment Quality Standards (SQS) criteria (WAC 173-204-320) in each of the samples submitted for chemical analysis. TBT either was not detected or was detected at a concentration less than the screening level defined in the Dredge Material Evaluation and Disposal Procedures User's Manual (DMMO, 2008).

In 2004, Landau completed supplemental sediment sampling activities to within the Wyman's marina area to further evaluate sediment conditions at the Site. Samples were obtained from the upper 10 cm of sediment using a grab sampler at three locations (MSI-4-6a through MSI-4-6c). Samples collected from these locations were composited and submitted for chemical analysis of metals, polychlorinated biphenyls (PCBs), semi-volatile organic compounds (SVOCs), butyltins, total organic carbon (TOC) and total solids. Contaminants of concern either were not detected or were detected at concentrations less than SQS criteria in the composite sediment sample.

SUPPLEMENTAL SOIL INVESTIGATION

Supplemental soil investigation activities were completed at the Site on July 5, 2012 to evaluate the vertical and lateral extent of previously documented shallow soil contamination associated with historic Site use; confirm the removal of petroleum related contamination in soil in the northern portion of the UST removal excavation; evaluate soil disposal options for soil that will be generated during mitigation habitat construction activities; and characterize soil conditions at the final proposed cut surface elevation that will be exposed to marine waters following construction excavation activities. Selected soil samples obtained from the Site were submitted for one or more of the following:

- Gasoline-range hydrocarbons by NWTPH-G.
- Diesel- and oil-range petroleum hydrocarbons by NWTPH-Dx.
- BETX by Environmental Protection Agency (EPA) Method 8260.
- Polychlorinated Biphenyl's (PCBs) by EPA Method 8280.
- Metals (arsenic, barium, cadmium, chromium, copper, lead, mercury, selenium, silver and zinc) by EPA Method 6000/7000 series.

- Semivolatile organic compounds (SVOCs) by EPA Method 8270D/SIM.
- Organochlorine Pesticides (DDD) by EPA Method 8081A.

Field investigations and chemical analytical results of samples obtained are summarized in the following sections. Chemical analytical results for this soil investigation are summarized in Tables 3 and 4. Soil sample locations are shown relative to the Site on Figure 3. Field screening procedures and exploration logs are presented in Appendix A. A copy of the laboratory report and data validation report are presented in Appendix B and C, respectively.

Shallow Surface Soil Investigation and Analytical Results

A total of 21 shallow surface soil samples (summarized in Table 3) were obtained from the Site to evaluate the vertical and lateral extent of historic contamination in soil identified during previous environmental investigations. At each historic exceedance location, soil samples obtained as part of this study were submitted for chemical analysis of only those contaminants which previously exceeded MTCA cleanup levels. In addition, composite soil sample GEI-SS-COMP was obtained to characterize soil conditions from historic exceedance areas WY-UPLD-SS-2, WY-UPLD-SS-6, WY-UPLD-SS-9 and WY-UPLD-SS-12 for evaluating disposal options. Due to the elevated concentrations of lead at locations WY-UPLD-SS-13, WY-UPLD-SS-14 and WY-UPLD-SS-15 (detected lead concentration in soil is greater than 20 times[1] the associated toxicity characteristic threshold listed in WAC 173-303-090(8)), two discrete soil samples (GEI-SS-13-0.5 and GEI-SS-14/15-0.5) were obtained from these locations and submitted for analysis by the toxicity characteristic leaching procedure (TCLP) to evaluate whether the soil generated from these areas would potentially designate as a dangerous waste.

Soil samples obtained as part of this investigation were screened in the field for evidence of petroleum hydrocarbons and VOCs. Field screening procedures are presented in Appendix A. Field screening evidence of potential petroleum-related contamination (moderate sheen or greater and/or elevated head space vapor measurements greater than 20 ppm) was not observed in each of the shallow soil samples obtained from the Site.

Contaminants of concern either were not detected or were detected at concentrations less than MTCA cleanup levels in each of the samples submitted for chemical analysis, with one exception. Arsenic was detected at a concentration exceeding the MTCA cleanup level of 20 milligrams per kilogram (mg/kg) in composite soil sample GEI-SS-COMP obtained to evaluate landfill disposal options. Additionally, TCLP test results indicate that soil represented by samples GEI-SS-13-0.5 and GEI-SS-14/15-0.5 do not designate as a dangerous Waste. Chemical analytical results are summarized in Table 3. Soil sample locations are shown relative to the Site on Figure 3.

Subsurface Soil Investigation and Analytical Results

A total of six soil samples (GEI-11-8.0 through GEI-16-5.0) were obtained from direct-push borings GEI-11 through GEI-16 to characterize the general soil quality within the proposed mitigation habitat excavation area (Figure 4). Soil samples obtained as part of this investigation were screened in the field for evidence

[1] This is referred to as the "20-times rule" and is described in a September 21, 1992 EPA letter titled "Calculation of TCLP Concentrations from Total Concentrations". This reference is available at:
http://yosemite.epa.gov/osw/rcra.nsf/ea6e50dc6214725285256bf00063269d/95e9e57b91ea2e9f8525670f006c0acd!OpenDocument

of petroleum hydrocarbons and VOCs. Field screening procedures and exploration logs are presented in Appendix A. Field screening evidence of potential petroleum-related contamination (moderate sheen or greater and/or elevated head space vapor measurements greater than 20 ppm) was not observed in each of the soil samples obtained from the Site.

Contaminants of concern either were not detected or were detected at concentrations less than MTCA cleanup levels in each of the samples submitted for chemical analysis. Chemical analytical results are summarized in Table 3. Soil sample locations are shown relative to the Site on Figure 4.

Proposed Mitigation Habitat Surface Investigation and Analytical Results

To evaluate soil conditions that will be exposed to marine waters following the completion of the mitigation habitat construction excavation, soil samples obtained from the approximate elevation of the final proposed cut surface in borings GEI-11 and GEI-14 through GEI-16 were composited in the field for chemical analysis of sediment quality standards (SQS) constituents (WAC 173-204-320). Due to the presence of bedrock at locations GEI-12 and GEI-13 at elevations above the final proposed cut surface, soil samples from the final cut surface were not obtained for chemical analysis.

Soil samples obtained as part of this investigation were screened in the field for evidence of petroleum hydrocarbons and VOCs. Field screening procedures and explorations logs are presented in Appendix A. Field screening evidence of potential petroleum-related contamination (moderate sheen or greater and/or elevated head space vapor measurements greater than 20 ppm) was not observed in each of the soil samples obtained from the Site.

Contaminants of concern either were not detected or were detected at concentrations less than the SQS criteria (WAC 173-204-320) in composite soil sample GEI-COMP-1. Chemical analytical results are summarized in Table 4. Soil sample locations are shown relative to the Site on Figure 4.

SUMMARY OF SUBSURFACE CONDITIONS

Soil Conditions

The soil conditions at the site generally consisted of fill overlying native soil interpreted to be representative of glaciomarine drift and/or bedrock. Surficial fill consists of approximately 3 to 5 inches of crushed rock overlying medium dense fine to coarse sand with gravel and varying silt content. The fill extended to depths varying from approximately 1 to 4 feet bgs in borings completed as part of this study. Native soil consisting of very stiff silt and clay with occasional gravel was encountered underlying the fill layer. In borings GEI-12 and GEI-13, bedrock was encountered at depths of 8½ and 10 feet bgs, respectively.

Observed soil conditions are detailed in exploration logs presented in Appendix A. Boring locations are shown relative to the Site on Figure 4.

Contaminants, including gasoline-, diesel- and heavy oil-range petroleum hydrocarbons, BETX, SVOCs, PCBs, metals and/or pesticides either were not detected or were detected at concentrations less than MTCA cleanup levels in soil samples obtained to evaluate the vertical and lateral extent of contaminants in historic exceedance areas and soil samples obtained to evaluate the general soil quality within the

propose mitigation habitat excavation prism. Additionally, contaminants either were not detected or were detected at concentrations less than the SQS criteria in a composite soil sample obtained from the final proposed cut surface of the mitigation habitat construction area.

Groundwater Conditions

Groundwater was observed in explorations GEI-11, GEI-14 and GEI-15 at depths ranging from approximately 1½ to 4½ feet bgs. Groundwater observations are detailed in the attached exploration logs (Appendix A). The inferred groundwater follow direction for the Site is north toward Guemes Channel. Based on the proximity of Guemes Channel to the property it is likely groundwater at the Site is hydraulically connected to Guemes Channel and that the groundwater level will fluctuate as a function of tidal influence.

REFERENCES

Dredged Material Management Office (DMMO), "Dredge Material Evaluation and Disposal Procedures (Users' Manual)," Dredged Material Management Program, dated July 2008.

Landau Associates (Landau), "Report, Multiple Site Investigation, Port of Anacortes, Anacortes, Washington," dated December 16, 2004.

Otten Engineering (Otten), "Underground Storage Tank Closure Assessment, Port of Anacortes, Former Wyman's Marina Property, 202 U Avenue, Anacortes, Washington" 1998.

Otten Engineering (Otten), "Phase 2 Environmental Assessment, Wyman's Marina Site, Port of Anacortes, Anacortes, Washington," dated October 1, 1997.

LIMITATIONS

We have prepared this letter for the exclusive use of the Port of Anacortes and their authorized agents for the Wyman's Property located in Anacortes, Washington.

Within the limitations of scope, schedule and budget, our services have been executed in accordance with generally accepted practices in the field of geotechnical engineering 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.

We appreciate the opportunity to provide these services to the Port of Anacortes. Please contact us if you have any questions regarding this report.

Sincerely,
GeoEngineers, Inc.

Robert S. Trahan
Geologist

John M. Herzog, PhD
Principal

RST:JMH:leh

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Table 1

Summary of Historic Soil Chemical Analytical Data

Wyman's Property Mitigation Habitat Site

Anacortes, Washington

Sample ID[1]	WY-UPLD-SS-1	WY-UPLD-SS-2	WY-UPLD-SS-3	WY-UPLD-SS-4	WY-UPLD-SS-5	WY-UPLD-SS-6	WY-UPLD-SS-7	WY-UPLD-SS-8A	WY-UPLD-SS-8B	MTCA Cleanup Level[2]
Sampled By	**Otten Engineering**	**Otten Engineering**	**Otten Engineering**	**Otten Engineering**	**Otten Engineering**	**Otten Engineering**	**Otten Engineering**	**Otten Engineering**	**Otten Engineering**	
Sample Date	**Jul-97**	**Jul-97**	**Jul-97**	**Jul-97**	**Jul-97**	**Jul-97**	**Jul-97**	**Jul-97**	**Jul-97**	
Sample Depth (ft bgs)	**0.0 - 0.2**	**0.0 - 0.3**	**0.2 - 0.6**	**0.0 - 0.6**	**0.0 - 0.9**	**0.0 - 0.6**	**0.0 - 0.6**	**0.0 - 0.4**	**0.4 - 1.0**	
Sample Elevation (ft MLLW)	**27**	**25**	**22**	**26**	**22**	**24**	**22**	**19**	**18.5**	
Petroleum Hydrocarbons by TPH-HCID, TPH-G, TPH-Dx or 418.1 (mg/kg)										
HCID	--	D, HO	HO	HO	HO	G, D, HO	--	D, HO	G, D, HO	NE
Gasoline-Range	--	--	--	--	--	**551**	--	--	33	30/100[3]
Diesel-Range	--	**3,530**	ND	--	--	**8,820**	--	--	642	2,000
Oil-Range	--	**14,200**	ND	--	--	ND	--	--	1,250	2,000
Petroleum-Range	--	**27,300**	304	ND	ND	**7,930**	--	1,350	1,250	2,000
Volatile Organic Compounds (VOCs) by EPA 8260 (mg/kg)										
Benzene	--	ND	--	--	ND	--	--	--	ND	0.03
Ethylbenzene	--	ND	--	--	ND	--	--	--	ND	6
Toluene	--	ND	--	--	ND	--	--	--	ND	7
Xylenes	--	ND	--	--	ND	--	--	--	ND	9
Other	--	ND	--	--	ND	ND	--	--	ND	varies
Semivolatile Organic Hydrocarbons (SVOCs) by EPA 8270										
SVOCs	--	ND	--	--	0.735 - Dimethyl Phthalate	0.493 - 1,3,5-Trimethylbenzene 0.504 - n-Butylbenzene 0.256 - Naphthalene 1.31 - p-Isopropyltoluene 0.229 - sec-Butylbenzene 1.19 Fluorene 1.75 - Pyrene	--	--	0.211 - 'Phenathrene 0.135 - Pyrene	varies
Metals by EPA 6000/7000 Series (mg/kg)										
Antimony	--	ND	ND	--	ND	ND	--	ND	7.56	32
Arsenic	--	11.9 J	6.84 J	--	10.1 J	6.09 J	--	4.59 J	5.10 J	20
Cadmium	--	0.664 J	ND	--	ND	ND	--	0.446 J	ND	2
Chromium	--	31.2 J	26.3 J	--	18.2 J	14.9 J	--	8.27 J	42.4 J	2,000
Copper	--	1120 J	2690 J	--	576 J	358 J	--	**3,300**	176 J	3,200
Lead	--	141 J	109 J	--	63.7 J	91.6 J	--	81.9	220 J	250
Mercury	--	0.846	0.899	--	0.114	ND	--	0.788	1.1	2
Nickel	--	39.0 J	30.2 J	--	31.3 J	61.5 J	--	3.81 J	36.8 J	1,600
Silver	--	0.109	0.593	--	0.0968	0.058	--	0.0732	0.0548	400
Zinc	--	353 J	308 J	--	109 J	440 J	--	584 J	220	24,000
Polychlorinated Biphenyls (PCBs) by EPA 8082 (mg/kg)										
PCBs	--	0.178	--	--	ND	ND	--	--	ND	1
Organochlorine Pesticides by EPA 8081A (mg/kg)										
Pesticides	--	--	--	--	--	--	--	--	--	4.2 - DDD 2.9 - DDE

Sample ID[1]	WY-UPLD-SS-9	WY-UPLD-SS-10	WY-UPLD-SS-11	WY-UPLD-SS-12	WY-UPLD-SS-13	WY-UPLD-SS-14	WY-UPLD-SS-15	NW Wall[4]	N Wall[4]	MTCA Cleanup Level[2]
Sampled By	Otten Engineering	Otten Engineering	Otten Engineering	Otten Engineering	Otten Engineering	Otten Engineering	Otten Engineering	Otten Engineering	Otten Engineering	
Sample Date	Jul-97	Jul-97	Jul-97	Jul-97	Jul-97	Jul-97	Jul-97	2/25/1998	2/25/1998	
Sample Depth (ft bgs)	0.0 - 0.3	0.0 - 0.6	0.0 - 0.3	0.0 - 0.3	0.0 - 0.3	0.0 - 0.3	0.0 - 0.3	5.0	5.0	
Sample Elevation (ft MLLW)	6	5	22.5	19	19	20	20	13	13	
Petroleum Hydrocarbons by NWTPH-HCID, NWTPH-G or NWTPH-Dx (mg/kg)										
HCID	--	--	--	G, D, HO	D, HO	G, D, HO	G, D, HO	--	--	NE
Gasoline-Range	--	--	--	ND	--	14.5 J	ND	**140**	**96**	30/100[3]
Diesel-Range	--	--	--	**25,100**	194	**6,300**	**6,920**	52.8	1,300	2,000
Oil-Range	--	--	--	ND	ND	ND	ND	--	--	2,000
Petroleum-Range	--	--	--	--	--	--	--	--	--	2,000
Volatile Organic Compounds (VOCs) by EPA 8260 (mg/kg)										
Benzene	--	--	--	--	--	--	--	**0.16**	ND	0.03
Ethylbenzene	--	--	--	--	--	--	--	1.09	ND	6
Toluene	--	--	--	--	--	--	--	0.2	ND	7
Xylenes	--	--	--	--	--	--	--	2.5	ND	9
Other	--	--	--	--	--	--	--	--	--	varies
Semivolatile Organic Hydrocarbons (SVOCs) by EPA 8270D										
SVOCs	--	--	--	--	--	ND	--	--	--	varies
Metals by EPA 6000/7000 Series (mg/kg)										
Antimony	ND	--	ND	ND	ND	ND	ND	--	--	32
Arsenic	**24.4**	--	ND	13.8	9.14	16.9	17.1	--	--	20
Cadmium	0.892	--	ND	0.386 J	**7.78 J**	0.79 J	**9.5 J**	--	--	2
Chromium	42.6	--	ND	29.2	41.4	41.5	39.4	--	--	2,000
Copper	**3,660**	--	ND	140	1,630	1,650	642	--	--	3,200
Lead	92	--	ND	67.5 J	**378 J**	**1,390 J**	**894 J**	ND	ND	250
Mercury	0.363	--	ND	0.279	**2.11**	0.558	0.499	--	--	2
Nickel	39.7	--	ND	36.6	50.2 J	35.2 J	35.8 J	--	--	1,600
Silver	ND	--	ND	ND	0.149	0.193	0.225	--	--	400
Zinc	1,110	--	ND	699	2,750	1010	1020	--	--	24,000
Polychlorinated Biphenyls (PCBs) by EPA 8082 (mg/kg)										
PCBs	--	--	--	--	--	0.105 J	--	--	--	1
Organochlorine Pesticides by EPA 8081A (µg/kg)										
Pesticides	--	--	--	--	**90 - 4,4' DDD**	0.028 - 4,4' DDE	--	--	--	4.2 - DDD 2.9 - DDE

Sample ID[1]	West W12[4]	NE Wall	SW Wall	SE Wall	N BTM	South B9	South W1	West W11	Southwest W13	MTCA Cleanup Level[2]
Sampled By	Otten Engineering	Otten Engineering	Otten Engineering	Otten Engineering	Otten Engineering	Otten Engineering	Otten Engineering	Otten Engineering	Otten Engineering	
Sample Date	2/27/1998	2/25/1998	2/25/1998	2/25/1998	2/25/1998	2/27/1998	2/27/1998	2/27/1998	2/27/1998	
Sample Depth (ft bgs)	6.0	5.5	6.0	5.5	8.5	9.0	9.0	6.0	6.0	
Sample Elevation (ft MLLW)	12	12.5	12	12.5	9.5	9	9	12	12	
Petroleum Hydrocarbons by NWTPH-HCID, NWTPH-G or NWTPH-Dx (mg/kg)										
HCID	--	--	--	--	--	--	--	--	--	NE
Gasoline-Range	**117**	ND	ND	ND	ND	ND	ND	16.9	ND	30/100[3]
Diesel-Range	171	ND	ND	ND	ND	ND	ND	105	ND	2,000
Oil-Range	--	--	--	--	--	--	--	--	--	2,000
Petroleum-Range	--	--	--	--	--	--	--	--	--	2,000
Volatile Organic Compounds (VOCs) by EPA 8260 (mg/kg)										
Benzene	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.03
Ethylbenzene	ND	ND	ND	ND	ND	ND	ND	ND	ND	6
Toluene	ND	ND	ND	ND	ND	ND	ND	ND	ND	7
Xylenes	ND	ND	ND	ND	ND	ND	ND	ND	ND	9
Other	--	--	--	--	--	--	--	--	--	varies
Semivolatile Organic Hydrocarbons (SVOCs) by EPA 8270D										
SVOCs	--	--	--	--	--	--	--	--	--	varies
Metals by EPA 6000/7000 Series (mg/kg)										
Antimony	--	--	--	--	--	--	--	--	--	32
Arsenic	--	--	--	--	--	--	--	--	--	20
Cadmium	--	--	--	--	--	--	--	--	--	2
Chromium	--	--	--	--	--	--	--	--	--	2,000
Copper	--	--	--	--	--	--	--	--	--	3,200
Lead	--	ND	ND	ND	ND	--	--	--	--	250
Mercury	--	--	--	--	--	--	--	--	--	2
Nickel	--	--	--	--	--	--	--	--	--	1,600
Silver	--	--	--	--	--	--	--	--	--	400
Zinc	--	--	--	--	--	--	--	--	--	24,000
Polychlorinated Biphenyls (PCBs) by EPA 8082 (mg/kg)										
PCBs	--	--	--	--	--	--	--	--	--	1
Organochlorine Pesticides by EPA 8081A (µg/kg)										
Pesticides	--	--	--	--	--	--	--	--	--	4.2 - DDD 2.9 - DDE

Sample ID[1]	Northwest W14	Piping #1	MSI-4-1	MSI-4-2	MSI-4-3	MSI-4-4	MSI-4-5	MTCA Cleanup Level[2]
Sampled By	Otten Engineering	Otten Engineering	Landau	Landau	Landau	Landau	Landau	
Sample Date	3/2/1998	2/25/1998	3/30/2004	3/30/2004	3/30/2004	3/30/2004	2004	
Sample Depth (ft bgs)	6.0	2.5	2	6	2	6	6	
Sample Elevation (ft MLLW)	12	15.5	24.5	13	18	12	12	
Petroleum Hydrocarbons by NWTPH-HCID, NWTPH-G or NWTPH-Dx (mg/kg)								
HCID	--	--	--	--	--	--	--	NE
Gasoline-Range	ND	ND	5.8 U	6.5 U	6.2 U	5.1 U	5.6 U	30/100[3]
Diesel-Range	ND	10.3	5.8	5.0 U	5.0 U	5.0 U	16	2,000
Oil-Range	--	--	37	10 U	10 U	10 U	10 U	2,000
Petroleum-Range	--	--	--	--	--	--	--	2,000
Volatile Organic Compounds (VOCs) by EPA 8260 (mg/kg)								
Benzene	ND	ND	0.029 U	--	0.031 U	--	--	0.03
Ethylbenzene	ND	ND	0.029 U	--	0.031 U	--	--	6
Toluene	ND	ND	0.029 U	--	0.031 U	--	--	7
Xylenes	ND	ND	0.058 U	--	0.062 U	--	--	9
Other	--	--	--	--	--	--	--	varies
Semivolatile Organic Hydrocarbons (SVOCs) by EPA 8270D								
SVOCs	--	--	--	--	--	--	--	varies
Metals by EPA 6000/7000 Series (mg/kg)								
Antimony	--	--	--	--	--	--	--	32
Arsenic	--	--	--	6.6	4.1	3.6	2.7	20
Cadmium	--	--	--	0.6 U	0.2 U	0.2 U	0.2 U	2
Chromium	--	--	--	55	46.6	41.5	50.2	2,000
Copper	--	--	--	45.3	25.7	20.7	20.6	3,200
Lead	--	--	--	6	13	3	3	250
Mercury	--	--	--	0.07	0.07	0.04 U	0.04	2
Nickel	--	--	--	77	44	77	66	1,600
Silver	--	--	--	--	--	--	--	400
Zinc	--	--	--	75	71.5	36.4	39.7	24,000
Polychlorinated Biphenyls (PCBs) by EPA 8082 (mg/kg)								
PCBs	--	--	--	--	--	--	--	1
Organochlorine Pesticides by EPA 8081A (µg/kg)								
Pesticides	--	--	--	--	--	--	--	4.2 - DDD 2.9 - DDE

Notes:

[1]Sample locations are shown on Figure 2.

[2]Soil cleanup levels are MTCA Method A or B cleanup levels referenced from CLARC database (*https://fortress.wa.gov/ecy/clarc/CLARCHome.aspx*).

[3]Gasoline cleanup level is 30 mg/kg if benzene is present.

[4]Soil represented by this samples was subsequentely excavated and removed from the Site.

MTCA = Model Toxics Control Act

U = Not detected above laboratory reporting limit

Shading indicates analyte was detected at a concentration above the Preliminary Soil Cleanup Level.

Table 2

Summary of Historic Sediment Laboratory Analytical Data

Wyman's Property Mitigation Habitat Site
Anacortes, Washington

Sample Identification	WY-SED-1	WY-SED-2	WY-SED-3	WY-SED-4	WY-SED-5	WY-SED-6	MSI-4-6	Sediment Quality Standard (SQS)[1]	Cleanup Screening Level (CSL)[2]
Sample Date	**8/6/1997**	**8/6/1997**	**8/6/1997**	**8/6/1997**	**8/6/1997**	**8/6/1997**	**4/1/2004**		
Sample Type	**Surface**	**Surface**	**Surface**	**Surface**	**Surface**	**Surface**	**Composite**		
Conventionals									
Total Organic Carbon (%)	2.12	2.38	3.94	2.23	2.25	2.86	2.19	NE	NE
Total Solids	--	--	--	--	--	--	38.3	NE	NE
Metals by EPA Method 6000/7000 Series (mg/kg)									
Arsenic	6.89 J	6.50 J	6.21 J	5.85 J	6.46 J	6.84 J	6.4	57	93
Cadmium	0.294	0.452	0.501	0.33	0.38	0.251	0.5	5.1	6.7
Chromium	26.1	31.6	31.3	28.9	27.8	19.8	41	260	270
Copper	258	136	80.9	40.3	29	131	65.9	390	390
Lead	10.7 J	13.2 J	16.8 J	11.6 J	11 J	17.7 J	18	450	530
Nickel	25.8	30.7	31.2	32	27.5	20	--	NE	NE
Mercury	ND	ND	ND	ND	ND	ND	0.2	0.41	0.59
Silver	0.123	0.111	0.111	0.0922	0.0932	0.1	0.7 U	6.1	6.1
Zinc	193	98.5	87.1	75.9	62	74.1	98	410	960
Organometallic Compounds									
Tributyltin ion (interstitial water; µg/L)	0.7	0.14	ND	ND	ND	0.15	--	NE	NE
Tributyltin ion (bulk; µg/kg)5	--	--	--	--	--	--	6.5	NE	NE
Organics by EPA Method 8270D/SIM (mg/kg OC)[3]									
LPAH	23.3	11.4	5.4	ND	ND	5.8	5.02	370	780
Naphthalene	0.642	1.7	0.452	ND	ND	0.766	0.91 U	99	170
Acenaphthylene	ND	ND	ND	ND	ND	ND	0.91 U	66	66
Acenaphthene	1.4	2.90	0.3	ND	ND	0.510	0.91 U	16	57
Fluorene	1.7	2	ND	ND	ND	0.427	0.91 U	23	79
Phenanthrene	17.2	8.8	2.9	ND	ND	2.8	5.02	100	480
Anthracene	2.5	3.2	1	ND	ND	0.937	0.91 U	220	1,200
2-Methylnaphthalene	ND	0.811	0.259	ND	ND	0.381	0.91 U	38	64
HPAH	82.6	35.7	22.4	ND	ND	22.5	42.47	960	5,300
Fluoranthene	20.5	13.1	7.9	ND	ND	6.1	14.61	160	1,200
Pyrene	18.3	9.7	6.1	ND	ND	4.8	9.59	1,000	1,400
Benz(a)anthracene	ND	2.6	1.6	ND	ND	2.2	1.96	110	270
Chrysene	8.7	4	2.6	ND	ND	3.1	5.02	110	460
Benzofluoranthenes (b, j ,k)	11.5	3.4	2.5	ND	ND	3.3	4.89	230	450
Benzo(a)pyrene	5.5	1.3	ND	ND	ND	1.4	1.51	99	210
Indeno(1,2,3-c,d)pyrene	3.2	0.761	0.419	ND	ND	0.724	0.91 U	34	88
Dibenz(a,h)anthracene	1.1	ND	ND	ND	ND	ND	0.91 U	12	33
Benzo(g,h,i)perylene	3.7	0.811	0.482	ND	ND	0.937	0.91 U	31	78
Chlorinated Hydrocarbons by EPA Method 8270D (mg/kg OC)[3]									
1,4-Dichlorobenzene	ND	ND	ND	ND	ND	ND	0.91 U	3.1	9
1,2-Dichlorobenzene	ND	ND	ND	ND	ND	ND	0.91 U	2.3	2.3
1,2,4-Trichlorobenzene	ND	ND	ND	ND	ND	ND	0.91 U	0.81	1.8
Hexachlorobenzene (HCB)	ND	ND	ND	ND	ND	ND	0.91 U	0.38	2.3
Phthalates by EPA Method 8270D (mg/kg OC)[3]									
Dimethyl phthalate	ND	6.4	6	ND	ND	7.6	0.91 U	53	53
Diethyl phthalate	ND	ND	ND	ND	ND	ND	0.91 U	61	110
Di-n-butyl phthalate	ND	ND	ND	ND	ND	ND	0.91 U	220	1,700
Butyl benzyl phthalate	ND	ND	ND	ND	ND	ND	0.91 U	4.9	64.0
Bis(2-ethylhexyl) phthalate	ND	ND	ND	ND	ND	ND	0.91 U	47	78
Di-n-octyl phthalate	ND	ND	ND	ND	ND	ND	0.91 U	58	4,500

Sample Identification	WY-SED-1	WY-SED-2	WY-SED-3	WY-SED-4	WY-SED-5	WY-SED-6	MSI-4-6	Sediment Quality Standard (SQS)[1]	Cleanup Screening Level (CSL)[2]
Sample Date	8/6/1997	8/6/1997	8/6/1997	8/6/1997	8/6/1997	8/6/1997	4/1/2004		
Sample Type	Surface	Surface	Surface	Surface	Surface	Surface	Composite		
Miscellaneous Extractables by EPA Method 8270D (µg/kg OC)[3]									
Dibenzofuran	ND	ND	ND	ND	ND	ND	0.91 U	NE	58
Hexachlorobutadiene	ND	ND	ND	ND	ND	ND	0.91 U	NE	6
N-Nitrosodiphenylamine	ND	ND	ND	ND	ND	ND	0.91 U	NE	11
Polychlorinated Biphenyls by EPA Method 8082 (mg/kg OC)[3]									
Total PCBs	ND	ND	ND	ND	ND	ND	0.91 U	12	65
Phenols by EPA Method 8270D (µg/kg)									
Phenol	ND	ND	ND	ND	ND	ND	20 U	420	1,200
2-Methylphenol	ND	ND	ND	ND	ND	ND	20 U	63	63
4-Methylphenol	ND	ND	ND	ND	ND	ND	20 U	670	670
2,4-Dimethylphenol	ND	ND	ND	ND	ND	ND	20 U	29	29
Pentachlorophenol	ND	ND	ND	ND	ND	ND	98 U	360	690
Miscellaneous Extractables by EPA Method 8270D (µg/kg)									
Benzyl alcohol	ND	ND	ND	ND	ND	ND	20 U	57	73
Benzoic acid	ND	ND	ND	ND	ND	ND	200 U	650	650

Notes:

[1]Marine Sediment Quality Standards -- Chemical Criteria (WAC 173-204-320).

[2]Marine Cleanup Screening Level -- Chemical Criteria (WAC 173-204-520).

[3]Value normalized to organic carbon and is expressed as mg/kg organic cabon (oc).

NE = not established

mg/kg = miligram per kilogram

µg/kg = microgram per kilogram

ng/kg = nonogram oer kilogram

µg/L = microgram per liter

OC = organic carbon

U = The analyte is not detected at or above the reported concentration.

J = Estimated Concentration

Shading indicates detected concentrations exceeds one or more of the DMMP Guidline Chemistry Values.

Chemical analyses performed by OnSite Environmental, Inc of Redmond, Washington.

Table 3

Summary of Soil Investigation Chemical Analytical Data

Wyman's Property Mitigation Habitat Site

Anacortes, Washington

Sample ID[1]	GEI-11-8.0	GEI-12-2.5	GEI-13-10.0	GEI-14-5.0	GEI-15-10.0	GEI-16-5.0	GEI-SS-2-1-1.5	GEI-SS-2-2-0.5	GEI-SS-2-3-0.5	MTCA Cleanup Level[2]
Sampled By	GeoEngineers	GeoEngineers	GeoEngineers	GeoEngineers	GeoEngineers	GeoEngineers	GeoEngineers	GeoEngineers	GeoEngineers	
Sample Date	7/5/2012	7/5/2012	7/5/2012	7/5/2012	7/5/2012	7/5/2012	7/5/2012	7/5/2012	7/5/2012	
Sample Depth (ft bgs)	8.0	2.5	10.0	5.0	10.0	5.0	1.5	0.5	0.5	
Sample Elevation (ft MLLW)	9	15.5	14	19	10	13	23.5	24.5	24.5	
Field Screening										
Sheen										NE
Headspace Vapors (ppm)										NE
Petroleum Hydrocarbons by NWTPH-G or NWTPH-Dx (mg/kg)										
Gasoline-Range	4.8 U	7.3 U	4.9 U	4.1 U	6.1 U	4.4 U	–	–	–	30/100[3]
Diesel-Range	–	–	–	–	–	–	31 U	27 U	30 U	2,000
Oil-Range	–	–	–	–	–	–	62 U	**59**	60 U	2,000
Volatile Organic Compounds (VOCs) by EPA Method 8260 (mg/kg)										
Benzene	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	–	–	–	0.03
Ethylbenzene	0.048 U	0.073 U	0.049 U	0.041 U	0.061 U	0.044 U	–	–	–	6
Toluene	0.048 U	0.073 U	0.049 U	0.041 U	0.061 U	0.044 U	–	–	–	7
Xylenes	0.048 U	0.073 U	0.049 U	0.041 U	0.061 U	0.044 U	–	–	–	9
Metals by EPA Method 6000/7000 Series (mg/kg)										
Arsenic	11 U	12 U	12 U	11 U	12 U	11 U	–	–	–	20
Barium	**69**	**58**	**60**	**59**	**75**	**52**	–	–	–	16,000
Cadmium	0.57 U	0.61 U	0.58 U	0.55 U	0.59 U	0.55 U	–	–	–	2
Chromium	**44**	**37**	**85**	**35**	**43**	**32**	–	–	–	2,000
Copper	**–**	**–**	**–**	**–**	**–**	**–**	–	–	–	3,200
Lead	5.7 U	6.1 U	5.8 U	5.5 U	5.9 U	5.5 U	–	–	–	250
Mercury	0.28 U	0.31 U	0.29 U	0.27 U	0.29 U	0.27 U	–	–	–	2
Selenium	11 U	12 U	12 U	11 U	12 U	11 U	–	–	–	400
Silver	0.57 U	0.61 U	0.58 U	0.55 U	0.59 U	0.55 U	–	–	–	400
TCLP Metals by EPA Method 1311/6010B/7470A (mg/L)										
Arsenic	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	–	–	–	5
Barium	**0.21**	**0.45**	0.02 U	**0.59**	**0.26**	**0.43**	–	–	–	100
Cadmium	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	–	–	–	1
Chromium	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	–	–	–	5
Copper										NE
Lead	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	–	–	–	5
Mercury	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	–	–	–	0.2
Selenium	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	–	–	–	1
Silver	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	–	–	–	5
Organochlorine Pesticides by EPA Method 8081A (mg/kg)										
4,4'-DDE	–	–	–	–	–	–	–	–	–	2.9
4,4'-DDD	–	–	–	–	–	–	–	–	–	4.2
4,4'-DDT	–	–	–	–	–	–	–	–	–	3

Sample ID[1]	GEI-SS-2-4-0.5	GEI-SS-6-1-1.5	GEI-SS-6-2-0.5	GEI-SS-6-3-0.5	GEI-SS-6-4-0.5	GEI-SS-9-1-1.5	GEI-SS-9-2-0.5	GEI-SS-9-3-0.5	GEI-SS-9-4-0.5	MTCA Cleanup Level[2]
Sampled By	**GeoEngineers**	**GeoEngineers**	**GeoEngineers**	**GeoEngineers**	**GeoEngineers**	**GeoEngineers**	**GeoEngineers**	**GeoEngineers**	**GeoEngineers**	
Sample Date	**7/5/2012**	**7/5/2012**	**7/5/2012**	**7/5/2012**	**7/5/2012**	**7/5/2012**	**7/5/2012**	**7/5/2012**	**7/5/2012**	
Sample Depth (ft bgs)	**0.5**	**1.5**	**0.5**	**0.5**	**0.5**	**1.5**	**0.5**	**0.5**	**0.5**	
Sample Elevation (ft MLLW)	**24.5**	**22.5**	**23.5**	**23.5**	**23.5**	**4.5**	**5.5**	**5.5**	**5.5**	
Field Screening										
Sheen										NE
Headspace Vapors (ppm)										NE
Petroleum Hydrocarbons by NWTPH-G or NWTPH-Dx (mg/kg)										
Gasoline-Range	–	4.8 U	4.6 U	4.0 U	5.3 U	–	–	–	–	30/100[3]
Diesel-Range	28 U	28 U	27 U	**100**	28 U	–	–	–	–	2,000
Oil-Range	66 U	57 U	55 U	51 U	67 U	–	–	–	–	2,000
Volatile Organic Compounds (VOCs) by EPA Method 8260 (mg/kg)										
Benzene	–	–	–	–	–	–	–	–	–	0.03
Ethylbenzene	–	–	–	–	–	–	–	–	–	6
Toluene	–	–	–	–	–	–	–	–	–	7
Xylenes	–	–	–	–	–	–	–	–	–	9
Metals by EPA Method 6000/7000 Series (mg/kg)										
Arsenic	–	–	–	–	–	12 U	12 U	11 U	12 U	20
Barium	–	–	–	–	–	–	–	–	–	16,000
Cadmium	–	–	–	–	–	–	–	–	–	2
Chromium	–	–	–	–	–	–	–	–	–	2,000
Copper	–	–	–	–	–	**31**	**56**	**200**	**78**	3,200
Lead	–	–	–	–	–	–	–	–	–	250
Mercury	–	–	–	–	–	–	–	–	–	2
Selenium	–	–	–	–	–	–	–	–	–	400
Silver	–	–	–	–	–	–	–	–	–	400
TCLP Metals by EPA Method 1311/6010B/7470A (mg/L)										
Arsenic	–	–	–	–	–	–	–	–	–	5
Barium	–	–	–	–	–	–	–	–	–	100
Cadmium	–	–	–	–	–	–	–	–	–	1
Chromium	–	–	–	–	–	–	–	–	–	5
Copper										NE
Lead	–	–	–	–	–	–	–	–	–	5
Mercury	–	–	–	–	–	–	–	–	–	0.2
Selenium	–	–	–	–	–	–	–	–	–	1
Silver	–	–	–	–	–	–	–	–	–	5
Organochlorine Pesticides by EPA Method 8081A (mg/kg)										
4,4'-DDE	–	–	–	–	–	–	–	–	–	2.9
4,4'-DDD	–	–	–	–	–	–	–	–	–	4.2
4,4'-DDT	–	–	–	–	–	–	–	–	–	3

Sample ID[1]	GEI-SS-12-1-1.5	GEI-SS-12-2-0.5	GEI-SS-12-3-0.5	GEI-SS-12-4-0.5	GEI-SS-13-1-0.5	GEI-SS-13-1-1.5	GEI-SS-13-2-0.5	GEI-SS-13-3-0.5	GEI-SS-13-4-0.5	MTCA Cleanup Level[2]
Sampled By	GeoEngineers	GeoEngineers	GeoEngineers	GeoEngineers	GeoEngineers	GeoEngineers	GeoEngineers	GeoEngineers	GeoEngineers	
Sample Date	7/5/2012	7/5/2012	7/5/2012	7/5/2012	7/5/2012	7/5/2012	7/5/2012	7/5/2012	7/5/2012	
Sample Depth (ft bgs)	1.5	0.5	0.5	0.5	0.5	1.5	0.5	0.5	0.5	
Sample Elevation (ft MLLW)	17.5	18.5	18.5	18.5	18.5	17.5	18.5	18.5	18.5	
Field Screening										
Sheen										NE
Headspace Vapors (ppm)										NE
Petroleum Hydrocarbons by NWTPH-G or NWTPH-Dx (mg/kg)										
Gasoline-Range	–	–	–	–	–	–	–	–	–	30/100[3]
Diesel-Range	30 U	29 U	28 U	**68**	–	–	–	–	–	2,000
Oil-Range	61 U	57 U	**69**	**330**	–	–	–	–	–	2,000
Volatile Organic Compounds (VOCs) by EPA Method 8260 (mg/kg)										
Benzene	–	–	–	–	–	–	–	–	–	0.03
Ethylbenzene	–	–	–	–	–	–	–	–	–	6
Toluene	–	–	–	–	–	–	–	–	–	7
Xylenes	–	–	–	–	–	–	–	–	–	9
Metals by EPA Method 6000/7000 Series (mg/kg)										
Arsenic	–	–	–	–	–	–	–	–	–	20
Barium	–	–	–	–	–	–	–	–	–	16,000
Cadmium	–	–	–	–	–	0.61 U	0.74 U	0.69 U	0.62 U	2
Chromium	–	–	–	–	–	–	–	–	–	2,000
Copper	–	–	–	–	–	–	–	–	–	3,200
Lead	–	–	–	–	–	6.1 U	**81**	**95**	6.2 U	250
Mercury	–	–	–	–	–	0.31 U	**1.2**	0.34 U	0.31 U	2
Selenium	–	–	–	–	–	–	–	–	–	400
Silver	–	–	–	–	–	–	–	–	–	400
TCLP Metals by EPA Method 1311/6010B/7470A (mg/L)										
Arsenic	–	–	–	–	–	–	–	–	–	5
Barium	–	–	–	–	–	–	–	–	–	100
Cadmium	–	–	–	–	–	–	–	–	–	1
Chromium	–	–	–	–	–	–	–	–	–	5
Copper										NE
Lead	–	–	–	–	0.2 U	–	–	–	–	5
Mercury	–	–	–	–	–	–	–	–	–	0.2
Selenium	–	–	–	–	–	–	–	–	–	1
Silver	–	–	–	–	–	–	–	–	–	5
Organochlorine Pesticides by EPA Method 8081A (mg/kg)										
4,4'-DDE	–	–	–	–	–	12 U	15 U	14 U	12 U	2.9
4,4'-DDD	–	–	–	–	–	12 U	15 U	14 U	12 U	4.2
4,4'-DDT	–	–	–	–	–	12 U	15 U	14 U	12 U	3

Sample ID[1]	GEI-SS-14/15-1-0.5	GEI-SS-14/15-1-1.5	GEI-SS-14/15-2-0.5	GEI-SS-14/15-3-0.5	GEI-SS-14/15-4-0.5	GEI-SS-COMP[2]	MTCA Cleanup Level[3]
Sampled By	**GeoEngineers**	**GeoEngineers**	**GeoEngineers**	**GeoEngineers**	**GeoEngineers**	**GeoEngineers**	
Sample Date	**7/5/2012**	**7/5/2012**	**7/5/2012**	**7/5/2012**	**7/5/2012**	**7/5/2012**	
Sample Depth (ft bgs)	**0.5**	**1.5**	**0.5**	**0.5**	**0.5**	**0.5**	
Sample Elevation (ft MLLW)	**19.5**	**18.5**	**19.5**	**19.5**	**19.5**	**n/a**	
Field Screening							
Sheen							NE
Headspace Vapors (ppm)							NE
Petroleum Hydrocarbons by NWTPH-G or NWTPH-Dx (mg/kg)							
Gasoline-Range	–	–	–	–	–	4.5 U	30/100[4]
Diesel-Range	–	30 U	27 U	30 U	27 U	–	2,000
Oil-Range	–	61 U	55 U	63 U	**150**	–	2,000
Volatile Organic Compounds (VOCs) by EPA Method 8260 (mg/kg)							
Benzene	–	–	–	–	–	0.02 U	0.03
Ethylbenzene	–	–	–	–	–	0.045 U	6
Toluene	–	–	–	–	–	0.045 U	7
Xylenes	–	–	–	–	–	0.045 U	9
Metals by EPA Method 6000/7000 Series (mg/kg)							
Arsenic	–	–	–	–	–	**56**	20
Barium	–	–	–	–	–	–	16,000
Cadmium	–	0.61 U	0.55 U	0.59 U	**0.91**	**0.73**	2
Chromium	–	–	–	–	–	**70**	2,000
Copper	–	–	–	–	–	**390**	3,200
Lead	–	**9.2**	5.5 U	**110**	**200**	**93**	250
Mercury	–	0.3 U	0.27 U	0.92 U	**0.48**	0.28 U	2
Selenium	–	–	–	–	–	–	400
Silver	–	–	–	–	–	–	400
TCLP Metals by EPA Method 1311/6010B/7470A (mg/L)							
Arsenic	–	–	–	–	–	–	5
Barium	–	–	–	–	–	–	100
Cadmium	–	–	–	–	–	–	1
Chromium	–	–	–	–	–	–	5
Copper							NE
Lead	0.2 U	–	–	0.2 U	0.2 U	–	5
Mercury	–	–	–	–	–	–	0.2
Selenium	–	–	–	–	–	–	1
Silver	–	–	–	–	–	–	5
Organochlorine Pesticides by EPA Method 8081A (mg/kg)							
4,4'-DDE	–	–	–	–	–	0.011 U	2.9
4,4'-DDD	–	–	–	–	–	0.011 U	4.2
4,4'-DDT	–	–	–	–	–	0.011 U	3

Notes:

[1]Sample locations are shown on Figure 3.

[2]Soil cleanup levels are MTCA Method A or B cleanup levels referenced from CLARC database (*https://fortress.wa.gov/ecy/clarc/CLARCHome.aspx*).

[3]Gasoline cleanup level is 30 mg/kg if benzene is present.

mg/L = milligrams per liter

MTCA = Model Toxics Control Act

ppm = parts per million

U = Not detected above laboratory reporting limit

Shading indicates analyte was detected at a concentration above the Preliminary Soil Cleanup Level.

Chemcial analysis performed by OnSIte Environmental, Inc. of Redmond, Washington.

Table 4

Summary of Marine Surface Investigation Laboratory Analytical Data

Wyman's Property Mitigation Habitat Site

Anacortes, Washington

Sample Identification	GEI-COMP-1	Sediment Quality Standard (SQS)[1]	Cleanup Screening Level (CSL)[2]
Sample Date	7/5/2012		
Sample Type	Composite		
Conventionals			
Total Organic Carbon (%)	5.5	NE	NE
Metals by EPA Method 6000/7000 Series (mg/kg)			
Arsenic	12 U	57	93
Cadmium	0.6 U	5.1	6.7
Chromium	74	260	270
Copper	28	390	390
Lead	6 U	450	530
Mercury	0.3 U	0.41	0.59
Silver	0.6 U	6.1	6.1
Zinc	47	410	960
Organics by EPA Method 8270D/SIM (mg/kg OC)[3]			
Total LPAH	0	370	780
Naphthalene	0.087 U	99	170
Acenaphthylene	0.087 U	66	66
Acenaphthene	0.087 U	16	57
Fluorene	0.087 U	23	79
Phenanthrene	0.087 U	100	480
Anthracene	0.087 U	220	1,200
2-Methylnaphthalene	0.087 U	38	64
Total HPAH	0	960	5,300
Fluoranthene	0.087 U	160	1,200
Pyrene	0.087 U	1,000	1,400
Benz(a)anthracene	0.087 U	110	270
Chrysene	0.087 U	110	460
Benzofluoranthenes (b, j ,k)	0.087 U	230	450
Benzo(a)pyrene	0.087 U	99	210
Indeno(1,2,3-c,d)pyrene	0.087 U	34	88
Dibenz(a,h)anthracene	0.087 U	12	33
Benzo(g,h,i)perylene	0.087 U	31	78
Chlorinated Hydrocarbons by EPA Method 8270D (mg/kg OC)[3]			
1,4-Dichlorobenzene	0.436 U	3.1	9
1,2-Dichlorobenzene	0.436 U	2.3	2.3
1,2,4-Trichlorobenzene	0.436 U	0.81	1.8
Hexachlorobenzene (HCB)	0.436 U	0.38	2.3
Phthalates by EPA Method 8270D (mg/kg OC)[3]			
Dimethyl phthalate	0.436 U	53	53
Diethyl phthalate	0.436 U	61	110
Di-n-butyl phthalate	0.436 U	220	1,700
Butyl benzyl phthalate	0.436 U	4.9	64.0
Bis(2-ethylhexyl) phthalate	0.436 U	47	78
Di-n-octyl phthalate	0.436 U	58	4,500
Miscellaneous Extractables by EPA Method 8270D (µg/kg OC)[3]			
Dibenzofuran	24 U	NE	58
Hexachlorobutadiene	24 U	NE	6
N-Nitrosodiphenylamine	24 U	NE	11

Sample Identification	GEI-COMP-1	Sediment Quality Standard (SQS)[1]	Cleanup Screening Level (CSL)[2]
Sample Date	7/5/2012		
Sample Type	Composite		
Polychlorinated Biphenyls by EPA Method 8082 (mg/kg OC)[3]			
Total PCBs	1.1 U	12	65
Phenols by EPA Method 8270D (µg/kg)			
Phenol	24 U	420	1,200
2-Methylphenol	24 U	63	63
4-Methylphenol	24 U	670	670
2,4-Dimethylphenol	24 U	29	29
Pentachlorophenol	24 U	360	690
Miscellaneous Extractables by EPA Method 8270D (µg/kg)			
Benzyl alcohol	24 U	57	73
Benzoic acid	24 U	650	650

Notes:

[1]Marine Sediment Quality Standards -- Chemical Criteria (WAC 173-204-320).

[2]Marine Cleanup Screening Level -- Chemical Criteria (WAC 173-204-520).

[3]Value normalized to organic carbon and is expressed as mg/kg organic cabon (oc).

NE = not established

mg/kg = miligram per kilogram

µg/kg = microgram per kilogram

ng/kg = nonogram oer kilogram

OC = organic carbon

U = The analyte is not detected at or above the reported concentration.

J = Estimated Concentration

Shading indicates detected concentrations exceeds one or more of the DMMP Guidline Chemistry Values.

Chemical analyses performed by OnSite Environmental, Inc of Redmond, Washington.

2,000 0 2,000

Feet

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. can not guarantee the accuracy and content of electronic files. The master file is stored by GeoEngineers, Inc. and will serve as the official record of this communication.
3. It is unlawful to copy or reproduce all or any part thereof, whether for personal use or resale, without permission.

Data Sources: ESRI Data & Maps

Projection: NAD 1983 UTM Zone 10N

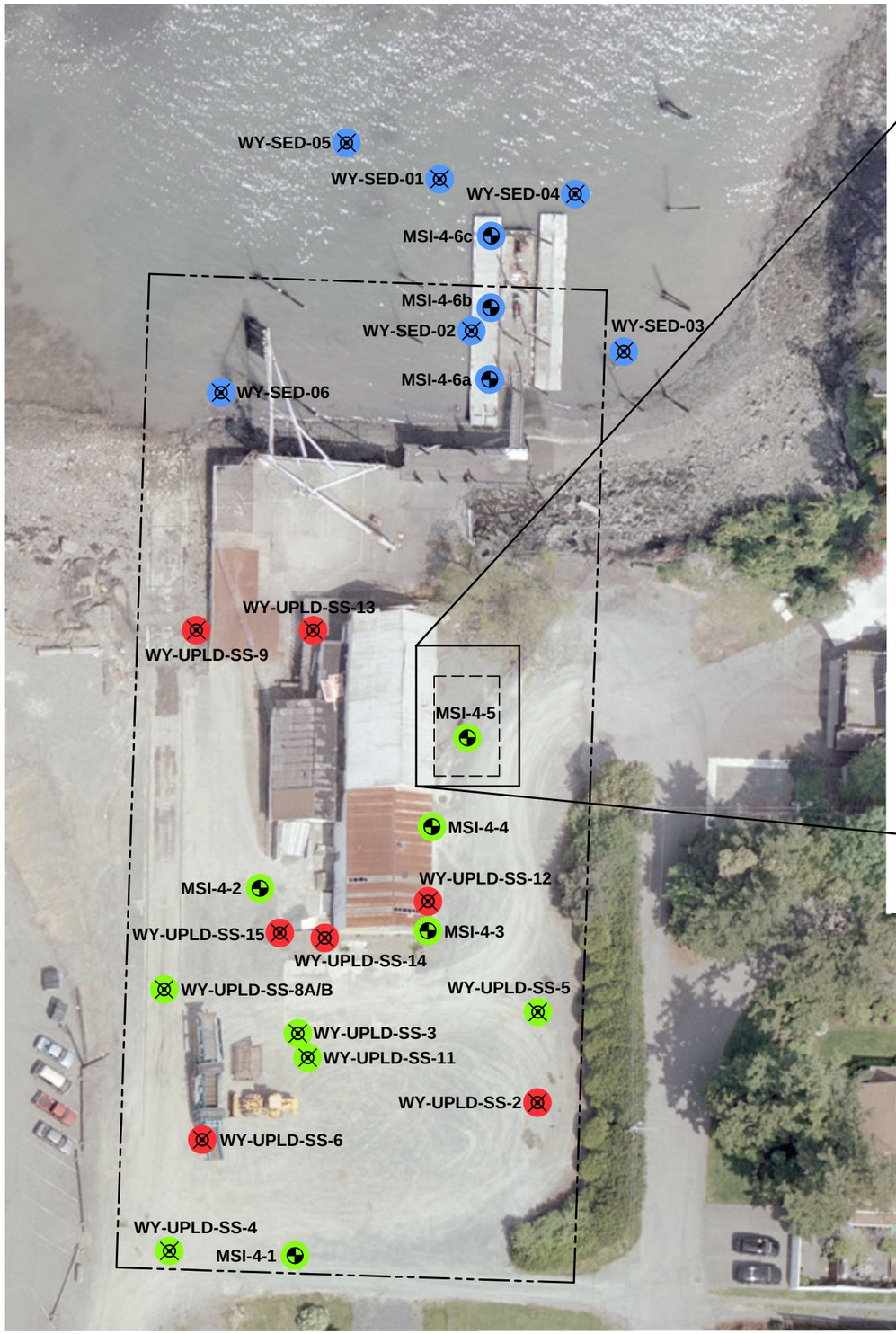
Vicinity Map

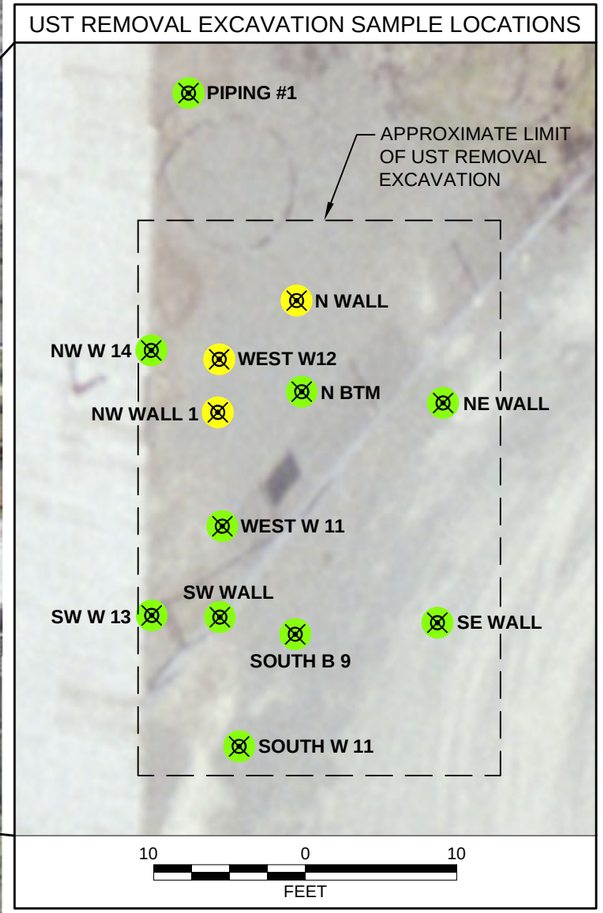
Wyman's Property
Anacortes, Washington

GeoEngineers

Figure 1

Path: \\seal\projects\5\5147019\GIS\5147019005_VicinityMap.mxd Map Revised: 06 August 2012 amanza





Legend

WY-UPLD-SS-1	Sample Location (Otten Engineering, 1997 & 1998)
MSI-4-4	Soil Sample Location (Landau Associates, 2004)
	One or more analyte exceeds MTCA cleanup levels (See Table 1)
	Analytes either not detected or detected at concentrations less than MTCA cleanup levels (See Table 1)
	Soil represented by this sample was subsequently excavated and removed from the site
	Analytes either not detected or detected at a concentration less than Marine Sediment Quality Standards (See Table 2)
	Site Boundary
MTCA	Model Toxics Control Act

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50 0 50
FEET

Notes

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Reference: Base Aerial taken by David C. Smith & Associates, Inc. on 6/17/2009.

Historic Sample Locations

Wyman's Property
Anacortes, Washington

GeoEngineers | **Figure 2**

P:\15\15I4701905\CAD\15I4701905 Task 100 Fig 2.dwg\TAB:LANDSCAPE Modified by TMICHAUD on Aug 13, 2012 - 11:11

Legend

GEI-SS-2-1 Surface Soil Sample Location (GeoEngineers, 2012)

Analytes either not detected or detected at concentrations less than MTCA cleanup levels (See Tables 3)

Site Boundary

N
W E
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50 0 50
FEET

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. can not guarantee the accuracy and content of electronic files. The master file is stored by GeoEngineers, Inc. and will serve as the official record of this communication.

Reference: Base Aerial taken by David C. Smith & Associates, Inc. on 6/17/2009.

Shallow Surface Soil Investigation

Wyman's Property
Anacortes, Washington

GeoEngineers | **Figure 3**

P:\5\5147019\05\CAD\5147019-05 TASK 100 FIG 3.DWG\TAB:LANDSCAPE MODIFIED BY THICHAUD ON AUG 13, 2012 - 11:54

Legend

- GEI-11 — Direct Push Boring Location (GeoEngineers, 2012)
- Analytes either not detected or detected at concentrations less than MTCA cleanup levels and/or sediment quality standards (See Tables 3 and 4)
- Site Boundary
- Proposed Mitigation Habitat Excavation Area

N
W E
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50 0 50
FEET

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. can not guarantee the accuracy and content of electronic files. The master file is stored by GeoEngineers, Inc. and will serve as the official record of this communication.

Reference: Base Aerial taken by David C. Smith & Associates, Inc. on 6/17/2009.

Subsurface Soil Investigation

Wyman's Property
Anacortes, Washington

GeoEngineers | **Figure 4**

P:\15\15\47019\05\CAD\15147019-05 Task 100 Fig 4.dwg\TAB:LANDSCAPE modified by tmichaud on Aug 13, 2012 - 14:03

APPENDIX A
Field Program and Exploration Logs

APPENDIX A
FIELD PROGRAM

General

Soil conditions were evaluated at the Site on July 5, 2012. Exploration, soil collection and handling, and field screening methods are summarized below.

Direct-Push Explorations

Six direct-push explorations were completed on July 5, 2012 to depths ranging from 8½ to 16 feet below ground surface (bgs) by Cascade Drilling Inc. of Woodinville, Washington using a truck mounded direct-push probe. The explorations were continuously monitored by a GeoEngineers field representative who observed and classified the soils encountered, obtained representative soil samples, observed groundwater conditions, and prepared a detailed log of each exploration. Representative soil samples were obtained from the explorations at selected depths using a 60-inch long, 1-⅜-inch-inside-diameter Teflon sampler driven into the soil using a pneumonic hammer. Soils encountered were visually classified in general accordance with American Society for Testing and Materials (ASTM) D 2488-94 (described in Figure A-1). Exploration logs are presented in Figures A-2 through A-7.

Soil samples were obtained from the continuous core soil exploration at approximately 2½-foot-depth intervals. Representative soil from each sampling interval was retained for field screening and potential chemical analysis. Drilling and sampling equipment were decontaminated before each sampling attempt with a Liqui-Nox® solution wash and distilled water rinse.

Samples were kept cool during transport to the chemical analytical testing laboratory. Chain-of-custody procedures were observed during transport of the samples to the testing laboratory. Samples that were submitted for chemical analysis are denoted in our boring logs with "CA."

Shallow Surface Explorations

Shallow surface explorations were completed on July 5, 2012 to depths ranging from ½ to 1½ feet bgs by GeoEngineers using hand tools (stainless steel shovel and/or trowel). Representative soil from each sample location was retained for field screening and potential chemical analysis. Sampling equipment was decontaminated before each sampling attempt with a Liqui-Nox® solution wash and distilled water rinse.

Samples were kept cool during transport to the chemical analytical testing laboratory. Chain-of-custody procedures were observed during transport of the samples to the testing laboratory.

Soil Sample Collection and Handling

Soil samples obtained from the explorations for chemical analysis were transferred to laboratory-prepared sample jars. Sample containers were filled to minimize headspace. Soil samples collected for analysis of volatile organics were collected using EPA Method 5035. Each soil sample collected for potential analysis was identified by a unique sample designation that corresponded to its mapped sample location and sample depth. The samples were placed in a cooler with ice pending transport to the analytical laboratory. Standard chain-of-custody procedures were followed in transporting the samples to the testing laboratory.

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. The results of water sheen testing on soil samples from the exploration are presented in Table 3. 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 boring-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.

Underground Utility locate

Prior to drilling activities, a “One Call” and private utility locate was conducted within a 20-foot radius of each boring location to identify any subsurface utilities and/or potential underground physical hazards. Utility locate records are on file with GeoEngineers and available upon request.

Investigative Wastes

Soil cuttings, decontamination rinse water, development water and purge water are stored on site in sealed and labeled 55-gallon drums located east of the Wyman’s Building pending permitted disposal.

Drilled	Start 7/5/2001	End 7/5/2012	Total Depth (ft) 8.5	Logged By JTD / Checked By	Driller Cascade Drilling	Drilling Method Direct Push
Surface Elevation (ft) / Vertical Datum	17.0 DMS		Hammer Data		Drilling Equipment	Geoprobe 6600
Latitude / Longitude	48°31'15.33"N / 122°30'19.36"W		System Datum	Geographic DMS	Groundwater: Date Measured	Depth to Water (ft) 2.0 / Elevation (ft) 15.0
Notes:					7/5/2012	

Elevation (feet)	Depth (feet)	FIELD DATA: Interval	Recovered (in)	Blows/foot	Collected Sample	Sample Name / Testing	Water Level	Graphic Log	Group Classification	MATERIAL DESCRIPTION	Sheen	Headspace Vapor (ppm)	REMARKS
	0		60						SP-SM	Brown sand with silt and gravel, trace organics (dense, dry)	NS	<1	
									ML	Dark brown sandy silt with fine gravel, organics and trace wood chips (dense, dry)			
15							▽		SP-SM	Gray sand with silt and trace fine gravel (dense, moist)	NS	<1	
						1			ML	Brown sandy silt with trace fine gravel (dense, moist)	NS	<1	
						2					NS	<1	
	5		36										
10						3 CA							

Refusal at 8.5 feet on bedrock

Note: See Figure A-1 for explanation of symbols.

Log of Boring GEI-11

GeoEngineers

Project: Wyman's Property
Project Location: Anacortes, Washington
Project Number: 5147-019-05

Figure A-2
Sheet 1 of 1

Seattle Date:8/7/12 Path:C:\DOCUMENTS AND SETTINGS\KROBINETTE\DESKTOP\5147019O3 WYMANS PROPERTY BORING LOGS.GPJ DBTemplate/LibTemplate:GEOENGINEERS8.GDT/GEI8_ENVIRONMENTAL_STANDARD

Drilled Start	End	Total Depth (ft)	Logged By / Checked By	Driller	Drilling Method
7/5/2001	7/5/2012	8.5	JTD	Cascade Drilling	Direct Push

Surface Elevation (ft) Vertical Datum	Hammer Data	Drilling Equipment
18.0		Geoprobe 6600

Latitude / Longitude	System Datum	Groundwater: Date Measured	Depth to Water (ft)	Elevation (ft)
48°31'14.29"N / 122°30'15.82"W	Geographic			

Notes:

Elevation (feet)	Depth (feet)	FIELD DATA: Interval	Recovered (in)	Blows/foot	Collected Sample	Sample Name / Testing	Water Level	Graphic Log	Group Classification	MATERIAL DESCRIPTION	Sheen	Headspace Vapor (ppm)	REMARKS
	0		60						ML	Brown sandy silt with fine gravel (dense, moist)			
15						1 CA					NS	<1	
						2					NS	<1	
	5		24										
			18			3 CA					NS	<1	
10										Refusal at 8.5 feet on bedrock			

Note: See Figure A-1 for explanation of symbols.

Log of Boring GEI-12

GeoEngineers

Project: Wyman's Property
Project Location: Anacortes, Washington
Project Number: 5147-019-05

Figure A-3
Sheet 1 of 1

Drilled	Start 7/5/2001	End 7/5/2012	Total Depth (ft)	10	Logged By / Checked By	JTD	Driller	Cascade Drilling	Drilling Method	Direct Push
Surface Elevation (ft) / Vertical Datum	24.0		Hammer Data				Drilling Equipment	Geoprobe 6600		
Latitude / Longitude	48°31'13.27"N / 122°30'18.46"W		System Datum	Geographic			Groundwater: Date Measured	Depth to Water (ft)	Elevation (ft)	
Notes:										

Elevation (feet)	Depth (feet)	Interval	Recovered (in)	Blows/foot	Collected Sample	Sample Name / Testing	Water Level	Graphic Log	Group Classification	MATERIAL DESCRIPTION	Sheen	Headspace Vapor (ppm)	REMARKS
	0		36						SP	Gray sand with fine to coarse gravel (dense, dry)			
									ML	Dark brown silt with occasional gravel (dense, moist)	NS	<1	
									ML	Green sandy silt with occasional gravel (dense, moist)			
						1					NS	<1	
			24						ML	Brown sandy silt with occasional gravel (dense, moist)			
20													
	5					2					NS	<1	
			36										
						3					NS	<1	
			24										
						4 / CA					NS	<1	
15													
	10									Refusal at 10 feet on bedrock			

Note: See Figure A-1 for explanation of symbols.

Log of Boring GEI-13

GeoEngineers

Project: Wyman's Property
Project Location: Anacortes, Washington
Project Number: 5147-019-05

Figure A-4
Sheet 1 of 1

Seattle Date:8/7/12 Path:C:\DOCUMENTS AND SETTINGS\KROBINETTE\DESKTOP\5147019O3 WYMANS PROPERTY BORING LOGS.GPJ DBTemplate/LibTemplate:GEOENGINEERS8.GDT/GEI8_ENVIRONMENTAL_STANDARD

Drilled	Start 7/5/2001	End 7/5/2012	Total Depth (ft)	16	Logged By / Checked By	JTD	Driller	Cascade Drilling	Drilling Method	Direct Push
Surface Elevation (ft) Vertical Datum	24.0		Hammer Data				Drilling Equipment	Geoprobe 6600		
Latitude / Longitude	48°31'13.84"N / 122°33'17.88"W		System Datum	Geographic			Groundwater Date Measured	7/5/2012	Depth to Water (ft)	5.0
Notes:									Elevation (ft)	19.0

Elevation (feet)	Depth (feet)	FIELD DATA: Interval	Recovered (in)	Blows/foot	Collected Sample	Sample Name / Testing	Water Level	Graphic Log	Group Classification	MATERIAL DESCRIPTION	Sheen	Headspace Vapor (ppm)	REMARKS
	0		31						SP	Gray fine to coarse sand with fine gravel (dense, dry)	NS	<1	
									ML	Brown silt with fine to coarse sand (dense, moist)			
						1					NS	<1	
									SM	Gray silty fine to coarse sand with fine gravel (dense, moist)	NS	<1	
						2 CA					NS	<1	
	5		60				▽						
									ML	Brown silt with fine to medium sand and trace organics (dense, moist)			
						3					NS	<1	
									ML	Light brown silt with fine to medium sand and trace fine gravel (dense, moist)			
						4					NS	<1	
	10		60										
						5					NS	<1	
	15		12			6 CA			SM	Gray silty sand (dense, moist)	NS	<1	
											NS	<1	
										Refusal at 16 feet on bedrock			

Note: See Figure A-1 for explanation of symbols.

Log of Boring GEI-14

GeoEngineers

Project: Wyman's Property
Project Location: Anacortes, Washington
Project Number: 5147-019-05

Figure A-5
Sheet 1 of 1

Seattle Date:8/7/12 Path:C:\DOCUMENTS AND SETTINGS\KROBINETTE\DESKTOP\5147019O3 WYMANS PROPERTY BORING LOGS.GPJ DBTemplate/LibTemplate:GEOENGINEERS8.GDT/GEI8_ENVIRONMENTAL_STANDARD

Drilled	Start 7/5/2001	End 7/5/2012	Total Depth (ft) 15	Logged By JTD / Checked By	Driller Cascade Drilling	Drilling Method Direct Push
Surface Elevation (ft) Vertical Datum	20.0		Hammer Data		Drilling Equipment	Geoprobe 6600
Latitude / Longitude	48°31'14.35"N / 122°36'17.85"W		System Datum	Geographic	Groundwater: Date Measured	Depth to Water (ft) 4.0 / Elevation (ft) 16.0
Notes:					7/5/2012	

Elevation (feet)	Depth (feet)	FIELD DATA: Interval	Recovered (in)	Blows/foot	Collected Sample	Sample Name / Testing	Water Level	Graphic Log	Group Classification	MATERIAL DESCRIPTION	Sheen	Headspace Vapor (ppm)	REMARKS
	0		48						SP	Brown fine to coarse sand with fine to coarse gravel (dense, dry)			
									ML	Dark brown to black with orange mottling silt with fine to coarse sand (dense, moist)			
						1					NS	<1	
									ML	Green and orange mottled silt with fine to medium sand (dense, moist)			
									ML	Brown with orange mottling silt with fine to medium sand, trace gravel (dense, moist)			
15	5		60			2	▽				NS	<1	
						3				Coarse gravel lense	NS	<1	
										Coarse gravel lense			
10	10		60			4 CA					NS	<1	
						5					NS	<1	
						6 CA			SM	Brown silty sand with occasional fine gravel (dense, moist)	NS	<1	
5	15								ML	Brown with orange mottling silt with fine to medium sand, trace gravel (dense, moist)			
										Refusal at 15 feet on bedrock			

Note: See Figure A-1 for explanation of symbols.

Log of Boring GEI-15

GeoEngineers

Project: Wyman's Property
Project Location: Anacortes, Washington
Project Number: 5147-019-05

Figure A-6
Sheet 1 of 1

Drilled	Start 7/5/2001	End 7/5/2012	Total Depth (ft) 14	Logged By JTD / Checked By	Driller Cascade Drilling	Drilling Method Direct Push
Surface Elevation (ft) / Vertical Datum	18.0		Hammer Data		Drilling Equipment	Geoprobe 6600
Latitude / Longitude	48°31'15.13"N / 122°36'17.91"W		System Datum	Geographic	Groundwater: Date Measured	Depth to Water (ft) / Elevation (ft)
Notes:						

Elevation (feet)	Depth (feet)	FIELD DATA: Interval	Recovered (in)	Blows/foot	Collected Sample	Sample Name / Testing	Water Level	Graphic Log	Group Classification	MATERIAL DESCRIPTION	Sheen	Headspace Vapor (ppm)	REMARKS
	0		36						SP	Gray sand with fine to coarse gravel (dense, dry)			
									SP-SM	Brown fine to coarse sand with silt and fine gravel (dense, moist)			
15						1							
									ML	Brown sandy silt (dense, moist)			
						2 CA							
	5		60						SP-SM	Brown fine to coarse sand with silt and fine gravel (dense, moist)			
									ML	Gray brown silt with fine to medium sand and occasional gravel (dense, moist)			
10						3							
						4							
	10		48										
						5 CA							
5													
										Refusal at 14 feet on bedrock			

Note: See Figure A-1 for explanation of symbols.

Log of Boring GEI-16

GeoEngineers

Project: Wyman's Property
Project Location: Anacortes, Washington
Project Number: 5147-019-05

Figure A-7
Sheet 1 of 1

Seattle Date:8/7/12 Path:C:\DOCUMENTS AND SETTINGS\KROBINETTE\DESKTOP\5147019O3 WYMANS PROPERTY BORING LOGS.GPJ DBTemplate/LibTemplate:GEOENGINEERS8.GDT/GEI8_ENVIRONMENTAL_STANDARD

APPENDIX B
Chemical Analytical Data

OnSite Environmental Inc.
14648 NE 95th Street, Redmond, WA 98052 • (425) 883-3881

July 18, 2012

Robert Trahan
GeoEngineers, Inc.
600 Stewart, Suite 1700
Seattle, WA 98101-1233

Re: Analytical Data for Project 5147-19-05
Laboratory Reference No. 1207-038

Dear Robert:

Enclosed are the analytical results and associated quality control data for samples submitted on July 6, 2012.

The standard policy of OnSite Environmental, Inc. is to store your samples for 30 days from the date of receipt. If you require longer storage, please contact the laboratory.

We appreciate the opportunity to be of service to you on this project. If you have any questions concerning the data, or need additional information, please feel free to call me.

Sincerely,

David Baumeister
Project Manager

Enclosures

Date of Report: July 18, 2012
Samples Submitted: July 6, 2012
Laboratory Reference: 1207-038
Project: 5147-19-05

Case Narrative

Samples were collected on July 5, 2012 and received by the laboratory on July 6, 2012. They were maintained at the laboratory at a temperature of 2°C to 6°C.

General QA/QC issues associated with the analytical data enclosed in this laboratory report will be indicated with a reference to a comment or explanation on the Data Qualifier page. More complex and involved QA/QC issues will be discussed in detail below.

SMS Semivolatiles EPA 8270D/SIM Analysis

GPC clean-up was not performed on this sample.

Total Metals EPA 6010B/7471A Analysis

Due to the high concentration of Copper in the QC sample, the amount spiked was insufficient for meaningful MS/MSD recovery data. The Spike Blank recovery was 104%.

The Matrix Spike/ Matrix Spike Duplicate recoveries for Zinc are outside control limits due to matrix inhomogeneity. The samples were re-extracted and re-analyzed with similar results. The Spike Blank recovery was 101%.

Please note that any other QA/QC issues associated with these extractions and analyses will be indicated with a footnote reference and discussed in detail on the Data Qualifier page.

Date of Report: July 18, 2012
Samples Submitted: July 6, 2012
Laboratory Reference: 1207-038
Project: 5147-19-05

ANALYTICAL REPORT FOR SAMPLES

Client ID	Laboratory ID	Matrix	Date Sampled	Date Received	Notes
GEI-11-8.0	07-038-03	Soil	7-5-12	7-6-12	
GEI-12-2.5	07-038-04	Soil	7-5-12	7-6-12	
GEI-13-10.0	07-038-10	Soil	7-5-12	7-6-12	
GEI-14-5.0	07-038-12	Soil	7-5-12	7-6-12	
GEI-15-10.0	07-038-20	Soil	7-5-12	7-6-12	
GEI-16-5.0	07-038-24	Soil	7-5-12	7-6-12	
GEI-COMP-1	07-038-28	Soil	7-5-12	7-6-12	
GEI-SS-COMP	07-038-29	Soil	7-5-12	7-6-12	
GEI-SS-2-1-1.5	07-038-30	Soil	7-5-12	7-6-12	
GEI-SS-2-2-0.5	07-038-32	Soil	7-5-12	7-6-12	
GEI-SS-2-3-0.5	07-038-33	Soil	7-5-12	7-6-12	
GEI-SS-2-4-0.5	07-038-34	Soil	7-5-12	7-6-12	
GEI-SS-6-1-1.5	07-038-36	Soil	7-5-12	7-6-12	
GEI-SS-6-2-0.5	07-038-38	Soil	7-5-12	7-6-12	
GEI-SS-6-3-0.5	07-038-39	Soil	7-5-12	7-6-12	
GEI-SS-6-4-0.5	07-038-40	Soil	7-5-12	7-6-12	
GEI-SS-12-1-1.5	07-038-46	Soil	7-5-12	7-6-12	
GEI-SS-12-2-0.5	07-038-48	Soil	7-5-12	7-6-12	
GEI-SS-12-3-0.5	07-038-49	Soil	7-5-12	7-6-12	
GEI-SS-12-4-0.5	07-038-50	Soil	7-5-12	7-6-12	
GEI-SS-14/15-1-0.5	07-038-51	Soil	7-5-12	7-6-12	
GEI-SS-14/15-1-1.5	07-038-52	Soil	7-5-12	7-6-12	
GEI-SS-14/15-2-1.5	07-038-54	Soil	7-5-12	7-6-12	
GEI-SS-14/15-3-1.5	07-038-55	Soil	7-5-12	7-6-12	
GEI-SS-14/15-4-1.5	07-038-56	Soil	7-5-12	7-6-12	
GEI-SS-13-1-0.5	07-038-57	Soil	7-5-12	7-6-12	
GEI-SS-13-1-1.5	07-038-58	Soil	7-5-12	7-6-12	
GEI-SS-13-2-0.5	07-038-59	Soil	7-5-12	7-6-12	
GEI-SS-13-3-0.5	07-038-60	Soil	7-5-12	7-6-12	
GEI-SS-13-4-0.5	07-038-61	Soil	7-5-12	7-6-12	

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NWTPH-Gx/BTEX

Matrix: Soil
Units: mg/kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**GEI-11-8.0**					
Laboratory ID:	07-038-03					
Benzene	**ND**	0.020	EPA 8021	7-10-12	7-10-12	
Toluene	**ND**	0.048	EPA 8021	7-10-12	7-10-12	
Ethyl Benzene	**ND**	0.048	EPA 8021	7-10-12	7-10-12	
m,p-Xylene	**ND**	0.048	EPA 8021	7-10-12	7-10-12	
o-Xylene	**ND**	0.048	EPA 8021	7-10-12	7-10-12	
Gasoline	**ND**	4.8	NWTPH-Gx	7-10-12	7-10-12	
Surrogate:	***Percent Recovery***	***Control Limits***				
Fluorobenzene	***96***	***70-132***				
Client ID:	**GEI-12-2.5**					
Laboratory ID:	07-038-04					
Benzene	**ND**	0.020	EPA 8021	7-10-12	7-10-12	
Toluene	**ND**	0.073	EPA 8021	7-10-12	7-10-12	
Ethyl Benzene	**ND**	0.073	EPA 8021	7-10-12	7-10-12	
m,p-Xylene	**ND**	0.073	EPA 8021	7-10-12	7-10-12	
o-Xylene	**ND**	0.073	EPA 8021	7-10-12	7-10-12	
Gasoline	**ND**	7.3	NWTPH-Gx	7-10-12	7-10-12	
Surrogate:	***Percent Recovery***	***Control Limits***				
Fluorobenzene	***95***	***70-132***				
Client ID:	**GEI-13-10.0**					
Laboratory ID:	07-038-10					
Benzene	**ND**	0.020	EPA 8021	7-10-12	7-10-12	
Toluene	**ND**	0.049	EPA 8021	7-10-12	7-10-12	
Ethyl Benzene	**ND**	0.049	EPA 8021	7-10-12	7-10-12	
m,p-Xylene	**ND**	0.049	EPA 8021	7-10-12	7-10-12	
o-Xylene	**ND**	0.049	EPA 8021	7-10-12	7-10-12	
Gasoline	**ND**	4.9	NWTPH-Gx	7-10-12	7-10-12	
Surrogate:	***Percent Recovery***	***Control Limits***				
Fluorobenzene	***95***	***70-132***				

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NWTPH-Gx/BTEX

Matrix: Soil
Units: mg/kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**GEI-14-5.0**					
Laboratory ID:	07-038-12					
Benzene	**ND**	0.020	EPA 8021	7-10-12	7-10-12	
Toluene	**ND**	0.041	EPA 8021	7-10-12	7-10-12	
Ethyl Benzene	**ND**	0.041	EPA 8021	7-10-12	7-10-12	
m,p-Xylene	**ND**	0.041	EPA 8021	7-10-12	7-10-12	
o-Xylene	**ND**	0.041	EPA 8021	7-10-12	7-10-12	
Gasoline	**ND**	4.1	NWTPH-Gx	7-10-12	7-10-12	
Surrogate:	***Percent Recovery***	***Control Limits***				
Fluorobenzene	***91***	***70-132***				
Client ID:	**GEI-15-10.0**					
Laboratory ID:	07-038-20					
Benzene	**ND**	0.020	EPA 8021	7-10-12	7-10-12	
Toluene	**ND**	0.051	EPA 8021	7-10-12	7-10-12	
Ethyl Benzene	**ND**	0.051	EPA 8021	7-10-12	7-10-12	
m,p-Xylene	**ND**	0.051	EPA 8021	7-10-12	7-10-12	
o-Xylene	**ND**	0.051	EPA 8021	7-10-12	7-10-12	
Gasoline	**ND**	5.1	NWTPH-Gx	7-10-12	7-10-12	
Surrogate:	***Percent Recovery***	***Control Limits***				
Fluorobenzene	***99***	***70-132***				
Client ID:	**GEI-16-5.0**					
Laboratory ID:	07-038-24					
Benzene	**ND**	0.020	EPA 8021	7-10-12	7-10-12	
Toluene	**ND**	0.044	EPA 8021	7-10-12	7-10-12	
Ethyl Benzene	**ND**	0.044	EPA 8021	7-10-12	7-10-12	
m,p-Xylene	**ND**	0.044	EPA 8021	7-10-12	7-10-12	
o-Xylene	**ND**	0.044	EPA 8021	7-10-12	7-10-12	
Gasoline	**ND**	4.4	NWTPH-Gx	7-10-12	7-10-12	
Surrogate:	***Percent Recovery***	***Control Limits***				
Fluorobenzene	***87***	***70-132***				

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NWTPH-Gx/BTEX

Matrix: Soil
Units: mg/kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**GEI-SS-COMP**					
Laboratory ID:	07-038-29					
Benzene	**ND**	0.020	EPA 8021	7-10-12	7-10-12	
Toluene	**ND**	0.045	EPA 8021	7-10-12	7-10-12	
Ethyl Benzene	**ND**	0.045	EPA 8021	7-10-12	7-10-12	
m,p-Xylene	**ND**	0.045	EPA 8021	7-10-12	7-10-12	
o-Xylene	**ND**	0.045	EPA 8021	7-10-12	7-10-12	
Gasoline	**ND**	4.5	NWTPH-Gx	7-10-12	7-10-12	
Surrogate:	***Percent Recovery***	***Control Limits***				
Fluorobenzene	***86***	***70-132***				
Client ID:	**GEI-SS-6-1-1.5**					
Laboratory ID:	07-038-36					
Gasoline	**ND**	4.8	NWTPH-Gx	7-10-12	7-10-12	
Surrogate:	***Percent Recovery***	***Control Limits***				
Fluorobenzene	***90***	***70-132***				
Client ID:	**GEI-SS-6-2-0.5**					
Laboratory ID:	07-038-38					
Gasoline	**ND**	4.6	NWTPH-Gx	7-10-12	7-10-12	
Surrogate:	***Percent Recovery***	***Control Limits***				
Fluorobenzene	***92***	***70-132***				

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NWTPH-Gx

Matrix: Soil
Units: mg/kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**GEI-SS-6-3-0.5**					
Laboratory ID:	07-038-39					
Gasoline	**ND**	4.0	NWTPH-Gx	7-10-12	7-10-12	
Surrogate:	***Percent Recovery***	***Control Limits***				
Fluorobenzene	***91***	***70-132***				
Client ID:	**GEI-SS-6-4-0.5**					
Laboratory ID:	07-038-40					
Gasoline	**ND**	5.3	NWTPH-Gx	7-10-12	7-10-12	
Surrogate:	***Percent Recovery***	***Control Limits***				
Fluorobenzene	***89***	***70-132***				

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Project: 5147-19-05

NWTPH-Dx
(with acid/silica gel clean-up)

Matrix: Soil
Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**GEI-SS-2-1-1.5**					
Laboratory ID:	07-038-30					
Diesel Range Organics	**ND**	31	NWTPH-Dx	7-13-12	7-13-12	
Lube Oil Range Organics	**ND**	62	NWTPH-Dx	7-13-12	7-13-12	
Surrogate:	***Percent Recovery***	***Control Limits***				
o-Terphenyl	***96***	***50-150***				
Client ID:	**GEI-SS-2-2-0.5**					
Laboratory ID:	07-038-32					
Diesel Range Organics	**ND**	27	NWTPH-Dx	7-13-12	7-13-12	
Lube Oil	**59**	54	NWTPH-Dx	7-13-12	7-13-12	
Surrogate:	***Percent Recovery***	***Control Limits***				
o-Terphenyl	***103***	***50-150***				
Client ID:	**GEI-SS-2-3-0.5**					
Laboratory ID:	07-038-33					
Diesel Range Organics	**ND**	30	NWTPH-Dx	7-13-12	7-13-12	
Lube Oil Range Organics	**ND**	60	NWTPH-Dx	7-13-12	7-13-12	
Surrogate:	***Percent Recovery***	***Control Limits***				
o-Terphenyl	***113***	***50-150***				
Client ID:	**GEI-SS-2-4-0.5**					
Laboratory ID:	07-038-34					
Diesel Range Organics	**ND**	28	NWTPH-Dx	7-13-12	7-13-12	
Lube Oil Range Organics	**ND**	56	NWTPH-Dx	7-13-12	7-13-12	
Surrogate:	***Percent Recovery***	***Control Limits***				
o-Terphenyl	***105***	***50-150***				
Client ID:	**GEI-SS-6-1-1.5**					
Laboratory ID:	07-038-36					
Diesel Range Organics	**ND**	28	NWTPH-Dx	7-13-12	7-13-12	
Lube Oil Range Organics	**ND**	57	NWTPH-Dx	7-13-12	7-13-12	
Surrogate:	***Percent Recovery***	***Control Limits***				
o-Terphenyl	***89***	***50-150***				
Client ID:	**GEI-SS-6-2-0.5**					
Laboratory ID:	07-038-38					
Diesel Range Organics	**ND**	27	NWTPH-Dx	7-13-12	7-13-12	
Lube Oil Range Organics	**ND**	55	NWTPH-Dx	7-13-12	7-13-12	
Surrogate:	***Percent Recovery***	***Control Limits***				
o-Terphenyl	***91***	***50-150***				

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NWTPH-Dx
(with acid/silica gel clean-up)

Matrix: Soil
Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**GEI-SS-6-3-0.5**					
Laboratory ID:	07-038-39					
Diesel Range Organics	**100**	26	NWTPH-Dx	7-13-12	7-13-12	
Lube Oil Range Organics	**ND**	51	NWTPH-Dx	7-13-12	7-13-12	
Surrogate:	***Percent Recovery***	***Control Limits***				
o-Terphenyl	***89***	***50-150***				
Client ID:	**GEI-SS-6-4-0.5**					
Laboratory ID:	07-038-40					
Diesel Range Organics	**ND**	28	NWTPH-Dx	7-13-12	7-13-12	
Lube Oil Range Organics	**ND**	57	NWTPH-Dx	7-13-12	7-13-12	
Surrogate:	***Percent Recovery***	***Control Limits***				
o-Terphenyl	***102***	***50-150***				
Client ID:	**GEI-SS-12-1-1.5**					
Laboratory ID:	07-038-46					
Diesel Range Organics	**ND**	30	NWTPH-Dx	7-13-12	7-13-12	
Lube Oil Range Organics	**ND**	61	NWTPH-Dx	7-13-12	7-13-12	
Surrogate:	***Percent Recovery***	***Control Limits***				
o-Terphenyl	***94***	***50-150***				
Client ID:	**GEI-SS-12-2-0.5**					
Laboratory ID:	07-038-48					
Diesel Range Organics	**ND**	29	NWTPH-Dx	7-13-12	7-13-12	
Lube Oil Range Organics	**ND**	57	NWTPH-Dx	7-13-12	7-13-12	
Surrogate:	***Percent Recovery***	***Control Limits***				
o-Terphenyl	***90***	***50-150***				
Client ID:	**GEI-SS-12-3-0.5**					
Laboratory ID:	07-038-49					
Diesel Range Organics	**ND**	28	NWTPH-Dx	7-13-12	7-13-12	
Lube Oil	**69**	55	NWTPH-Dx	7-13-12	7-13-12	
Surrogate:	***Percent Recovery***	***Control Limits***				
o-Terphenyl	***98***	***50-150***				
Client ID:	**GEI-SS-12-4-0.5**					
Laboratory ID:	07-038-50					
Diesel Range Organics	**68**	28	NWTPH-Dx	7-13-12	7-13-12	
Lube Oil	**330**	56	NWTPH-Dx	7-13-12	7-13-12	
Surrogate:	***Percent Recovery***	***Control Limits***				
o-Terphenyl	***88***	***50-150***				

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NWTPH-Dx
(with acid/silica gel clean-up)

Matrix: Soil
Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**GEI-SS-14/15-1-1.5**					
Laboratory ID:	07-038-52					
Diesel Range Organics	**ND**	30	NWTPH-Dx	7-13-12	7-13-12	
Lube Oil Range Organics	**ND**	61	NWTPH-Dx	7-13-12	7-13-12	
Surrogate:	***Percent Recovery***	***Control Limits***				
o-Terphenyl	***89***	***50-150***				
Client ID:	**GEI-SS-14/15-2-0.5**					
Laboratory ID:	07-038-54					
Diesel Range Organics	**ND**	27	NWTPH-Dx	7-13-12	7-13-12	
Lube Oil Range Organics	**ND**	55	NWTPH-Dx	7-13-12	7-13-12	
Surrogate:	***Percent Recovery***	***Control Limits***				
o-Terphenyl	***93***	***50-150***				
Client ID:	**GEI-SS-14/15-3-0.5**					
Laboratory ID:	07-038-55					
Diesel Range Organics	**ND**	30	NWTPH-Dx	7-13-12	7-13-12	
Lube Oil	**63**	59	NWTPH-Dx	7-13-12	7-13-12	
Surrogate:	***Percent Recovery***	***Control Limits***				
o-Terphenyl	***92***	***50-150***				
Client ID:	**GEI-SS-14/15-4-0.5**					
Laboratory ID:	07-038-56					
Diesel Range Organics	**ND**	27	NWTPH-Dx	7-13-12	7-13-12	
Lube Oil	**150**	54	NWTPH-Dx	7-13-12	7-13-12	
Surrogate:	***Percent Recovery***	***Control Limits***				
o-Terphenyl	***96***	***50-150***				

Date of Report: July 18, 2012
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ORGANOCHLORINE PESTICIDES by EPA 8081A

Matrix: Soil
Units: ug/Kg (ppb)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**GEI-SS-COMP**					
Laboratory ID:	07-038-29					
alpha-BHC	**ND**	5.6	EPA 8081	7-13-12	7-13-12	
gamma-BHC	**ND**	5.6	EPA 8081	7-13-12	7-13-12	
beta-BHC	**ND**	5.6	EPA 8081	7-13-12	7-13-12	
delta-BHC	**ND**	5.6	EPA 8081	7-13-12	7-13-12	
Heptachlor	**ND**	5.6	EPA 8081	7-13-12	7-13-12	
Aldrin	**ND**	5.6	EPA 8081	7-13-12	7-13-12	
Heptachlor Epoxide	**ND**	5.6	EPA 8081	7-13-12	7-13-12	
gamma-Chlordane	**ND**	11	EPA 8081	7-13-12	7-13-12	
alpha-Chlordane	**ND**	11	EPA 8081	7-13-12	7-13-12	
4,4'-DDE	**ND**	11	EPA 8081	7-13-12	7-13-12	
Endosulfan I	**ND**	5.6	EPA 8081	7-13-12	7-13-12	
Dieldrin	**ND**	11	EPA 8081	7-13-12	7-13-12	
Endrin	**ND**	11	EPA 8081	7-13-12	7-13-12	
4,4'-DDD	**ND**	11	EPA 8081	7-13-12	7-13-12	
Endosulfan II	**ND**	11	EPA 8081	7-13-12	7-13-12	
4,4'-DDT	**ND**	11	EPA 8081	7-13-12	7-13-12	
Endrin Aldehyde	**ND**	11	EPA 8081	7-13-12	7-13-12	
Methoxychlor	**ND**	11	EPA 8081	7-13-12	7-13-12	
Endosulfan Sulfate	**ND**	11	EPA 8081	7-13-12	7-13-12	
Endrin Ketone	**ND**	11	EPA 8081	7-13-12	7-13-12	
Toxaphene	**ND**	56	EPA 8081	7-13-12	7-13-12	
Surrogate:	***Percent Recovery***	***Control Limits***				
TCMX	***82***	***43-105***				
DCB	***75***	***43-121***				

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ORGANOCHLORINE PESTICIDES by EPA 8081A

Matrix: Soil
Units: ug/Kg (ppb)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**GEI-SS-13-1-1.5**					
Laboratory ID:	07-038-58					
alpha-BHC	**ND**	6.1	EPA 8081	7-13-12	7-13-12	
gamma-BHC	**ND**	6.1	EPA 8081	7-13-12	7-13-12	
beta-BHC	**ND**	6.1	EPA 8081	7-13-12	7-13-12	
delta-BHC	**ND**	6.1	EPA 8081	7-13-12	7-13-12	
Heptachlor	**ND**	6.1	EPA 8081	7-13-12	7-13-12	
Aldrin	**ND**	6.1	EPA 8081	7-13-12	7-13-12	
Heptachlor Epoxide	**ND**	6.1	EPA 8081	7-13-12	7-13-12	
gamma-Chlordane	**ND**	12	EPA 8081	7-13-12	7-13-12	
alpha-Chlordane	**ND**	12	EPA 8081	7-13-12	7-13-12	
4,4'-DDE	**ND**	12	EPA 8081	7-13-12	7-13-12	
Endosulfan I	**ND**	6.1	EPA 8081	7-13-12	7-13-12	
Dieldrin	**ND**	12	EPA 8081	7-13-12	7-13-12	
Endrin	**ND**	12	EPA 8081	7-13-12	7-13-12	
4,4'-DDD	**ND**	12	EPA 8081	7-13-12	7-13-12	
Endosulfan II	**ND**	12	EPA 8081	7-13-12	7-13-12	
4,4'-DDT	**ND**	12	EPA 8081	7-13-12	7-13-12	
Endrin Aldehyde	**ND**	12	EPA 8081	7-13-12	7-13-12	
Methoxychlor	**ND**	12	EPA 8081	7-13-12	7-13-12	
Endosulfan Sulfate	**ND**	12	EPA 8081	7-13-12	7-13-12	
Endrin Ketone	**ND**	12	EPA 8081	7-13-12	7-13-12	
Toxaphene	**ND**	61	EPA 8081	7-13-12	7-13-12	
Surrogate:	***Percent Recovery***	***Control Limits***				
TCMX	***75***	***43-105***				
DCB	***74***	***43-121***				

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ORGANOCHLORINE PESTICIDES by EPA 8081A

Matrix: Soil
Units: ug/Kg (ppb)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**GEI-SS-13-2-0.5**					
Laboratory ID:	07-038-59					
alpha-BHC	**ND**	7.4	EPA 8081	7-13-12	7-13-12	
gamma-BHC	**ND**	7.4	EPA 8081	7-13-12	7-13-12	
beta-BHC	**ND**	7.4	EPA 8081	7-13-12	7-13-12	
delta-BHC	**ND**	7.4	EPA 8081	7-13-12	7-13-12	
Heptachlor	**ND**	7.4	EPA 8081	7-13-12	7-13-12	
Aldrin	**ND**	7.4	EPA 8081	7-13-12	7-13-12	
Heptachlor Epoxide	**ND**	7.4	EPA 8081	7-13-12	7-13-12	
gamma-Chlordane	**ND**	15	EPA 8081	7-13-12	7-13-12	
alpha-Chlordane	**ND**	15	EPA 8081	7-13-12	7-13-12	
4,4'-DDE	**ND**	15	EPA 8081	7-13-12	7-13-12	
Endosulfan I	**ND**	7.4	EPA 8081	7-13-12	7-13-12	
Dieldrin	**ND**	15	EPA 8081	7-13-12	7-13-12	
Endrin	**ND**	15	EPA 8081	7-13-12	7-13-12	
4,4'-DDD	**ND**	15	EPA 8081	7-13-12	7-13-12	
Endosulfan II	**ND**	15	EPA 8081	7-13-12	7-13-12	
4,4'-DDT	**ND**	15	EPA 8081	7-13-12	7-13-12	
Endrin Aldehyde	**ND**	15	EPA 8081	7-13-12	7-13-12	
Methoxychlor	**ND**	15	EPA 8081	7-13-12	7-13-12	
Endosulfan Sulfate	**ND**	15	EPA 8081	7-13-12	7-13-12	
Endrin Ketone	**ND**	15	EPA 8081	7-13-12	7-13-12	
Toxaphene	**ND**	74	EPA 8081	7-13-12	7-13-12	
Surrogate:	***Percent Recovery***	***Control Limits***				
TCMX	***65***	***43-105***				
DCB	***68***	***43-121***				

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ORGANOCHLORINE PESTICIDES by EPA 8081A

Matrix: Soil
Units: ug/Kg (ppb)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**GEI-SS-13-3-0.5**					
Laboratory ID:	07-038-60					
alpha-BHC	**ND**	6.9	EPA 8081	7-13-12	7-13-12	
gamma-BHC	**ND**	6.9	EPA 8081	7-13-12	7-13-12	
beta-BHC	**ND**	6.9	EPA 8081	7-13-12	7-13-12	
delta-BHC	**ND**	6.9	EPA 8081	7-13-12	7-13-12	
Heptachlor	**ND**	6.9	EPA 8081	7-13-12	7-13-12	
Aldrin	**ND**	6.9	EPA 8081	7-13-12	7-13-12	
Heptachlor Epoxide	**ND**	6.9	EPA 8081	7-13-12	7-13-12	
gamma-Chlordane	**ND**	14	EPA 8081	7-13-12	7-13-12	
alpha-Chlordane	**ND**	14	EPA 8081	7-13-12	7-13-12	
4,4'-DDE	**ND**	14	EPA 8081	7-13-12	7-13-12	
Endosulfan I	**ND**	6.9	EPA 8081	7-13-12	7-13-12	
Dieldrin	**ND**	14	EPA 8081	7-13-12	7-13-12	
Endrin	**ND**	14	EPA 8081	7-13-12	7-13-12	
4,4'-DDD	**ND**	14	EPA 8081	7-13-12	7-13-12	
Endosulfan II	**ND**	14	EPA 8081	7-13-12	7-13-12	
4,4'-DDT	**ND**	14	EPA 8081	7-13-12	7-13-12	
Endrin Aldehyde	**ND**	14	EPA 8081	7-13-12	7-13-12	
Methoxychlor	**ND**	14	EPA 8081	7-13-12	7-13-12	
Endosulfan Sulfate	**ND**	14	EPA 8081	7-13-12	7-13-12	
Endrin Ketone	**ND**	14	EPA 8081	7-13-12	7-13-12	
Toxaphene	**ND**	69	EPA 8081	7-13-12	7-13-12	
Surrogate:	***Percent Recovery***	***Control Limits***				
TCMX	***72***	***43-105***				
DCB	***72***	***43-121***				

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ORGANOCHLORINE PESTICIDES by EPA 8081A

Matrix: Soil
Units: ug/Kg (ppb)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**GEI-SS-13-4-0.5**					
Laboratory ID:	07-038-61					
alpha-BHC	**ND**	6.2	EPA 8081	7-13-12	7-13-12	
gamma-BHC	**ND**	6.2	EPA 8081	7-13-12	7-13-12	
beta-BHC	**ND**	6.2	EPA 8081	7-13-12	7-13-12	
delta-BHC	**ND**	6.2	EPA 8081	7-13-12	7-13-12	
Heptachlor	**ND**	6.2	EPA 8081	7-13-12	7-13-12	
Aldrin	**ND**	6.2	EPA 8081	7-13-12	7-13-12	
Heptachlor Epoxide	**ND**	6.2	EPA 8081	7-13-12	7-13-12	
gamma-Chlordane	**ND**	12	EPA 8081	7-13-12	7-13-12	
alpha-Chlordane	**ND**	12	EPA 8081	7-13-12	7-13-12	
4,4'-DDE	**ND**	12	EPA 8081	7-13-12	7-13-12	
Endosulfan I	**ND**	6.2	EPA 8081	7-13-12	7-13-12	
Dieldrin	**ND**	12	EPA 8081	7-13-12	7-13-12	
Endrin	**ND**	12	EPA 8081	7-13-12	7-13-12	
4,4'-DDD	**ND**	12	EPA 8081	7-13-12	7-13-12	
Endosulfan II	**ND**	12	EPA 8081	7-13-12	7-13-12	
4,4'-DDT	**ND**	12	EPA 8081	7-13-12	7-13-12	
Endrin Aldehyde	**ND**	12	EPA 8081	7-13-12	7-13-12	
Methoxychlor	**ND**	12	EPA 8081	7-13-12	7-13-12	
Endosulfan Sulfate	**ND**	12	EPA 8081	7-13-12	7-13-12	
Endrin Ketone	**ND**	12	EPA 8081	7-13-12	7-13-12	
Toxaphene	**ND**	62	EPA 8081	7-13-12	7-13-12	
Surrogate:	***Percent Recovery***	***Control Limits***				
TCMX	***74***	***43-105***				
DCB	***73***	***43-121***				

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TOTAL METALS
EPA 6010B/7471A

Matrix: Soil
Units: mg/kg (ppm)

Analyte	Result	PQL	EPA Method	Date Prepared	Date Analyzed	Flags
Lab ID:	07-038-03					
Client ID:	**GEI-11-8.0**					
Arsenic	**ND**	11	6010B	7-16-12	7-17-12	
Barium	**69**	2.8	6010B	7-16-12	7-17-12	
Cadmium	**ND**	0.57	6010B	7-16-12	7-17-12	
Chromium	**44**	0.57	6010B	7-16-12	7-17-12	
Lead	**ND**	5.7	6010B	7-16-12	7-17-12	
Mercury	**ND**	0.28	7471A	7-16-12	7-16-12	
Selenium	**ND**	11	6010B	7-16-12	7-17-12	
Silver	**ND**	0.57	6010B	7-16-12	7-17-12	
Lab ID:	07-038-04					
Client ID:	**GEI-12-2.5**					
Arsenic	**ND**	12	6010B	7-16-12	7-17-12	
Barium	**58**	3.1	6010B	7-16-12	7-17-12	
Cadmium	**ND**	0.61	6010B	7-16-12	7-17-12	
Chromium	**37**	0.61	6010B	7-16-12	7-17-12	
Lead	**ND**	6.1	6010B	7-16-12	7-17-12	
Mercury	**ND**	0.31	7471A	7-16-12	7-16-12	
Selenium	**ND**	12	6010B	7-16-12	7-17-12	
Silver	**ND**	0.61	6010B	7-16-12	7-17-12	

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TOTAL METALS
EPA 6010B/7471A

Matrix: Soil
Units: mg/kg (ppm)

Analyte	Result	PQL	EPA Method	Date Prepared	Date Analyzed	Flags
Lab ID:	07-038-10					
Client ID:	**GEI-13-10.0**					
Arsenic	**ND**	12	6010B	7-16-12	7-17-12	
Barium	**60**	2.9	6010B	7-16-12	7-17-12	
Cadmium	**ND**	0.58	6010B	7-16-12	7-17-12	
Chromium	**85**	0.58	6010B	7-16-12	7-17-12	
Lead	**ND**	5.8	6010B	7-16-12	7-17-12	
Mercury	**ND**	0.29	7471A	7-16-12	7-16-12	
Selenium	**ND**	12	6010B	7-16-12	7-17-12	
Silver	**ND**	0.58	6010B	7-16-12	7-17-12	
Lab ID:	07-038-12					
Client ID:	**GEI-14-5.0**					
Arsenic	**ND**	11	6010B	7-16-12	7-17-12	
Barium	**59**	2.7	6010B	7-16-12	7-17-12	
Cadmium	**ND**	0.55	6010B	7-16-12	7-17-12	
Chromium	**35**	0.55	6010B	7-16-12	7-17-12	
Lead	**ND**	5.5	6010B	7-16-12	7-17-12	
Mercury	**ND**	0.27	7471A	7-16-12	7-16-12	
Selenium	**ND**	11	6010B	7-16-12	7-17-12	
Silver	**ND**	0.55	6010B	7-16-12	7-17-12	

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TOTAL METALS
EPA 6010B/7471A

Matrix: Soil
Units: mg/kg (ppm)

Analyte	Result	PQL	EPA Method	Date Prepared	Date Analyzed	Flags
Lab ID:	07-038-20					
Client ID:	**GEI-15-10.0**					
Arsenic	**ND**	12	6010B	7-16-12	7-17-12	
Barium	**75**	2.9	6010B	7-16-12	7-17-12	
Cadmium	**ND**	0.59	6010B	7-16-12	7-17-12	
Chromium	**43**	0.59	6010B	7-16-12	7-17-12	
Lead	**ND**	5.9	6010B	7-16-12	7-17-12	
Mercury	**ND**	0.29	7471A	7-16-12	7-16-12	
Selenium	**ND**	12	6010B	7-16-12	7-17-12	
Silver	**ND**	0.59	6010B	7-16-12	7-17-12	
Lab ID:	07-038-24					
Client ID:	**GEI-16-5.0**					
Arsenic	**ND**	11	6010B	7-16-12	7-17-12	
Barium	**52**	2.7	6010B	7-16-12	7-17-12	
Cadmium	**ND**	0.55	6010B	7-16-12	7-17-12	
Chromium	**32**	0.55	6010B	7-16-12	7-17-12	
Lead	**ND**	5.5	6010B	7-16-12	7-17-12	
Mercury	**ND**	0.27	7471A	7-16-12	7-16-12	
Selenium	**ND**	11	6010B	7-16-12	7-17-12	
Silver	**ND**	0.55	6010B	7-16-12	7-17-12	

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TOTAL METALS
EPA 6010B/7471A

Matrix: Soil
Units: mg/kg (ppm)

Analyte	Result	PQL	EPA Method	Date Prepared	Date Analyzed	Flags
Lab ID:	07-038-29					
Client ID:	**GEI-SS-COMP**					
Arsenic	**56**	11	6010B	7-16-12	7-17-12	
Cadmium	**0.73**	0.56	6010B	7-16-12	7-17-12	
Chromium	**70**	0.56	6010B	7-16-12	7-17-12	
Copper	**390**	1.1	6010B	7-16-12	7-17-12	
Lead	**93**	5.6	6010B	7-16-12	7-17-12	
Mercury	**ND**	0.28	7471A	7-16-12	7-16-12	
Lab ID:	07-038-41					
Client ID:	**GEI-SS9-1-1.5**					
Arsenic	**ND**	12	6010B	7-16-12	7-17-12	
Copper	**31**	1.2	6010B	7-16-12	7-17-12	
Lab ID:	07-038-43					
Client ID:	**GEI-SS-9-2-0.5**					
Arsenic	**ND**	12	6010B	7-16-12	7-17-12	
Copper	**56**	1.2	6010B	7-16-12	7-17-12	

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TOTAL METALS
EPA 6010B/7471A

Matrix: Soil
Units: mg/kg (ppm)

Analyte	Result	PQL	EPA Method	Date Prepared	Date Analyzed	Flags
Lab ID:	07-038-44					
Client ID:	**GEI-SS-9-3-0.5**					
Arsenic	**ND**	11	6010B	7-16-12	7-17-12	
Copper	**200**	1.1	6010B	7-16-12	7-17-12	
Lab ID:	07-038-45					
Client ID:	**GEI-SS-6-4-0.5**					
Arsenic	**ND**	12	6010B	7-16-12	7-17-12	
Copper	**78**	1.2	6010B	7-16-12	7-17-12	
Lab ID:	07-038-52					
Client ID:	**GEI-SS-14/15-1-1.5**					
Cadmium	**ND**	0.61	6010B	7-16-12	7-17-12	
Lead	**9.2**	6.1	6010B	7-16-12	7-17-12	
Mercury	**ND**	0.3	7471A	7-16-12	7-16-12	

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TOTAL METALS
EPA 6010B/7471A

Matrix: Soil
Units: mg/kg (ppm)

Analyte	Result	PQL	EPA Method	Date Prepared	Date Analyzed	Flags
Lab ID:	07-038-54					
Client ID:	**GEI-SS-14/15-2-0.5**					
Cadmium	**ND**	0.55	6010B	7-16-12	7-17-12	
Lead	**ND**	5.5	6010B	7-16-12	7-17-12	
Mercury	**ND**	0.27	7471A	7-16-12	7-16-12	
Lab ID:	07-038-55					
Client ID:	**GEI-SS-14/15-3-0.5**					
Cadmium	**ND**	0.59	6010B	7-16-12	7-17-12	
Lead	**110**	5.9	6010B	7-16-12	7-17-12	
Mercury	**0.92**	0.30	7471A	7-16-12	7-16-12	
Lab ID:	07-038-56					
Client ID:	**GEI-SS-14/15-4-0.5**					
Cadmium	**0.91**	0.54	6010B	7-16-12	7-17-12	
Lead	**200**	5.4	6010B	7-16-12	7-17-12	
Mercury	**0.48**	0.27	7471A	7-16-12	7-16-12	
Lab ID:	07-038-58					
Client ID:	**GEI-SS-13-1-1.5**					
Cadmium	**ND**	0.61	6010B	7-16-12	7-17-12	
Lead	**ND**	6.1	6010B	7-16-12	7-17-12	
Mercury	**ND**	0.31	7471A	7-16-12	7-16-12	
Lab ID:	07-038-59					
Client ID:	**GEI-SS-13-2-0.5**					
Cadmium	**ND**	0.74	6010B	7-16-12	7-17-12	
Lead	**81**	7.4	6010B	7-16-12	7-17-12	
Mercury	**1.2**	0.37	7471A	7-16-12	7-16-12	

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TOTAL METALS
EPA 6010B/7471A

Matrix: Soil
Units: mg/kg (ppm)

Analyte	Result	PQL	EPA Method	Date Prepared	Date Analyzed	Flags
Lab ID:	07-038-60					
Client ID:	**GEI-SS-13-3-0.5**					
Cadmium	**ND**	0.69	6010B	7-16-12	7-17-12	
Lead	**95**	6.9	6010B	7-16-12	7-17-12	
Mercury	**ND**	0.34	7471A	7-16-12	7-16-12	
Lab ID:	07-038-61					
Client ID:	**GEI-SS-13-4-0.5**					
Cadmium	**ND**	0.62	6010B	7-16-12	7-17-12	
Lead	**ND**	6.2	6010B	7-16-12	7-17-12	
Mercury	**ND**	0.31	7471A	7-16-12	7-16-12	

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TCLP METALS
EPA 1311/6010B/7470A

Matrix: TCLP Extract
Units: mg/L (ppm)

Analyte	Result	PQL	EPA Method	Date Prepared	Date Analyzed	Flags
Lab ID:	07-038-03					
Client ID:	**GEI-11-8.0**					
Arsenic	**ND**	0.40	6010B	7-10-12	7-10-12	
Barium	**0.21**	0.20	6010B	7-10-12	7-10-12	
Cadmium	**ND**	0.020	6010B	7-10-12	7-10-12	
Chromium	**ND**	0.020	6010B	7-10-12	7-10-12	
Lead	**ND**	0.20	6010B	7-10-12	7-10-12	
Mercury	**ND**	0.0050	7470A	7-10-12	7-10-12	
Selenium	**ND**	0.40	6010B	7-10-12	7-10-12	
Silver	**ND**	0.020	6010B	7-10-12	7-10-12	
Lab ID:	07-038-04					
Client ID:	**GEI-12-2.5**					
Arsenic	**ND**	0.40	6010B	7-10-12	7-10-12	
Barium	**0.45**	0.20	6010B	7-10-12	7-10-12	
Cadmium	**ND**	0.020	6010B	7-10-12	7-10-12	
Chromium	**ND**	0.020	6010B	7-10-12	7-10-12	
Lead	**ND**	0.20	6010B	7-10-12	7-10-12	
Mercury	**ND**	0.0050	7470A	7-10-12	7-10-12	
Selenium	**ND**	0.40	6010B	7-10-12	7-10-12	
Silver	**ND**	0.020	6010B	7-10-12	7-10-12	

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TCLP METALS
EPA 1311/6010B/7470A

Matrix: TCLP Extract
Units: mg/L (ppm)

Analyte	Result	PQL	EPA Method	Date Prepared	Date Analyzed	Flags
Lab ID:	07-038-10					
Client ID:	**GEI-13-10.0**					
Arsenic	**ND**	0.40	6010B	7-10-12	7-10-12	
Barium	**ND**	0.20	6010B	7-10-12	7-10-12	
Cadmium	**ND**	0.020	6010B	7-10-12	7-10-12	
Chromium	**ND**	0.020	6010B	7-10-12	7-10-12	
Lead	**ND**	0.20	6010B	7-10-12	7-10-12	
Mercury	**ND**	0.0050	7470A	7-10-12	7-10-12	
Selenium	**ND**	0.40	6010B	7-10-12	7-10-12	
Silver	**ND**	0.020	6010B	7-10-12	7-10-12	
Lab ID:	07-038-12					
Client ID:	**GEI-14-5.0**					
Arsenic	**ND**	0.40	6010B	7-10-12	7-10-12	
Barium	**0.59**	0.20	6010B	7-10-12	7-10-12	
Cadmium	**ND**	0.020	6010B	7-10-12	7-10-12	
Chromium	**ND**	0.020	6010B	7-10-12	7-10-12	
Lead	**ND**	0.20	6010B	7-10-12	7-10-12	
Mercury	**ND**	0.0050	7470A	7-10-12	7-10-12	
Selenium	**ND**	0.40	6010B	7-10-12	7-10-12	
Silver	**ND**	0.020	6010B	7-10-12	7-10-12	

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TCLP METALS
EPA 1311/6010B/7470A

Matrix: TCLP Extract
Units: mg/L (ppm)

Analyte	Result	PQL	EPA Method	Date Prepared	Date Analyzed	Flags
Lab ID:	07-038-20					
Client ID:	**GEI-15-10.0**					
Arsenic	**ND**	0.40	6010B	7-10-12	7-10-12	
Barium	**0.26**	0.20	6010B	7-10-12	7-10-12	
Cadmium	**ND**	0.020	6010B	7-10-12	7-10-12	
Chromium	**ND**	0.020	6010B	7-10-12	7-10-12	
Lead	**ND**	0.20	6010B	7-10-12	7-10-12	
Mercury	**ND**	0.0050	7470A	7-10-12	7-10-12	
Selenium	**ND**	0.40	6010B	7-10-12	7-10-12	
Silver	**ND**	0.020	6010B	7-10-12	7-10-12	
Lab ID:	07-038-24					
Client ID:	**GEI-16-5.0**					
Arsenic	**ND**	0.40	6010B	7-10-12	7-10-12	
Barium	**0.43**	0.20	6010B	7-10-12	7-10-12	
Cadmium	**ND**	0.020	6010B	7-10-12	7-10-12	
Chromium	**ND**	0.020	6010B	7-10-12	7-10-12	
Lead	**ND**	0.20	6010B	7-10-12	7-10-12	
Mercury	**ND**	0.0050	7470A	7-10-12	7-10-12	
Selenium	**ND**	0.40	6010B	7-10-12	7-10-12	
Silver	**ND**	0.020	6010B	7-10-12	7-10-12	

Date of Report: July 18, 2012
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TCLP LEAD
EPA 1311/6010B

Matrix: TCLP Extract
Units: mg/L (ppm)

Analyte	Result	PQL	EPA Method	Date Prepared	Date Analyzed	Flags
Lab ID:	07-038-51					
Client ID:	**GEI-SS-14/15-1-0.5**					
Lead	**ND**	0.20	6010B	7-10-12	7-10-12	
Lab ID:	07-038-57					
Client ID:	**GEI-SS-13-1-0.5**					
Lead	**ND**	0.20	6010B	7-10-12	7-10-12	

Date of Report: July 18, 2012
Samples Submitted: July 6, 2012
Laboratory Reference: 1207-038
Project: 5147-19-05

TOTAL ORGANIC CARBON
EPA 9060

Matrix: Soil
Units: % Carbon

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**GEI-COMP-1**					
Laboratory ID:	07-038-28					
Total Organic Carbon	**0.055**	0.040	9060	7-10-12	7-10-12	

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Laboratory Reference: 1207-038
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TOTAL METALS
EPA 6010B/7471A

Matrix: Soil
Units: mg/kg (ppm)

Analyte	Result	PQL	EPA Method	Date Prepared	Date Analyzed	Flags
Lab ID:	07-038-28					
Client ID:	**GEI-COMP-1**					
Arsenic	**ND**	12	6010B	7-16-12	7-17-12	
Cadmium	**ND**	0.60	6010B	7-16-12	7-17-12	
Chromium	**74**	0.60	6010B	7-16-12	7-17-12	
Copper	**28**	1.2	6010B	7-16-12	7-17-12	
Lead	**ND**	6.0	6010B	7-16-12	7-17-12	
Mercury	**ND**	0.30	7471A	7-16-12	7-16-12	
Silver	**ND**	0.60	6010B	7-16-12	7-17-12	
Zinc	**47**	3.0	6010B	7-16-12	7-17-12	

Date of Report: July 18, 2012
Samples Submitted: July 6, 2012
Laboratory Reference: 1207-038
Project: 5147-19-05

SEMIVOLATILES by EPA 8270D/SIM

Matrix: Soil
Units: mg/Kg

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**GEI-COMP-1**					
Laboratory ID:	07-038-28					
Phenol	**ND**	0.024	EPA 8270	7-11-12	7-13-12	
1,4-Dichlorobenzene	**ND**	0.024	EPA 8270	7-11-12	7-13-12	
Benzyl alcohol	**ND**	0.024	EPA 8270	7-11-12	7-13-12	
1,2-Dichlorobenzene	**ND**	0.024	EPA 8270	7-11-12	7-13-12	
2-Methylphenol (o-Cresol)	**ND**	0.024	EPA 8270	7-11-12	7-13-12	
(3+4)-Methylphenol (m,p-Cresol)	**ND**	0.024	EPA 8270	7-11-12	7-13-12	
2,4-Dimethylphenol	**ND**	0.024	EPA 8270	7-11-12	7-13-12	
1,2,4-Trichlorobenzene	**ND**	0.024	EPA 8270	7-11-12	7-13-12	
Naphthalene	**ND**	0.0048	EPA 8270/SIM	7-11-12	7-12-12	
Hexachlorobutadiene	**ND**	0.024	EPA 8270	7-11-12	7-13-12	
2-Methylnaphthalene	**ND**	0.0048	EPA 8270/SIM	7-11-12	7-12-12	
Dimethylphthalate	**ND**	0.024	EPA 8270	7-11-12	7-13-12	
Acenaphthylene	**ND**	0.0048	EPA 8270/SIM	7-11-12	7-12-12	
Acenaphthene	**ND**	0.0048	EPA 8270/SIM	7-11-12	7-12-12	
Dibenzofuran	**ND**	0.024	EPA 8270	7-11-12	7-13-12	
Diethylphthalate	**ND**	0.024	EPA 8270	7-11-12	7-13-12	
Fluorene	**ND**	0.0048	EPA 8270/SIM	7-11-12	7-12-12	
n-Nitrosodiphenylamine	**ND**	0.024	EPA 8270	7-11-12	7-13-12	
Hexachlorobenzene	**ND**	0.024	EPA 8270	7-11-12	7-13-12	
Pentachlorophenol	**ND**	0.024	EPA 8270	7-11-12	7-13-12	
Phenanthrene	**ND**	0.0048	EPA 8270/SIM	7-11-12	7-12-12	
Anthracene	**ND**	0.0048	EPA 8270/SIM	7-11-12	7-12-12	
Di-n-butylphthalate	**ND**	0.024	EPA 8270	7-11-12	7-13-12	
Fluoranthene	**ND**	0.0048	EPA 8270/SIM	7-11-12	7-12-12	
Pyrene	**ND**	0.0048	EPA 8270/SIM	7-11-12	7-12-12	
Butylbenzylphthalate	**ND**	0.024	EPA 8270	7-11-12	7-13-12	
bis-2-Ethylhexyladipate	**ND**	0.024	EPA 8270	7-11-12	7-13-12	
Benzo[a]anthracene	**ND**	0.0048	EPA 8270/SIM	7-11-12	7-12-12	
Chrysene	**ND**	0.0048	EPA 8270/SIM	7-11-12	7-12-12	
Di-n-octylphthalate	**ND**	0.024	EPA 8270	7-11-12	7-13-12	
Benzo[a]pyrene	**ND**	0.0048	EPA 8270/SIM	7-11-12	7-12-12	
Indeno[1,2,3-cd]pyrene	**ND**	0.0048	EPA 8270/SIM	7-11-12	7-12-12	
Dibenz[a,h]anthracene	**ND**	0.0048	EPA 8270/SIM	7-11-12	7-12-12	
Benzo[g,h,i]perylene	**ND**	0.0048	EPA 8270/SIM	7-11-12	7-12-12	
Benzoic Acid	**ND**	0.12	EPA 8270	7-11-12	7-13-12	
Surrogate:	***Percent Recovery***	***Control Limits***				
2-Fluorophenol	***62***	***24 - 95***				
Phenol-d6	***65***	***34 - 101***				
Nitrobenzene-d5	***60***	***32 - 102***				
2-Fluorobiphenyl	***68***	***44 - 104***				
2,4,6-Tribromophenol	***69***	***34 - 124***				
Terphenyl-d14	***77***	***47 - 114***				

Date of Report: July 18, 2012
Samples Submitted: July 6, 2012
Laboratory Reference: 1207-038
Project: 5147-19-05

PCBs by EPA 8082

Matrix: Soil
Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**GEI-COMP-1**					
Laboratory ID:	07-038-28					
Aroclor 1016	**ND**	0.060	EPA 8082	7-12-12	7-12-12	
Aroclor 1221	**ND**	0.060	EPA 8082	7-12-12	7-12-12	
Aroclor 1232	**ND**	0.060	EPA 8082	7-12-12	7-12-12	
Aroclor 1242	**ND**	0.060	EPA 8082	7-12-12	7-12-12	
Aroclor 1248	**ND**	0.060	EPA 8082	7-12-12	7-12-12	
Aroclor 1254	**ND**	0.060	EPA 8082	7-12-12	7-12-12	
Aroclor 1260	**ND**	0.060	EPA 8082	7-12-12	7-12-12	
Surrogate:	***Percent Recovery***	***Control Limits***				
DCB	***81***	***47-120***				

Date of Report: July 18, 2012
Samples Submitted: July 6, 2012
Laboratory Reference: 1207-038
Project: 5147-19-05

NWTPH-Gx/BTEX
METHOD BLANK QUALITY CONTROL

Matrix: Soil
Units: mg/kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Laboratory ID:	MB0710S1					
Benzene	**ND**	0.020	EPA 8021	7-10-12	7-10-12	
Toluene	**ND**	0.050	EPA 8021	7-10-12	7-10-12	
Ethyl Benzene	**ND**	0.050	EPA 8021	7-10-12	7-10-12	
m,p-Xylene	**ND**	0.050	EPA 8021	7-10-12	7-10-12	
o-Xylene	**ND**	0.050	EPA 8021	7-10-12	7-10-12	
Gasoline	**ND**	5.0	NWTPH-Gx	7-10-12	7-10-12	
Surrogate:	***Percent Recovery***	***Control Limits***				
Fluorobenzene	***89***	***70-132***				
Laboratory ID:	MB0710S2					
Benzene	**ND**	0.020	EPA 8021	7-10-12	7-11-12	
Toluene	**ND**	0.050	EPA 8021	7-10-12	7-11-12	
Ethyl Benzene	**ND**	0.050	EPA 8021	7-10-12	7-11-12	
m,p-Xylene	**ND**	0.050	EPA 8021	7-10-12	7-11-12	
o-Xylene	**ND**	0.050	EPA 8021	7-10-12	7-11-12	
Gasoline	**ND**	5.0	NWTPH-Gx	7-10-12	7-11-12	
Surrogate:	***Percent Recovery***	***Control Limits***				
Fluorobenzene	***87***	***70-132***				

Date of Report: July 18, 2012
Samples Submitted: July 6, 2012
Laboratory Reference: 1207-038
Project: 5147-19-05

NWTPH-Gx/BTEX
QUALITY CONTROL

Matrix: Soil
Units: mg/kg (ppm)

Analyte	Result		Spike Level		Source Result	Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE											
Laboratory ID:	07-038-29										
	ORIG	DUP									
Benzene	**ND**	**ND**	NA	NA		NA		NA	NA	30	
Toluene	**ND**	**ND**	NA	NA		NA		NA	NA	30	
Ethyl Benzene	**ND**	**ND**	NA	NA		NA		NA	NA	30	
m,p-Xylene	**ND**	**ND**	NA	NA		NA		NA	NA	30	
o-Xylene	**ND**	**ND**	NA	NA		NA		NA	NA	30	
Gasoline	**ND**	**ND**	NA	NA		NA		NA	NA	30	
Surrogate:											
Fluorobenzene						***86***	***92***	***70-132***			
Laboratory ID:	07-038-36										
	ORIG	DUP									
Benzene	**ND**	**ND**	NA	NA		NA		NA	NA	30	
Toluene	**ND**	**ND**	NA	NA		NA		NA	NA	30	
Ethyl Benzene	**ND**	**ND**	NA	NA		NA		NA	NA	30	
m,p-Xylene	**ND**	**ND**	NA	NA		NA		NA	NA	30	
o-Xylene	**ND**	**ND**	NA	NA		NA		NA	NA	30	
Gasoline	**ND**	**ND**	NA	NA		NA		NA	NA	30	
Surrogate:											
Fluorobenzene						***90***	***90***	***70-132***			
SPIKE BLANKS											
Laboratory ID:	SB0710S1										
	SB	SBD	SB	SBD		SB	SBD				
Benzene	**0.881**	**0.924**	1.00	1.00		**88**	**92**	71-125	5	11	
Toluene	**0.911**	**0.949**	1.00	1.00		**91**	**95**	77-125	4	11	
Ethyl Benzene	**0.902**	**0.936**	1.00	1.00		**90**	**94**	76-125	4	10	
m,p-Xylene	**0.903**	**0.934**	1.00	1.00		**90**	**93**	78-124	3	9	
o-Xylene	**0.878**	**0.889**	1.00	1.00		**88**	**89**	77-123	1	9	
Surrogate:											
Fluorobenzene						***86***	***89***	***70-132***			

Date of Report: July 18, 2012
Samples Submitted: July 6, 2012
Laboratory Reference: 1207-038
Project: 5147-19-05

NWTPH-Gx
CONTINUING CALIBRATION SUMMARY

Lab ID	True Value (ppm)	Calc. Value	Percent Difference	Control Limits
CC	5.00	4.20	16	+/- 20%

Date of Report: July 18, 2012
Samples Submitted: July 6, 2012
Laboratory Reference: 1207-038
Project: 5147-19-05

BTEX by
EPA 8021B
CONTINUING CALIBRATION SUMMARY

Analyte	Lab ID	True Value (ppm)	Calc. Value	Percent Difference	Control Limits
Benzene	CCVD0710B-1	50.0	44.2	11.6	+/- 15%
Toluene	CCVD0710B-1	50.0	45.8	8.4	+/- 15%
Ethyl Benzene	CCVD0710B-1	50.0	46.5	7.0	+/- 15%
m,p-Xylene	CCVD0710B-1	50.0	47.5	5.0	+/- 15%
o-Xylene	CCVD0710B-1	50.0	46.1	7.8	+/- 15%
Benzene	CCVD0710B-2	50.0	46.9	6.2	+/- 15%
Toluene	CCVD0710B-2	50.0	47.6	4.8	+/- 15%
Ethyl Benzene	CCVD0710B-2	50.0	48.3	3.4	+/- 15%
m,p-Xylene	CCVD0710B-2	50.0	48.2	3.6	+/- 15%
o-Xylene	CCVD0710B-2	50.0	47.2	5.6	+/- 15%
Benzene	CCVD0710B-3	50.0	45.4	9.2	+/- 15%
Toluene	CCVD0710B-3	50.0	45.8	8.4	+/- 15%
Ethyl Benzene	CCVD0710B-3	50.0	46.5	7.0	+/- 15%
m,p-Xylene	CCVD0710B-3	50.0	46.4	7.2	+/- 15%
o-Xylene	CCVD0710B-3	50.0	45.4	9.2	+/- 15%
Benzene	CCVD0711B-2	50.0	46.8	6.4	+/- 15%
Toluene	CCVD0711B-2	50.0	47.2	5.6	+/- 15%
Ethyl Benzene	CCVD0711B-2	50.0	47.0	6.0	+/- 15%
m,p-Xylene	CCVD0711B-2	50.0	46.8	6.4	+/- 15%
o-Xylene	CCVD0711B-2	50.0	45.1	9.8	+/- 15%

Date of Report: July 18, 2012
Samples Submitted: July 6, 2012
Laboratory Reference: 1207-038
Project: 5147-19-05

NWTPH-Dx
(with acid/silica gel clean-up)
QUALITY CONTROL

Matrix: Soil
Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0713S1					
Diesel Range Organics	**ND**	25	NWTPH-Dx	7-13-12	7-13-12	
Lube Oil Range Organics	**ND**	50	NWTPH-Dx	7-13-12	7-13-12	
Surrogate:	***Percent Recovery***	***Control Limits***				
o-Terphenyl	***93***	***50-150***				

Analyte	Result		Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE								
Laboratory ID:	07-038-34							
	ORIG	DUP						
Diesel Range Organics	**ND**	**ND**				NA	NA	
Lube Oil Range Organics	**ND**	**ND**				NA	NA	
Surrogate:								
o-Terphenyl			***105***	***117***	***50-150***			
Laboratory ID:	07-038-39							
	ORIG	DUP						
Diesel Range Organics	**99.3**	**79.8**				22	NA	
Lube Oil Range Organics	**ND**	**ND**				NA	NA	
Surrogate:								
o-Terphenyl			***89***	***96***	***50-150***			

Date of Report: July 18, 2012
Samples Submitted: July 6, 2012
Laboratory Reference: 1207-038
Project: 5147-19-05

NWTPH-Dx
(with acid/silica gel clean-up)
CONTINUING CALIBRATION SUMMARY

Lab ID	True Value (ppm)	Calc. Value	Percent Difference	Contol Limits
CCV0713F-V2	100	103	-3.0	+/-15%
CCV0713F-V3	100	96.8	3.2	+/-15%
CCV0713R-V2	100	104	-4.0	+/-15%
CCV0713R-V3	100	92.9	7.1	+/-15%
CCV0713R-V4	100	94.8	5.2	+/-15%
CCV0713R-V5	100	97.3	2.7	+/-15%

Date of Report: July 18, 2012
Samples Submitted: July 6, 2012
Laboratory Reference: 1207-038
Project: 5147-19-05

ORGANOCHLORINE PESTICIDES by EPA 8081A METHOD BLANK QUALITY CONTROL

Matrix: Soil
Units: ug/Kg (ppb)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0713S1					
alpha-BHC	**ND**	5.0	EPA 8081	7-13-12	7-13-12	
gamma-BHC	**ND**	5.0	EPA 8081	7-13-12	7-13-12	
beta-BHC	**ND**	5.0	EPA 8081	7-13-12	7-13-12	
delta-BHC	**ND**	5.0	EPA 8081	7-13-12	7-13-12	
Heptachlor	**ND**	5.0	EPA 8081	7-13-12	7-13-12	
Aldrin	**ND**	5.0	EPA 8081	7-13-12	7-13-12	
Heptachlor Epoxide	**ND**	5.0	EPA 8081	7-13-12	7-13-12	
gamma-Chlordane	**ND**	10	EPA 8081	7-13-12	7-13-12	
alpha-Chlordane	**ND**	10	EPA 8081	7-13-12	7-13-12	
4,4'-DDE	**ND**	10	EPA 8081	7-13-12	7-13-12	
Endosulfan I	**ND**	5.0	EPA 8081	7-13-12	7-13-12	
Dieldrin	**ND**	10	EPA 8081	7-13-12	7-13-12	
Endrin	**ND**	10	EPA 8081	7-13-12	7-13-12	
4,4'-DDD	**ND**	10	EPA 8081	7-13-12	7-13-12	
Endosulfan II	**ND**	10	EPA 8081	7-13-12	7-13-12	
4,4'-DDT	**ND**	10	EPA 8081	7-13-12	7-13-12	
Endrin Aldehyde	**ND**	10	EPA 8081	7-13-12	7-13-12	
Methoxychlor	**ND**	10	EPA 8081	7-13-12	7-13-12	
Endosulfan Sulfate	**ND**	10	EPA 8081	7-13-12	7-13-12	
Endrin Ketone	**ND**	10	EPA 8081	7-13-12	7-13-12	
Toxaphene	**ND**	50	EPA 8081	7-13-12	7-13-12	
Surrogate:	***Percent Recovery***	***Control Limits***				
TCMX	***88***	***43-105***				
DCB	***81***	***43-121***				

Date of Report: July 18, 2012
Samples Submitted: July 6, 2012
Laboratory Reference: 1207-038
Project: 5147-19-05

ORGANOCHLORINE PESTICIDES by EPA 8081A MS/MSD QUALITY CONTROL

Matrix: Soil
Units: ug/Kg (ppb)

Analyte	Result		Spike Level		Source Result	Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
MATRIX SPIKES											
Laboratory ID:	07-017-35										
	MS	MSD	MS	MSD		MS	MSD				
gamma-BHC	**42.7**	**43.5**	50.0	50.0	ND	**85**	**87**	45-114	2	20	
Heptachlor	**39.5**	**40.0**	50.0	50.0	ND	**79**	**80**	42-118	1	20	
Aldrin	**41.9**	**42.2**	50.0	50.0	ND	**84**	**84**	42-119	1	22	
Dieldrin	**97.7**	**98.0**	125	125	ND	**78**	**78**	50-111	0	20	
Endrin	**108**	**108**	125	125	ND	**86**	**86**	53-112	0	20	
4,4'-DDT	**105**	**105**	125	125	ND	**84**	**84**	53-112	0	20	
Surrogate:											
TCMX						***73***	***75***	***43-105***			
DCB						***73***	***73***	***43-121***			

Date of Report: July 18, 2012
Samples Submitted: July 6, 2012
Laboratory Reference: 1207-038
Project: 5147-19-05

TOTAL METALS
EPA 6010B/7471A
METHOD BLANK QUALITY CONTROL

Date Extracted: 7-16-12
Date Analyzed: 7-16&17-12

Matrix: Soil
Units: mg/kg (ppm)

Lab ID: MB0716S1,MB0716SM2&MB0716SM3

Analyte	Method	Result	PQL
Arsenic	6010B	**ND**	10
Barium	6010B	**ND**	2.5
Cadmium	6010B	**ND**	0.50
Chromium	6010B	**ND**	0.50
Copper	6010B	**ND**	1.0
Lead	6010B	**ND**	5.0
Mercury	7471A	**ND**	0.25
Selenium	6010B	**ND**	10
Silver	6010B	**ND**	0.50

Date of Report: July 18, 2012
Samples Submitted: July 6, 2012
Laboratory Reference: 1207-038
Project: 5147-19-05

TOTAL METALS
EPA 6010B/7471A
DUPLICATE QUALITY CONTROL

Date Extracted: 7-16-12
Date Analyzed: 7-16&17-12

Matrix: Soil
Units: mg/kg (ppm)

Lab ID: 07-038-56

Analyte	Sample Result	Duplicate Result	RPD	PQL	Flags
Arsenic	**20.0**	**17.6**	13	10	
Barium	**80.1**	**80.9**	1	2.5	
Cadmium	**0.846**	**1.49**	55	0.50	C
Chromium	**59.8**	**52.7**	13	0.50	
Copper	**280**	**302**	8	1.0	
Lead	**184**	**194**	5	5.0	
Mercury	**ND**	**ND**	2	0.25	
Selenium	**ND**	**ND**	NA	10	
Silver	**ND**	**ND**	NA	0.50	

Date of Report: July 18, 2012
Samples Submitted: July 6, 2012
Laboratory Reference: 1207-038
Project: 5147-19-05

TOTAL METALS
EPA 6010B/7471A
MS/MSD QUALITY CONTROL

Date Extracted: 7-16-12
Date Analyzed: 7-16&17-12

Matrix: Soil
Units: mg/kg (ppm)

Lab ID: 07-038-56

Analyte	Spike Level	MS	Percent Recovery	MSD	Percent Recovery	RPD	Flags
Arsenic	100	**109**	89	**116**	96	6	
Barium	100	**177**	96	**187**	107	6	
Cadmium	50.0	**46.1**	90	**47.0**	92	2	
Chromium	100	**139**	79	**145**	86	5	
Copper	50	**324**	87	**389**	218	18	A
Lead	250	**419**	94	**472**	115	12	
Mercury	0.500	**0.895**	89	**0.901**	90	1	
Selenium	100	**92.0**	92	**94.7**	95	3	
Silver	25.0	**23.0**	92	**23.3**	93	1	

Date of Report: July 18, 2012
Samples Submitted: July 6, 2012
Laboratory Reference: 1207-038
Project: 5147-19-05

TOTAL METALS
EPA 6010B/7471A
SPIKE BLANK QUALITY CONTROL

Date Extracted: 7-16-12
Date Analyzed: 7-16&17-12

Matrix: Soil
Units: mg/kg (ppm)

Lab ID: SB0716S1,SB0716SM2&SB0716SM3

Analyte	Method	Spike Level	SB Result	Percent Recovery
Arsenic	6010B	100	**92.8**	93
Barium	6010B	100	**97.0**	97
Cadmium	6010B	50.0	**47.0**	94
Chromium	6010B	100	**99.9**	100
Copper	6010B	50.0	**52.0**	104
Lead	6010B	250	**242**	97
Mercury	7471A	0.500	**0.441**	88
Selenium	6010B	100	**97.1**	97
Silver	6010B	25.0	**27.4**	109

Date of Report: July 18, 2012
Samples Submitted: July 6, 2012
Laboratory Reference: 1207-038
Project: 5147-19-05

TOTAL METALS
EPA 6010B/7471A
CONTINUING CALIBRATION SUMMARY

Analyte	Lab ID	True Value (ppm)	Calc. Value	Percent Difference	Control Limits
Arsenic	ICV071712P	1.00	0.932	6.8	+/- 10%
Barium	ICV071712P	1.00	0.996	0.40	+/- 10%
Cadmium	ICV071712P	1.00	0.988	1.2	+/- 10%
Chromium	ICV071712P	1.00	1.00	0	+/- 10%
Copper	ICV071712P	1.00	1.01	-1.0	+/- 10%
Lead	ICV071712P	1.00	0.977	2.3	+/- 10%
Mercury	ICV071612Y	0.00500	0.00503	-0.60	+/- 10%
Selenium	ICV071712P	1.00	0.991	0.90	+/- 10%
Silver	ICV071712P	1.00	1.09	-9.0	+/- 10%
Arsenic	CCV1071712P	10.0	9.63	3.7	+/- 10%
Barium	CCV1071712P	2.00	1.94	3.0	+/- 10%
Cadmium	CCV1071712P	1.00	0.924	7.6	+/- 10%
Chromium	CCV1071712P	1.00	0.991	0.90	+/- 10%
Copper	CCV1071712P	2.00	1.99	0.50	+/- 10%
Lead	CCV1071712P	10.0	9.83	1.7	+/- 10%
Mercury	CCV1071612Y	0.00500	0.00419	16.2	+/- 20%
Selenium	CCV1071712P	10.0	9.66	3.4	+/- 10%
Silver	CCV1071712P	1.00	1.07	-7.0	+/- 10%
Arsenic	CCV2071712P	10.0	9.82	1.8	+/- 10%
Barium	CCV2071712P	2.00	1.93	3.5	+/- 10%
Cadmium	CCV2071712P	1.00	0.953	4.7	+/- 10%
Chromium	CCV2071712P	1.00	0.996	0.40	+/- 10%
Copper	CCV2071712P	2.00	2.00	0	+/- 10%
Lead	CCV2071712P	10.0	9.90	1.0	+/- 10%
Mercury	CCV2071612Y	0.00500	0.00481	3.8	+/- 20%
Selenium	CCV2071712P	10.0	9.62	3.8	+/- 10%
Silver	CCV2071712P	1.00	1.07	-7.0	+/- 10%
Arsenic	CCV3071712P	10.0	10.0	0	+/- 10%
Barium	CCV3071712P	2.00	2.01	-0.50	+/- 10%
Cadmium	CCV3071712P	1.00	0.956	4.4	+/- 10%
Chromium	CCV3071712P	1.00	1.02	-2.0	+/- 10%
Copper	CCV3071712P	2.00	2.04	-2.0	+/- 10%
Lead	CCV3071712P	10.0	10.1	-1.0	+/- 10%
Mercury	CCV3071612Y	0.00500	0.00483	3.4	+/- 20%
Selenium	CCV3071712P	10.0	9.85	1.5	+/- 10%
Silver	CCV3071712P	1.00	1.09	-9.0	+/- 10%

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TOTAL METALS
EPA 6010B/7471A
CONTINUING CALIBRATION SUMMARY

Analyte	Lab ID	True Value (ppm)	Calc. Value	Percent Difference	Control Limits
Arsenic	CCV4071712P	10.0	9.85	1.5	+/- 10%
Cadmium	CCV4071712P	1.00	0.947	5.3	+/- 10%
Copper	CCV4071712P	2.00	2.04	-2.0	+/- 10%
Lead	CCV4071712P	10.0	10.1	-1.0	+/- 10%
Mercury	CCV4071612Y	0.00500	0.00477	4.6	+/- 20%
Lead	CCV5071712P	10.0	9.99	0.10	+/- 10%
Lead	CCV6071712P	10.0	10.1	-1.0	+/- 10%
Lead	CCV7071712P	10.0	10.0	0	+/- 10%

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TCLP METALS
EPA 1311/6010B/7470A
METHOD BLANK QUALITY CONTROL

Date Prepared:	7-9-12
Date Extracted:	7-10-12
Date Analyzed:	7-10-12
Matrix:	TCLP Extract
Units:	mg/L (ppm)
Lab ID:	MB0710T1&MB0710T3

Analyte	Method	Result	PQL
Arsenic	6010B	**ND**	0.40
Barium	6010B	**ND**	0.20
Cadmium	6010B	**ND**	0.020
Chromium	6010B	**ND**	0.020
Lead	6010B	**ND**	0.20
Mercury	7470A	**ND**	0.0050
Selenium	6010B	**ND**	0.40
Silver	6010B	**ND**	0.020

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TCLP METALS
EPA 1311/6010B/7470A
DUPLICATE QUALITY CONTROL

Date Prepared: 7-9-12
Date Extracted: 7-10-12
Date Analyzed: 7-10-12

Matrix: TCLP Extract
Units: mg/L (ppm)

Lab ID: 07-038-03

Analyte	Sample Result	Duplicate Result	RPD	PQL	Flags
Arsenic	**ND**	**ND**	NA	0.40	
Barium	**0.207**	**0.203**	2	0.20	
Cadmium	**ND**	**ND**	NA	0.020	
Chromium	**ND**	**ND**	NA	0.020	
Lead	**ND**	**ND**	NA	0.20	
Mercury	**ND**	**ND**	NA	0.0050	
Selenium	**ND**	**ND**	NA	0.40	
Silver	**ND**	**ND**	NA	0.020	

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TCLP METALS
EPA 1311/6010B/7470A
MS/MSD QUALITY CONTROL

Date Prepared: 7-9-12
Date Extracted: 7-10-12
Date Analyzed: 7-10-12

Matrix: TCLP Extract
Units: mg/L (ppm)

Lab ID: 07-038-03

Analyte	Spike Level	MS	Percent Recovery	MSD	Percent Recovery	RPD	Flags
Arsenic	4.00	**3.78**	94	**3.82**	95	1	
Barium	4.00	**4.14**	98	**4.15**	99	0	
Cadmium	2.00	**1.91**	95	**1.93**	97	1	
Chromium	4.00	**3.97**	99	**4.01**	100	1	
Lead	10.0	**9.24**	92	**9.32**	93	1	
Mercury	0.0500	**0.0462**	92	**0.0464**	93	0	
Selenium	4.00	**4.03**	101	**4.06**	102	1	
Silver	1.00	**1.01**	101	**1.02**	102	1	

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TCLP METALS
EPA 1311/6010B/7470A
SPIKE BLANK QUALITY CONTROL

Date Prepared: 7-9-12
Date Extracted: 7-10-12
Date Analyzed: 7-10-12

Matrix: TCLP Extract
Units: mg/L (ppm)

Lab ID: SB0710T1&SB0710T3

Analyte	Method	Spike Level	SB	Percent Recovery
Arsenic	6010B	4.00	**3.80**	95
Barium	6010B	4.00	**3.99**	100
Cadmium	6010B	2.00	**1.93**	97
Chromium	6010B	4.00	**3.96**	99
Lead	6010B	10.0	**9.28**	93
Mercury	7470A	0.0500	**0.0460**	92
Selenium	6010B	4.00	**4.02**	100
Silver	6010B	1.00	**1.01**	101

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TCLP METALS
EPA 1311/6010B/7470A
CONTINUING CALIBRATION SUMMARY

Analyte	Lab ID	True Value (ppm)	Calc. Value	Percent Difference	Control Limits
Arsenic	ICV071012P	1.00	0.987	1.3	+/- 10%
Barium	ICV071012P	1.00	1.02	-2.0	+/- 10%
Cadmium	ICV071012P	1.00	1.03	-3.0	+/- 10%
Chromium	ICV071012P	1.00	1.03	-3.0	+/- 10%
Lead	ICV071012P	1.00	1.02	-2.0	+/- 10%
Mercury	ICV071012Y	0.00500	0.00508	-1.6	+/- 10%
Selenium	ICV071012P	1.00	0.967	3.3	+/- 10%
Silver	ICV071012P	1.00	1.03	-3.0	+/- 10%
Arsenic	CCV1071012P	10.0	10.1	-1.0	+/- 10%
Barium	CCV1071012P	1.00	1.01	-1.0	+/- 10%
Cadmium	CCV1071012P	1.00	1.01	-1.0	+/- 10%
Chromium	CCV1071012P	1.00	1.03	-3.0	+/- 10%
Lead	CCV1071012P	10.0	10.2	-2.0	+/- 10%
Mercury	CCV1071012Y	0.00500	0.00503	-0.60	+/- 20%
Selenium	CCV1071012P	10.0	9.91	0.90	+/- 10%
Silver	CCV1071012P	1.00	1.02	-2.0	+/- 10%
Arsenic	CCV2071012P	10.0	10.2	-2.0	+/- 10%
Barium	CCV2071012P	1.00	1.02	-2.0	+/- 10%
Cadmium	CCV2071012P	1.00	1.01	-1.0	+/- 10%
Chromium	CCV2071012P	1.00	1.02	-2.0	+/- 10%
Lead	CCV2071012P	10.0	10.1	-1.0	+/- 10%
Mercury	CCV2071012Y	0.00500	0.00498	0.40	+/- 20%
Selenium	CCV2071012P	10.0	9.85	1.5	+/- 10%
Silver	CCV2071012P	1.00	1.02	-2.0	+/- 10%
Arsenic	CCV3071012P	10.0	10.1	-1.0	+/- 10%
Barium	CCV3071012P	1.00	1.02	-2.0	+/- 10%
Cadmium	CCV3071012P	1.00	1.00	0	+/- 10%
Chromium	CCV3071012P	1.00	1.02	-2.0	+/- 10%
Lead	CCV3071012P	10.0	10.1	-1.0	+/- 10%
Mercury	CCV3071012Y	0.00500	0.00496	0.80	+/- 20%
Selenium	CCV3071012P	10.0	9.78	2.2	+/- 10%
Silver	CCV3071012P	1.00	1.01	-1.0	+/- 10%

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TCLP METALS
EPA 1311/6010B/7470A
CONTINUING CALIBRATION SUMMARY

Analyte	Lab ID	True Value (ppm)	Calc. Value	Percent Difference	Control Limits
Arsenic	CCV4071012P	10.0	10.0	0	+/- 10%
Barium	CCV4071012P	1.00	1.02	-2.0	+/- 10%
Cadmium	CCV4071012P	1.00	0.992	0.80	+/- 10%
Chromium	CCV4071012P	1.00	1.02	-2.0	+/- 10%
Lead	CCV4071012P	10.0	10.1	-1.0	+/- 10%
Selenium	CCV4071012P	10.0	9.80	2.0	+/- 10%
Silver	CCV4071012P	1.00	1.02	-2.0	+/- 10%
Arsenic	CCV5071012P	10.0	10.1	-1.0	+/- 10%
Barium	CCV5071012P	1.00	1.03	-3.0	+/- 10%
Cadmium	CCV5071012P	1.00	0.997	0.30	+/- 10%
Chromium	CCV5071012P	1.00	1.01	-1.0	+/- 10%
Lead	CCV5071012P	10.0	10.0	0	+/- 10%
Selenium	CCV5071012P	10.0	9.67	3.3	+/- 10%
Silver	CCV5071012P	1.00	1.01	-1.0	+/- 10%
Arsenic	CCV6071012P	10.0	10.1	-1.0	+/- 10%
Barium	CCV6071012P	1.00	1.03	-3.0	+/- 10%
Cadmium	CCV6071012P	1.00	1.01	-1.0	+/- 10%
Chromium	CCV6071012P	1.00	1.04	-4.0	+/- 10%
Lead	CCV6071012P	10.0	10.2	-2.0	+/- 10%
Selenium	CCV6071012P	10.0	9.88	1.2	+/- 10%
Silver	CCV6071012P	1.00	1.03	-3.0	+/- 10%
Arsenic	CCV7071012P	10.0	10.0	0	+/- 10%
Barium	CCV7071012P	1.00	1.07	-7.0	+/- 10%
Cadmium	CCV7071012P	1.00	1.00	0	+/- 10%
Chromium	CCV7071012P	1.00	1.04	-4.0	+/- 10%
Lead	CCV7071012P	10.0	10.2	-2.0	+/- 10%
Selenium	CCV7071012P	10.0	9.95	0.50	+/- 10%
Silver	CCV7071012P	1.00	1.03	-3.0	+/- 10%
Arsenic	CCV8071012P	10.0	10.0	0	+/- 10%
Barium	CCV8071012P	1.00	1.05	-5.0	+/- 10%
Cadmium	CCV8071012P	1.00	1.00	0	+/- 10%
Chromium	CCV8071012P	1.00	1.04	-4.0	+/- 10%
Lead	CCV8071012P	10.0	10.2	-2.0	+/- 10%
Selenium	CCV8071012P	10.0	9.83	1.7	+/- 10%
Silver	CCV8071012P	1.00	1.03	-3.0	+/- 10%

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TCLP METALS
EPA 1311/6010B/7470A
CONTINUING CALIBRATION SUMMARY

Analyte	Lab ID	True Value (ppm)	Calc. Value	Percent Difference	Control Limits
Arsenic	CCV9071012P	10.0	9.86	1.4	+/- 10%
Barium	CCV9071012P	1.00	1.05	-5.0	+/- 10%
Cadmium	CCV9071012P	1.00	0.996	0.40	+/- 10%
Chromium	CCV9071012P	1.00	1.05	-5.0	+/- 10%
Lead	CCV9071012P	10.0	10.2	-2.0	+/- 10%
Selenium	CCV9071012P	10.0	9.94	0.60	+/- 10%
Silver	CCV9071012P	1.00	1.03	-3.0	+/- 10%
Arsenic	CCV10071012P	10.0	9.69	3.1	+/- 10%
Barium	CCV10071012P	1.00	1.06	-6.0	+/- 10%
Cadmium	CCV10071012P	1.00	0.984	1.6	+/- 10%
Chromium	CCV10071012P	1.00	1.05	-5.0	+/- 10%
Lead	CCV10071012P	10.0	10.2	-2.0	+/- 10%
Selenium	CCV10071012P	10.0	9.89	1.1	+/- 10%
Silver	CCV10071012P	1.00	1.02	-2.0	+/- 10%
Lead	CCV11071012P	10.0	10.1	-1.0	+/- 10%

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TOTAL ORGANIC CARBON
EPA 9060
QUALITY CONTROL

Matrix: Soil
Units: % Carbon

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0710S1					
Total Organic Carbon	**ND**	0.042	9060	7-10-12	7-10-12	

Analyte	Result		PQL	RPD	Limit	Flags
DUPLICATE						
Laboratory ID:	06-206-30					
	Sample	Duplicate				
Total Organic Carbon	**0.426**	**0.416**	0.047	2	20	

Analyte	Result	Spike Level	Source Result	Percent Recovery	Recovery Limits	Flags
SPIKE BLANK						
Laboratory ID:	SB0710S1					
Total Organic Carbon	**49.1**	42.1	ND	**117**	80-120	

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TOTAL METALS
EPA 6010B/7471A
METHOD BLANK QUALITY CONTROL

Date Extracted: 7-16-12
Date Analyzed: 7-16&17-12

Matrix: Soil
Units: mg/kg (ppm)

Lab ID: MB0716S1,MB0716SM2&MB0716SM3

Analyte	Method	Result	PQL
Arsenic	6010B	**ND**	10
Cadmium	6010B	**ND**	0.50
Chromium	6010B	**ND**	0.50
Copper	6010B	**ND**	1.0
Lead	6010B	**ND**	5.0
Mercury	7471A	**ND**	0.25
Silver	6010B	**ND**	0.50
Zinc	6010B	**ND**	2.5

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TOTAL METALS
EPA 6010B/7471A
DUPLICATE QUALITY CONTROL

Date Extracted: 7-16-12
Date Analyzed: 7-16&17-12

Matrix: Soil
Units: mg/kg (ppm)

Lab ID: 07-038-56

Analyte	Sample Result	Duplicate Result	RPD	PQL	Flags
Arsenic	**20.0**	**17.6**	13	10	
Cadmium	**0.846**	**1.49**	55	0.50	C
Chromium	**59.8**	**52.7**	13	0.50	
Copper	**280**	**302**	8	1.0	
Lead	**184**	**194**	5	5.0	
Mercury	**ND**	**ND**	2	0.25	
Silver	**ND**	**ND**	NA	0.50	
Zinc	**296**	**341**	14	2.5	

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TOTAL METALS
EPA 6010B/7471A
MS/MSD QUALITY CONTROL

Date Extracted: 7-16-12
Date Analyzed: 7-16&17-12

Matrix: Soil
Units: mg/kg (ppm)

Lab ID: 07-038-56

Analyte	Spike Level	MS	Percent Recovery	MSD	Percent Recovery	RPD	Flags
Arsenic	100	**109**	89	**116**	96	6	
Cadmium	50.0	**46.1**	90	**47.0**	92	2	
Chromium	100	**139**	79	**145**	86	5	
Copper	50	**324**	87	**389**	218	18	A
Lead	250	**419**	94	**472**	115	12	
Mercury	0.500	**0.895**	89	**0.901**	90	1	
Silver	25.0	**23.0**	92	**23.3**	93	1	
Zinc	100	**419**	124	**495**	199	17	V

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TOTAL METALS
EPA 6010B/7471A
SPIKE BLANK QUALITY CONTROL

Date Extracted: 7-16-12
Date Analyzed: 7-16&17-12

Matrix: Soil
Units: mg/kg (ppm)

Lab ID: SB0716S1,SB0716SM2&SB0716SM3

Analyte	Method	Spike Level	SB Result	Percent Recovery
Arsenic	6010B	100	**92.8**	93
Cadmium	6010B	50.0	**47.0**	94
Chromium	6010B	100	**99.9**	100
Copper	6010B	50.0	**52.0**	104
Lead	6010B	250	**242**	97
Mercury	7471A	0.500	**0.441**	88
Silver	6010B	25.0	**27.4**	109
Zinc	6010B	100	**101**	101

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TOTAL METALS
EPA 6010B/7471A
CONTINUING CALIBRATION SUMMARY

Analyte	Lab ID	True Value (ppm)	Calc. Value	Percent Difference	Control Limits
Arsenic	ICV071712P	1.00	0.932	6.8	+/- 10%
Cadmium	ICV071712P	1.00	0.988	1.2	+/- 10%
Chromium	ICV071712P	1.00	1.00	0	+/- 10%
Copper	ICV071712P	1.00	1.01	-1.0	+/- 10%
Lead	ICV071712P	1.00	0.977	2.3	+/- 10%
Mercury	ICV071612Y	0.00500	0.00503	-0.60	+/- 10%
Silver	ICV071712P	1.00	1.09	-9.0	+/- 10%
Zinc	ICV071712P	1.00	0.999	0.10	+/- 10%
Arsenic	CCV1071712P	10.0	9.63	3.7	+/- 10%
Cadmium	CCV1071712P	1.00	0.924	7.6	+/- 10%
Chromium	CCV1071712P	1.00	0.991	0.90	+/- 10%
Copper	CCV1071712P	2.00	1.99	0.50	+/- 10%
Lead	CCV1071712P	10.0	9.83	1.7	+/- 10%
Mercury	CCV1071612Y	0.00500	0.00419	16	+/- 20%
Silver	CCV1071712P	1.00	1.07	-7.0	+/- 10%
Zinc	CCV1071712P	2.00	1.97	1.5	+/- 10%
Arsenic	CCV2071712P	10.0	9.82	1.8	+/- 10%
Cadmium	CCV2071712P	1.00	0.953	4.7	+/- 10%
Chromium	CCV2071712P	1.00	0.996	0.40	+/- 10%
Copper	CCV2071712P	2.00	2.00	0	+/- 10%
Lead	CCV2071712P	10.0	9.90	1.0	+/- 10%
Mercury	CCV2071612Y	0.00500	0.00481	3.8	+/- 20%
Silver	CCV2071712P	1.00	1.07	-7.0	+/- 10%
Zinc	CCV2071712P	2.00	1.94	3.0	+/- 10%
Lead	CCV3071712P	10.0	10.1	-1.0	+/- 10%
Zinc	CCV3071712P	2.00	1.99	0.50	+/- 10%
Lead	CCV4071712P	10.0	10.1	-1.0	+/- 10%
Zinc	CCV4071712P	2.00	2.00	0	+/- 10%
Lead	CCV5071712P	10.0	9.99	0.10	+/- 10%
Zinc	CCV5071712P	2.00	1.99	0.50	+/- 10%
Lead	CCV6071712P	10.0	10.1	-1.0	+/- 10%
Zinc	CCV6071712P	2.00	2.02	-1.0	+/- 10%

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SEMIVOLATILES by EPA 8270D/SIM
METHOD BLANK QUALITY CONTROL

Matrix: Soil
Units: mg/Kg

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Laboratory ID:	MB0711S1					
Phenol	**ND**	0.020	EPA 8270	7-11-12	7-13-12	
1,4-Dichlorobenzene	**ND**	0.020	EPA 8270	7-11-12	7-13-12	
Benzyl alcohol	**ND**	0.020	EPA 8270	7-11-12	7-13-12	
1,2-Dichlorobenzene	**ND**	0.020	EPA 8270	7-11-12	7-13-12	
2-Methylphenol (o-Cresol)	**ND**	0.020	EPA 8270	7-11-12	7-13-12	
(3+4)-Methylphenol (m,p-Cresol)	**ND**	0.020	EPA 8270	7-11-12	7-13-12	
2,4-Dimethylphenol	**ND**	0.020	EPA 8270	7-11-12	7-13-12	
1,2,4-Trichlorobenzene	**ND**	0.020	EPA 8270	7-11-12	7-13-12	
Naphthalene	**ND**	0.0040	EPA 8270/SIM	7-11-12	7-12-12	
Hexachlorobutadiene	**ND**	0.020	EPA 8270	7-11-12	7-13-12	
2-Methylnaphthalene	**ND**	0.0040	EPA 8270/SIM	7-11-12	7-12-12	
Dimethylphthalate	**ND**	0.020	EPA 8270	7-11-12	7-13-12	
Acenaphthylene	**ND**	0.0040	EPA 8270/SIM	7-11-12	7-12-12	
Acenaphthene	**ND**	0.0040	EPA 8270/SIM	7-11-12	7-12-12	
Dibenzofuran	**ND**	0.020	EPA 8270	7-11-12	7-13-12	
Diethylphthalate	**ND**	0.020	EPA 8270	7-11-12	7-13-12	
Fluorene	**ND**	0.0040	EPA 8270/SIM	7-11-12	7-12-12	
n-Nitrosodiphenylamine	**ND**	0.020	EPA 8270	7-11-12	7-13-12	
Hexachlorobenzene	**ND**	0.020	EPA 8270	7-11-12	7-13-12	
Pentachlorophenol	**ND**	0.020	EPA 8270	7-11-12	7-13-12	
Phenanthrene	**ND**	0.0040	EPA 8270/SIM	7-11-12	7-12-12	
Anthracene	**ND**	0.0040	EPA 8270/SIM	7-11-12	7-12-12	
Di-n-butylphthalate	**ND**	0.020	EPA 8270	7-11-12	7-13-12	
Fluoranthene	**ND**	0.0040	EPA 8270/SIM	7-11-12	7-12-12	
Pyrene	**ND**	0.0040	EPA 8270/SIM	7-11-12	7-12-12	
Butylbenzylphthalate	**ND**	0.020	EPA 8270	7-11-12	7-13-12	
bis-2-Ethylhexyladipate	**ND**	0.020	EPA 8270	7-11-12	7-13-12	
Benzo[a]anthracene	**ND**	0.0040	EPA 8270/SIM	7-11-12	7-12-12	
Chrysene	**ND**	0.0040	EPA 8270/SIM	7-11-12	7-12-12	
Di-n-octylphthalate	**ND**	0.020	EPA 8270	7-11-12	7-13-12	
Benzo[a]pyrene	**ND**	0.0040	EPA 8270/SIM	7-11-12	7-12-12	
Indeno[1,2,3-cd]pyrene	**ND**	0.0040	EPA 8270/SIM	7-11-12	7-12-12	
Dibenz[a,h]anthracene	**ND**	0.0040	EPA 8270/SIM	7-11-12	7-12-12	
Benzo[g,h,i]perylene	**ND**	0.0040	EPA 8270/SIM	7-11-12	7-12-12	
Benzoic Acid	**ND**	0.10	EPA 8270	7-11-12	7-13-12	
Surrogate:	***Percent Recovery***	***Control Limits***				
2-Fluorophenol	***74***	***24 - 95***				
Phenol-d6	***76***	***34 - 101***				
Nitrobenzene-d5	***76***	***32 - 102***				
2-Fluorobiphenyl	***83***	***44 - 104***				
2,4,6-Tribromophenol	***74***	***34 - 124***				
Terphenyl-d14	***78***	***47 - 114***				

Date of Report: July 18, 2012
Samples Submitted: July 6, 2012
Laboratory Reference: 1207-038
Project: 5147-19-05

SEMIVOLATILES by EPA 8270D/SIM
SB/SBD QUALITY CONTROL

Matrix: Soil
Units: mg/Kg

Analyte	Result		Spike Level		Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
SPIKE BLANKS										
Laboratory ID:	SB0711S1									
	SB	SBD	SB	SBD	SB	SBD				
Phenol	**1.03**	**1.08**	1.33	1.33	77	81	41 - 104	5	34	
2-Chlorophenol	**1.05**	**1.09**	1.33	1.33	79	82	41 - 100	4	37	
1,4-Dichlorobenzene	**0.473**	**0.489**	0.667	0.667	71	73	34 - 100	3	37	
n-Nitroso-di-n-propylamine	**0.500**	**0.527**	0.667	0.667	75	79	41 - 98	5	32	
1,2,4-Trichlorobenzene	**0.488**	**0.497**	0.667	0.667	73	75	30 - 101	2	35	
4-Chloro-3-methylphenol	**1.09**	**1.11**	1.33	1.33	82	83	57 - 113	2	25	
Acenaphthene	**0.481**	**0.496**	0.667	0.667	72	74	56 - 95	3	23	
4-Nitrophenol	**1.06**	**1.06**	1.33	1.33	80	80	43 - 133	0	30	
2,4-Dinitrotoluene	**0.524**	**0.509**	0.667	0.667	79	76	63 - 110	3	31	
Pentachlorophenol	**0.874**	**0.661**	1.33	1.33	66	50	35 - 120	28	30	
Pyrene	**0.497**	**0.528**	0.667	0.667	75	79	56 - 114	6	27	
Surrogate:										
2-Fluorophenol					***72***	***76***	***24 - 95***			
Phenol-d6					***76***	***79***	***34 - 101***			
Nitrobenzene-d5					***78***	***79***	***32 - 102***			
2-Fluorobiphenyl					***82***	***85***	***44 - 104***			
2,4,6-Tribromophenol					***72***	***74***	***34 - 124***			
Terphenyl-d14					***76***	***81***	***47 - 114***			

Date of Report: July 18, 2012
Samples Submitted: July 6, 2012
Laboratory Reference: 1207-038
Project: 5147-19-05

PCBs by EPA 8082
QUALITY CONTROL

Matrix: Soil
Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0712S1					
Aroclor 1016	**ND**	0.050	EPA 8082	7-12-12	7-12-12	
Aroclor 1221	**ND**	0.050	EPA 8082	7-12-12	7-12-12	
Aroclor 1232	**ND**	0.050	EPA 8082	7-12-12	7-12-12	
Aroclor 1242	**ND**	0.050	EPA 8082	7-12-12	7-12-12	
Aroclor 1248	**ND**	0.050	EPA 8082	7-12-12	7-12-12	
Aroclor 1254	**ND**	0.050	EPA 8082	7-12-12	7-12-12	
Aroclor 1260	**ND**	0.050	EPA 8082	7-12-12	7-12-12	
Surrogate:	***Percent Recovery***	***Control Limits***				
DCB	***93***	***47-120***				

Analyte	Result		Spike Level		Source Result	Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
MATRIX SPIKES											
Laboratory ID:	07-086-01										
	MS	MSD	MS	MSD		MS	MSD				
Aroclor 1260	**0.501**	**0.511**	0.500	0.500	ND	**100**	**102**	42-133	2	15	
Surrogate:											
DCB						***90***	***92***	***47-120***			

Date of Report: July 18, 2012
Samples Submitted: July 6, 2012
Laboratory Reference: 1207-038
Project: 5147-19-05

PCB's by EPA 8082
CONTINUING CALIBRATION SUMMARY

Lab ID	Analyte	True Value (ppb)	Calc. Value	Percent Difference	Control Limits
Column 1					
PCBCCV 0712-1	Aroclor 1016	500	517	-3.4	+/- 15%
PCBCCV 0712-1	Aroclor 1260	500	490	2.0	+/- 15%
Column 2					
PCBCCV 0712-1	Aroclor 1016	500	509	-1.8	+/- 15%
PCBCCV 0712-1	Aroclor 1260	500	512	-2.4	+/- 15%
Column 1					
PCBCCV 0712-2	Aroclor 1016	500	519	-3.8	+/- 15%
PCBCCV 0712-2	Aroclor 1260	500	484	3.2	+/- 15%
Column 2					
PCBCCV 0712-2	Aroclor 1016	500	485	3.0	+/- 15%
PCBCCV 0712-2	Aroclor 1260	500	507	-1.4	+/- 15%
Column 1					
PCBCCV 0712-3	Aroclor 1016	500	530	-6.0	+/- 15%
PCBCCV 0712-3	Aroclor 1260	500	494	1.2	+/- 15%
Column 2					
PCBCCV 0712-3	Aroclor 1016	500	520	-4.0	+/- 15%
PCBCCV 0712-3	Aroclor 1260	500	515	-3.0	+/- 15%
Column 1					
PCBCCV 0712-4	Aroclor 1016	500	528	-5.6	+/- 15%
PCBCCV 0712-4	Aroclor 1260	500	497	0.60	+/- 15%
Column 2					
PCBCCV 0712-4	Aroclor 1016	500	528	-5.6	+/- 15%
PCBCCV 0712-4	Aroclor 1260	500	528	-5.6	+/- 15%

Date of Report: July 18, 2012
Samples Submitted: July 6, 2012
Laboratory Reference: 1207-038
Project: 5147-19-05

% MOISTURE

Date Analyzed: 7-11,12&13-12

Client ID	Lab ID	% Moisture
GEI-11-8.0	07-038-03	12
GEI-12-2.5	07-038-04	18
GEI-13-10.0	07-038-10	14
GEI-14-5.0	07-038-12	9
GEI-15-10.0	07-038-20	15
GEI-16-5.0	07-038-24	9
GEI-COMP-1	07-038-28	16
GEI-SS-COMP	07-038-29	11
GEI-SS-2-1-1.5	07-038-30	20
GEI-SS-2-2-0.5	07-038-32	7
GEI-SS-2-3-0.5	07-038-33	17
GEI-SS-2-4-0.5	07-038-34	11
GEI-SS-6-1-1.5	07-038-36	12
GEI-SS-6-2-0.5	07-038-38	8
GEI-SS-6-3-0.5	07-038-39	3
GEI-SS-6-4-0.5	07-038-40	12
GEI-SS9-1-1.5	07-038-41	17
GEI-SS-9-2-0.5	07-038-43	15
GEI-SS-9-3-0.5	07-038-44	13
GEI-SS-6-4-0.5	07-038-45	17
GEI-SS-12-1-1.5	07-038-46	17
GEI-SS-12-2-0.5	07-038-48	12
GEI-SS-12-3-0.5	07-038-49	10
GEI-SS-12-4-0.5	07-038-50	10
GEI-SS-14/15-1-1.5	07-038-52	18
GEI-SS-14/15-2-0.5	07-038-54	9
GEI-SS-14/15-3-0.5	07-038-55	16
GEI-SS-14/15-4-0.5	07-038-56	7
GEI-SS-13-1-1.5	07-038-58	18
GEI-SS-13-2-0.5	07-038-59	32
GEI-SS-13-3-0.5	07-038-60	27
GEI-SS-13-4-0.5	07-038-61	19

OnSite Environmental Inc.

Data Qualifiers and Abbreviations

A - Due to a high sample concentration, the amount spiked is insufficient for meaningful MS/MSD recovery data.

B - The analyte indicated was also found in the blank sample.

C - The duplicate RPD is outside control limits due to high result variability when analyte concentrations are within five times the quantitation limit.

E - The value reported exceeds the quantitation range and is an estimate.

F - Surrogate recovery data is not available due to the high concentration of coeluting target compounds.

H - The analyte indicated is a common laboratory solvent and may have been introduced during sample preparation, and be impacting the sample result.

I - Compound recovery is outside of the control limits.

J - The value reported was below the practical quantitation limit. The value is an estimate.

K - Sample duplicate RPD is outside control limits due to sample inhomogeneity. The sample was re-extracted and re-analyzed with similar results.

L - The RPD is outside of the control limits.

M - Hydrocarbons in the gasoline range are impacting the diesel range result.

M1 - Hydrocarbons in the gasoline range (toluene-napthalene) are present in the sample.

N - Hydrocarbons in the lube oil range are impacting the diesel range result.

N1 - Hydrocarbons in diesel range are impacting lube oil range results.

O - Hydrocarbons indicative of heavier fuels are present in the sample and are impacting the gasoline result.

P - The RPD of the detected concentrations between the two columns is greater than 40.

Q - Surrogate recovery is outside of the control limits.

S - Surrogate recovery data is not available due to the necessary dilution of the sample.

T - The sample chromatogram is not similar to a typical _____.

U - The analyte was analyzed for, but was not detected above the reported sample quantitation limit.

U1 - The practical quantitation limit is elevated due to interferences present in the sample.

V - Matrix Spike/Matrix Spike Duplicate recoveries are outside control limits due to matrix effects.

W - Matrix Spike/Matrix Spike Duplicate RPD are outside control limits due to matrix effects.

X - Sample extract treated with a mercury cleanup procedure.

Y - Sample extract treated with an acid/silica gel cleanup procedure.

Z -

ND - Not Detected at PQL
PQL - Practical Quantitation Limit
RPD - Relative Percent Difference

Chain of Custody

Page 1 of 67 (DB)

OnSite Environmental Inc.
Analytical Laboratory Testing Services
14648 NE 95th Street • Redmond, WA 98052
Phone: (425) 883-3881 • www.onsite-env.com

Laboratory Number: 07-038

Company: GEI

Project Number: ~~5147-19-05~~ (JP) 5147-19-05

Project Name: WYMAN RAMP

Project Manager: ROBERT TRAHAN

Sampled by: JOHN PETERS

Turnaround Request (in working days)

(Check One)

- ☐ Same Day
- ☐ 1 Day
- ☐ 2 Days
- ☐ 3 Days
- ☒ Standard (7 Days) (TPH analysis 5 Days)
- ☐ _____ (other)

Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	No. of Cont.	NWTPH-HCID	NWTPH-Gx/BTEX	NWTPH-Gx	NWTPH-Dx	Volatiles 8260B	Halogenated Volatiles 8260B	Semivolatiles 8270D/SIM (with low-level PAHs)	PAHs 8270D/SIM (low-level)	PCBs 8082	Organochlorine Pesticides 8081A	Organophosphorus Pesticides 8270D/SIM	Chlorinated Acid Herbicides 8151A	Total RCRA Metals	Total MTCA Metals	TCLP Metals	HEM (oil and grease) 1664				HOLD	% Moisture
1	GEI-11-2.5	7/5/12	1620	S	1																				X	
2	GEI-11-5.0		1625		2																				X	
3	GEI-11-8.0		1635		4		X											X		X					X	X
4	GEI-12-2.5		1425		1		X											X		X					X	X
5	GEI-12-5.0		1430		2																				X	
6	GEI-12-8.5		1440		4																				X	
7	GEI-13-2.5		1230		1																				X	
8	GEI-13-5.0		1235		2																				X	
9	GEI-13-7.5		1245		1																				X	
10	GEI-13-10.0		1350		4		X											X		X					X	X

	Signature	Company	Date	Time
Relinquished		GeoEngineers, Inc.	7/6/12	1105
Received		OSE	7/6/12	1105
Relinquished				
Received				
Relinquished				
Received				
Reviewed/Date		Reviewed/Date		

Comments/Special Instructions

ALL SAMPLE ~~PROJECT~~ LABELS SHALL HAVE PROJECT NUMBER 5147-19-05 EVEN IF PROJECT NUMBER 5147-49-05 ~~AS~~ HAS BEEN WRITTEN.

X Added 7/9/12. DB (STA)

Chromatograms with final report ☐

Data Package: Level III ☒ Level IV ☐

Electronic Data Deliverables (EDDs) ☒

Chain of Custody

OnSite Environmental Inc.
Analytical Laboratory Testing Services
14648 NE 95th Street • Redmond, WA 98052
Phone: (425) 883-3881 • www.onsite-env.com

Company: GEI
Project Number: ~~5147-49-05~~ JTP 5147-19-05
Project Name: WYMAN RAMP
Project Manager: ROBERT TRAHAN
Sampled by: JOHN PETERS

Turnaround Request (in working days)

(Check One)

☐ Same Day ☐ 1 Day
☐ 2 Days ☐ 3 Days
☒ Standard (7 Days) (TPH analysis 5 Days)
☐ _____ (other)

Laboratory Number: 07-038

Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	No. of Cont.	NWTPH-HCID	NWTPH-Gx/BTEX	NWTPH-Gx	NWTPH-Dx	Volatiles 8260B	Halogenated Volatiles 8260B	Semivolatiles 8270D/SIM (with low-level PAHs)	PAHs 8270D/SIM (low-level)	PCBs 8082	Organochlorine Pesticides 8081A	Organophosphorus Pesticides 8270D/SIM	Chlorinated Acid Herbicides 8151A	Total RCRA Metals	Total MTCA Metals	TCLP Metals	HEM (oil and grease) 1664				HOLD	% Moisture
11	GEI-14-2.5	~~7~~ 7/5	0850	S	1																				X	
12	GEI-14-5.0		0920		2		X											X		X					X	X
13	GEI-14-7.5		0925		1																				X	
14	GEI-14-10.0		0930		2																				X	
15	GEI-14-12.5		0935		DB X 2																				X	
16	GEI-14-15		0940	~~W~~	3																				X	
17	GEI-15-2.5		1030		1																				X	
18	GEI-15-5.0		1040		2																				X	
19	GEI-15-7.5		1100		1																				X	
20	GEI-15-10.0	↓	1110	↓	2		X											X		X					X	X

	Signature	Company	Date	Time
Relinquished	John Peters	GeoEngineers, Inc.	7/6/12	1105
Received		GEI	7/6/12	1105
Relinquished				
Received				
Relinquished				
Received				
Reviewed/Date		Reviewed/Date		

Comments/Special Instructions

ALL SAMPLE LABELS SHALL HAVE PROJECT NUMBER 5147-19-05 EVEN IF PROJECT NUMBER 5147-49-05 HAS BEEN WRITTEN.

X Added 7/9/12. DB (STA)

Chromatograms with final report ☐

Data Package: Level III ☐ Level IV ☐ Electronic Data Deliverables (EDDs) ☐ _____

DD

Chain of Custody

Page 3 of 67

OnSite Environmental Inc.
Analytical Laboratory Testing Services
14648 NE 95th Street • Redmond, WA 98052
Phone: (425) 883-3881 • www.onsite-env.com

Company: GEI
Project Number: ~~5147-49-05~~ JP 5147-19-05
Project Name: WYMAN RAMP
Project Manager: ROBERT TRAHAN
Sampled by: JOHN PETERS

Turnaround Request (in working days)

(Check One)

☐ Same Day ☐ 1 Day
☐ 2 Days ☐ 3 Days
☒ Standard (7 Days) (TPH analysis 5 Days)
☐ _____ (other)

Laboratory Number: 07-038

Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	No. of Cont.	NWTPH-HCID	NWTPH-Gx/BTEX	NWTPH-Gx	NWTPH-Dx	Volatiles 8260B	Halogenated Volatiles 8260B	Semivolatiles 8270D/SIM (with low-level PAHs)	PAHs 8270D/SIM (low-level)	PCBs 8082	Organochlorine Pesticides 8081A	Organophosphorus Pesticides 8270D/SIM	Chlorinated Acid Herbicides 8151A	Total RCRA Metals	Total MTCA Metals	TCLP Metals	HEM (oil and grease) 1664	Dioxin/Furans	TOC	SVOCs, PCBs	HOLD	% Moisture
21	GEI-15-12.5	7/5/12	1117	S	1																				X	
22	GEI-15-14		1115		3																				X	
23	GEI-16-2.5		1130		1																				X	
24	GEI-16-5.0		1135		2		(X)											(X)		(X)		NO (X)	NO (X)		NO X	(X)
25	GEI-16-7.5		1140		1																				X	
26	GEI-16-10.0		1145		2																				X	
27	GEI-16-13.0		1150		3																				X	
28	GEI-COMP-1		1320		3																	(X)	(X)	(X)	X NO	(X)
		JP		JP																						

	Signature	Company	Date	Time
Relinquished	John Peters	GeoEngineers, Inc.	7/6/12	1105
Received		OSE	7/6/12	1105
Relinquished				
Received				
Relinquished				
Received				
Reviewed/Date		Reviewed/Date		

Comments/Special Instructions

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(X) Added 7/9/12. DB (STA)

Chromatograms with final report ☐ * See Attached

Data Package: Level III ☐ Level IV ☐

Electronic Data Deliverables (EDDs) ☐ _____

Chain of Custody

OnSite Environmental Inc.
Analytical Laboratory Testing Services
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Company: GEI
Project Number: 5147-19-05
Project Name: WYMAN RAMP
Project Manager: ROBERT TRAHAN
Sampled by: JOHN PETERS

Turnaround Request (in working days)

(Check One)

- ☐ Same Day
- ☐ 1 Day
- ☐ 2 Days
- ☐ 3 Days
- ☒ Standard (7 Days) (TPH analysis 5 Days)
- ☐ _____ (other)

Laboratory Number: 07-038

Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	No. of Cont.	NWTPH-HCID	NWTPH-Gx/BTEX	NWTPH-Gx	NWTPH-Dx	Volatiles 8260B	Halogenated Volatiles 8260B	Semivolatiles 8270D/SIM (with low-level PAHs)	PAHs 8270D/SIM (low-level)	PCBs 8082	Organochlorine Pesticides 8081A	Organophosphorus Pesticides 8270D/SIM	Chlorinated Acid Herbicides 8151A	Total RCRA Metals	Total MTCA Metals	TCLP Metals	HEM (oil and grease) 1664	As, Cr, Cd, Cu, Pb, Hg		HOLD	% Moisture
29	GEI-SS-COMP	7/5/12	1630	S	3		X								X							X			X
30	GEI-SS-2-1-1.5		1520		1				X																X
31	GEI-SS-2-1-2.5		1525		1																				
32	GEI-SS-2-2-0.5		1040		1				X																X
33	GEI-SS-2-3-0.5		1045		1				X																X
34	GEI-SS-2-4-0.5		1050		1				X																X
35	GEI-SS-6-1-0.5		1528		1 VOA ONLY																				
36	GEI-SS-6-1-1.5		1530		2			X	X																X
37	GEI-SS-6-1-2.5		1535		2																				
38	GEI-SS-6-2-0.5		0950		2			X	X																X

	Signature	Company	Date	Time
Relinquished	John Peters	GeoEngineers, Inc	7/6/12	1105
Received		GeoEngineers, Inc	7/6/12	1105
Relinquished				
Received				
Relinquished				
Received				
Reviewed/Date		Reviewed/Date		

Comments/Special Instructions

ALL SAMPLE LABELS SHALL HAVE PROJECT NUMBER 5147-19-05 EVEN IF PROJECT NUMBER 5147-49-05 HAS BEEN WRITTEN

Added 7/9/12. DJ (STA)

Chromatograms with final report ☐

Data Package: Level III ☐ Level IV ☐ Electronic Data Deliverables (EDDs) ☐ _____

Chain of Custody

Page 5 of 67

OnSite Environmental Inc.
Analytical Laboratory Testing Services
14648 NE 95th Street • Redmond, WA 98052
Phone: (425) 883-3881 • www.onsite-env.com

Company: GEI
Project Number: 5147-19-05
Project Name: WYMAN RAMP
Project Manager: ROBERT TRAHAN
Sampled by: JOHN PETERS

Turnaround Request (in working days)

(Check One)

☐ Same Day ☐ 1 Day
☐ 2 Days ☐ 3 Days
☒ Standard (7 Days) (TPH analysis 5 Days)
☐ _____ (other)

Laboratory Number: 07-038

Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	No. of Cont.	NWTPH-HCID	NWTPH-Gx/BTEX	NWTPH-Gx	NWTPH-Dx	Volatiles 8260B	Halogenated Volatiles 8260B	Semivolatiles 8270D/SIM (with low-level PAHs)	PAHs 8270D/SIM (low-level)	PCBs 8082	Organochlorine Pesticides 8081A	Organophosphorus Pesticides 8270D/SIM	Chlorinated Acid Herbicides 8151A	Total RCRA Metals	Total MTCA Metals	TCLP Metals	HEM (oil and grease) 1664	As, Cu			HOLD	% Moisture
39	GEI-SS-6-3-0.5	7/5/12	0955	S	2			X	X																X	X
40	GEI-SS-6-4-0.5		1000		2			X	X																X	X
41	GEI-SS-9-1-1.5		1620		1																	X			X	X
42	GEI-SS-9-1-2.5		1625		1																				X	
43	GEI-SS-9-2-0.5		1210		1																	X			X	X
44	GEI-SS-9-3-0.5		1215		1																	X			X	X
45	GEI-SS-9-4-0.5		1220		1																	X			X	X
46	GEI-SS-12-1-1.5		1505		1				X																X	X
47	GEI-SS-12-1-2.5		1510		1																				X	
48	GEI-SS-12-2-0.5		1120		1				X																X	X

	Signature	Company	Date	Time
Relinquished	John Peters	GeoEngineers, Inc	7/6/12	1105
Received		GEI	7/6/12	1105
Relinquished				
Received				
Relinquished				
Received				
Reviewed/Date		Reviewed/Date		

Comments/Special Instructions

ALL SAMPLE LABELS SHALL HAVE PROJECT NUMBER 5147-19-05 EVEN IF PROJECT NUMBER 5147-49-05 HAS BEEN WRITTEN

Chromatograms with final report ☐

Data Package: Level III ☐ Level IV ☐ Electronic Data Deliverables (EDDs) ☐ _____

Chain of Custody

OnSite Environmental Inc.
Analytical Laboratory Testing Services
14648 NE 95th Street • Redmond, WA 98052
Phone: (425) 883-3881 • www.onsite-env.com

Company: GEI
Project Number: 5147-19-05 ~~5147-49-05~~ JTP
Project Name: WYMAN RAMP
Project Manager: ROBERT TRAHAN
Sampled by: JOHN PETERS

Turnaround Request (in working days)

(Check One)

☐ Same Day ☐ 1 Day
☐ 2 Days ☐ 3 Days
☒ Standard (7 Days) (TPH analysis 5 Days)
☐ _____ (other)

Laboratory Number: 07-038

Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	No. of Cont.	NWTPH-HCID	NWTPH-Gx/BTEX	NWTPH-Gx	NWTPH-Dx	Volatiles 8260B	Halogenated Volatiles 8260B	Semivolatiles 8270D/SIM (with low-level PAHs)	PAHs 8270D/SIM (low-level)	PCBs 8082	Organochlorine Pesticides 8081A	Organophosphorus Pesticides 8270D/SIM	Chlorinated Acid Herbicides 8151A	Total RCRA Metals	Total MTCA Metals	TCLP Metals	HEM (oil and grease) 1664	TCLP LEAD		Cd, Pb, Hg	HOLD	% Moisture
49	GEI-SS-12-3-0.5	7/5/12	1125	S	1				X																X	X
50	GEI-SS-12-4-0.5		1130		1				X																X	X
51	GEI-SS-14/15-1-0.5		1545		2																	X			X	X
52	GEI-SS-14/15-1-1.5		1550		2				X															X	X	X
53	GEI-SS-14/15-1-2.5		1555		2																				X	
54	GEI-SS-14/15-2-0.5		1140		1				X															X	X	X
55	GEI-SS-14/15-3-0.5		1145		1				X															X	X	X
56	GEI-SS-14/15-4-0.5		1150		1				X															X	X	X

	Signature	Company	Date	Time
Relinquished	John Porter	GeoEngineers, Inc	7/6/12	1105
Received		GSE	7/6/12	1105
Relinquished				
Received				
Relinquished				
Received				
Reviewed/Date		Reviewed/Date		

Comments/Special Instructions

ALL SAMPLE LABELS SHALL HAVE PROJECT NUMBER 5147-19-05 EVEN IF PROJECT NUMBER 5147-49-05 HAS BEEN WRITTEN

(X) Added 7/9/12. DB (STA)

Chromatograms with final report ☐

Data Package: Level III ☐ Level IV ☐ Electronic Data Deliverables (EDDs) ☐ _____

Chain of Custody

07-038

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- ☐ 3 Days
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- ☐ _____ (other)

Laboratory Number:

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57	GEI-SS-13-1-0.5	7/5/12	1230	S	1				X													X				X
58	GEI-SS-13-1-1.5	↓	1235	↓	↓				X						X									X		X
59	GEI-SS-13-2-0.5		1240												X									X		X
60	GEI-SS-13-3-0.5		1245						X						X									X		X
61	GEI-SS-13-4-0.5	↓	1250	↓	↓										X									X		X

	Signature	Company	Date	Time
Relinquished		GeoEngineers, Inc	7/6/12	1105
Received			7/6/12	1105
Relinquished				
Received				
Relinquished				
Received				
Reviewed/Date		Reviewed/Date		

Comments/Special Instructions

X Added 7/9/12. DB (STA)

Chromatograms with final report ☐

Data Package: Level III ☐ Level IV ☐

Electronic Data Deliverables (EDDs) ☐ _____

Sample/Cooler Receipt and Acceptance Checklist

Client: GES

Client Project Name/Number: 5147-19-05

OnSite Project Number: 07-038

Initiated by: MR

Date Initiated: 7/6/12

1.0 Cooler Verification

1.1 Were there custody seals on the outside of the cooler?	Yes	No	N/A	1 2 3 4
1.2 Were the custody seals intact?	Yes	No	N/A	1 2 3 4
1.3 Were the custody seals signed and dated by last custodian?	Yes	No	N/A	1 2 3 4
1.4 Were the samples delivered on ice or blue ice?	Yes	No		1 2 3 4
1.5 Were samples received between 0-6 degrees Celsius?	Yes	No	Temperature: 0.6.5	
1.6 Have shipping bills (if any) been attached to the back of this form?	Yes	N/A		
1.7 How were the samples delivered?	Client	Courier	UPS/FedEx	OSE Pickup	Other

2.0 Chain of Custody Verification

2.1 Was a Chain of Custody submitted with the samples?	Yes	No		1 2 3 4
2.2 Was the COC legible and written in permanent ink?	Yes	No		1 2 3 4
2.3 Have samples been relinquished and accepted by each custodian?	Yes	No		1 2 3 4
2.4 Did the sample labels (ID, date, time, preservative) agree with COC?	Yes	No		1 2 3 4
2.5 Were all of the samples listed on the COC submitted?	Yes	No		1 2 3 4
2.6 Were any of the samples submitted omitted from the COC?	Yes	No		1 2 3 4

3.0 Sample Verification

3.1 Were any sample containers broken or compromised?	Yes	No		1 2 3 4
3.2 Were any sample labels missing or illegible?	Yes	No		1 2 3 4
3.3 Have the correct containers been used for each analysis requested?	Yes	No		1 2 3 4
3.4 Have the samples been correctly preserved?	Yes	No	N/A	1 2 3 4
3.5 Are volatiles samples free from headspace and air bubbles?	Yes	No	N/A	1 2 3 4
3.6 Is there sufficient sample submitted to perform requested analyses?	Yes	No		1 2 3 4
3.7 Have any holding times already expired or will expire in 24 hours?	Yes	No		1 2 3 4
3.8 Was method 5035A used?	Yes	No	N/A	1 2 3 4
3.9 If 5035A was used, which sampling option was used (#1, 2, or 3).	#		N/A	1 2 3 4

Explain any discrepancies:

2.6) Sample 15) GE1-14-12.5 7/5 0935 extra sample 1 8oz, 1 voa

3.3) Sample 35) GE1-SS-6-1-0.5 7/5/12 1528 only 1 voa submitted

2.6) Sample GE1-SS-13-1-0.5 7/5/12 1230 not on COC - 1 com 8oz

Sample GE1-SS-13-1-1.5 7/5/12 1235 not on COC - 1 8oz

Sample GE1-SS-13-2-0.5 7/5/12 1240 not on COC - 1 8oz

Sample GE1-SS-13-3-0.5 7/5/12 1245 not on COC - 1 8oz

1 - Discuss issue in Case Narrative

2 - Process Sample As-is

3 - Client contacted to discuss problem

4 - Sample cannot be analyzed or client does not wish to proceed

Sample GE1-SS-13-4-0.5 7/5/12 1250 not on COC - 1 8oz

OnSite Environmental Inc.
14648 NE 95th Street, Redmond, WA 98052 • (425) 883-3881

August 2, 2012

Robert Trahan
GeoEngineers, Inc.
600 Stewart, Suite 1700
Seattle, WA 98101-1233

Re: Analytical Data for Project 5147-19-05
Laboratory Reference No. 1207-038B

Dear Robert:

Enclosed are the analytical results and associated quality control data for samples submitted on July 6, 2012.

The standard policy of OnSite Environmental, Inc. is to store your samples for 30 days from the date of receipt. If you require longer storage, please contact the laboratory.

We appreciate the opportunity to be of service to you on this project. If you have any questions concerning the data, or need additional information, please feel free to call me.

Sincerely,

David Baumeister
Project Manager

Enclosures

Date of Report: August 2, 2012
Samples Submitted: July 6, 2012
Laboratory Reference: 1207-038B
Project: 5147-19-05

Case Narrative

Samples were collected on July 5, 2012 and received by the laboratory on July 6, 2012. They were maintained at the laboratory at a temperature of 2°C to 6°C.

General QA/QC issues associated with the analytical data enclosed in this laboratory report will be indicated with a reference to a comment or explanation on the Data Qualifier page. More complex and involved QA/QC issues will be discussed in detail below.

Date of Report: August 2, 2012
Samples Submitted: July 6, 2012
Laboratory Reference: 1207-038B
Project: 5147-19-05

ANALYTICAL REPORT FOR SAMPLES

Client ID	Laboratory ID	Matrix	Date Sampled	Date Received	Notes
GEI-COMP-1	07-038-28	Soil	7-5-12	7-6-12	
GEI-SS-14/15-3-1.5	07-038-55	Soil	7-5-12	7-6-12	
GEI-SS-14/15-4-1.5	07-038-56	Soil	7-5-12	7-6-12	

Date of Report: August 2, 2012
Samples Submitted: July 6, 2012
Laboratory Reference: 1207-038B
Project: 5147-19-05

TCLP LEAD
by EPA 1311/6010B

Matrix: TCLP Extract
Units: mg/L (ppm)

Analyte	Result	PQL	EPA Method	Date Prepared	Date Analyzed	Flags
Lab ID:	07-038-55					
Client ID:	**GEI-SS-14/15-3-0.5**					
Lead	**ND**	0.20	6010B	7-31-12	7-31-12	
Lab ID:	07-038-56					
Client ID:	**GEI-SS-14/15-4-0.5**					
Lead	**0.31**	0.20	6010B	7-31-12	7-31-12	

Date of Report: August 2, 2012
Samples Submitted: July 6, 2012
Laboratory Reference: 1207-038B
Project: 5147-19-05

TCLP LEAD
by EPA 1311/6010B
METHOD BLANK QUALITY CONTROL

Date Prepared:	7-30-12
Date Extracted:	7-31-12
Date Analyzed:	7-31-12
Matrix:	TCLP Extract
Units:	mg/L (ppm)
Lab ID:	MB0731T1

Analyte	Method	Result	PQL
Lead	6010B	**ND**	0.20

Date of Report: August 2, 2012
Samples Submitted: July 6, 2012
Laboratory Reference: 1207-038B
Project: 5147-19-05

TCLP LEAD
by EPA 1311/6010B
DUPLICATE QUALITY CONTROL

Date Prepared: 7-30-12
Date Extracted: 7-31-12
Date Analyzed: 7-31-12

Matrix: TCLP Extract
Units: mg/L (ppm)

Lab ID: 07-038-56

Analyte	Sample Result	Duplicate Result	RPD	PQL	Flags
Lead	**0.308**	**0.316**	3	0.20	

Date of Report: August 2, 2012
Samples Submitted: July 6, 2012
Laboratory Reference: 1207-038B
Project: 5147-19-05

TCLP LEAD
by EPA 1311/6010B
MS/MSD QUALITY CONTROL

Date Prepared: 7-30-12
Date Extracted: 7-31-12
Date Analyzed: 7-31-12

Matrix: TCLP Extract
Units: mg/L (ppm)

Lab ID: 07-038-56

Analyte	Spike Level	MS	Percent Recovery	MSD	Percent Recovery	RPD	Flags
Lead	10.0	**9.30**	90	**9.34**	90	0	

Date of Report: August 2, 2012
Samples Submitted: July 6, 2012
Laboratory Reference: 1207-038B
Project: 5147-19-05

TCLP LEAD
by EPA 1311/6010B
SPIKE BLANK QUALITY CONTROL

Date Prepared: 7-30-12
Date Extracted: 7-31-12
Date Analyzed: 7-31-12

Matrix: TCLP Extract
Units: mg/L (ppm)

Lab ID: SB0731T1

Analyte	Method	Spike Level	SB	Percent Recovery
Lead	6010B	10.0	**9.03**	90

Date of Report: August 2, 2012
Samples Submitted: July 6, 2012
Laboratory Reference: 1207-038B
Project: 5147-19-05

TCLP LEAD
by EPA 1311/6010B
CONTINUING CALIBRATION SUMMARY

Analyte	Lab ID	True Value (ppm)	Calc. Value	Percent Difference	Control Limits
Lead	ICV073112P	1.00	1.00	0	+/- 10%
Lead	CCV1073112P	10.0	9.88	1.2	+/- 10%
Lead	CCV2073112P	10.0	9.93	0.70	+/- 10%
Lead	CCV3073112P	10.0	9.88	1.2	+/- 10%

OnSite Environmental Inc.

Data Qualifiers and Abbreviations

A - Due to a high sample concentration, the amount spiked is insufficient for meaningful MS/MSD recovery data.

B - The analyte indicated was also found in the blank sample.

C - The duplicate RPD is outside control limits due to high result variability when analyte concentrations are within five times the quantitation limit.

E - The value reported exceeds the quantitation range and is an estimate.

F - Surrogate recovery data is not available due to the high concentration of coeluting target compounds.

H - The analyte indicated is a common laboratory solvent and may have been introduced during sample preparation, and be impacting the sample result.

I - Compound recovery is outside of the control limits.

J - The value reported was below the practical quantitation limit. The value is an estimate.

K - Sample duplicate RPD is outside control limits due to sample inhomogeneity. The sample was re-extracted and re-analyzed with similar results.

L - The RPD is outside of the control limits.

M - Hydrocarbons in the gasoline range are impacting the diesel range result.

M1 - Hydrocarbons in the gasoline range (toluene-napthalene) are present in the sample.

N - Hydrocarbons in the lube oil range are impacting the diesel range result.

N1 - Hydrocarbons in diesel range are impacting lube oil range results.

O - Hydrocarbons indicative of heavier fuels are present in the sample and are impacting the gasoline result.

P - The RPD of the detected concentrations between the two columns is greater than 40.

Q - Surrogate recovery is outside of the control limits.

S - Surrogate recovery data is not available due to the necessary dilution of the sample.

T - The sample chromatogram is not similar to a typical _____.

U - The analyte was analyzed for, but was not detected above the reported sample quantitation limit.

U1 - The practical quantitation limit is elevated due to interferences present in the sample.

V - Matrix Spike/Matrix Spike Duplicate recoveries are outside control limits due to matrix effects.

W - Matrix Spike/Matrix Spike Duplicate RPD are outside control limits due to matrix effects.

X - Sample extract treated with a mercury cleanup procedure.

Y - Sample extract treated with an acid/silica gel cleanup procedure.

Z -

ND - Not Detected at PQL
PQL - Practical Quantitation Limit
RPD - Relative Percent Difference

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

Pace Analytical™

Method 8290 Sample Analysis Results

Client - Onsite Environmental, Inc.

Client's Sample ID	GEI-16-5.0		
Lab Sample ID	10198494001		
Filename	U120730B_06		
Injected By	SMT		
Total Amount Extracted	12.0 g	Matrix	Solid
% Moisture	12.6	Dilution	NA
Dry Weight Extracted	10.5 g	Collected	07/05/2012 11:35
ICAL ID	U120729	Received	07/12/2012 09:18
CCal Filename(s)	U120730B_01 & U120730B_16	Extracted	07/24/2012 20:30
Method Blank ID	BLANK-33331	Analyzed	07/30/2012 20:06

Native Isomers	Conc ng/Kg	EMPC ng/Kg	RL ng/Kg		Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDF	ND	-----	0.28		2,3,7,8-TCDF-13C	2.00	69
Total TCDF	ND	-----	0.28		2,3,7,8-TCDD-13C	2.00	83
					1,2,3,7,8-PeCDF-13C	2.00	77
2,3,7,8-TCDD	ND	-----	0.27		2,3,4,7,8-PeCDF-13C	2.00	76
Total TCDD	ND	-----	0.27		1,2,3,7,8-PeCDD-13C	2.00	82
					1,2,3,4,7,8-HxCDF-13C	2.00	73
1,2,3,7,8-PeCDF	ND	-----	0.15		1,2,3,6,7,8-HxCDF-13C	2.00	80
2,3,4,7,8-PeCDF	ND	-----	0.16		2,3,4,6,7,8-HxCDF-13C	2.00	77
Total PeCDF	ND	-----	0.15		1,2,3,7,8,9-HxCDF-13C	2.00	74
					1,2,3,4,7,8-HxCDD-13C	2.00	79
1,2,3,7,8-PeCDD	ND	-----	0.23		1,2,3,6,7,8-HxCDD-13C	2.00	72
Total PeCDD	ND	-----	0.23		1,2,3,4,6,7,8-HpCDF-13C	2.00	72
					1,2,3,4,7,8,9-HpCDF-13C	2.00	68
1,2,3,4,7,8-HxCDF	ND	-----	0.15		1,2,3,4,6,7,8-HpCDD-13C	2.00	74
1,2,3,6,7,8-HxCDF	ND	-----	0.14		OCDD-13C	4.00	56
2,3,4,6,7,8-HxCDF	ND	-----	0.12				
1,2,3,7,8,9-HxCDF	ND	-----	0.14		1,2,3,4-TCDD-13C	2.00	NA
Total HxCDF	ND	-----	0.14		1,2,3,7,8,9-HxCDD-13C	2.00	NA
1,2,3,4,7,8-HxCDD	ND	-----	0.16		2,3,7,8-TCDD-37Cl4	0.20	91
1,2,3,6,7,8-HxCDD	ND	-----	0.18				
1,2,3,7,8,9-HxCDD	ND	-----	0.18				
Total HxCDD	ND	-----	0.17				
1,2,3,4,6,7,8-HpCDF	ND	-----	0.12		Total 2,3,7,8-TCDD		
1,2,3,4,7,8,9-HpCDF	ND	-----	0.17		Equivalence: 0.35 ng/Kg		
Total HpCDF	ND	-----	0.14		(Using 2005 WHO Factors - Using PRL/2 where ND)		
1,2,3,4,6,7,8-HpCDD	0.29	-----	0.17	BJ			
Total HpCDD	1.00	-----	0.17	BJ			
OCDF	0.26	-----	0.25	BJ			
OCDD	-----	3.0	0.31	I			

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).
EMPC = Estimated Maximum Possible Concentration
RL = Reporting Limit.

ND = Not Detected
NA = Not Applicable
NC = Not Calculated

Results reported on a dry weight basis and are valid to no more than 2 significant figures.
J = Estimated value
B = Less than 10x higher than method blank level
I = Interference present

REPORT OF LABORATORY ANALYSIS

Report No.....10198494

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

Pace Analytical™

Method 8290 Blank Analysis Results

Lab Sample ID	BLANK-33331	Matrix	Solid
Filename	F120729B_11	Dilution	NA
Total Amount Extracted	20.7 g	Extracted	07/24/2012 20:30
ICAL ID	F120614	Analyzed	07/29/2012 23:43
CCal Filename(s)	F120729A_16 & F120729B_17	Injected By	BAL

Native Isomers	Conc ng/Kg	EMPC ng/Kg	RL ng/Kg		Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDF	0.047	-----	0.019	J	2,3,7,8-TCDF-13C	2.00	88
Total TCDF	0.087	-----	0.019	J	2,3,7,8-TCDD-13C	2.00	93
					1,2,3,7,8-PeCDF-13C	2.00	90
2,3,7,8-TCDD	ND	-----	0.027		2,3,4,7,8-PeCDF-13C	2.00	92
Total TCDD	ND	-----	0.027		1,2,3,7,8-PeCDD-13C	2.00	91
					1,2,3,4,7,8-HxCDF-13C	2.00	81
1,2,3,7,8-PeCDF	-----	0.025	0.022	I	1,2,3,6,7,8-HxCDF-13C	2.00	95
2,3,4,7,8-PeCDF	-----	0.023	0.023	I	2,3,4,6,7,8-HxCDF-13C	2.00	91
Total PeCDF	ND	-----	0.023		1,2,3,7,8,9-HxCDF-13C	2.00	87
					1,2,3,4,7,8-HxCDD-13C	2.00	76
1,2,3,7,8-PeCDD	ND	-----	0.023		1,2,3,6,7,8-HxCDD-13C	2.00	77
Total PeCDD	0.063	-----	0.023	J	1,2,3,4,6,7,8-HpCDF-13C	2.00	75
					1,2,3,4,7,8,9-HpCDF-13C	2.00	71
1,2,3,4,7,8-HxCDF	0.091	-----	0.017	J	1,2,3,4,6,7,8-HpCDD-13C	2.00	75
1,2,3,6,7,8-HxCDF	0.040	-----	0.015	J	OCDD-13C	4.00	56
2,3,4,6,7,8-HxCDF	0.032	-----	0.015	J			
1,2,3,7,8,9-HxCDF	ND	-----	0.022		1,2,3,4-TCDD-13C	2.00	NA
Total HxCDF	0.250	-----	0.017	J	1,2,3,7,8,9-HxCDD-13C	2.00	NA
1,2,3,4,7,8-HxCDD	ND	-----	0.024		2,3,7,8-TCDD-37Cl4	0.20	93
1,2,3,6,7,8-HxCDD	-----	0.027	0.026	I			
1,2,3,7,8,9-HxCDD	-----	0.034	0.022	I			
Total HxCDD	0.130	-----	0.024	J			
1,2,3,4,6,7,8-HpCDF	0.230	-----	0.021	J	Total 2,3,7,8-TCDD		
1,2,3,4,7,8,9-HpCDF	0.035	-----	0.031	J	Equivalence: 0.058 ng/Kg		
Total HpCDF	0.270	-----	0.026	J	(Using 2005 WHO Factors - Using PRL/2 where ND)		
1,2,3,4,6,7,8-HpCDD	0.100	-----	0.023	J			
Total HpCDD	0.250	-----	0.023	J			
OCDF	0.260	-----	0.052	J			
OCDD	0.370	-----	0.063	J			

Conc = Concentration (Totals include 2,3,7,8-substituted isomers).
EMPC = Estimated Maximum Possible Concentration
RL = Reporting Limit

Results reported on a dry weight basis and are valid to no more than 2 significant figures.
J = Estimated value
I = Interference present

REPORT OF LABORATORY ANALYSIS

Report No.....10198494

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

Pace Analytical™

Method 8290 Laboratory Control Spike Results

Lab Sample ID	LCS-33332		
Filename	F120729B_04	Matrix	Solid
Total Amount Extracted	21.5 g	Dilution	NA
ICAL ID	F120614	Extracted	07/24/2012 20:30
CCal Filename(s)	F120729A_16 & F120729B_17	Analyzed	07/29/2012 18:15
Method Blank ID	BLANK-33331	Injected By	BAL

Native Isomers	Qs (ng)	Qm (ng)	% Rec.
2,3,7,8-TCDF	0.20	0.23	113
Total TCDF			
2,3,7,8-TCDD	0.20	0.19	96
Total TCDD			
1,2,3,7,8-PeCDF	1.0	1.1	112
2,3,4,7,8-PeCDF	1.0	1.1	107
Total PeCDF			
1,2,3,7,8-PeCDD	1.0	0.98	98
Total PeCDD			
1,2,3,4,7,8-HxCDF	1.0	1.1	112
1,2,3,6,7,8-HxCDF	1.0	1.1	110
2,3,4,6,7,8-HxCDF	1.0	1.1	107
1,2,3,7,8,9-HxCDF	1.0	1.1	108
Total HxCDF			
1,2,3,4,7,8-HxCDD	1.0	1.0	105
1,2,3,6,7,8-HxCDD	1.0	1.2	116
1,2,3,7,8,9-HxCDD	1.0	1.1	115
Total HxCDD			
1,2,3,4,6,7,8-HpCDF	1.0	1.1	108
1,2,3,4,7,8,9-HpCDF	1.0	0.95	95
Total HpCDF			
1,2,3,4,6,7,8-HpCDD	1.0	0.97	97
Total HpCDD			
OCDF	2.0	2.2	110
OCDD	2.0	2.1	106

Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDF-13C	2.0	83
2,3,7,8-TCDD-13C	2.0	88
1,2,3,7,8-PeCDF-13C	2.0	84
2,3,4,7,8-PeCDF-13C	2.0	85
1,2,3,7,8-PeCDD-13C	2.0	85
1,2,3,4,7,8-HxCDF-13C	2.0	82
1,2,3,6,7,8-HxCDF-13C	2.0	93
2,3,4,6,7,8-HxCDF-13C	2.0	90
1,2,3,7,8,9-HxCDF-13C	2.0	84
1,2,3,4,7,8-HxCDD-13C	2.0	76
1,2,3,6,7,8-HxCDD-13C	2.0	77
1,2,3,4,6,7,8-HpCDF-13C	2.0	73
1,2,3,4,7,8,9-HpCDF-13C	2.0	70
1,2,3,4,6,7,8-HpCDD-13C	2.0	74
OCDD-13C	4.0	58
1,2,3,4-TCDD-13C	2.0	NA
1,2,3,7,8,9-HxCDD-13C	2.0	NA
2,3,7,8-TCDD-37Cl4	0.20	86

Qs = Quantity Spiked
Qm = Quantity Measured
Rec. = Recovery (Expressed as Percent)
R = Recovery outside of target range

Y = RF averaging used in calculations
Nn = Value obtained from additional analysis
NA = Not Applicable
* = See Discussion

REPORT OF LABORATORY ANALYSIS

Report No.....10198494

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

Method 8290 Spiked Sample Report

Client - Onsite Environmental, Inc.

Client's Sample ID	GEI-16-5.0-MS		
Lab Sample ID	10198494001-MS		
Filename	U120730B_02	Matrix	Solid
Total Amount Extracted	11.6 g	Dilution	NA
ICAL ID	U120729	Extracted	07/24/2012 20:30
CCal Filename(s)	U120730B_01 & U120730B_16	Analyzed	07/30/2012 16:56
Method Blank ID	BLANK-33331	Injected By	SMT

Native Isomers	Qs (ng)	Qm (ng)	% Rec.
2,3,7,8-TCDF	0.20	0.24	118
2,3,7,8-TCDD	0.20	0.20	102
1,2,3,7,8-PeCDF	1.00	1.10	110
2,3,4,7,8-PeCDF	1.00	1.10	110
1,2,3,7,8-PeCDD	1.00	1.01	101
1,2,3,4,7,8-HxCDF	1.00	1.18	118
1,2,3,6,7,8-HxCDF	1.00	1.12	112
2,3,4,6,7,8-HxCDF	1.00	1.11	111
1,2,3,7,8,9-HxCDF	1.00	1.15	115
1,2,3,4,7,8-HxCDD	1.00	1.15	115
1,2,3,6,7,8-HxCDD	1.00	1.23	123
1,2,3,7,8,9-HxCDD	1.00	1.18	118
1,2,3,4,6,7,8-HpCDF	1.00	1.21	121
1,2,3,4,7,8,9-HpCDF	1.00	1.06	106
1,2,3,4,6,7,8-HpCDD	1.00	1.09	109
OCDF	2.00	2.19	109
OCDD	2.00	2.33	117

Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDF-13C	2.00	78
2,3,7,8-TCDD-13C	2.00	88
1,2,3,7,8-PeCDF-13C	2.00	86
2,3,4,7,8-PeCDF-13C	2.00	80
1,2,3,7,8-PeCDD-13C	2.00	89
1,2,3,4,7,8-HxCDF-13C	2.00	80
1,2,3,6,7,8-HxCDF-13C	2.00	85
2,3,4,6,7,8-HxCDF-13C	2.00	83
1,2,3,7,8,9-HxCDF-13C	2.00	79
1,2,3,4,7,8-HxCDD-13C	2.00	83
1,2,3,6,7,8-HxCDD-13C	2.00	77
1,2,3,4,6,7,8-HpCDF-13C	2.00	75
1,2,3,4,7,8,9-HpCDF-13C	2.00	73
1,2,3,4,6,7,8-HpCDD-13C	2.00	78
OCDD-13C	4.00	60
1,2,3,4-TCDD-13C	2.00	NA
1,2,3,7,8,9-HxCDD-13C	2.00	NA
2,3,7,8-TCDD-37Cl4	0.20	89

Qs = Quantity Spiked Qm = Quantity Measured Rec. = Recovery (Expressed as Percent)

Results reported on a dry weight basis and are valid to no more than 2 significant figures.

REPORT OF LABORATORY ANALYSIS

Report No.....10198494

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

Method 8290 Spiked Sample Report

Client - Onsite Environmental, Inc.

Client's Sample ID	GEI-16-5.0-MSD		
Lab Sample ID	10198494001-MSD		
Filename	U120730B_03	Matrix	Solid
Total Amount Extracted	11.9 g	Dilution	NA
ICAL ID	U120729	Extracted	07/24/2012 20:30
CCal Filename(s)	U120730B_01 & U120730B_16	Analyzed	07/30/2012 17:42
Method Blank ID	BLANK-33331	Injected By	SMT

Native Isomers	Qs (ng)	Qm (ng)	% Rec.	Internal Standards	ng's Added	Percent Recovery
2,3,7,8-TCDF	0.20	0.22	112	2,3,7,8-TCDF-13C	2.00	79
				2,3,7,8-TCDD-13C	2.00	93
				1,2,3,7,8-PeCDF-13C	2.00	87
2,3,7,8-TCDD	0.20	0.20	98	2,3,4,7,8-PeCDF-13C	2.00	84
				1,2,3,7,8-PeCDD-13C	2.00	98
				1,2,3,4,7,8-HxCDF-13C	2.00	81
1,2,3,7,8-PeCDF	1.00	1.05	105	1,2,3,6,7,8-HxCDF-13C	2.00	83
2,3,4,7,8-PeCDF	1.00	1.04	104	2,3,4,6,7,8-HxCDF-13C	2.00	83
				1,2,3,7,8,9-HxCDF-13C	2.00	79
				1,2,3,4,7,8-HxCDD-13C	2.00	87
1,2,3,7,8-PeCDD	1.00	0.97	97	1,2,3,6,7,8-HxCDD-13C	2.00	77
				1,2,3,4,6,7,8-HpCDF-13C	2.00	73
				1,2,3,4,7,8,9-HpCDF-13C	2.00	70
1,2,3,4,7,8-HxCDF	1.00	1.13	113	1,2,3,4,6,7,8-HpCDD-13C	2.00	78
1,2,3,6,7,8-HxCDF	1.00	1.06	106	OCDD-13C	4.00	57
2,3,4,6,7,8-HxCDF	1.00	1.08	108			
1,2,3,7,8,9-HxCDF	1.00	1.11	111	1,2,3,4-TCDD-13C	2.00	NA
				1,2,3,7,8,9-HxCDD-13C	2.00	NA
1,2,3,4,7,8-HxCDD	1.00	1.04	104	2,3,7,8-TCDD-37Cl4	0.20	95
1,2,3,6,7,8-HxCDD	1.00	1.22	122			
1,2,3,7,8,9-HxCDD	1.00	1.12	112			
1,2,3,4,6,7,8-HpCDF	1.00	1.13	113			
1,2,3,4,7,8,9-HpCDF	1.00	1.02	102			
1,2,3,4,6,7,8-HpCDD	1.00	1.00	100			
OCDF	2.00	2.12	106			
OCDD	2.00	2.21	111			

Qs = Quantity Spiked Qm = Quantity Measured Rec. = Recovery (Expressed as Percent)

Results reported on a dry weight basis and are valid to no more than 2 significant figures.

REPORT OF LABORATORY ANALYSIS

Report No.....10198494

Pace Analytical Services, Inc.
1700 Elm Street - Suite 200
Minneapolis, MN 55414

Tel: 612-607-1700
Fax: 612- 607-6444

Pace Analytical™

Method 8290 Spike Sample Results

Client - Onsite Environmental, Inc.

				Dry Weights	
Client Sample ID	GEI-16-5.0				
Lab Sample ID	10198494001	Sample Filename	U120730B_06	Sample Amount	10.5 g
MS ID	10198494001-MS	MS Filename	U120730B_02	MS Amount	10.1 g
MSD ID	10198494001-MSD	MSD Filename	U120730B_03	MSD Amount	10.4 g

Analyte	Sample Conc. ng/Kg	MS/MSD Qs (ng)	MS Qm (ng)	MSD Qm (ng)	RPD	Background Subtracted MS % Rec.	MSD % Rec.	RPD
2,3,7,8-TCDF	0.000	0.20	0.24	0.22	5.0	118	112	5.0
2,3,7,8-TCDD	0.000	0.20	0.20	0.20	3.7	102	98	3.7
1,2,3,7,8-PeCDF	0.000	1.00	1.10	1.05	4.6	110	105	4.6
2,3,4,7,8-PeCDF	0.000	1.00	1.10	1.04	5.6	110	104	5.6
1,2,3,7,8-PeCDD	0.000	1.00	1.01	0.97	3.5	101	97	3.5
1,2,3,4,7,8-HxCDF	0.000	1.00	1.18	1.13	3.9	118	113	3.9
1,2,3,6,7,8-HxCDF	0.000	1.00	1.12	1.06	6.2	112	106	6.2
2,3,4,6,7,8-HxCDF	0.000	1.00	1.11	1.08	2.2	111	108	2.2
1,2,3,7,8,9-HxCDF	0.000	1.00	1.15	1.11	3.6	115	111	3.6
1,2,3,4,7,8-HxCDD	0.000	1.00	1.15	1.04	10.3	115	104	10.3
1,2,3,6,7,8-HxCDD	0.000	1.00	1.23	1.22	0.6	123	122	0.6
1,2,3,7,8,9-HxCDD	0.000	1.00	1.18	1.12	5.9	118	112	5.9
1,2,3,4,6,7,8-HpCDF	0.000	1.00	1.21	1.13	7.0	121	113	7.0
1,2,3,4,7,8,9-HpCDF	0.000	1.00	1.06	1.02	4.2	106	102	4.2
1,2,3,4,6,7,8-HpCDD	0.295	1.00	1.09	1.00	8.3	109	100	8.3
OCDF	0.261	2.00	2.19	2.12	3.0	109	106	3.0
OCDD	0.000	2.00	2.33	2.21	5.2	115	109	5.3

Definitions

MS = Matrix Spike
MSD = Matrix Spike Duplicate
Qm = Quantity Measured
Qs = Quantity Spiked
% Rec. = Percent Recovery
RPD = Relative Percent Difference
NA = Not Applicable
NC = Not Calculated

CDD = Chlorinated dibenzo-p-dioxin
CDF = Chlorinated dibenzo-p-furan
T = Tetra
Pe = Penta
Hx = Hexa
Hp = Hepta
O = Octa

1126

OnSite Environmental Inc.

14648 NE 95th Street, Redmond, WA 98052 · (425) 883-3881

Laboratory Reference #: 07-038 10198494

Subcontract Laboratory: Pace Analytical Service, Inc.

Contact Person: Scott Unze / Dioxin Manger

Address: 1700 Elm St. Ste. 200 Minneapolis, MN 55414

Phone Number: (612) 607-6383

Date/Time: _____

Turnaround Request:

1 Day 2 Day 3 Day

(Standard)

Other: _____

Project Manager: David Baumeister

email: dbaumeister@onsite-env.com

Project Number: 5147-19-05

Project Name: _____

Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	# of Cont.	Requested Analysis
	GEI-16-5.0	7/5/12	1135	S	1	Dioxin/Furans

	Signature	Company	Date	Time
Relinquished by:		OSE	7/11/12	1530
Received by:		UPS		
Relinquished by:				
Received by:	Clt	Pace	7/12/12	09:19
Relinquished by:				
Received by:				

Comments/Special Instructions

EDDs

TIER 3

PLEASE RETURN COOLER & BLUE ICE

Pace Analytical®	Document Name: **Sample Condition Upon Receipt Form**	Document Revised: 19Jun2012 Page 1 of 1
	Document No.: **F-MN-L-213-rev.03**	Issuing Authority: Pace Minnesota Quality Office

Sample Condition Upon Receipt

Client Name: On Site Environmental Inc

Project #: WO#: 10198494

10198494

Courier: ☐ Fed Ex ☑ UPS ☐ USPS ☐ Client ☐ Commercial ☐ Pace ☐ Other: _____

Tracking Number: 1Z 684 E1W 13 9281 1020

Custody Seal on Cooler/Box Present? ☐ Yes ☑ No **Seals Intact?** ☐ Yes ☑ No **Optional:** Proj. Due Date: Proj. Name:

Packing Material: ☐ Bubble Wrap ☑ Bubble Bags ☐ None ☐ Other: _____ **Temp Blank?** ☐ Yes ☑ No

Thermometer Used: ☐ 80344042 ☑ 80512447 **Type of Ice:** ☐ Wet ☑ Blue ☐ None ☐ Samples on ice, cooling process has begun

Cooler Temperature: 3.8 **Biological Tissue Frozen?** ☐ Yes ☐ No **Date and Initials of Person Examining Contents:** CW 7.12.12

Temp should be above freezing to 6°C

				Comments:
Chain of Custody Present?	☑ Yes	☐ No	☐ N/A	1.
Chain of Custody Filled Out?	☑ Yes	☐ No	☐ N/A	2.
Chain of Custody Relinquished?	☑ Yes	☐ No	☐ N/A	3.
Sampler Name and Signature on COC?	☐ Yes	☑ No	☐ N/A	4.
Samples Arrived within Hold Time?	☑ Yes	☐ No	☐ N/A	5.
Short Hold Time Analysis (<72 hr)?	☐ Yes	☑ No	☐ N/A	6.
Rush Turn Around Time Requested?	☐ Yes	☑ No	☐ N/A	7.
Sufficient Volume?	☑ Yes	☐ No	☐ N/A	8.
Correct Containers Used?	☑ Yes	☐ No	☐ N/A	9.
-Pace Containers Used?	☐ Yes	☑ No	☐ N/A	
Containers Intact?	☑ Yes	☐ No	☐ N/A	10.
Filtered Volume Received for Dissolved Tests?	☐ Yes	☐ No	☑ N/A	11.
Sample Labels Match COC? -Includes Date/Time/ID/Analysis Matrix: SL	☑ Yes	☐ No	☐ N/A	12.
All containers needing acid/base preservation have been checked? Noncompliances are noted in 13.	☐ Yes	☐ No	☑ N/A	13. ☐ HNO_3 ☐ H_2SO_4 ☐ NaOH ☐ HCl
All containers needing preservation are found to be in compliance with EPA recommendation? (HNO_3, H_2SO_4, HCl<2; NaOH>12)	☐ Yes	☐ No	☑ N/A	Sample #
Exceptions: VOA, Coliform, TOC, Oil and Grease, WI-DRO (water)	☐ Yes	☑ No		Initial when completed: _____ Lot # of added preservative: _____
Headspace in VOA Vials (>6mm)?	☐ Yes	☐ No	☑ N/A	14.
Trip Blank Present?	☐ Yes	☐ No	☑ N/A	15.
Trip Blank Custody Seals Present?	☐ Yes	☐ No	☑ N/A	
Pace Trip Blank Lot # (if purchased): _____				

CLIENT NOTIFICATION/RESOLUTION **Field Data Required?** ☐ Yes ☐ No

Person Contacted: _____ Date/Time: _____

Comments/Resolution: _____

Project Manager Review: CW **Date:** 07/12/12

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e out of hold, incorrect preservative, out of temp, incorrect containers)

Chain of Custody

OnSite Environmental Inc.
Analytical Laboratory Testing Services
14648 NE 95th Street • Redmond, WA 98052
Phone: (425) 883-3881 • www.onsite-env.com

Company: GEI
Project Number: ~~5147-19-05~~ 5147-19-05
Project Name: WYMAN RAMP
Project Manager: ROBERT TRAHAN
Sampled by: JOHN PETERS

Turnaround Request (in working days)

(Check One)

☐ Same Day ☐ 1 Day
☐ 2 Days ☐ 3 Days
☒ Standard (7 Days) (TPH analysis 5 Days)
☐ _____ (other)

Laboratory Number: 07-038

Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	No. of Cont.	NWTPH-HCID	NWTPH-Gx/BTEX	NWTPH-Gx	NWTPH-Dx	Volatiles 8260B	Halogenated Volatiles 8260B	Semivolatiles 8270D/SIM (with low-level PAHs)	PAHs 8270D/SIM (low-level)	PCBs 8082	Organochlorine Pesticides 8081A	Organophosphorus Pesticides 8270D/SIM	Chlorinated Acid Herbicides 8151A	Total RCRA Metals	Total MTCA Metals	TCLP Metals	HEM (oil and grease) 1664				HOLD	% Moisture
1	GEI-11-2.5	7/5/12	1620	S	1																				X	
2	GEI-11-5.0		1625		2																				X	
3	GEI-11-8.0		1635		4		X											X		X					X	X
4	GEI-12-2.5		1425		1		X											X		X					X	X
5	GEI-12-5.0		1430		2																				X	
6	GEI-12-8.5		1440		4																				X	
7	GEI-13-2.5		1230		1																				X	
8	GEI-13-5.0		1235		2																				X	
9	GEI-13-7.5		1245		1																				X	
10	GEI-13-10.0		1350		4		X											X		X					X	X

	Signature	Company	Date	Time
Relinquished		GeoEngineers, Inc.	7/6/12	1105
Received		GSE	7/6/12	1105
Relinquished				
Received				
Relinquished				
Received				
Reviewed/Date		Reviewed/Date		

Comments/Special Instructions

ALL SAMPLE ~~PROJECT~~ LABELS SHALL HAVE PROJECT NUMBER 5147-19-05 EVEN IF PROJECT NUMBER 5147-49-05 ~~AS~~ HAS BEEN WRITTEN.

X Added 7/9/12. DB (STA)

Chromatograms with final report ☐ O Added 7/23/12. DB (STA)

Data Package: Level III X Level IV ☐ Electronic Data Deliverables (EDDs) X

Chain of Custody

Page 2 of 7 DB

OnSite Environmental Inc.
Analytical Laboratory Testing Services
14648 NE 95th Street • Redmond, WA 98052
Phone: (425) 883-3881 • www.onsite-env.com

Laboratory Number: 07-038

Company: GEI
Project Number: ~~5147-49-05~~ JTP 5147-19-05
Project Name: WYMAN RAMP
Project Manager: ROBERT TRAHAN
Sampled by: JOHN PETERS

Turnaround Request (in working days)
(Check One)
☐ Same Day ☐ 1 Day
☐ 2 Days ☐ 3 Days
☒ Standard (7 Days) (TPH analysis 5 Days)
☐ _____ (other)

Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	No. of Cont.	NWTPH-HCID	NWTPH-Gx/BTEX	NWTPH-Gx	NWTPH-Dx	Volatiles 8260B	Halogenated Volatiles 8260B	Semivolatiles 8270D/SIM (with low-level PAHs)	PAHs 8270D/SIM (low-level)	PCBs 8082	Organochlorine Pesticides 8081A	Organophosphorus Pesticides 8270D/SIM	Chlorinated Acid Herbicides 8151A	Total RCRA Metals	Total MTCA Metals	TCLP Metals	HEM (oil and grease) 1664				HOLD	% Moisture
11	GEI-14-2.5	~~X~~ 7/5	0850	S	1																				X	
12	GEI-14-5.0		0920		2		X											X		X					~~X~~ MS	X
13	GEI-14-7.5		0925		1																				X	
14	GEI-14-10.0		0930		2																				X	
15	GEI-14-12.5		0935		DB X 2																				X	
16	GEI-14-15		0940	~~S~~	3																				X	
17	GEI-15-2.5		1030		1																				X	
18	GEI-15-5.0		1040		2																				X	
19	GEI-15-7.5		1100		1																				X	
20	GEI-15-10.0	↓	1110	↓	2		X											X		X					~~X~~	X

	Signature	Company	Date	Time
Relinquished	John Peters	GeoEngineers, Inc.	7/6/12	1105
Received		GEI	7/6/12	1105
Relinquished				
Received				
Relinquished				
Received				
Reviewed/Date		Reviewed/Date		

Comments/Special Instructions
ALL SAMPLE LABELS SHALL HAVE PROJECT NUMBER 5147-19-05 EVEN IF PROJECT NUMBER 5147-49-05 HAS BEEN WRITTEN.
X Added 7/9/12. DB (STA)

Chromatograms with final report ☐

Data Package: Level III ☐ Level IV ☐ Electronic Data Deliverables (EDDs) ☐ _____

DD

Chain of Custody

Page 3 of 67

OnSite Environmental Inc.
Analytical Laboratory Testing Services
14648 NE 95th Street • Redmond, WA 98052
Phone: (425) 883-3881 • www.onsite-env.com

Company: GEI
Project Number: ~~5147-49-05~~ JHP 5147-19-05
Project Name: WYMAN RAMP
Project Manager: ROBERT TRAHAN
Sampled by: JOHN PETERS

Turnaround Request (in working days)

(Check One)

☐ Same Day ☐ 1 Day
☐ 2 Days ☐ 3 Days
☒ Standard (7 Days) (TPH analysis 5 Days)
☐ _____ (other)

Laboratory Number: 07-038

Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	No. of Cont.	NWTPH-HCID	NWTPH-Gx/BTEX	NWTPH-Gx	NWTPH-Dx	Volatiles 8260B	Halogenated Volatiles 8260B	Semivolatiles 8270D/SIM (with low-level PAHs)	PAHs 8270D/SIM (low-level)	PCBs 8082	Organochlorine Pesticides 8081A	Organophosphorus Pesticides 8270D/SIM	Chlorinated Acid Herbicides 8151A	Total RCRA Metals	Total MTCA Metals	TCLP Metals	HEM (oil and grease) 1664	Dioxin / Furans	TOC	SMS* - Metals, SVOCs, PCBs	HOLD	% Moisture
21	GEI-15-12.5	7/5/12	1117	S	1																				X	
22	GEI-15-14		1115		3																				X	
23	GEI-16-2.5		1130		1																				X	
24	GEI-16-5.0		1135		2		X											X		X		NC ~~X~~	~~X~~ NC		~~X~~ NC	X
25	GEI-16-7.5		1140		1																				X	
26	GEI-16-10.0		1145		2																				X	
27	GEI-16-13.0		1150		3																				X	
28	GEI-COMP-1		1320		3																X	X	X	X	~~X~~	X
		JHP		JHP																						

	Signature	Company	Date	Time
Relinquished	John Peters	GeoEngineers, Inc.	7/6/12	1105
Received		OSE	7/6/12	1105
Relinquished				
Received				
Relinquished				
Received				
Reviewed/Date		Reviewed/Date		

Comments/Special Instructions

ALL SAMPLE LABELS SHALL HAVE PROJECT NUMBER 5147-19-05 EVEN IF PROJECT NUMBER 5147-49-05 HAS BEEN WRITTEN

⊗Added 7/9/12. DB (STA)

Chromatograms with final report ☐ * See Attached

Data Package: Level III ☐ Level IV ☐ Electronic Data Deliverables (EDDs) ☐ _____

Chain of Custody

Page 4 of 67 (D3)

OnSite Environmental Inc.
Analytical Laboratory Testing Services
14648 NE 95th Street • Redmond, WA 98052
Phone: (425) 883-3881 • www.onsite-env.com

Company: GEI
Project Number: 5147-19-05
Project Name: WYMAN RAMP
Project Manager: ROBERT TRAHAN
Sampled by: JOHN PETERS

Turnaround Request (in working days)

(Check One)

- ☐ Same Day
- ☐ 1 Day
- ☐ 2 Days
- ☐ 3 Days
- ☒ Standard (7 Days) (TPH analysis 5 Days)
- ☐ _____ (other)

Laboratory Number: 07-038

Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	No. of Cont.	NWTPH-HCID	NWTPH-Gx/BTEX	NWTPH-Gx	NWTPH-Dx	Volatiles 8260B	Halogenated Volatiles 8260B	Semivolatiles 8270D/SIM (with low-level PAHs)	PAHs 8270D/SIM (low-level)	PCBs 8082	Organochlorine Pesticides 8081A	Organophosphorus Pesticides 8270D/SIM	Chlorinated Acid Herbicides 8151A	Total RCRA Metals	Total MTCA Metals	TCLP Metals	HEM (oil and grease) 1664	As, Cr, Cd, Cu, Pb, Hg		HOLD	% Moisture
29	GEI-SS-COMP	7/5/12	1630	S	3		X								X							X			X (D3)
30	GEI-SS-2-1-1.5		1520		1				X																X
31	GEI-SS-2-1-2.5		1525		1																			X	
32	GEI-SS-2-2-0.5		1040		1				X																X
33	GEI-SS-2-3-0.5		1045		1				X																X
34	GEI-SS-2-4-0.5		1050		1				X																X
35	GEI-SS-6-1-0.5		1528		1 VOA ONLY																			X	
36	GEI-SS-6-1-1.5		1530		2			X	X																X
37	GEI-SS-6-1-2.5		1535		2																			X	
38	GEI-SS-6-2-0.5		0950		2			X	X																X

	Signature	Company	Date	Time
Relinquished	John Peters	GeoEngineers, Inc	7/6/12	1105
Received		GE2	7/6/12	1105
Relinquished				
Received				
Relinquished				
Received				
Reviewed/Date		Reviewed/Date		

Comments/Special Instructions

ALL SAMPLE LABELS SHALL HAVE PROJECT NUMBER 5147-19-05 EVEN IF PROJECT NUMBER 5147-49-05 HAS BEEN WRITTEN

☒ Added 7/9/12. D3 (STA)

Chromatograms with final report ☐

Data Package: Level III ☐ Level IV ☐ Electronic Data Deliverables (EDDs) ☐ _____

Chain of Custody

Page 5 of 07 R1

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39	GEI-SS-6-3-0.5	7/5/12	0955	S	2			X	X																HOLD	X
40	GEI-SS-6-4-0.5		1000		2			X	X																HOLD	X
41	GEI-SS-9-1-1.5		1620		1																	X			HOLD	X
42	GEI-SS-9-1-2.5		1625		1																					X
43	GEI-SS-9-2-0.5		1210		1																	X			HOLD	X
44	GEI-SS-9-3-0.5		1215		1																	X			HOLD	X
45	GEI-SS-9-4-0.5		1220		1																	X			HOLD	X
46	GEI-SS-12-1-1.5		1505		1				X																HOLD	X
47	GEI-SS-12-1-2.5		1510		1																					X
48	GEI-SS-12-2-0.5		1120		1				X																HOLD	X

	Signature	Company	Date	Time
Relinquished	John Peters	GeoEngineers, Inc	7/6/12	1105
Received		GeoEngineers, Inc	7/6/12	1105
Relinquished				
Received				
Relinquished				
Received				
Reviewed/Date		Reviewed/Date		

Comments/Special Instructions
ALL SAMPLE LABELS SHALL HAVE PROJECT NUMBER 5147-19-05 EVEN IF PROJECT NUMBER 5147-49-05 HAS BEEN WRITTEN

Chromatograms with final report ☐

Data Package: Level III ☐ Level IV ☐ Electronic Data Deliverables (EDDs) ☐ _____

Chain of Custody

Page 6 of 6 7 DB

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Company: GEI
Project Number: 5147-19-05 ~~5147-49-05~~ JTP
Project Name: WYMAN RAMP
Project Manager: ROBERT TRAHAN
Sampled by: JOHN PETERS

Turnaround Request (in working days)

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Laboratory Number: 07-038

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49	GEI-SS-12-3-0.5	7/5/12	1125	S	1				X																X	X
50	GEI-SS-12-4-0.5	↓	1130	↓	1				X																X	X
51	GEI-SS-14/15-1-0.5		1545		2																	X			X	X NO
52	GEI-SS-14/15-1-1.5		1550		2				X															X	X	X
53	GEI-SS-14/15-1-2.5		1555		2																				X	
54	GEI-SS-14/15-2-0.5		1140		1				X															X	X	X
55	GEI-SS-14/15-3-0.5		1145		1				X													O		X	X	X
56	GEI-SS-14/15-4-0.5	↓	1150	↓	1				X													O		X	X	X

	Signature	Company	Date	Time
Relinquished	John Peters	GeoEngineers, Inc	7/6/12	1105
Received	[signature]	GSE	7/6/12	1105
Relinquished				
Received				
Relinquished				
Received				
Reviewed/Date		Reviewed/Date		

Comments/Special Instructions

ALL SAMPLE LABELS SHALL HAVE PROJECT NUMBER 5147-19-05 EVEN IF PROJECT NUMBER 5147-49-05 HAS BEEN WRITTEN

X Added 7/9/12. DB (STA)

Chromatograms with final report ☐ O Added 7/23/12. DB (STA)

Data Package: Level III ☐ Level IV ☐ Electronic Data Deliverables (EDDs) ☐ _____

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Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	No. of Cont.	NWTPH-HCID	NWTPH-Gx/BTEX	NWTPH-Gx	NWTPH-Dx	Volatiles 8260B	Halogenated Volatiles 8260B	Semivolatiles 8270D/SIM (with low-level PAHs)	PAHs 8270D/SIM (low-level)	PCBs 8082	Organochlorine Pesticides 8081A	Organophosphorus Pesticides 8270D/SIM	Chlorinated Acid Herbicides 8151A	Total RCRA Metals	Total MTCA Metals	TCLP Metals	HEM (oil and grease) 1664	TCLP LEAD		Pb, Cd, Hg		% Moisture
57	GEI-SS-13-1-0.5	7/5/12	1230	S	1				X	NO												X				X
58	GEI-SS-13-1-1.5		1235						X	NO					X									X		X
59	GEI-SS-13-2-0.5		1240												X									X		X
60	GEI-SS-13-3-0.5		1245						X	NO					X									X		X
61	GEI-SS-13-4-0.5	↓	1250	↓	↓										X									X		X

	Signature	Company	Date	Time
Relinquished		GeoEngineers, Inc	7/6/12	1105
Received			7/6/12	1105
Relinquished				
Received				
Relinquished				
Received				
Reviewed/Date		Reviewed/Date		

Comments/Special Instructions
X Added 7/9/12 DB (STA)

Chromatograms with final report ☐

Data Package: Level III ☐ Level IV ☐ Electronic Data Deliverables (EDDs) ☐ _____

APPENDIX C
Data Validation Report

GeoEngineers

Plaza 600 Building, 600 Stewart Street, Suite 1700, Seattle, WA 98101, Telephone: 206.728.2674, Fax: 206.728.2732 www.geoengineers.com

Data Validation Report

Project:	Wyman's Property Habitat Mitigation Area Design
File:	5147-019-05
Date:	July 26, 2012

GENERAL

This report presents the results of a United States Environmental Protection Agency (USEPA)-defined Stage 2A validation (USEPA Document 540-R-08-005; USEPA, 2009) of analytical data from the analyses of soil samples obtained from Wyman's Ramp Site located in Anacortes, Washington.

Objective and Quality Control (QC) Elements

The objective of the data quality assessment was to review laboratory analytical procedures and QC results to evaluate whether the samples were analyzed using well-defined and acceptable methods that provide quantitation limits below applicable regulatory criteria, the precision and accuracy of the data are well defined and sufficient to provide defensible data, and the quality assurance/quality control (QA/QC) procedures utilized by the laboratory meet acceptable industry practices and standards. The laboratory data was reviewed for following QC elements:

- Chain of Custody
- Holding Times
- Surrogates
- Method and Trip Blanks
- Laboratory Control Samples
- Matrix Spikes/Matrix Spike Duplicates
- Laboratory and Field Duplicates
- Internal Standards
- Dual column confirmations (PCBs only)
- Reporting Limits and Miscellaneous

Chemical Analysis Performed:

Samples obtained during the cleanup action were submitted to a Department of Ecology (Ecology)-certified laboratory - OnSite Environmental, Inc. (OnSite) of Redmond, Washington for one or more of the following analyses:

- Gasoline-range petroleum hydrocarbons by Ecology Method NWTPH-Gx;
- Diesel- and heavy oil-range petroleum hydrocarbons by Ecology Method NWTPH-Dx with silica gel/sulfuric acid cleanup;
- Benzene, ethylbenzene, toluene and xylenes (BETX) by EPA Method 8260B;

- Semivolatile organic compounds (SVOCs) by EPA Method 8270D/SIM;
- Organochlorine pesticides by EPA Method 8081A;
- Polychlorinated biphenyls (PCBs) by EPA Method 8082;
- Metals (arsenic, barium, cadmium, total chromium, copper, lead, mercury, selenium, silver, and zinc) by EPA Method 6010B/7470A; and
- TCPL metals (arsenic, barium, cadmium, total chromium, copper, lead, mercury, selenium, silver, and zinc) by EPA Method 1311/6010B/7470A.

OnSite Sample Data Groups (SDGs):

Following laboratory SDGs were delivered by OnSite and were reviewed by GeoEngineers for QC elements listed above:

- 1207-038

DATA QUALITY ASSESSMENT SUMMARY

The results for each of the QC elements are summarized below. The data assessment was performed using guidance in two USEPA documents: USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review (USEPA, 2010) and USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review (USEPA, 2008).

Chain-of-Custody Documentation

Chain-of-custody forms were provided with the laboratory analytical reports. All transcription discrepencies were documented, and the appropriate signatures were applied. There were no anomalies mentioned in the sample receipt forms, as the samples were transported to the laboratory at the appropriate temperatures of between 2 and 6 degrees Celsius.

Samples GEI-SS-13-1-0.5, GEI-SS-13-1-1.5, GEI-SS-13-2-0.5, and GEI-SS-13-3-0.5 were not listed on the chain-of-custody (COC). There was one extra sample VOA container for Sample GEI-14-12.5, and only one available sample VOA container for Sample GEI-SS-6-1-0.5.

Holding Times and Sample Preservation

The holding time is defined as the time that elapses between sample collection and sample analysis. Recommended maximum holding time criteria exist for each analysis to help ensure that the analyte concentrations found at the time of analysis reflect the concentrations present at the time of sample collection. Recommended holding times were met for all analyses.

Method Blanks

Method blanks are analyzed to assess whether laboratory procedures or reagents may have introduced measurable concentrations of the analytes of interest into project samples. Method blanks were analyzed with each batch of project samples, at a frequency of one per twenty samples. No method blank detections were reported by the testing laboratory.

Surogate Recoveries (Organics Analysis)

A surrogate compound is a compound that is chemically similar to one or more analytes of interest, but unlikely to be found in any project sample. Surrogates are used for organic analyses and are added to all project samples, laboratory standards and blank samples to verify the accuracy and specificity of each analysis. The surrogates are added at a known concentration, and percent recoveries (%R) are calculated after analysis. All surrogate recoveries were within laboratory control limits.

MATRIX SPIKES/MATRIX SPIKE DUPLICATES

Because actual analyte concentrations in environmental samples are not known and may differ from concentrations determined through laboratory analysis, the accuracy of a particular analysis is usually inferred by performing a matrix spike (MS) analysis. One aliquot of a sample is analyzed in the normal manner, and then a second aliquot of the sample (the MS sample) is spiked with a known amount of analyte and analyzed. From the MS analysis, a %R value is calculated. Matrix spike duplicate (MSD) analyses are generally performed for organic analyses as a precision check.

Due to the field sampling limitations of this sampling event, often times a laboratory control sample/laboratory control sample duplicate (LCS/LCSD) sample set was analyzed in lieu of an MS/MSD analysis. LCS/LCSD analyses are discussed in the next section.

- Metals: A matrix spike/matrix spike duplicate was performed on Sample GEI-SS-14/15-4-1.5. The MSD %R values for copper and zinc were greater than the conrol limit of 125%. No action was required, as the corresponding MS %R value was within the control limits.

Laboratroy Control Samples/Laboratory Control Sample Duplicates

A laboratory control sample (LCS) is a blank sample that is spiked with a known amount of analyte and then analyzed. An LCS is similar to an MS, but without the possibility of matrix interference. Because matrix interference is not an issue, the LCS/LCSD control limits for accuracy and precision are usually more rigorous than for MS/MSD analyses. Additionally, data qualification based on LCS/LCSD analysis would apply to all samples in the analytical batch instead of just the parent sample.

One LCS/LCSD analysis should be performed for every analytical batch or every 20 project samples, whichever is more frequent. The recovery criteria (%R) for LCS and LCSD analyses are specified in the laboratory documents, as are the relative percent difference (RPD) criteria for LCS/LCSD sample pairs. The frequency criteria were met for all analyses. The %R and RPD values for all target analytes in the LCS/LCSD analyses were within the laboratory control limits.

Field Duplicates

One field duplicate sample was obtained and analyzed along with the primary project samples. The duplicate sample was analyzed for the same parameters as the associated primary samples. The RPD between the primary and duplicate samples is used to assess sample heterogeneity and laboratory precision, unless one or more of the samples used has a concentration greater than five times the method reporting limit for that sample. In such cases, the absolute difference is used instead of the RPD. The RPD control limit for soil samples is 50 percent.

There were no field duplicates submitted for this sampling event.

Dual Column Confirmations

The PCB Aroclor compounds are analyzed by two columns, a primary and a secondary column. The percent difference (%D) values for any positive results between the primary and secondary columns are assessed against a control limit of 40%. All positive results for Aroclors were properly confirmed by a secondary column with %D values less than 40%.

Reporting Limits and Miscellaneous

There were no reporting limit anomalies associated with this sample delivery group.

OVERALL ASSESSMENT

The results of this Stage 2A data validation indicate that the laboratory followed the specified analytical methods. The accuracy of the data is acceptable, as demonstrated by the surrogate, LCS/LCSD, and MS/MSD %R values. The precision of the data also is acceptable, as demonstrated by the LCS/LCSD, MS/MSD, laboratory and field duplicate RPD values. Based on the data quality review, it is our opinion that the analytical data are of acceptable quality for their intended use.

REFERENCES

U.S. Environmental Protection Agency (USEPA). "Contract Laboratory Program National Functional Guidelines for Inorganic Data Review," OSWER 9240.1-51, EPA 540-R-10-011. January 2010.

U.S. Environmental Protection Agency (USEPA). "Contract Laboratory Program National Functional Guidelines for Superfund Organic Methods Data Review," EPA-540-R-08-01. June 2008.

U.S. Environmental Protection Agency (USEPA). "Guidance for Labeling Externally Validated Laboratory Analytical Data for Superfund Use," EPA-540-R-08-005. January 2009.