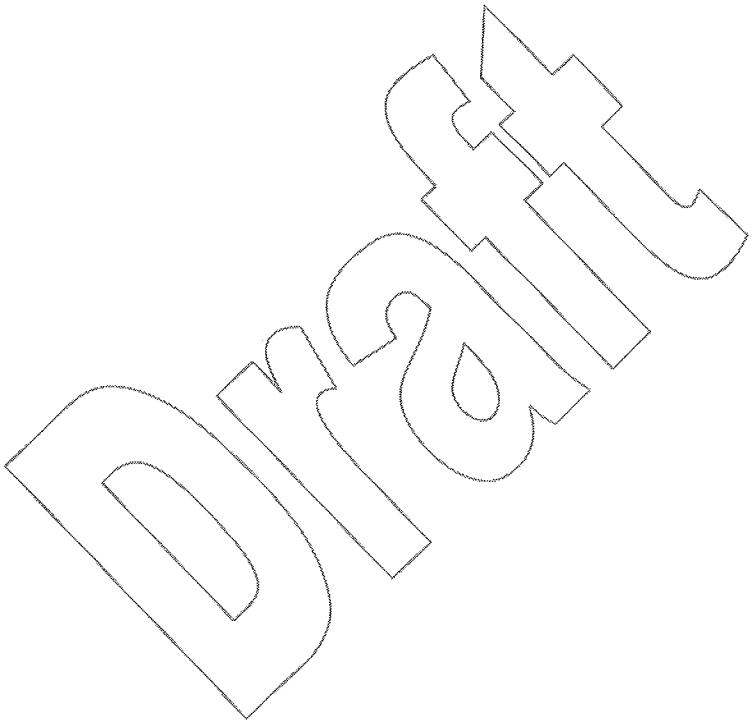
South Magnolia Combined Sewer Overflow Control Project
Phase II Environmental Site Assessment
Seattle, Washington

May 11, 2011



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EXECUTIVE SUMMARY

Shannon & Wilson, Inc. has completed a Phase II Environmental Site Assessment (ESA) for the Port of Seattle's West Yard as part of the South Magnolia Combined Sewer Overflow Control Project. The subject property is located within the South Magnolia Basin, south of the Magnolia Bridge on 23rd Avenue West in Seattle, Washington. The objective of this Phase II ESA was to address recognized environmental concerns indentified in the 2011 Kleinfelder Phase I ESA and the 2004 Shannon & Wilson Hazardous Materials Discipline Report conducted for the Magnolia Bridge Replacement project, and to investigate the areas proposed for construction of the project storage tank facility site and associated utilities. The investigation was conducted for King County.

The objective of this Phase II ESA was to evaluate whether current or former on- and off-site activities have affected the subject property. The Phase II ESA scope of work was conducted in two phases and included soil sampling from twenty four (24) geoprobes and one geotechnical soil boring, the collection of nine groundwater samples from select geoprobes and a monitoring well installed in the geotechnical boring. In addition, one composite soil sample was collected from a soil stockpile located in the northwest corner of the property.

Soil samples collected from geoprobe borings, geotechnical boring, and soil stockpile were analyzed for petroleum hydrocarbons and metals. Near-surface soil samples collected from the geoprobe borings were analyzed for lead only. Select samples were also analyzed for volatile organic compounds (VOCs), polychlorinated biphenyls, and polycyclic aromatic hydrocarbon (PAHs). Groundwater samples collected from geoprobes and the monitoring well were analyzed for petroleum hydrocarbons, metals, and VOCs.

From this sampling. the following conclusions and recommendations can be drawn:

- A records review was performed to evaluate for potential sources of contamination. No specific sources of contamination were identified in any of the records reviewed during the investigation. Therefore, grid-wise sampling was performed with randomized placement of explorations.

- Petroleum hydrocarbons were detected in three widely distributed areas across the site at concentrations less than the Method A cleanup criterion of 2,000 mg/kg. Diesel-range hydrocarbons were detected in sample GP-14:SO2:7 at a concentration of 46 mg/kg. Lube oil-range hydrocarbons were detected in samples GP-16:7, GP-17:8, and MA-9:7 at concentrations of 4, 780, and 58 mg/kg, respectively. Residual-range hydrocarbons were also detected in sample MA-9:7 at concentration of 101 mg/kg. The distribution of the petroleum suggests multiple potential sources of contamination. Since detected concentrations are less then MTCA Method A cleanup criteria, no cleanup is warranted based up existing data.
- No staining or odors were observed in surface soil samples; therefore, they were only collected for lead analysis in each grid-wise exploration. Detected levels of lead in the samples were less than the MTCA Method A cleanup criteria and Washington State metals background concentrations for lead for the Puget Sound region.
- Low levels of contamination, including oil-range hydrocarbons and metals were detected in the composite sample collected from the soil stockpile. Although no constituent or combination of constituents exceeded a regulatory criteria, based on the presence of contamination, it is recommended that the soil be disposed of at a regulated landfill.
- Field screening results indicated petroleum contamination is present in the vicinity of GP-14. Step-out probes were completed to evaluate the potential source of the odors and elevated photoionization detector (PID) readings. Only a single step-out probe (GP-14:SO2) northeast of GP-14 manifested a significant indication of contamination.
- GP-14:7 and GP-14:SO2 were analyzed for diesel- and oil-range hydrocarbons and PAHs and GP-14:7 was also analyzed for VOCs. Diesel-range hydrocarbons were detected in GP-14:SO2 at a concentration less than the Method A cleanup criteria of 2,000 mg/kg. No diesel-range hydrocarbons were detected in sample GP-14:7. However, PAHs were present in both GP-14:7 and GP-14:SO2 at concentrations less than Method A cleanup criteria. Given the wide distribution of persistent petroleum odors and based on screening and analytical results, an additional investigation maybe warranted near GP-14:7 and GP-14:SO2 to determine if higher levels are present nearby.
- VOCs including acetone, carbon disulfide and 2-butanone were also detected in GP-14 at concentrations less than their respective Method B Non-carcinogenic criteria. The source of the contamination is not known; however, 2-butanone and carbon disulfide are frequently associated with landfills and occur naturally. Acetone is common cleaner but could also be a laboratory contaminant. Additional investigation of the volatiles is probably not warrented.
- Carbon disulfide was also detected in sample GP-2:16 at a concentration less than its MTCA Method B Non-carcinogenic criteria. The source of the contamination is not known; however, carbon disulfide is frequently associated with landfills and can occur naturally. No further investigation of this area is probably warranted.

- Oil-range hydrocarbons were detected in groundwater sample GP-11:GW at a concentration that exceeded the Method A cleanup criterion of 0.5 mg/L. In addition to the petroleum hydrocarbons, total lead and mercury were detected. Lead was detected at a concentration of 2,000 µg/L, well above its Method A cleanup criteria of 15 µg/L and mercury was detected at concentration of 5.2 µg/L above its Method A cleanup criterion of 2 µg/L. This type of contamination is suggestive of a waste oil release and, therefore, an additional investigation is probably warranted to determine if higher levels are present nearby. Soil did not excced a regulatory criteria at this location.
- Total metal analysis for arsenic, and lead in groundwater derived from geoprobe borings exceeded Method A cleanup criteria in five of the nine samples. Total chromium exceeded its Method A cleanup criteria in four of the nine samples. However, the associated dissolved metals results did not exceed Method A cleanup criteria. Therefore, these elevated metals results are likely an artifact of sampling methodology and are not representative of widespread metals contamination in groundwater, with possibly the exception of lead in GP-11. As discussed above, the elevated lead detected in the groundwater in GP-11 may be associated with a waste oil release.
- Oil and its underlying constituents were also detected in samples collected from GP-16 and GP-17, however because of the low levels and nature of the contaminant an additional investigation does not appear warranted.
- Benzene was detected in the groundwater sample collected from monitoring well MA-9, which is screened at 36 feet below ground surface (bgs) to 46 feet bgs. The source of the benzene is not known but given its depth is likely associated with an off-site source. Since benzene was not detected elsewhere on site, an additional investigation is probably not warranted.

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SOUTH MAGNOLIA COMBINED SEWER OVERFLOW CONTROL PROJECT PHASE II ENVIRONMENTAL SITE ASSESSMENT SEATTLE, WASHINGTON

1.0 INTRODUCTION

1.1 Authorization

Shannon & Wilson, Inc. has completed a Phase II Environmental Site Assessment (ESA) for the Port of Seattle's West Yard Site as part of the South Magnolia Combined Sewer Overflow (CSO) Control Project. The project site is located within the South Magnolia Basin, south of the Magnolia Bridge on 23rd Avenue West in Seattle, Washington, as shown in Figure 1. This investigation was performed in accordance with the scope of services for King County (KC) Contract E00223E11, authorized on September 27, 2011.

1.2 Objective

The work was conducted as part of the South Magnolia CSO Control Project on behalf of KC. The scope of services was developed to address recognized environmental concerns (RECs) identified in the Klienfelder Phase I ESA (Klienfelder, 2011) and the RECs relevant to this project identified in the Shannon & Wilson Hazardous Materials Discipline Study (Shannon & Wilson, 2004) conducted for the Magnolia Bridge Replacement project. The 2004 study identified properties to the north and west that store or have stored heating oil. As part of the South Magnolia CSO project this investigation was also used to evaluate the potential for soil and groundwater contamination in the areas proposed for construction of the storage tank facility. The scope of this investigation consisted of the following tasks:

- Obtain right of entries from the Port of Seattle.
- Advance twenty-four (24) geoprobe soil borings to collect soil samples for chemical analysis at the site. Five advanced within the proposed storage tank footprint, an additional twelve (12) advanced on a grid-wise basis across the site, and seven step-out borings advanced to evaluate potential contamination identified by screening.
- Collect eight (8) groundwater samples, two (2) from the geoprobe soil borings within the proposed storage tank footprint and six (6) from the additional the geoprobe borings across the site for chemical analysis.

- Collect two (2) soil samples from the geotechnical boring/monitoring well installed for the Phase I geotechnical investigation at the storage tank site for chemical analysis.
- Collect a groundwater sample from the monitoring well installed during the Phase 1 geotechnical investigation at the storage tank site for chemical analysis.
- Collect one composite soil sample from the soil stockpile located in the northwest corner of site.
- Coordinate the disposal of investigation-derived waste (IDW) generated by this investigation.
- Prepare this report.

2.0 BACKGROUND

2.1 Project Description

The proposed Magnolia CSO storage tank site is located within the Port of Seattle's (the Port's) West Yard. The site is currently being used by American Seafoods for storage of equipment. The Site is relatively flat and is bordered to the west by 23rd Avenue West, to the north by the existing Magnolia Bridge, to the east by Smith Cove and Puget Sound, and to the south by Smith Cove Park and Puget Sound. The existing ground surface elevation of the site is about 110 feet (KC Metro Datum). The site is developed with a combination of concrete-paved and gravel areas. No buildings are currently located on the site.

The Magnolia CSO Control project, when completed, will include a new conveyance pipeline and storage tank. The new conveyance pipeline will start at the existing diversion structure located on 32nd Avenue West and will terminate at the proposed storage tank located at the Port of Seattle's West Yard. In addition to the storage tank structure, there is a buried stilling basin and pump station facility and an aboveground ancillary building located at the southwest corner of the storage tank.

2.2 Historical Review and Findings

Starting in 1911, in association with the ship canal project, portions of the site were first filled in and developed. A review of historical aerial photographs and Sanborn Fire Insurance maps show the presence of structures on the site between 1930s and 1940s. Aerial photographs reviewed from 1936 and 1946 first show the presence of potential residential and commercial buildings and then, by 1946, the site was completely filled in, as it presently looks today, and was used as ball fields. No structures were present in the 1946 photograph. By 1940, the site was operated

by the Navy and used as recreation field until 1974, when it was sold to the Port, where it has been leased by entities at the Port for use as storage (Kleinfelder West, 2011). A further discussion of the historical review is included in draft Historical Investigation Report (Shannon & Wilson, 2012).

Findings of the Phase I ESA conducted by Kleinfelder West in 2011 identified poor housekeeping, including the presence of several 55-gallon drums labeled as containing potentially hazardous material, and an approximate 2,000 cubic yard of stockpiled soil as being a REC for the site. Additional relevant RECs were identified for the project in the Shannon & Wilson Hazardous Materials Discipline Study (Shannon & Wilson, 2004) conducted for the Magnolia Bridge Replacement project. The 2004 study identified properties to the north and west that store or have stored heating oil. These identified properties could have potentially impacted the site soil and/or groundwater.

3.0 GEOLOGY AND HYDROGEOLOGY

3.1 Geology

Seattle is located in the central portion of the Puget Lowland, an elongated topographic and structural depression bordered by the Cascade Mountains on the east and the Olympic Mountains on the west. The lowland is characterized by a series of north-trending ridges separated by deep ravines and broad valleys. These ridges and valleys were formed by glacial scouring and sub-glacial erosion. In general, the ground surface elevation in the Puget Sound Region is within 500 feet of sea level.

The proposed project area is located within a north-south-trending topographic trough known as Interbay. The trough is bounded on both sides by glacial uplands, Magnolia on the west, and Queen Anne Hill on the east. The uplands are underlain by very dense and hard glacial soil laid down during the advance and retreat of several glaciations, whereas the intervening topographic swale/trough of Interbay is underlain by loose to dense glacial recessional outwash and beach deposits and very soft to stiff estuarine deposits laid down since the last retreat of glacial ice. Since the nineteenth century, various fill materials have been placed in the Interbay area, especially Smith Cove (Shannon & Wilson, 2004).

Soil observed in the subsurface explorations conducted during the Phase II ESA and geotechnical investigation generally consisted approximately 8 to 12 feet of loose artificial fill, consisting of slightly silty to silty, gravelly sand with scattered debris. The fill is underlain by about 6 to 11 feet of recent estuarine deposits and 22 to 34 feet of recent beach deposits. The

recent estuarine deposits consist of very soft, clayey silt to silty clay with scattered organic and shell fragments. The recent beach deposits consist of very loose to dense, silty, clayey gravel and slightly silty to silty gravel. The beach deposits are underlain by glacially overridden deposits of stiff to hard, silty clay to clayey silt at a depth of about 45 to 48 feet (elevation 62 to 65 feet).

3.2 Hydrogeology

The depth to the water table measured on the property during the Phase II ESA explorations and geotechnical investigation ranged from about 7.5 to 8 feet below ground surface (bgs). Based on topography of the site and the surrounding area, the local groundwater flow direction is likely to be to the south/southwest toward Smith Cove and Puget Sound. Since the site is directly adjacent to Smith Cove, the groundwater flow direction may fluctuate in response to tidal changes and other factors.

4.0 FIELD ACTIVITIES

Field activities were conducted during two phases. The initial phase was conducted from October 12 through 14, 2011, to investigate the area of the proposed CSO tank. The second phase was conducted on April 6 and 9, 2012, to investigate additional areas across the site.

During Phase 1in October 2011, a total of five geoprobe soil borings (GP-1 through GP-5) were advanced within the proposed storage tank footprint by ESN Northwest of Olympia, Washington. In addition, two geotechnical borings, MA-8 and MA-9, were drilled in the southwest and southeast corners of the proposed storage tank footprint. Boring MA-8 was completed with a vibrating wire and MA-9 was completed as a monitoring well. Additional information regarding the geotechnical investigation and borings are discussed in a draft technical memorandum.

During Phase 2 in April 2012, a total of 12 geoprobe soil borings (GP-6 through GP-17), and seven step-out probes (SO-1 through SO-7) were advance across the site by ESN Northwest. Locations of all the borings are shown in Figure 2.

The geoprobes borings were advanced using an AMS Powerprobe 9600 mounted on a Ford 550 series truck. The Powerprobe is a direct-push geoprobe rig with a 2-inch-outside diameter (O.D.) casing that is advanced using a percussive force, rather than an auger, to remove soils in its path. Geoprobe installation involved advancing the probe below the ground surface, then driving a 4-foot-long, 2-inch-O.D., plastic-lined sampler to retrieve a soil sample. The sampler

was then opened using a utility knife to expose the entire length of the sample and the soil is field screened for contamination using a photoionization detector (PID) and both visual and olfactory observations. Geoprobe samplers and associated sampling equipment were decontaminated between each geoprobe boring.

The two geotechnical borings were advanced using a mud-rotary drill rig. Soil samples were collected from the boring using a stainless steel spilt-spoon sampler equipped with a sample catcher. The samples were field screened for contamination using a PID and both visual and olfactory observations.

4.1 Site Access and Utility Review

Prior to the start of the Phase II investigation, utilities were cleared by reviewing available utility maps, notifying the public Washington Call-Before-You-Dig service, and subcontracting a private utility locating service. Site access was coordinated with the Port.

4.2 Soil Sampling

During the first phase of the investigation, geoprobe borings were advanced to a total depth of 20 feet bgs in five locations. A total of five soil samples were collected for analytical testing, one from each probe. The samples were collected from between 8 and 16.5 feet bgs. If no indication of contamination was encountered during the geoprobing, the soil sample was collected at the groundwater interface. Based on field screening including a detection of 22.5 parts per million (ppm) on the PID, one additional sample was collected in GP-2 at depth of 16.5 feet bgs. Because of the elevated PID readings, only the 16.5-foot sample from GP-2 was analyzed. The borings were advanced to 20 feet bgs in each location to provide additional information in support of the geotechnical review for the CSO Project.

Geotechnical borings MA-8 and MA-9 were drilled to a total depth of approximately 80 feet bgs using a mud-rotary drill rig. No field evidence of potential contamination was observed during the drilling, with the exception of two samples collected in boring MA-9 at 7 and 10 feet bgs near the water table. Field observations during drilling indicated that a slight hydrocarbon odor, along with an oily sheen, was present. Based on the observations soil samples were collected at 7 (MA-9:7) and 10 feet bgs (MA-9:10).

During the second phase of the investigation, a total of 12 geoprobe borings were advanced to an approximate total depth of 12 feet bgs. A total of 24 soil samples were collected for analytical testing, two from each boring. One soil sample was collected near the ground surface

(near-surface sample), at a depth of approximately 5 inches in each of the 12 locations during the geoprobing. A second soil sample was collected at the approximate groundwater interface. The second sample in each boring was collected between 6 and 9 feet bgs. PID readings taken during the course of the investigation ranged from 0.0 to 0.3 ppm, with the exception of one sample collected from geoprobe boring GP-14, which had a reading of 7.2 ppm.

Based on field screening, including an hydrocarbon odor and a detection of 7.2 ppm on the PID, seven step-out borings (SO-1 through SO-7) were advanced around geoprobe boring GP-14 to further evaluate the potential presence of contamination. Two soil samples were collected from each step-out geoprobe boring as described above. PID readings taken from the step-out geoprobe borings during sampling ranged from 0.1 ppm to the highest reading at 195 ppm in GP-14:SO2 at 7 feet. Based on the 195-ppm reading, the sample was analyzed.

All samples were collected using disposable sampling equipment and immediately placed into laboratory-supplied glassware. Each sample was identified with a unique sample number, immediately logged, stored in a cooler, and transported under proper chain-of-custody procedures to OnSite Environmental Inc. in Redmond, Washington, or Fremont Analytical in Seattle, Washington.

4.3 Soil Stockpile Sampling

During the second phase of the investigation, one composite soil sample (Stockpile Sample) was collected from the stockpiled soil located in the northwest corner of the site. Using a hand probe, soil borings were advanced on the stockpile in four locations to a depth of 5 feet below the top of the stockpile. The soil from each boring was placed and mixed in a stainless steel bowl. Prior to composting, the soil was screened for volatiles using a PID. Once all of the soil from the four borings was mixed together, one composite sample was collected using disposable sampling equipment and placed into laboratory-supplied glassware. The sample was stored in a cooler and transported under proper chain-of-custody procedures to OnSite Environmental, Inc.

4.4 Groundwater Sampling

A total of nine groundwater samples were collected during the first and second phases of the investigation at the site. Three samples were collected during the first phase and six samples were collected during the second phase. Groundwater samples were collected from the geoprobe borings (GP-2, -5, -6, -8, -11, -13, -14, and -16) and the monitoring well (MA-9) installed on the site in the geotechnical boring.

Groundwater was collected from geoprobe borings using temporary "micro-wells" or a mill-slotted groundwater sampler. Micro-wells consist of slotted ⅜-inch polyethylene tubing attached to an anchor point. The anchor point was driven to depth with a probe rod and the tubing was run through the rod and threaded to the anchor point. The probe rod was then withdrawn from the well, leaving the tubing in place.

The mill-slotted groundwater sampler is a vertically slotted drill rod with a drive point at the end. The sampler was advanced to depth and allowed to fill with water. A ⅜-inch polyethylene tube was then placed in the sampler for sampling. Once the sampler was in place, groundwater was withdrawn using ⅜-inch polyethylene tubing attached to a peristaltic pump.

After installation of monitoring well MA-9, the well was developed and sampled. The well was developed using the pump and surge method, with a surge block and submersible pump. Development was considered completed when the entire screened interval had been surged and little to no sediment remained at the bottom of the well. Development water was drummed at the site.

Groundwater sampling was initiated at least 24 hours after well development was completed. A submersible pump was used to remove standing water so that a representative sample of the groundwater could be collected. Purging was completed when field parameters measured during the purge had stabilized. After purging was completed, the monitoring well was sampled using the submersible pump and disposable tubing. All purge and sampling water was drummed at the site.

Groundwater samples were collected in the geoprobe borings within the groundwater interface at approximately 7.5 and 9.0 feet bgs. The water sample collected from monitoring well MA-9 was collected at a depth of approximately 40 feet bgs. Upon collection, each sample was identified with a unique sample number, immediately logged, and stored in an ice filled cooler. Upon completion of the sampling, the samples were transported under proper chain-of-custody procedures to OnSite Environmental, Inc. in Redmond, Washington.

4.5 Analytical Methods

All of the geoprobe soil samples collected during the first phase of the investigation, were analyzed for Northwest Total Petroleum Hydrocarbons (NWTPH)-Hydrocarbon Identification (HCID) and Resource Conservation and Recovery Act (RCRA) 8 metals (arsenic, barium, cadmium, chromium, lead, mercury, selenium, and silver) by U.S. Environmental Protection Agency (EPA) Method 6000/7000 series. Based on field screening observations, soil sample

GP-2:16.5 was additionally analyzed for volatile organic compounds (VOCs) by EPA Method 8260.

Soil sample MA-9:7, collected from the geotechnical boring MA-9, was analyzed for gasoline-range hydrocarbons by the NWTPH Gasoline-Extended method, for diesel- and oil-range hydrocarbons by the NWTPH Diesel-Extended (Dx) method, for polychlorinated biphenyls (PCBs) by EPA Method 8082, and for RCRA 8 metals EPA Method 6000/7000 series. Soil sample MA-9:10 was only analyzed using the NWTPH-HCID method.

All of the geoprobe soil samples and one composite stockpile sample collected during the second phase of the investigation were analyzed for NWTPH-HICD, Model Toxics Control Act (MTCA) 5 Metals (arsenic, cadmium, chromium, lead, and mercury). The near-surface soil samples collected were only analyzed for total lead. Based on field screening and initial analytical results, select samples were also analyzed for polycyclic aromatic hydrocarbons (PAHs) by EPA Method 8310, VOCs by EPA Method 8260, PCBs by EPA Method 8082, antimony and selenium by EPA Method 6010B, and diesel- and oil-range hydrocarbons by NWTPH-Dx method.

The groundwater samples collected during the first and second phases were analyzed for petroleum hydrocarbons by the NWTPH-HCID Method, VOCs by EPA Method 8260 and total and dissolved Priority Pollutant metals by EPA Methods 200.7, 6010, 245, 7470, and 7471. Based on the initial analytical results groundwater sample GP-11:GW was also analyzed for diesel- and oil-rang hydrocarbons by NWTPH-Dx method.

4.6 Analytical Results

Analytical results for the soil, stockpile, and groundwater samples collected during the Phase II ESA are discussed below. Tables 1, 2, 3, and 4, present summaries of results by various chemical groups for the soil and groundwater samples collected. A discussion of these data is provided in the following report sections. The analytical laboratory results for the collected samples are presented in Appendix B.

4.6.1 Soil Analytical Results

No gasoline-range hydrocarbons were detected in any of the soil samples collected at the site during the investigation.

Diesel-range hydrocarbons were only detected in one sample, GP-14:SO-2:7, at a concentration of 46 milligrams per kilograms (mg/kg), The detected concentration is below its corresponding MTCA Method A cleanup criterion of 2,000 mg/kg.

Oil- range hydrocarbons were detected in two geoprobe boring soil samples, GP-16:7 and GP-17:8, at concentrations of 4 and 780 mg/kg, the composite stockpile soil sample at a concentration of 160 mg/kg, and geotechnical boring sample, MA-9:7, at a concentration of 58 mg/kg. In addition, residual-range hydrocarbons were also detected in MA-9:7 at a concentration of 101 mg/kg. All of the detected concentrations are below their corresponding MTCA Method A cleanup criterion of 2,000 mg/kg.

Lead was detected in 7 of the 12 near surface samples collected during the second phase of the investigation. The detected concentrations ranged from 6.3 mg/kg in GP-14:0.5 to 50 mg/kg in GP-11:0.5. The detected concentrations were well below the established MCTA Method A cleanup criterion of 250 mg/kg.

Lead was detected in 6 of the 18 soil samples collected at the groundwater interface during the first and second phase of the investigation. The detected concentrations ranged from 6.0 mg/kg in GP-16:7 to 77 mg/kg in GP-11:8. The detected concentrations are below leads established MTCA Method A cleanup criterion of 250 mg/kg.

Low concentrations of chromium were detected in all of the soil samples analyzed for metals. The detected chromium concentrations ranged from 21 mg/kg in GP-15:8 to 69 mg/kg in GP-7:8, below its Method A cleanup criterion of 2,000 mg/kg when plating is not a concern.

Low concentrations of barium were detected in all of the soil samples collected during the first phase of the investigation at concentrations ranging from 16 mg/kg in GP-2:16.5 to 43 mg/kg in GP-1:8. At present, the Washington State Department of Ecology (Ecology) does not have an established cleanup criterion for barium. However, the detected concentrations are well below the Washington State background metals concentration of 300 mg/kg for the Puget Sound Region.

No antimony was detected in either of the eight foot samples collected from GP-9 or GP-11.

No mercury was detected in any of the first- or second-phase soil samples analyzed for metals.

No selenium was detected in any of the first- or second-phase soil samples analyzed for metals.

No arsenic or cadmium was detected in any of the soil samples collected during the first or second phases of the investigation with the exception of the 7-foot sample collected from boring MA-9. Arsenic and cadmium were detected at concentrations of 3.65 and 0.274 mg/kg, respectively, below their representative Method A cleanup criteria of 20 and 2 mg/kg.

Silver was detected in only one of the soil sample collected during the first phase of the investigation. Silver was detected at a concentration of 0.0381 mg/kg in boring MA-9:7. The detected concentration is below Washington States metals background concentration of 0.61 mg/kg for the Puget Sound Region.

No PCBs were detected in the samples collected from borings MA-9 or GP-17 and/or the soil stockpile sample.

Acetone, carbon disulfide, and 2-butanone were detected in the 7-foot sample collected from boring GP-14 at concentrations of 0.022, 0.0022, and 0.0046 mg/kg, respectively. The detected concentrations are all below Ecology's MTCA Method B values for each individual analyte.

Carbon disulfide was the only VOC detected in sample GP-2:16.5; at a concentration of 0.0013 mg/kg which is below Ecology's MTCA Method B value of 8,000 mg/kg.

PAHs, including carcinogenic PAHs (cPAHs), were detected in three of the four samples where they were analyzed. However, none of these samples had detections that exceeded either the MTCA Method A residential and/or industrial use cleanup criteria of 0.1 mg/kg and/or 2 mg/kg for total cPAHs (Table 4).

Table 4 provides the toxicity equivalency factor (TEF) analysis of the individual cPAH constituents. The TEF method is used to adjust the concentrations of individual cPAHs such that they are relative in toxicity to benzo(a)pyrene, which is the most carcinogenic of the PAHs. The individual cPAH concentrations are then added together for comparison with the MTCA cleanup level for benzo(a)pyrene.

Soil analytical results are presented in Tables 1, 3, and 4.

4.6.2 Stockpile Analytical Results

Metals including chromium and lead in the soil stockpile sample were detected at concentrations well below their individual Method A cleanup criteria. Lead was detected at a concentration of 33 mg/kg in the soil stockpile sample. No arsenic, cadmium, or mercury were detected in this sample.

No PCBs were detected in this sample.

Oil-range hydrocarbons were detected in the stockpile soil sample at a concentration of 160 mg/kg, below its corresponding MTCA Method A cleanup criterion of 2,000 mg/kg.

4.6.3 Water Analytical Results

No petroleum hydrocarbons were detected in the groundwater samples collected from the geoprobe borings and monitoring well during the investigation, with the exception of the sample collected from GP-11. Lube oil was detected above the MTCA Method A cleanup criterion of 0.5 milligram per liter (mg/L) at a concentration of 1.3 mg/L.

Total arsenic was detected in seven of the nine groundwater samples collected. The detected concentrations, with the exception of one (MA-9), exceeded its Method A cleanup criterion of 5 micrograms per liter (µg/L). Concentrations ranged from 4.6 µg/L in MA-9 to 170 µg/L in GP-11. Dissolved arsenic was detected in three of nine samples at concentrations ranging from 3.5 µg/L in GP-16 to 4.3 µg/L in MA-9, lower than the Method A criterion of 5 µg/L.

Total chromium was detected in seven of the nine groundwater samples collected. The detected concentrations exceeded its Method A cleanup criterion of 50 µg/L in four of the samples. Concentrations ranged from 170 µg/L in GP-11 to a maximum of 350 µg/L in GP-16.

Total lead was detected in seven of the nine groundwater samples collected. The detected concentrations exceeded the Method A cleanup criterion of 15 µg/L in six of the samples. Concentrations ranged from 17 µg/L in GP-6 to 2,000 µg/L in GP-11. Dissolved lead was detected in the sample collected from GP-14 at a concentration of 7.7 µg/L, well below its Method A criterion of 15µg/L.

Mercury (total) was detected in the groundwater sample collected from GP-11 at a concentration of 5.2 µg/L. The detected concentration exceeds its Method A cleanup criterion of 2 µg/L.

Total and dissolved antimony were detected in two of the nine groundwater samples collected. Antimony was detected at concentrations of 9.9 µg/L (total) and 11 µg/L (dissolved) in GP-5 and 13 µg/L (total) and 9.7 µg/L (dissolved) in GP-16. Total antimony was also detected in the sample collected from GP-11 at a concentration of 11 µg/L. The detected concentrations are greater than Ecology's Method B non-carcinogen standard formula value of 6.4 µg/L.

Total copper, nickel, and zinc were detected in samples collected from GP-6, GP-8, GP-11, GP-13, GP-14, and GP-16. The copper concentrations ranged from 20 µg/L in GP-14 to 760 µg/L in GP-11. The nickel concentrations ranged from 17 µg/L in GP-14 to 380 µg/L in GP-16 and the zinc concentrations ranged from 28 µg/L in GP-14 to 1300 µg/L in GP-11. Presently, Ecology has not established a Method A cleanup criterion for copper or nickel. The detected concentrations of zinc were less then Ecology's Method B non-carcinogen standard formula value of 4,800 µg/L.

No VOCs were detected in any of the groundwater samples collected from geoprobe borings and the monitoring well with the exception of benzene, carbon disulfide, and naphthnalene. Benzene was detected in the groundwater sample from monitoring well MA-9 at a concentration of 0.22 µg/L, which is less than its Method A cleanup criterion of 5 µg/L. Carbon disulfide was detected in samples collected from GP-14 and GP-16 at concentrations of 0.31 µg/L in GP-14 and 0.24 µg/L in GP-16. Both of the detected concentrations are less than Ecology's Method B non-carcinogen value of 8,000 µg/L. Naphthnalene was only detected in the sample collected from GP-16 at a concentration of 2.5 µg/L which is less than its Method A cleanup criterion of 160 µg/L.

Groundwater analytical results are presented in Table 2.

4.7 Investigation-derived Waste (IDW)

IDW, including soil cuttings and development/purge/rinse water generated during the first phase of field activities, was placed into 55-gallon drums, labeled, and temporarily stored on site. The drilling subcontractor, Boart Longyear of Fife, Washington, disposed of this material in accordance with applicable local, state, and federal regulations and permits on November 30, 2011.

IDW generated during the second phase of the investigation was placed into 15-gallon drums and temporarily stored onsite. The IDW is currently waiting for disposal. Available disposal documentation is contained in Appendix C.

5.0 CONCLUSIONS AND RECOMENDATIONS

Based on the above data, we offer the following conclusions and recommendations for the subject property.

- A records review was performed to evaluate for potential sources of contamination. No specific sources of contamination were identified in any of the records reviewed during the investigation. Therefore, grid-wise sampling was performed with randomized placement of explorations.
- Petroleum hydrocarbons were detected in three widely distributed areas across the site at concentrations less than the Method A cleanup criterion of 2,000 mg/kg. Diesel-range hydrocarbons were detected in sample GP-14:SO2:7 at a concentration of 46 mg/kg. Lube oil-range hydrocarbons were detected in samples GP-16:7, GP-17:8, and MA-9:7 at concentrations of 4, 780, and 58 mg/kg, respectively. Residual-range hydrocarbons were also detected in sample MA-9:7 at concentration of 101 mg/kg. The distribution of the petroleum suggests multiple potential sources of contamination. Since detected concentrations are less then MTCA Method A cleanup criteria, no cleanup is warranted based up existing data.
- No staining or odors were observed in surface soil samples; therefore, they were only collected for lead analysis in each grid-wise exploration. Detected levels of lead in the samples were less than the MTCA Method A cleanup criteria and Washington State metals background concentrations for lead for the Puget Sound region.
- Low levels of contamination, including oil-range hydrocarbons and metals were detected in the composite sample collected from the soil stockpile. Although no constituent or combination of constituents exceeded a regulatory criteria, based on the presence of contamination, it is recommended that the soil be disposed of at a regulated landfill.
- Field screening results indicated petroleum contamination is present in the vicinity of GP-14. Step-out probes were completed to evaluate the potential source of the odors and elevated photoionization detector (PID) readings. Only a single step-out probe (GP-14:SO2) northeast of GP-14 manifested a significant indication of contamination.

- GP-14:7 and GP-14:SO2 were analyzed for diesel- and oil-range hydrocarbons and PAHs and GP-14:7 was also analyzed for VOCs. Diesel-range hydrocarbons were detected in GP-14:SO2 at a concentration less than the Method A cleanup criteria of 2,000 mg/kg. No diesel-range hydrocarbons were detected in sample GP-14:7. However, PAHs were present in both GP-14:7 and GP-14:SO2 at concentrations less than Method A cleanup criteria. Given the wide distribution of persistent petroleum odors and based on screening and analytical results, an additional investigation maybe warranted near GP-14:7 and GP-14:SO2 to determine if higher levels are present nearby.
- VOCs including acetone, carbon disulfide and 2-butanone were also detected in GP-14 at concentrations less than their respective Method B Non-carcinogenic criteria. The source of the contamination is not known; however, 2-butanone and carbon disulfide are frequently associated with landfills and occur naturally. Acetone is common cleaner but could also be a laboratory contaminant. Additional investigation of the volatiles is probably not warrented.
- Carbon disulfide was also detected in sample GP-2:16 at a concentration less than its MTCA Method B Non-carcinogenic criteria. The source of the contamination is not known; however, carbon disulfide is frequently associated with landfills and can occur naturally. No further investigation of this area is probably warranted.
- Oil-range hydrocarbons were detected in groundwater sample GP-11:GW at a concentration that exceeded the Method A cleanup criterion of 0.5 mg/L. In addition to the petroleum hydrocarbons, total lead and mercury were detected. Lead was detected at a concentration of 2,000 µg/L, well above its Method A cleanup criteria of 15 µg/L and mercury was detected at concentration of 5.2 µg/L above its Method A cleanup criterion of 2 µg/L. This type of contamination is suggestive of a waste oil release and, therefore, an additional investigation is probably warranted to determine if higher levels are present nearby. Soil did not excced a regulatory criteria at this location.
- Total metal analysis for arsenic, and lead in groundwater derived from geoprobe borings exceeded Method A cleanup criteria in five of the nine samples. Total chromium exceeded its Method A cleanup criteria in four of the nine samples. However, the associated dissolved metals results did not exceed Method A cleanup criteria. Therefore, these elevated metals results are likely an artifact of sampling methodology and are not representative of widespread metals contamination in groundwater, with possibly the exception of lead in GP-11. As discussed above, the elevated lead detected in the groundwater in GP-11 may be associated with a waste oil release.
- Oil and its underlying constituents were also detected in samples collected from GP-16 and GP-17, however because of the low levels and nature of the contaminant an additional investigation does not appear warranted.

- Benzene was detected in the groundwater sample collected from monitoring well MA-9, which is screened at 36 feet below ground surface (bgs) to 46 feet bgs. The source of the benzene is not known but given its depth is likely associated with an off-site source. Since benzene was not detected elsewhere on site, an additional investigation is probably not warranted.

6.0 LIMITATIONS

Within the limitations of scope, schedule, and budget, Shannon & Wilson has prepared this report in a professional manner, using that level of skill and care normally exercised for similar projects under similar conditions by reputable and competent environmental consultants currently practicing in this area.

The data presented in this report are based on limited research and sampling at the site and should be considered representative at the time of our observations. Other areas of contamination that were not obvious during our site work could be present at the site. Shannon & Wilson is not responsible for conditions or consequences arising from relevant facts that were concealed, withheld, or not fully disclosed at the time the report was prepared. We also note that the facts and conditions referenced in this report may change over time and that the conclusions and recommendations set forth here are applicable to the facts and conditions as described only at the time of this report. We believe that the conclusions stated here are factual, but no guarantee is made or implied.

This report was prepared for the exclusive use of KC and Tetra Tech and their representatives, and in no way guarantees that any agency or its staff will reach the same conclusions as Shannon & Wilson. To help you and others in understanding the limitations of our report, Shannon & Wilson has prepared Appendix D, "Important Information About Your Geotechnical/ Environmental Report."

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7.0 REFERENCES

Kleinfelder, 2011, Phase I environmental site assessment, South Magnolia CSO Control Project, Vicinity of 2001 West Garfield Street Seattle, Washington: Report prepared by Kleinfelder, Redmond, Washington, for EAS Adolfson, Seattle, Washington, May 27.

Shannon & Wilson, Inc., 2004, Discipline report hazardous materials, Draft EIS Magnolia Bridge Replacement, Seattle, Washington: Report prepared by Shannon & Wilson, Seattle, Washington, for the City of Seattle, Washington, August.

Washington State Department of Ecology, 1994, Natural background soil metals concentrations in Washington State: Olympia, Wash., Washington State Department of Ecology, publication No. 94-115, October.

Washington State Department of Ecology, 2001, Model Toxics Control Act cleanup regulation, Chapter 173-340 Washington Administration Code: Olympia, Wash., Washington State Department of Ecology, publication No. 94-06, amended February 12.

TABLE 1
WEST YARD PHASE II ENVIRONMENTAL SITE ASSESSMENT
SEATTLE, WASHINGTON
SOIL ANALYTICAL RESULTS FOR TPH, METALS, PCBs, AND VOCs

Boring ID	Sample Number	NWTPH-HCID			NWTPH-Gx	NWTPH-Dx/Dx Ext.			Total Metals									PCBs	VOCs^		
		Gasoline	Diesel	Oil	Gasoline	Diesel	Oil	Heavy Fuel Oil	Arsenic	Antimony	Barium	Cadmium	Chromium	Lead	Mercury	Selenium	Silver		Acetone	Carbon Disulfide	2-Butanone
SOIL RESULTS (mg/kg)								--													
GP-1	GP-1:8	<25	<61	<120	--	--	--	--	<12	--	**43**	<0.61	**44**	<6.1	<0.31	<12	<0.61	--	--	--	--
GP-2	GP-2:16.5	<23	<57	<110	--	--	--	--	<11	--	**16**	<0.57	**17**	<5.7	<0.28	<11	<0.57	--	<0.0052	**0.013**	<0.0052
GP-3	GP-3:8	<22	<56	<110	--	--	--	--	<11	--	**35**	<0.56	**56**	<5.6	<0.28	<11	<0.56	--	--	--	--
GP-4	GP-4:8	<23	<56	<110	--	--	--	--	<11	--	**34**	<0.56	**36**	<5.6	<0.28	<11	<0.56	--	--	--	--
GP-5	GP-5:8	<22	<56	<110	--	--	--	--	<11	--	**31**	<0.56	**38**	<5.6	<0.28	<11	<0.56	--	--	--	--
GP-6	GP-6:0.5	--	--	--	--	--	--	--	--	--	--	--	--	**15**	--	--	--	--	--	--	--
GP-6	GP-6:7	<22	<56	<110	--	--	--	--	<11	--	--	<0.56	**32**	<5.6	<0.28	--	--	--	--	--	--
GP-7	GP-7:0.5	--	--	--	--	--	--	--	--	--	--	--	--	<5.5	--	--	--	--	--	--	--
GP-7	GP-7:8	<25	<62	<130	--	--	--	--	<12	--	--	<0.62	**69**	<6.2	<0.31	--	--	--	--	--	--
GP-8	GP-8:0.5	--	--	--	--	--	--	--	--	--	--	--	--	<5.5	--	--	--	--	--	--	--
GP-8	GP-8:7	<23	<56	<110	--	--	--	--	<11	--	--	<0.56	**29**	<5.6	<0.28	--	--	--	--	--	--
GP-9	GP-9:0.5	--	--	--	--	--	--	--	--	--	--	--	--	<5.4	--	--	--	--	--	--	--
GP-9	GP-9:8	<24	<60	<120	--	--	--	--	<12	<6	--	<0.60	**23**	**38**	<0.30	<12	--	--	--	--	--
GP-10	GP-10:0.5	--	--	--	--	--	--	--	--	--	--	--	--	**14**	--	--	--	--	--	--	--
GP-10	GP-10:9	<22	<54	<110	--	--	--	--	<11	--	--	<0.54	**24**	**11**	<0.27	--	--	--	--	--	--
GP-11	GP-11:0.5	--	--	--	--	--	--	--	--	--	--	--	--	**50**	--	--	--	--	--	--	--
GP-11	GP-11:8	<23	<58	<120	--	--	--	--	<12	<5.8	--	<0.58	**22**	**77**	<0.29	<12	--	--	--	--	--
GP-12	GP-12:0.5	--	--	--	--	--	--	--	--		--	--	--	**11**	--	--	--	--	--	--	--
GP-12	GP-12:8	<27	<66	<130	--	--	--	--	<13	--	--	<0.66	**42**	<6.6	<0.33	--	--	--	--	--	--
GP-13	GP-13:0.5	--	--	--	--	--	--	--	--	--	--	--	--	**8.8**	--	--	--	--	--	--	--
GP-13	GP-13:6	<22	<56	<110	--	--	--	--	<11	--	--	<0.56	**26**	<5.6	<0.28	--	--	--	--	--	--
GP-14	GP-14:0.5	--	--	--	--	--	--	--	--	--	--	--	--	**6.3**	--	--	--	--	--	--	--
GP-14	GP-14:7	<22	<56	<120	--	--	--	--	<12	--	--	<0.58	**32**	<5.8	<0.29	--	--	--	**0.022**	**0.0022**	**0.0046**
GP-14:SO2	GP-14:SO2:7	<23	<55	**	--	**46**	<57	--	--	--	--	--	--	--	--	--	--	--	--	--	--
GP-15	GP-15:0.5	--	--	--	--	--	--	--	--	--	--	--	--	**14**	--	--	--	--	--	--	--
GP-15	GP-15:8	<22	<56	<110	--	--	--	--	<11	--	--	<0.56	**21**	<5.6	<0.28	--	--	--	--	--	--
GP-16	GP-16:0.5	--	--	--	--	--	--	--	--	--	--	--	--	<6.3	--	--	--	--	--	--	--
GP-16	GP-16:7	<23	<57	**	--	<28	**4**	--	<11	--	--	<0.57	**48**	**6.0**	<0.28	--	--	--	--	--	--
GP-17	GP-17:0.5	--	--	--	--	--	--	--	--	--	--	--	--	<5.6	--	--	--	--	--	--	--
GP-17	GP-17:8	<25	<62	**	--	<160	**780**	--	<12	--	--	<0.62	**43**	**6.4**	<0.31	--	--	<0.062	--	--	--
Soil Stockpile	Soil Stockpile	<22	<55	**	--	<27	**160**	--	<11	--	--	<.55	**37**	**33**	<0.27	--	--	<0.055	--	--	--
MA-9	MA-9:7	--	--	--	<4.62	<23.2	**58**	**101****	**3.65**	--	**42**	**0.274**	**20.6**	**11.7**	<0.218	<0.452	**0.0381**	<0.101	--	--	--
MA-9	MA-9:10	<28.3	<70.8	142	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MA-8	MA8:0:C	<37.7	<94.2	<188	--	--	--	--	**3.84**	--	**62.7**	<0.224	**19.4**	**5.27**	--	<0.560	<0.112	--	--	--	--
MTCA Method A (unrestricted use)		100	2,000	2,000	100	2,000	2,000	2,000	20		*	2	2000	250	2	*	*	1	*	*	*
MTCA Method A (industrial use)		100	2,000	2,000	100	2,000	2,000	2,000	20		*	2	2000	250	2	*	*	10	*	*	*
MTCA Method B (Non-carcinogen)																			72,000	8,000	48,000
Puget Sound Background		NA	NA	NA	NA	NA	NA	NA	7		(1)	1	48	24	0.07	0.78	0.61	NA	NA	NA	NA

Notes:

(1) State background levels for barium range from 300 - 1,000 mg/kg.

* No MTCA Method A cleanup criterion is established for this analyte.

-- = not tested

^ = Only detected VOCs are summarized on this table.

< = Analyte detected below method reporting limit.

** Indicates the presence of a detected compound in the lube oil-range.

Bold text indicates a detected analyte.

Dx = diesel-extended

HCID = hydrocarbon Identification

mg/kg = milligrams per kilogram

MTCA = Model Toxics Control Act

NA = not applicable

NWTPH = Northwest Total Petroleum Hydrocarbons

PCBs = polychlorinated biphenyls

VOCs = volatile organic compounds

TABLE 2
WEST YARD PHASE II ENVIRONMENTAL SITE ASSESSMENT
SEATTLE, WASHINGTON
GROUNDWATER ANALYTICAL RESULTS FOR TPH, METALS AND VOCs

Boring ID	Sample Number	NWTPH-HCID (mg/L)			NWTPH-Dx/Dx Ext. (mg/L		Total Priority Pollutant Metals^ (µg/L)								Dissolved Priority Pollutant Metals^ (µg/L)			VOCs^ (µg/L)		
		Gasoline	Diesel	Oil	Diesel	Oil	Antimony	Arsenic	Chromium	Copper	Lead	Mercury	Nickel	Zinc	Arsenic	Antimony	Lead	Benzene	Carbon Disulfide	Naphthnalene
GP-2	GP-2:GW	<0.11	<0.28	<0.45	--	--	<5.6	<3.3	**17**	<11	**1.9**	<0.50	**33**	<28	<3.0	<5.0	<5.0	<0.20	<0.20	<1.0
GP-5	GP-5:GW	<0.11	<0.27	<0.44	--	--	**9.9**	<3.3	<11	<11	<1.1	<0.50	<22	<22	<3.0	**11**	<5.0	--	--	--
GP-6	GP-6:GW	<0.10	<0.26	<0.41	--	--	<5.0	**6.1**	**36**	**22**	**17**	<0.50	**60**	**43**	<3.0	<5.0	<1.0	<0.20	<0.20	<1.0
GP-8	GP-8:GW	<0.10	<0.26	<0.41	--	--	<5.0	**22**	**320**	**140**	**80**	<0.50	**340**	**270**	<3.0	<5.0	<1.0	<0.20	<0.20	<1.0
GP-11	GP-11:GW	<0.10	<0.25	**	<0.25	**1.3**	**11**	**170**	**170**	**760**	**2000**	**5.2**	**170**	**1300**	<3.0	<5.0	<1.0	<0.20	<0.20	<1.0
GP-13	GP-13:GW	<0.10	<0.26	<0.41	--	--	<5.0	**18**	**180**	**91**	**25**	<0.50	**220**	**150**	<3.0	<5.0	<1.0	<0.20	<0.20	<1.0
GP-14	GP-14:GW	<0.10	<0.26	<0.42	--	--	<5.0	**5.8**	**12**	**20**	**62**	<0.50	**17**	**28**	**4**	<5.0	**7.7**	<0.20	**0.31**	<1.0
GP-16	GP-16:GW	<0.10	<0.26	<0.41	--	--	**13**	**50**	**350**	**240**	**130**	<0.50	**380**	**510**	**3.5**	**9.7**	<1.0	<0.20	**0.24**	**2.5**
MA-9	MA-9:GW:1	<0.10	<0.26	<0.41	--	--	<5.6	**4.6**	<11	<11	<1.1	<0.025	<22	<22	**4.3**	<5.0	<5.0	**0.22**	<0.20	<1.0
MTCA Method A		0.8	0.5	0.5	0.5	0.5	*	5	50	*	15	2	*	*	5	*	15	5	*	160
MTCA Method B (Carcinogen)							NR	0.05833	NR		NR	NR	NR	NR	0.0583	NR	NR	0.79545	NR	NR
MTCA Method B (Non-carcinogen)							6.4	4.8	NR	640	NR	RND	NR	4800	4.8	6.4	NR	32	800	350

Notes:
* No MTCA Method A cleanup criterion is established for this analyte.
^ = Only detected VOCs and metals are summarized in this table.
Shading indicates an exceedance of criteria.
** Indicates the presence of a detected compound in the lube oil-range.
Bold text indicates a detected analyte.
Priority pollutant metals include: antimony, arsenic, beryllium, cadmium, chromium, copper, lead, mercury, nickel, selenium, silver, thallium, and zinc.
Dx = diesel-extended
µg/L = micrograms per liter
mg/L = milligrams per liter
MTCA = Washington Model Toxics Control Act
ND = not detected
NR = Not Researched; means research has not been conducted and no value exists in the database for this parameter.
NWTPH = Northwest Total Hydrocarbons
RND = Researched, No Data; means research has not been conducted and no value exists in the database for this parameter.
VOCs = volatile organic compounds

TABLE 3
WEST YARD PHASE II ENVIRONMENTAL SITE ASSESSMENT
SEATTLE, WASHINGTON
SOIL ANALYTICAL RESULTS FOR PAHs and cPAHS

Sample Number	GP-14:7	GP-14:SO2:7	GP-16:7	GP-17:8
units	mg/kg	mg/kg	mg/kg	mg/kg
Polycyclic Aromatic Hydrocarbons (PAHs)				
Naphthalene	**0.015**	**0.054**	**0.57**	<0.0083
2-Methylnaphthalene	<0.0077	0.028	**0.24**	<0.0083
1-Methylnaphthalene	<0.0077	0.028	**0.16**	<0.0083
Acenaphthylene	<0.0077	<0.0076	<0.0076	<0.0083
Acenaphthene	<0.0077	<0.0076	**0.28**	<0.0083
Fluorene	**0.0078**	**0.0093**	**0.23**	<0.0083
Phenanthrene	**0.015**	**0.029**	**0.210**	<0.0083
Anthracene	**0.09**	**0.01**	**0.027**	<0.0083
Fluoranthene	**0.100**	**0.046**	**0.056**	<0.0083
Pyrene	**0.065**	**0.051**	**0.039**	<0.0083
Benzo[g,h,i]perylene	<0.0077	0.013	<0.0076	<0.0083
Carcinogenic PAHs (cPAHs)				
Benzo[a]anthracene	**0.028**	**0.020**	**0.010**	<0.0083
Chrysene	**0.031**	**0.019**	**0.013**	<0.0083
Benzo[b]fluoranthene	**0.013**	**0.270**	**0.013**	<0.0083
Benzo[k]fluoranthene	<0.0077	<0.0076	<0.0076	<0.0083
Benzo[a]pyrene	**0.028**	**0.016**	<0.0076	<0.0083
Indeno[1,2,3-c,d]pyrene	<0.0077	**0.012**	<0.0076	<0.0083
Dibenz[a,h]anthracene	<0.0077	<0.0076	<0.0076	<0.0083
TEF for cPAHs - mg/kg (See Table 4)	**0.01**	**0.02**	**0.01**	**0.01**
MTCA Method A (unrestricted use)	0.1	0.1	0.1	0.1
MTCA Method A (industrial use)	2	2	2	2

Notes:
-- = not tested
< = not detected above indicated reporting limit
Bold text indicates a detected analyte.
Shading indicates an exceedance of criteria
cPAHs = carcinogenic polynucelar aromatic hydrocarbons
µg/L = micrograms per liter
mg/kg = milligrams per kilogram
MTCA = Washington Model Toxics Control Act
NA = not applicable
ND = not detected above reporting limit (see Table 4)
PAHs = polynuclear aromatic hydrocarbons
TEF = toxicity equivalency factor

TABLE 4
WEST YARD PHASE II ENVIRONMENTAL SITE ASSESSMENT
SEATTLE, WASHINGTON
TOXICITY EQUIVALENCY FACTOR-ADJUSTED cPAH CONCENTRATIONS

ADJUSTED TEF CONCENTRATION FOR SAMPLE GP-14:7

Analyte	Sample Result (mg/kg)	Method Detection Limit (mg/kg)	Toxic Equivalency Factor	Adjusted Concentration[1] (mg/kg)
Benzo(a)anthracene	0.028	0.0077	0.1	0.0028
Chrysene	0.031	0.0077	0.01	0.00031
Benzo(b)fluoranthene	0.013	0.0077	0.1	0.0013
Benzo(k)fluoranthene	ND	0.0077	0.1	0.000385
Benzo(a)pyrene	ND	0.0077	1	0.00385
Indeno(1,2,3-c,d)pyrene	ND	0.0077	0.1	0.000385
Dibenzo(a,h)anthracene	ND	0.0077	0.4	0.0015
Sum[2]				**0.01**
MTCA Method A Cleanup Level for Unrestricted Land Use				0.100

ADJUSTED TEF CONCENTRATION FOR SAMPLE GP-14:SO2:7

Analyte	Sample Result (mg/kg)	Method Detection Limit (mg/kg)	Toxic Equivalency Factor	Adjusted Concentration[1] (mg/kg)
Benzo(a)anthracene	0.020	0.0076	0.1	0.002
Chrysene	0.019	0.0076	0.01	0.00019
Benzo(b)fluoranthene	0.027	0.0076	0.1	0.0027
Benzo(k)fluoranthene	ND	0.0076	0.1	0.00038
Benzo(a)pyrene	0.016	0.0076	1	0.016
Indeno(1,2,3-c,d)pyrene	0.012	0.0076	0.1	0.0012
Dibenzo(a,h)anthracene	ND	0.0076	0.4	0.0015
Sum[2]				**0.02**
MTCA Method A Cleanup Level for Unrestricted Land Use				0.100

TABLE 4
WEST YARD PHASE II ENVIRONMENTAL SITE ASSESSMENT
SEATTLE, WASHINGTON
TOXICITY EQUIVALENCY FACTOR-ADJUSTED cPAH CONCENTRATIONS

ADJUSTED TEF CONCENTRATION FOR SAMPLE GP-16:7

Analyte	Sample Result (mg/kg)	Method Detection Limit (mg/kg)	Toxic Equivalency Factor	Adjusted Concentration[(1)] (mg/kg)
Benzo(a)anthracene	0.010	0.0076	0.1	0.001
Chrysene	0.013	0.0076	0.01	0.00013
Benzo(b)fluoranthene	0.013	0.0076	0.1	0.0013
Benzo(k)fluoranthene	ND	0.0076	0.1	0.00038
Benzo(a)pyrene	ND	0.0076	1	0.0038
Indeno(1,2,3-c,d)pyrene	ND	0.0076	0.1	0.00038
Dibenzo(a,h)anthracene	ND	0.0076	0.4	0.0015
Sum[(2)]				**0.01**
MTCA Method A Cleanup Level for Unrestricted Land Use				0.100

ADJUSTED TEF CONCENTRATION FOR SAMPLE GP-17:8

Analyte	Sample Result (mg/kg)	Method Detection Limit (mg/kg)	Toxic Equivalency Factor	Adjusted Concentration[(1)] (mg/kg)
Benzo(a)anthracene	ND	0.0083	0.1	0.000415
Chrysene	ND	0.0083	0.01	0.0000415
Benzo(b)fluoranthene	ND	0.0083	0.1	0.000415
Benzo(k)fluoranthene	ND	0.0083	0.1	0.000415
Benzo(a)pyrene	ND	0.0083	1	0.00415
Indeno(1,2,3-c,d)pyrene	ND	0.0083	0.1	0.000415
Dibenzo(a,h)anthracene	ND	0.0083	0.4	0.0017
Sum[(2)]				**0.01**
MTCA Method A Cleanup Level for Unrestricted Land Use				0.100

Notes:

[(1)] Calculated as the detected concentration times the toxic equivalency factor (TEF), or as the method detection limit (if analyte is not detected) times the TEF.

[(2)] Sum of the TEF for each carcinogenic polycyclic aromatic hydrocarbon.

Shading indicates an exceedance of criteria.

cPAHs = carcinogenic polycyclic aromatic hydrocarbons
mg/kg = milligrams per kilogram
MTCA = Washington Model Toxics Control Act
ND = not detected

0 2,500 5,000

Approximate Scale in Feet

NOTE

Map adapted from aerial imagery provided by Google Earth Pro, reproduced by permission granted by Google Earth ™ Mapping Service.

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Magnolia CSO Control Project
Seattle, Washington

VICINITY MAP

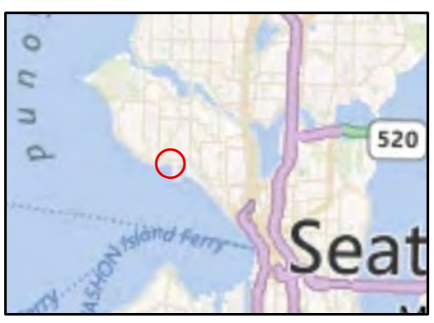
April 2012 21-1-21623-016

SHANNON & WILSON, INC.
Geotechnical and Environmental Consultants

FIG. 1

Filename: J:\21\21623-016\21-1-21623-016 fig 1.dwg Date: 04-24-2012 Login: sac

Filename: T:\Project\21-1\21623_Magnolia_CSO\AV_mxd\SiteExplorationPlan.mxd Date: 5/8/2012 beo



LEGEND

- Geotechnical Boring (MA)
- Random Test Site (GP, SO)
- Stockpile Sample

DRAFT

N W E S

0 25 50

Scale in Feet

Magnolia CSO Control Project
Seattle, Washington

SITE AND EXPLORATION PLAN

Mayl 2012 21-1-21623-016

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FIG. 2

APPENDIX A

GEOPROBE AND BORING LOGS

Shannon & Wilson, Inc. (S&W), uses a soil classification system modified from the Unified Soil Classification System (USCS). Elements of the USCS and other definitions are provided on this and the following page. Soil descriptions are based on visual-manual procedures (ASTM D 2488-93) unless otherwise noted.

S&W CLASSIFICATION OF SOIL CONSTITUENTS

- MAJOR constituents compose more than 50 percent, by weight, of the soil. Major consituents are capitalized (i.e., SAND).
- Minor constituents compose 12 to 50 percent of the soil and precede the major constituents (i.e., silty SAND). Minor constituents preceded by "slightly" compose 5 to 12 percent of the soil (i.e., slightly silty SAND).
- Trace constituents compose 0 to 5 percent of the soil (i.e., slightly silty SAND, trace of gravel).

MOISTURE CONTENT DEFINITIONS

Dry	Absence of moisture, dusty, dry to the touch
Moist	Damp but no visible water
Wet	Visible free water, from below water table

ABBREVIATIONS

ATD	At Time of Drilling
Elev.	Elevation
ft	feet
FeO	Iron Oxide
MgO	Magnesium Oxide
HSA	Hollow Stem Auger
ID	Inside Diameter
in	inches
lbs	pounds
Mon.	Monument cover
N	Blows for last two 6-inch increments
NA	Not applicable or not available
NP	Non plastic
OD	Outside diameter
OVA	Organic vapor analyzer
PID	Photo-ionization detector
ppm	parts per million
PVC	Polyvinyl Chloride
SS	Split spoon sampler
SPT	Standard penetration test
USC	Unified soil classification
WOH	Weight of hammer
WOR	Weight of drill rods
WLI	Water level indicator

GRAIN SIZE DEFINITION

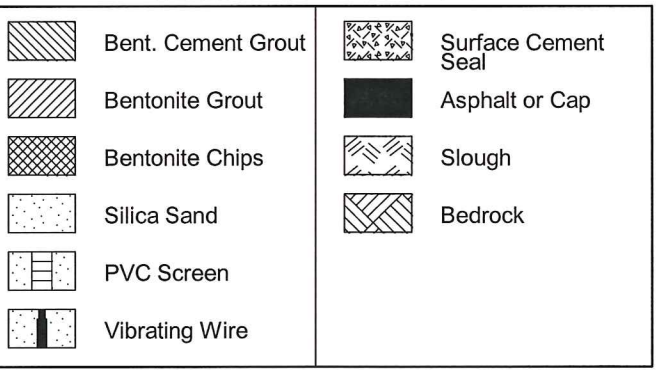
DESCRIPTION	SIEVE NUMBER AND/OR SIZE
FINES	< #200 (0.08 mm)
SAND*	
- Fine	#200 to #40 (0.08 to 0.4 mm)
- Medium	#40 to #10 (0.4 to 2 mm)
- Coarse	#10 to #4 (2 to 5 mm)
GRAVEL*	
- Fine	#4 to 3/4 inch (5 to 19 mm)
- Coarse	3/4 to 3 inches (19 to 76 mm)
COBBLES	3 to 12 inches (76 to 305 mm)
BOULDERS	> 12 inches (305 mm)

* Unless otherwise noted, sand and gravel, when present, range from fine to coarse in grain size.

RELATIVE DENSITY / CONSISTENCY

COARSE-GRAINED SOILS		FINE-GRAINED SOILS	
N, SPT, BLOWS/FT.	RELATIVE DENSITY	N, SPT, BLOWS/FT.	RELATIVE CONSISTENCY
0 - 4	Very loose	Under 2	Very soft
4 - 10	Loose	2 - 4	Soft
10 - 30	Medium dense	4 - 8	Medium stiff
30 - 50	Dense	8 - 15	Stiff
Over 50	Very dense	15 - 30	Very stiff
		Over 30	Hard

WELL AND OTHER SYMBOLS



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Magnolia CSO Control Project
Draft Phase II ESA Report
Seattle, Washington

SOIL CLASSIFICATION AND LOG KEY

January 2012 21-1-21623-015

SHANNON & WILSON, INC.
Geotechnical and Environmental Consultants

FIG. A-1
Sheet 1 of 2

BORING_CLASS1 21-21623.GPJ SWNEW.GDT 1/27/12

UNIFIED SOIL CLASSIFICATION SYSTEM (USCS)
(From USACE Tech Memo 3-357)

MAJOR DIVISIONS			GROUP/GRAPHIC SYMBOL		TYPICAL DESCRIPTION
COARSE-GRAINED SOILS *(more than 50% retained on No. 200 sieve)*	Gravels *(more than 50% of coarse fraction retained on No. 4 sieve)*	Clean Gravels *(less than 5% fines)*	GW		Well-graded gravels, gravels, gravel/sand mixtures, little or no fines.
			GP		Poorly graded gravels, gravel-sand mixtures, little or no fines
		Gravels with Fines *(more than 12% fines)*	GM		Silty gravels, gravel-sand-silt mixtures
			GC		Clayey gravels, gravel-sand-clay mixtures
	Sands *(50% or more of coarse fraction passes the No. 4 sieve)*	Clean Sands *(less than 5% fines)*	SW		Well-graded sands, gravelly sands, little or no fines
			SP		Poorly graded sand, gravelly sands, little or no fines
		Sands with Fines *(more than 12% fines)*	SM		Silty sands, sand-silt mixtures
			SC		Clayey sands, sand-clay mixtures
FINE-GRAINED SOILS *(50% or more passes the No. 200 sieve)*	Silts and Clays *(liquid limit less than 50)*	Inorganic	ML		Inorganic silts of low to medium plasticity, rock flour, sandy silts, gravelly silts, or clayey silts with slight plasticity
			CL		Inorganic clays of low to medium plasticity, gravelly clays, sandy clays, silty clays, lean clays
		Organic	OL		Organic silts and organic silty clays of low plasticity
	Silts and Clays *(liquid limit 50 or more)*	Inorganic	MH		Inorganic silts, micaceous or diatomaceous fine sands or silty soils, elastic silt
			CH		Inorganic clays of medium to high plasticity, sandy fat clay, or gravelly fat clay
		Organic	OH		Organic clays of medium to high plasticity, organic silts
HIGHLY-ORGANIC SOILS	Primarily organic matter, dark in color, and organic odor		PT		Peat, humus, swamp soils with high organic content (see ASTM D 4427)

NOTE: No. 4 size = 5 mm; No. 200 size = 0.075 mm

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NOTES

1. Dual symbols *(symbols separated by a hyphen, i.e., SP-SM, slightly silty fine SAND)* are used for soils with between 5% and 12% fines or when the liquid limit and plasticity index values plot in the CL-ML area of the plasticity chart.

2. Borderline symbols *(symbols separated by a slash, i.e., CL/ML, silty CLAY/clayey SILT; GW/SW, sandy GRAVEL/gravelly SAND)* indicate that the soil may fall into one of two possible basic groups.

Magnolia CSO Control Project
Draft Phase II ESA Report
Seattle, Washington

SOIL CLASSIFICATION AND LOG KEY

January 2012 21-1-21623-015

SHANNON & WILSON, INC.
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FIG. A-1
Sheet 2 of 2

BORING_CLASS2 21-21623.GPJ SWNEW.GDT 1/27/12

LOG OF GEOPROBE

Date Started 10/13/11	Location *Magnolia Combined Sewer Overflow, Seattle, WA*	Ground Elevation: *Approx. NA feet*	
Date Completed 10/13/11		Typical Run Length *4 feet*	
Total Depth (ft) 20.0	Drilling Company: *ESN Northwest*	Hole Diameter: *2 inches*	

Depth (ft)	Probe Run	Soil Description	Depth, ft.	Symbol	PID, ppm	Ground Water	Sample Number, Description, and Results	Depth (ft)
		Refer to the report text for a proper understanding of the subsurface materials and probing methods. The stratification lines indicated below represent the approximate boundaries between soil types. Actual boundaries may be different if soil shifted inside sample tubes during extraction.						
		Light gray, fine to medium SAND, trace of silt; moist; SA.	0.3					
	R-1	Brown, slightly sandy, silty CLAY; moist; (Fill) CL.	3.0					
5	R-2	Gray, slightly fine sandy, silty GRAVEL (possibly just one rock broken by probe); moist; GM.	4.0					5
		Brown, slightly gravelly, slightly silty, medium to fine SAND; moist; SM.	7.5			▽ During Drilling	GP-1:8	
10	1 R-3	Gray, slightly silty CLAY, trace of sand; moist; CL.	7.9					10
		Brown and gray, slightly gravelly, slightly silty, medium to fine SAND; wet; SM.	12.8					
	R-4	Gray, slightly silty CLAY, trace of organics; moist to wet; CL.						
15			16.0					15
	R-5	Gray, GRAVEL, trace of sand and silt; wet; GP-GM.						
20		BOTTOM OF GEOPROBE COMPLETED 10/16/2011	20.0					20
25								25
30								30
35								35
40								40
45								45

NOTES

1. In some cases where recovery was low in the upper part of the run, the soil sample may have slid down in the tube prior to removal from the ground.
2. Groundwater level, if indicated above, was estimated during probing and should be considered approximate.
3. Refer to KEY for definitions and explanation of symbols.
4. CT = corrosion test sample; TR = thermal resistivity sample; EN = environmental sample; GE = geotechnical sample; AR = archeological sample.

LEGEND

3 — 2" Plastic Tube - No Soil Recovery
2" Plastic Tube with Soil Recovery
Run No.
▽ Estimated Water Level

Magnolia CSO Control Project
Geotechnical Data Report
Seattle, Washington

LOG OF GEOPROBE GP-1

May 2012 21-1-21623-015

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FIG. A-2

GEOPROBE 21-21623.GPJ 21-16604.GPJ 5/11/12 Log: CMJ Rev: CMJ Typ: CLP

LOG OF GEOPROBE

Date Started: 10/13/11	Location: Magnolia Combined Sewer Overflow, Seattle, WA	Ground Elevation: Approx. NA feet	
Date Completed: 10/13/11		Typical Run Length: 4 feet	
Total Depth (ft): 20.0	Drilling Company: ESN Northwest	Hole Diameter: 2 inches	

Depth (ft)	Probe Run	Soil Description	Depth, ft.	Symbol	PID, ppm	Ground Water	Sample Number, Description, and Results	Depth (ft)
0	R-1	Gray, slightly silty, medium to fine SAND; moist; SM.	0.1					0
		Light brown/brown with oxide stains, slightly sandy, silty CLAY; wet; CL.	3.7					
5	R-2	Light brown/brown, slightly silty, medium to fine SAND, trace to slightly gravelly; moist; SM.						5
	1 2 R-3	Brown, slightly silty, medium to fine SAND, trace to slightly gravelly; wet; SM.	8.0			▽ During Drilling	GP-2:GW	
10		Dark gray, slightly silty CLAY; moist to wet; CL.	11.5					10
	R-4	Dark gray, medium to coarse SAND, trace of fine gravel; wet; sulphur odor; SP.	12.4					
15					225			15
	3 R-5	Brown, slightly silty CLAY, numerous organics; moist; CL.	16.4				GP-2:16.5	
		Dark gray, slightly sandy, trace of slightly silty GRAVEL; wet; GP-GM.	18.0					
20		BOTTOM OF GEOPROBE COMPLETED 10/13/2011	20.0					20
25								25
30								30
35								35
40								40
45								45

Typ: CLP
Rev: CMJ
Log: CMJ

GEOPROBE 21-21623.GPJ 21-16604.GPJ 5/11/12

NOTES

1. In some cases where recovery was low in the upper part of the run, the soil sample may have slid down in the tube prior to removal from the ground.
2. Groundwater level, if indicated above, was estimated during probing and should be considered approximate.
3. Refer to KEY for definitions and explanation of symbols.
4. CT = corrosion test sample; TR = thermal resistivity sample; EN = environmental sample; GE = geotechnical sample; AR = archeological sample.

LEGEND

3 — 2" Plastic Tube - No Soil Recovery
2" Plastic Tube with Soil Recovery
Run No.
▽ Estimated Water Level

Magnolia CSO Control Project
Geotechnical Data Report
Seattle, Washington

LOG OF GEOPROBE GP-2

May 2012 21-1-21623-015

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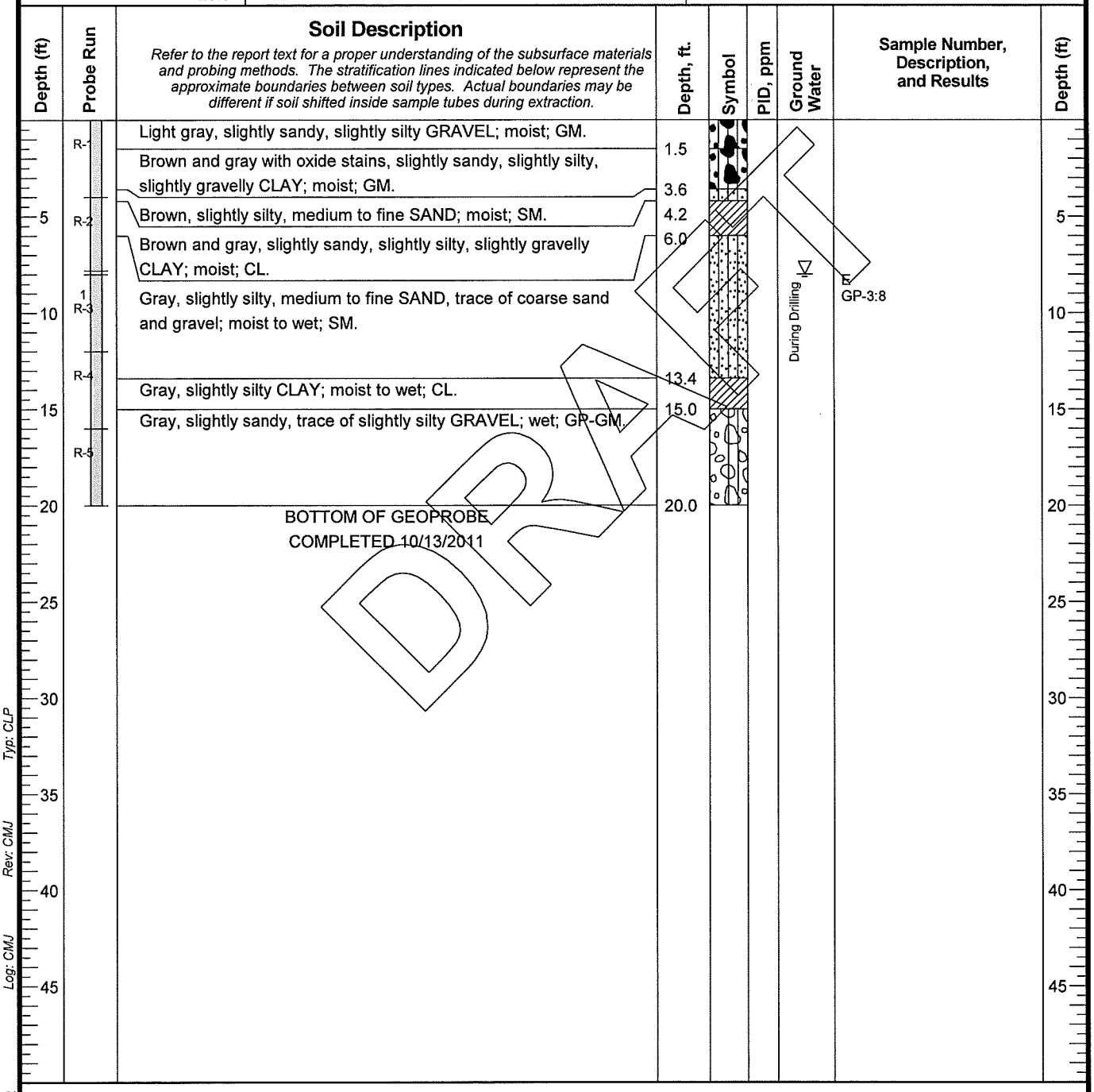
FIG. A-3

LOG OF GEOPROBE

Date Started 10/13/11	Location *Magnolia Combined Sewer Overflow, Seattle, WA*	Ground Elevation: *Approx. NA feet*	
Date Completed 10/13/11		Typical Run Length *4 feet*	
Total Depth (ft) 20.0	Drilling Company: *ESN Northwest*	Hole Diameter: *2 inches*	



Log: CMJ Rev: CMJ Typ: CLP

GEOPROBE 21-21623.GPJ 21-16604.GPJ 5/11/12

NOTES

1. In some cases where recovery was low in the upper part of the run, the soil sample may have slid down in the tube prior to removal from the ground.
2. Groundwater level, if indicated above, was estimated during probing and should be considered approximate.
3. Refer to KEY for definitions and explanation of symbols.
4. CT = corrosion test sample; TR = thermal resistivity sample; EN = environmental sample; GE = geotechnical sample; AR = archeological sample.

LEGEND

3 — Run No.

2" Plastic Tube - No Soil Recovery

2" Plastic Tube with Soil Recovery

▽ Estimated Water Level

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Geotechnical Data Report
Seattle, Washington

LOG OF GEOPROBE GP-3

May 2012 21-1-21623-015

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FIG. A-4

LOG OF GEOPROBE

Date Started 10/13/11	Location *Magnolia Combined Sewer Overflow, Seattle, WA*	Ground Elevation: *Approx. NA feet*	
Date Completed 10/13/11		Typical Run Length *feet*	
Total Depth (ft) 20.0	Drilling Company: *ESN Northwest*	Hole Diameter: *2 inches*	

Depth (ft)	Probe Run	Soil Description	Depth, ft.	Symbol	PID, ppm	Ground Water	Sample Number, Description, and Results	Depth (ft)
	R-1	Brown and gray, with oxide stains, slightly sandy, slightly gravelly, slightly silty CLAY; moist; CL.						
5	R-2	Light gray/brown, slightly silty, medium to fine SAND, trace of gravel; moist; SM.	4.8					5
	1 R-3	Gray, slightly silty, slightly gravelly SAND; moist to wet; asphalt chunk approximately 1-inch thick at 7.9 to 8 feet--not sample; SM.	7.8			During Drilling	GP-4:8	
10	R-4	Gray, slightly silty CLAY; moist; CL.	13.5					10
15	R-5	Gray, slightly sandy, slight to trace of silty GRAVEL; wet; GP-GM.	18.5					15
20		BOTTOM OF GEOPROBE COMPLETED 10/13/2011	20.0					20
25								25
30								30
35								35
40								40
45								45

Soil Description: *Refer to the report text for a proper understanding of the subsurface materials and probing methods. The stratification lines indicated below represent the approximate boundaries between soil types. Actual boundaries may be different if soil shifted inside sample tubes during extraction.*

NOTES

1. In some cases where recovery was low in the upper part of the run, the soil sample may have slid down in the tube prior to removal from the ground.
2. Groundwater level, if indicated above, was estimated during probing and should be considered approximate.
3. Refer to KEY for definitions and explanation of symbols.
4. CT = corrosion test sample; TR = thermal resistivity sample; EN = environmental sample; GE = geotechnical sample; AR = archeological sample.

LEGEND

3 — 2" Plastic Tube - No Soil Recovery
2" Plastic Tube with Soil Recovery
Run No.
Estimated Water Level

Magnolia CSO Control Project
Geotechnical Data Report
Seattle, Washington

LOG OF GEOPROBE GP-4

May 2012 21-1-21623-015

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FIG. A-5

GEOPROBE 21-21623.GPJ 21-16604.GPJ 5/11/12 Log: CMJ Rev: CMJ Typ: CLP

LOG OF GEOPROBE

Date Started 10/12/11	Location Magnolia Combined Sewer Overflow, Seattle, WA	Ground Elevation: Approx. NA feet	
Date Completed 10/13/11		Typical Run Length 4 feet	
Total Depth (ft) 20.0	Drilling Company: ESN Northwest	Hole Diameter: 2 inches	

Depth (ft)	Probe Run	Soil Description	Depth, ft.	Symbol	PID, ppm	Ground Water	Sample Number, Description, and Results	Depth (ft)
	R-1	Brown and gray with oxide stains, slightly silty, slightly sandy, slightly gravelly CLAY; moist; CL.						
5	R-2	Light brown and gray, slightly silty, medium to fine SAND, trace of gravel; moist; SM.	5.0					5
		Brown and gray, slightly silty, slightly gravelly, medium to fine SAND; moist to wet; SM.	7.2			During Drilling	GP-5:8 GP-5:GW	
10	1 2 R-3							10
	R-4	Gray, slightly silty CLAY, organics in top 1 foot; moist; CL.	14.0					
15	R-5							15
20		BOTTOM OF GEOPROBE COMPLETED 10/13/2011	20.0					20
25								25
30								30
35								35
40								40
45								45

Typ: CLP
Rev: CMJ
Log: CMJ

GEOPROBE 21-21623.GPJ 21-16604.GPJ 5/11/12

NOTES

1. In some cases where recovery was low in the upper part of the run, the soil sample may have slid down in the tube prior to removal from the ground.
2. Groundwater level, if indicated above, was estimated during probing and should be considered approximate.
3. Refer to KEY for definitions and explanation of symbols.
4. CT = corrosion test sample; TR = thermal resistivity sample; EN = environmental sample; GE = geotechnical sample; AR = archeological sample.

LEGEND

3 — Run No.
2" Plastic Tube - No Soil Recovery
2" Plastic Tube with Soil Recovery
▽ Estimated Water Level

Magnolia CSO Control Project
Geotechnical Data Report
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LOG OF GEOPROBE GP-5

May 2012 21-1-21623-015

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FIG. A-6

LOG OF GEOPROBE

Date Started 4/6/12	Location	Ground Elevation: Approx. NA feet
Date Completed 4/6/12		Typical Run Length 4 feet
Total Depth (ft) 12.0	Drilling Company: ESN Northwest	Hole Diameter: 2.25 inches

Depth (ft)	Probe Run	Soil Description	Depth, ft.	Symbol	PID, ppm	Ground Water	Sample Number, Description, and Results	Depth (ft)
	1	Light brown, slightly silty SAND, trace of gravel; SM.						
		Light brown, slightly sandy SILT, trace of gravel; ML.	2.0		0			
5	2	Brown, slightly silty SAND, trace of gravel; SM.	4.0				GP-6:0.5	5
					0.4	▽ During Drilling		
	3	Light brown to medium gray, sandy SILT, trace of gravel; ML.	8.0				GP-6:7	
10					0			10
		BOTTOM OF GEOPROBE COMPLETED 4/6/2012	12.0				GP-6:GW	
15								15
20								20
25								25
30								30
35								35
40								40
45								45

Log: JML Rev: DJR Typ: LKN

NOTES

1. In some cases where recovery was low in the upper part of the run, the soil sample may have slid down in the tube prior to removal from the ground.
2. Groundwater level, if indicated above, was estimated during probing and should be considered approximate.
3. Refer to KEY for definitions and explanation of symbols.
4. CT = corrosion test sample; TR = thermal resistivity sample; EN = environmental sample; GE = geotechnical sample; AR = archeological sample.

LEGEND

3 — 2" Plastic Tube - No Soil Recovery
2" Plastic Tube with Soil Recovery
Run No.
▽ Estimated Water Level

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LOG OF GEOPROBE GP-6

May 2012 21-1-21623-015

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FIG. A-7

GEOPROBE 21-21623.GPJ 21-16604.GPJ 5/11/12

LOG OF GEOPROBE

Date Started: 4/6/12	Location:	Ground Elevation: Approx. NA feet
Date Completed: 4/6/12		Typical Run Length: 4 feet
Total Depth (ft): 16.0	Drilling Company: ESN Northwest	Hole Diameter: 2.25 inches

Depth (ft)	Probe Run	Soil Description	Depth, ft.	Symbol	PID, ppm	Ground Water	Sample Number, Description, and Results	Depth (ft)
0	1	Light gray to light brown, slightly sandy SILT; moist; ML.	2.0		0			0
5	2	Light gray to brown, slightly silty SAND, trace of gravel; moist; SM.			0	▽ During Drilling	GP-7:0.5	5
10	3	Dark gray, slightly sandy SILT, trace of clay; wet; CL.	8.0		0		GP-7:8	10
15		BOTTOM OF GEOPROBE COMPLETED 4/6/2012	12.0					15
20								20
25								25
30								30
35								35
40								40
45								45

Typ: LKN
Rev: DJR
Log: JML

NOTES

1. In some cases where recovery was low in the upper part of the run, the soil sample may have slid down in the tube prior to removal from the ground.
2. Groundwater level, if indicated above, was estimated during probing and should be considered approximate.
3. Refer to KEY for definitions and explanation of symbols.
4. CT = corrosion test sample; TR = thermal resistivity sample; EN = environmental sample; GE = geotechnical sample; AR = archeological sample.

LEGEND

3 — Run No.
2" Plastic Tube - No Soil Recovery
2" Plastic Tube with Soil Recovery
▽ Estimated Water Level

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Seattle, Washington

LOG OF GEOPROBE GP-7

May 2012 21-1-21623-015

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FIG. A-8

GEOPROBE 21-21623.GPJ 21-16604.GPJ 5/11/12

LOG OF GEOPROBE

Date Started *4/6/12*	Location	Ground Elevation: *Approx. NA feet*	
Date Completed *4/6/12*		Typical Run Length *4 feet*	
Total Depth (ft) *12.0*	Drilling Company: *ESN Northwest*	Hole Diameter: *2.25 inches*	

Depth (ft)	Probe Run	Soil Description	Depth, ft.	Symbol	PID, ppm	Ground Water	Sample Number, Description, and Results	Depth (ft)
0	1	Brown, slightly sandy SILT, trace of gravel, trace of clay; moist; CL.			0			0
5	2	Light brown to light gray, slightly silty SAND, trace of gravel; wet; SM.	4.0		0	During Drilling ▽	GP-8:0.5	5
10	3				0		GP-8:7	10
		BOTTOM OF GEOPROBE COMPLETED 4/6/2012	12.0				GP-8:GW	
15								15
20								20
25								25
30								30
35								35
40								40
45								45

Typ: LKN
Rev: DJR
Log: JML

NOTES

1. In some cases where recovery was low in the upper part of the run, the soil sample may have slid down in the tube prior to removal from the ground.
2. Groundwater level, if indicated above, was estimated during probing and should be considered approximate.
3. Refer to KEY for definitions and explanation of symbols.
4. CT = corrosion test sample; TR = thermal resistivity sample; EN = environmental sample; GE = geotechnical sample; AR = archeological sample.

LEGEND

3 — Run No.
2" Plastic Tube - No Soil Recovery
2" Plastic Tube with Soil Recovery
▽ Estimated Water Level

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Geotechnical Data Report
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LOG OF GEOPROBE GP-8

May 2012 21-1-21623-015

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FIG. A-9

GEOPROBE 21-21623.GPJ 21-16604.GPJ 5/11/12

LOG OF GEOPROBE

Date Started 4/6/12	Location	Ground Elevation: Approx. NA feet	
Date Completed 4/6/12		Typical Run Length 4 feet	
Total Depth (ft) 12.0	Drilling Company: ESN Northwest	Hole Diameter: 2.25 inches	

Depth (ft)	Probe Run	Soil Description	Depth, ft.	Symbol	PID, ppm	Ground Water	Sample Number, Description, and Results	Depth (ft)
0	1	Light gray to light brown, slightly sandy SILT, trace of gravel, trace of clay; moist; CL.			0			0
5	2	Dark gray to brown, slightly silty SAND; SM-ML.	4.0		0		GP-9:0.5	5
10	3	Loose, slightly silty, slightly clayey SAND; SC.	8.0		0	During Drilling ▽		10
15		BOTTOM OF GEOPROBE COMPLETED 4/6/2012	12.0				GP-9:8	15
20								20
25								25
30								30
35								35
40								40
45								45

Refer to the report text for a proper understanding of the subsurface materials and probing methods. The stratification lines indicated below represent the approximate boundaries between soil types. Actual boundaries may be different if soil shifted inside sample tubes during extraction.

NOTES

1. In some cases where recovery was low in the upper part of the run, the soil sample may have slid down in the tube prior to removal from the ground.
2. Groundwater level, if indicated above, was estimated during probing and should be considered approximate.
3. Refer to KEY for definitions and explanation of symbols.
4. CT = corrosion test sample; TR = thermal resistivity sample; EN = environmental sample; GE = geotechnical sample; AR = archeological sample.

LEGEND

3 — 2" Plastic Tube - No Soil Recovery
2" Plastic Tube with Soil Recovery
Run No.
▽ Estimated Water Level

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LOG OF GEOPROBE GP-9

May 2012 21-1-21623-015

SHANNON & WILSON, INC.
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FIG. A-10

GEOPROBE 21-21623.GPJ 21-16604.GPJ 5/11/12 Log: JML Rev: DJR Typ: LKN

LOG OF GEOPROBE

Date Started 4/6/12	Location	Ground Elevation: Approx. NA feet
Date Completed 4/6/12		Typical Run Length 4 feet
Total Depth (ft) 12.0	Drilling Company: ESN Northwest	Hole Diameter: 2.25 inches

Depth (ft)	Probe Run	Soil Description	Depth, ft.	Symbol	PID, ppm	Ground Water	Sample Number, Description, and Results	Depth (ft)
0	1	Light gray, slightly sandy SILT, trace of gravel; ML.			0.3		GP-10:0.5	0
5	2				0	▽ During Drilling		5
10	3				0.1			10
		BOTTOM OF GEOPROBE COMPLETED 4/6/2012	12.0				GP-10:9	
15								15
20								20
25								25
30								30
35								35
40								40
45								45

Typ: LKN
Rev: DJR
Log: JML

NOTES

1. In some cases where recovery was low in the upper part of the run, the soil sample may have slid down in the tube prior to removal from the ground.
2. Groundwater level, if indicated above, was estimated during probing and should be considered approximate.
3. Refer to KEY for definitions and explanation of symbols.
4. CT = corrosion test sample; TR = thermal resistivity sample; EN = environmental sample; GE = geotechnical sample; AR = archeological sample.

LEGEND

3 — Run No.
2" Plastic Tube - No Soil Recovery
2" Plastic Tube with Soil Recovery
▽ Estimated Water Level

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LOG OF GEOPROBE GP-10

May 2012 21-1-21623-015

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FIG. A-11

GEOPROBE 21-21623.GPJ 21-16604.GPJ 5/11/12

LOG OF GEOPROBE

Date Started 4/6/12	Location	Ground Elevation: Approx. NA feet	
Date Completed 4/6/12		Typical Run Length 4 feet	
Total Depth (ft) 12.0	Drilling Company: ESN Northwest	Hole Diameter: 2.25 inches	

Depth (ft)	Probe Run	Soil Description	Depth, ft.	Symbol	PID, ppm	Ground Water	Sample Number, Description, and Results	Depth (ft)
0	1	Light gray to brown, slightly sandy SILT, trace of gravel, trace of clay, trace of organic material (wood chips); CL.			0			0
5	2				0.1		GP-11:0.5	5
10	3	Dark gray to brown, slightly silty SAND, trace of gravels; SM.	8.0		0.1	During Drilling		10
15		BOTTOM OF GEOPROBE COMPLETED 4/6/2012	12.0				GP-11:8/GP-11:GW	15
20								20
25								25
30								30
35								35
40								40
45								45

Soil Description

Refer to the report text for a proper understanding of the subsurface materials and probing methods. The stratification lines indicated below represent the approximate boundaries between soil types. Actual boundaries may be different if soil shifted inside sample tubes during extraction.

NOTES

1. In some cases where recovery was low in the upper part of the run, the soil sample may have slid down in the tube prior to removal from the ground.
2. Groundwater level, if indicated above, was estimated during probing and should be considered approximate.
3. Refer to KEY for definitions and explanation of symbols.
4. CT = corrosion test sample; TR = thermal resistivity sample; EN = environmental sample; GE = geotechnical sample; AR = archeological sample.

LEGEND

3 — Run No.

2" Plastic Tube - No Soil Recovery

2" Plastic Tube with Soil Recovery

▽ Estimated Water Level

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LOG OF GEOPROBE GP-11

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FIG. A-12

GEOPROBE 21-21623.GPJ 21-16604.GPJ 5/11/12 Log: JML Rev: DJR Typ: LKN

LOG OF GEOPROBE

Date Started 4/6/12	Location	Ground Elevation: Approx. NA feet
Date Completed 4/6/12		Typical Run Length 4 feet
Total Depth (ft) 12.0	Drilling Company: ESN Northwest	Hole Diameter: 2.25 inches

Depth (ft)	Probe Run	Soil Description	Depth, ft.	Symbol	PID, ppm	Ground Water	Sample Number, Description, and Results	Depth (ft)
0	1	Light gray to light brown, slightly sandy SILT, trace of gravel; ML.			0.1		GP-12:0.5	0
5	2				0.2			5
	3	Dark gray, slightly sandy, silty CLAY, trace of gravel; CL.	8.0			▽ During Drilling		
10		BOTTOM OF GEOPROBE COMPLETED 4/6/2012	12.0				GP-12:8	10
15								15
20								20
25								25
30								30
35								35
40								40
45								45

NOTES

1. In some cases where recovery was low in the upper part of the run, the soil sample may have slid down in the tube prior to removal from the ground.
2. Groundwater level, if indicated above, was estimated during probing and should be considered approximate.
3. Refer to KEY for definitions and explanation of symbols.
4. CT = corrosion test sample; TR = thermal resistivity sample; EN = environmental sample; GE = geotechnical sample; AR = archeological sample.

LEGEND

3 — 2" Plastic Tube - No Soil Recovery
2" Plastic Tube with Soil Recovery
Run No.
▽ Estimated Water Level

Magnolia CSO Control Project
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LOG OF GEOPROBE GP-12

May 2012 21-1-21623-015

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FIG. A-13

GEOPROBE 21-21623.GPJ 21-16604.GPJ 5/11/12 Log: JML Rev: DJR Typ: LKN

LOG OF GEOPROBE

Date Started 4/6/12	Location	Ground Elevation: Approx. NA feet	
Date Completed 4/6/12		Typical Run Length 4 feet	
Total Depth (ft) 12.0	Drilling Company: ESN Northwest	Hole Diameter: 2.25 inches	

Depth (ft)	Probe Run	Soil Description	Depth, ft.	Symbol	PID, ppm	Ground Water	Sample Number, Description, and Results	Depth (ft)
	1	Light brown, slightly sandy SILT, trace of gravel; ML.			0			
5	2	Light brown to light gray, slightly silty SAND, trace of gravel; SM.	4.0		0.3		GP-13:0.5	5
	3	Light gray, slightly sandy SILT, trace of gravel; ML.	8.0		0	▽ During Drilling	GP-13:6	
10		BOTTOM OF GEOPROBE COMPLETED 4/6/2012	12.0				GP-13:GW	10
15								15
20								20
25								25
30								30
35								35
40								40
45								45

NOTES

1. In some cases where recovery was low in the upper part of the run, the soil sample may have slid down in the tube prior to removal from the ground.
2. Groundwater level, if indicated above, was estimated during probing and should be considered approximate.
3. Refer to KEY for definitions and explanation of symbols.
4. CT = corrosion test sample; TR = thermal resistivity sample; EN = environmental sample; GE = geotechnical sample; AR = archeological sample.

LEGEND

3 — 2" Plastic Tube - No Soil Recovery
2" Plastic Tube with Soil Recovery
Run No.
▽ Estimated Water Level

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LOG OF GEOPROBE GP-13

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FIG. A-14

GEOPROBE 21-21623.GPJ 21-16604.GPJ 5/11/12 Log: JML Rev: DJR Typ: LKN

LOG OF GEOPROBE

Date Started *4/6/12*	Location	Ground Elevation: *Approx. NA feet*	
Date Completed *4/6/12*		Typical Run Length *4 feet*	
Total Depth (ft) *12.0*	Drilling Company: *ESN Northwest*	Hole Diameter: *2.25 inches*	

Depth (ft)	Probe Run	Soil Description	Depth, ft.	Symbol	PID, ppm	Ground Water	Sample Number, Description, and Results	Depth (ft)
0	1	Light brown to light gray, slightly sandy, slightly silty CLAY, trace of gravel; CL.			0			0
5	2	Light gray, slightly sandy SILT, trace of gravel; moist; ML.	4.0		7.2	None Observed During Drilling	GP-14:0.5	5
10	3	Dark gray, slightly silty SAND, trace of gravel (wood chips), oil odor; SM.	8.0		4.2		GP-14:7	10
15		BOTTOM OF GEOPROBE COMPLETED 4/6/2012	12.0				GP-14:GW	15
20								20
25								25
30								30
35								35
40								40
45								45

Refer to the report text for a proper understanding of the subsurface materials and probing methods. The stratification lines indicated below represent the approximate boundaries between soil types. Actual boundaries may be different if soil shifted inside sample tubes during extraction.

NOTES

1. In some cases where recovery was low in the upper part of the run, the soil sample may have slid down in the tube prior to removal from the ground.
2. Groundwater level, if indicated above, was estimated during probing and should be considered approximate.
3. Refer to KEY for definitions and explanation of symbols.
4. CT = corrosion test sample; TR = thermal resistivity sample; EN = environmental sample; GE = geotechnical sample; AR = archeological sample.

LEGEND

3 — Run No.
2" Plastic Tube - No Soil Recovery
2" Plastic Tube with Soil Recovery
▽ Estimated Water Level

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LOG OF GEOPROBE GP-14

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FIG. A-15

GEOPROBE 21-21623.GPJ 21-16604.GPJ 5/11/12 Log: JML Rev: DJR Typ: LKN

LOG OF GEOPROBE

Date Started 4/9/12	Location	Ground Elevation: Approx. NA feet	
Date Completed 4/9/12		Typical Run Length 4 feet	
Total Depth (ft) 12.0	Drilling Company: ESN Northwest	Hole Diameter: 2.25 inches	

Depth (ft)	Probe Run	Soil Description	Depth, ft.	Symbol	PID, ppm	Ground Water	Sample Number, Description, and Results	Depth (ft)
	1	Light brown to light gray, slightly sandy SILT, trace of gravel, trace of clay; CL.			0			
5	2	Light brown to light gray, slightly clayey SILT; CL.	4.0		0	▽ During Drilling	GP-14:S01:0.5	5
	3	Dark gray, slightly silty SAND, trace of gravel; ML.	8.0		10		GP-14:S01:7	
10		BOTTOM OF GEOPROBE COMPLETED 4/9/2012	12.0					10
15								15
20								20
25								25
30								30
35								35
40								40
45								45

Soil Description

Refer to the report text for a proper understanding of the subsurface materials and probing methods. The stratification lines indicated below represent the approximate boundaries between soil types. Actual boundaries may be different if soil shifted inside sample tubes during extraction.

NOTES

1. In some cases where recovery was low in the upper part of the run, the soil sample may have slid down in the tube prior to removal from the ground.
2. Groundwater level, if indicated above, was estimated during probing and should be considered approximate.
3. Refer to KEY for definitions and explanation of symbols.
4. CT = corrosion test sample; TR = thermal resistivity sample; EN = environmental sample; GE = geotechnical sample; AR = archeological sample.

LEGEND

3 — 2" Plastic Tube - No Soil Recovery
2" Plastic Tube with Soil Recovery
Run No.
▽ Estimated Water Level

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LOG OF GEOPROBE GP-14:SO1

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FIG. A-16

GEOPROBE 21-21623.GPJ 21-16604.GPJ 5/11/12 Log: JML Rev: DJR Typ: LKN

LOG OF GEOPROBE

Date Started 4/9/12	Location	Ground Elevation: Approx. NA feet	
Date Completed 4/9/12		Typical Run Length 4 feet	
Total Depth (ft) 12.0	Drilling Company: ESN Northwest	Hole Diameter: 2.25 inches	

Depth (ft)	Probe Run	Soil Description	Depth, ft.	Symbol	PID, ppm	Ground Water	Sample Number, Description, and Results	Depth (ft)
		Refer to the report text for a proper understanding of the subsurface materials and probing methods. The stratification lines indicated below represent the approximate boundaries between soil types. Actual boundaries may be different if soil shifted inside sample tubes during extraction.						
0	1	Light brown, slightly sandy SILT, trace of clay, trace of gravel; CL.			0			0
5	2				0		GP-14:S02:0.5	5
			8.0			▽ During Drilling	GP-14:S02:7	
10	3	Dark gray, slightly silty SAND, trace of gravel; SM.			19.5			10
			12.0					
15		BOTTOM OF GEOPROBE COMPLETED 4/9/2012						15
20								20
25								25
30								30
35								35
40								40
45								45

Typ: LKN
Rev: DJR
Log: JML

NOTES

1. In some cases where recovery was low in the upper part of the run, the soil sample may have slid down in the tube prior to removal from the ground.
2. Groundwater level, if indicated above, was estimated during probing and should be considered approximate.
3. Refer to KEY for definitions and explanation of symbols.
4. CT = corrosion test sample; TR = thermal resistivity sample; EN = environmental sample; GE = geotechnical sample; AR = archeological sample.

LEGEND

3 — Run No.
2" Plastic Tube - No Soil Recovery
2" Plastic Tube with Soil Recovery
▽ Estimated Water Level

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LOG OF GEOPROBE GP-14:SO2

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FIG. A-17

GEOPROBE 21-21623.GPJ 21-16604.GPJ 5/11/12

LOG OF GEOPROBE

Date Started 4/9/12	Location	Ground Elevation: Approx. NA feet	
Date Completed 4/9/12		Typical Run Length 4 feet	
Total Depth (ft) 12.0	Drilling Company: ESN Northwest	Hole Diameter: 2.25 inches	

Depth (ft)	Probe Run	Soil Description	Depth, ft.	Symbol	PID, ppm	Ground Water	Sample Number, Description, and Results	Depth (ft)
0	1	Light brown, slightly silty CLAY, trace of gravel; CL.			0.1			0
5	2	Dark brown, slightly silty SAND, trace of gravel; SM.	4.0		6.8	▽ During Drilling	GP-14:S03:0.5	5
10	3	BOTTOM OF GEOPROBE COMPLETED 4/9/2012	12.0		9.7		GP-14:S03:8	10
15								15
20								20
25								25
30								30
35								35
40								40
45								45

Refer to the report text for a proper understanding of the subsurface materials and probing methods. The stratification lines indicated below represent the approximate boundaries between soil types. Actual boundaries may be different if soil shifted inside sample tubes during extraction.

NOTES

1. In some cases where recovery was low in the upper part of the run, the soil sample may have slid down in the tube prior to removal from the ground.
2. Groundwater level, if indicated above, was estimated during probing and should be considered approximate.
3. Refer to KEY for definitions and explanation of symbols.
4. CT = corrosion test sample; TR = thermal resistivity sample; EN = environmental sample; GE = geotechnical sample; AR = archeological sample.

LEGEND

3 — 2" Plastic Tube - No Soil Recovery
2" Plastic Tube with Soil Recovery
Run No.
▽ Estimated Water Level

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LOG OF GEOPROBE GP-14:SO3

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FIG. A-18

GEOPROBE 21-21623.GPJ 21-16604.GPJ 5/11/12 Log: JML Rev: DJR Typ: LKN

LOG OF GEOPROBE

Date Started 4/9/12	Location	Ground Elevation: Approx. NA feet	
Date Completed 4/9/12		Typical Run Length 4 feet	
Total Depth (ft) 12.0	Drilling Company: ESN Northwest	Hole Diameter: 2.25 inches	

Depth (ft)	Probe Run	Soil Description	Depth, ft.	Symbol	PID, ppm	Ground Water	Sample Number, Description, and Results	Depth (ft)
	1	Light brown, slightly silty SAND, trace of gravel, trace of clay, wood chips; CL.			0			
5	2	Light brown to dark gray, slightly silty SAND, trace of gravel; SM.	4.0		12.6		GP-14:S04:0.5	5
	3	Dark gray, slightly silty, slightly gravelly SAND, trace of clay; CL.	8.0		1.2	During Drilling	GP-14:S04:7	
10		BOTTOM OF GEOPROBE COMPLETED 4/9/2012	12.0					10
15								15
20								20
25								25
30								30
35								35
40								40
45								45

Typ: LKN Rev: DJR Log: JML

GEOPROBE 21-21623.GPJ 21-16604.GPJ 5/11/12

NOTES

1. In some cases where recovery was low in the upper part of the run, the soil sample may have slid down in the tube prior to removal from the ground.
2. Groundwater level, if indicated above, was estimated during probing and should be considered approximate.
3. Refer to KEY for definitions and explanation of symbols.
4. CT = corrosion test sample; TR = thermal resistivity sample; EN = environmental sample; GE = geotechnical sample; AR = archeological sample.

LEGEND

3 — 2" Plastic Tube - No Soil Recovery
2" Plastic Tube with Soil Recovery ▽ Estimated Water Level
Run No.

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LOG OF GEOPROBE GP-14:SO4

May 2012 21-1-21623-015

SHANNON & WILSON, INC.
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FIG. A-19

LOG OF GEOPROBE

Date Started 4/9/12	Location	Ground Elevation: Approx. NA feet	
Date Completed 4/9/12		Typical Run Length 4 feet	
Total Depth (ft) 12.0	Drilling Company: ESN Northwest	Hole Diameter: 2.25 inches	

Depth (ft)	Probe Run	Soil Description	Depth, ft.	Symbol	PID, ppm	Ground Water	Sample Number, Description, and Results	Depth (ft)
	1	Light brown, slightly sandy, slightly clayey SILT, trace of gravel; CL.			0.1			
5	2	Light gray to dark gray, slightly sandy SILT, trace of gravel; ML.	4.0		20.5		GP-14:S05:0.5	5
	3	Dark gray, slightly silty SAND, trace of gravel; slight odor (oil); SM.	8.0		3.5	During Drilling		
10		BOTTOM OF GEOPROBE COMPLETED 4/9/2012	12.0				GP-14:S05:8	10
15								15
20								20
25								25
30								30
35								35
40								40
45								45

Typ: LKN Rev: DJR Log: JML

NOTES

1. In some cases where recovery was low in the upper part of the run, the soil sample may have slid down in the tube prior to removal from the ground.
2. Groundwater level, if indicated above, was estimated during probing and should be considered approximate.
3. Refer to KEY for definitions and explanation of symbols.
4. CT = corrosion test sample; TR = thermal resistivity sample; EN = environmental sample; GE = geotechnical sample; AR = archeological sample.

LEGEND

3 — Run No.

2" Plastic Tube - No Soil Recovery

2" Plastic Tube with Soil Recovery

▽ Estimated Water Level

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LOG OF GEOPROBE GP-14:SO5

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SHANNON & WILSON, INC.
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FIG. A-20

GEOPROBE 21-21623.GPJ 21-16604.GPJ 5/11/12

LOG OF GEOPROBE

Date Started: 4/9/12	Location:	Ground Elevation: Approx. NA feet
Date Completed: 4/9/12		Typical Run Length: 4 feet
Total Depth (ft): 12.0	Drilling Company: ESN Northwest	Hole Diameter: 2.25 inches

Depth (ft)	Probe Run	Soil Description	Depth, ft.	Symbol	PID, ppm	Ground Water	Sample Number, Description, and Results	Depth (ft)
0	1	Light brown to light gray, slightly sandy SILT, trace of clay, trace of gravel; CL.			0.1		GP-14:S06:0.5	0
5	2				0.8	▽ During Drilling		5
10	3	Light to dark gray, slightly silty SAND, trace of clay; SC.	8.0		0.4		GP-14:S06:7.5	10
15		BOTTOM OF GEOPROBE COMPLETED 4/9/2012	12.0				GP-14:S06:GW	15
20								20
25								25
30								30
35								35
40								40
45								45

Refer to the report text for a proper understanding of the subsurface materials and probing methods. The stratification lines indicated below represent the approximate boundaries between soil types. Actual boundaries may be different if soil shifted inside sample tubes during extraction.

NOTES

1. In some cases where recovery was low in the upper part of the run, the soil sample may have slid down in the tube prior to removal from the ground.
2. Groundwater level, if indicated above, was estimated during probing and should be considered approximate.
3. Refer to KEY for definitions and explanation of symbols.
4. CT = corrosion test sample; TR = thermal resistivity sample; EN = environmental sample; GE = geotechnical sample; AR = archeological sample.

LEGEND

3 — Run No.

2" Plastic Tube - No Soil Recovery

2" Plastic Tube with Soil Recovery

▽ Estimated Water Level

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LOG OF GEOPROBE GP-14:SO6

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FIG. A-21

GEOPROBE 21-21623.GPJ 21-16604.GPJ 5/11/12 Log: JML Rev: DJR Typ: LKN

LOG OF GEOPROBE

Date Started 4/9/12	Location	Ground Elevation: Approx. NA feet	
Date Completed 4/9/12		Typical Run Length 4 feet	
Total Depth (ft) 12.0	Drilling Company: ESN Northwest	Hole Diameter: 2.25 inches	

Depth (ft)	Probe Run	Soil Description	Depth, ft.	Symbol	PID, ppm	Ground Water	Sample Number, Description, and Results	Depth (ft)
	1	Light brown, slightly sandy SILT, trace of clay, trace of gravel; CL.			0			
5	2	Light gray to light brown, slightly silty SAND, trace of gravel; SM.	4.0		0.3	During Drilling	GP-14:S07:0.5	5
	3						GP-14:S07:7	
10					0.1			10
		BOTTOM OF GEOPROBE COMPLETED 4/9/2012	12.0					
15								15
20								20
25								25
30								30
35								35
40								40
45								45

Soil Description

Refer to the report text for a proper understanding of the subsurface materials and probing methods. The stratification lines indicated below represent the approximate boundaries between soil types. Actual boundaries may be different if soil shifted inside sample tubes during extraction.

NOTES

1. In some cases where recovery was low in the upper part of the run, the soil sample may have slid down in the tube prior to removal from the ground.
2. Groundwater level, if indicated above, was estimated during probing and should be considered approximate.
3. Refer to KEY for definitions and explanation of symbols.
4. CT = corrosion test sample; TR = thermal resistivity sample; EN = environmental sample; GE = geotechnical sample; AR = archeological sample.

LEGEND

3 — Run No.

2" Plastic Tube - No Soil Recovery

2" Plastic Tube with Soil Recovery

▽ Estimated Water Level

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LOG OF GEOPROBE GP-14:SO7

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SHANNON & WILSON, INC.
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FIG. A-22

Log: JML Rev: DJR Typ: LKN

GEOPROBE 21-21623.GPJ 21-16604.GPJ 5/11/12

LOG OF GEOPROBE

Date Started: 4/6/12	Location:	Ground Elevation: Approx. NA feet
Date Completed: 4/6/12		Typical Run Length: 4 feet
Total Depth (ft): 12.0	Drilling Company: ESN Northwest	Hole Diameter: 2.25 inches

Depth (ft)	Probe Run	Soil Description	Depth, ft.	Symbol	PID, ppm	Ground Water	Sample Number, Description, and Results	Depth (ft)
0	1	Light gray to light brown, slightly silty, slightly sandy CLAY, trace of gravel; CL.			0.1		GP-15:0.5	0
5	2				0.2			5
	3	Dark gray, slightly silty SAND, brick, trace of gravel; SM.	8.0		0.2	▽ During Drilling		
10		BOTTOM OF GEOPROBE COMPLETED 4/6/2012	12.0				GP-15:8	10
15								15
20								20
25								25
30								30
35								35
40								40
45								45

Typ: LKN
Rev: DJR
Log: JML

NOTES

1. In some cases where recovery was low in the upper part of the run, the soil sample may have slid down in the tube prior to removal from the ground.
2. Groundwater level, if indicated above, was estimated during probing and should be considered approximate.
3. Refer to KEY for definitions and explanation of symbols.
4. CT = corrosion test sample; TR = thermal resistivity sample; EN = environmental sample; GE = geotechnical sample; AR = archeological sample.

LEGEND

3 — 2" Plastic Tube - No Soil Recovery
2" Plastic Tube with Soil Recovery
Run No.
▽ Estimated Water Level

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LOG OF GEOPROBE GP-15

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FIG. A-23

GEOPROBE 21-21623.GPJ 21-16604.GPJ 5/11/12

LOG OF GEOPROBE

Date Started 4/6/12	Location	Ground Elevation: Approx. NA feet	
Date Completed 4/6/12		Typical Run Length 4 feet	
Total Depth (ft) 12.0	Drilling Company: ESN Northwest	Hole Diameter: 2.25 inches	

Depth (ft)	Probe Run	Soil Description	Depth, ft.	Symbol	PID, ppm	Ground Water	Sample Number, Description, and Results	Depth (ft)
0	1	Brown to light gray, slightly silty CLAY, trace of gravel; CL.	8.0		0.7		GP-16:0.5	0
5	2				0.2	During Drilling	GP-16:7	5
10	3	Dark gray, slightly silty SAND, wood chips, brick; SM.	12.0		0.1			10
15		BOTTOM OF GEOPROBE COMPLETED 4/6/2012						15
20								20
25								25
30								30
35								35
40								40
45								45

Refer to the report text for a proper understanding of the subsurface materials and probing methods. The stratification lines indicated below represent the approximate boundaries between soil types. Actual boundaries may be different if soil shifted inside sample tubes during extraction.

NOTES

1. In some cases where recovery was low in the upper part of the run, the soil sample may have slid down in the tube prior to removal from the ground.
2. Groundwater level, if indicated above, was estimated during probing and should be considered approximate.
3. Refer to KEY for definitions and explanation of symbols.
4. CT = corrosion test sample; TR = thermal resistivity sample; EN = environmental sample; GE = geotechnical sample; AR = archeological sample.

LEGEND

3 — 2" Plastic Tube - No Soil Recovery
2" Plastic Tube with Soil Recovery
Run No.
Estimated Water Level

Magnolia CSO Control Project
Geotechnical Data Report
Seattle, Washington

LOG OF GEOPROBE GP-16

May 2012 21-1-21623-015

SHANNON & WILSON, INC.
Geotechnical and Environmental Consultants

FIG. A-24

GEOPROBE 21-21623.GPJ 21-16604.GPJ 5/11/12 Log: JML Rev: DJR Typ: LKN

LOG OF GEOPROBE

Date Started 4/6/12	Location	Ground Elevation: Approx. NA feet	
Date Completed 4/6/12		Typical Run Length 4 feet	
Total Depth (ft) 12.0	Drilling Company: ESN Northwest	Hole Diameter: 2.25 inches	

Depth (ft)	Probe Run	Soil Description	Depth, ft.	Symbol	PID, ppm	Ground Water	Sample Number, Description, and Results	Depth (ft)
		Refer to the report text for a proper understanding of the subsurface materials and probing methods. The stratification lines indicated below represent the approximate boundaries between soil types. Actual boundaries may be different if soil shifted inside sample tubes during extraction.						
5	1, 2	Light gray to light brown, slightly silty, slightly sandy CLAY, trace of gravel; wood chips; CL.			0, 0.1		GP-17:0.5	5
10	3	Light gray to dark gray, slightly silty SAND, trace of gravel; SM.	8.0		0	During Drilling	GP-17:8	10
15		BOTTOM OF GEOPROBE COMPLETED 4/6/2012	12.0					15
20								20
25								25
30								30
35								35
40								40
45								45

NOTES

1. In some cases where recovery was low in the upper part of the run, the soil sample may have slid down in the tube prior to removal from the ground.
2. Groundwater level, if indicated above, was estimated during probing and should be considered approximate.
3. Refer to KEY for definitions and explanation of symbols.
4. CT = corrosion test sample; TR = thermal resistivity sample; EN = environmental sample; GE = geotechnical sample; AR = archeological sample.

LEGEND

3 — 2" Plastic Tube - No Soil Recovery
2" Plastic Tube with Soil Recovery
Run No.
▽ Estimated Water Level

Magnolia CSO Control Project
Geotechnical Data Report
Seattle, Washington

LOG OF GEOPROBE GP-17

May 2012 21-1-21623-015

SHANNON & WILSON, INC.
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FIG. A-25

GEOPROBE 21-21623.GPJ 21-16604.GPJ 5/11/12 Log: JML Rev: DJR Typ: LKN

LOG OF GEOPROBE

Date Started: 10/12/11	Location: N: 234,654 E: 1,257,456	Ground Elevation: Approx. 113.2 feet	
Date Completed: 10/13/11		Typical Run Length: feet	
Total Depth (ft): 81.5	Drilling Company: Boart Longyear	Hole Diameter: 6 inches	

Depth (ft)	Probe Run	Soil Description	Depth, ft.	Symbol	PID, ppm	Ground Water	Sample Number, Description, and Results	Depth (ft)
		Refer to the report text for a proper understanding of the subsurface materials and probing methods. The stratification lines indicated below represent the approximate boundaries between soil types. Actual boundaries may be different if soil shifted inside sample tubes during extraction.						
		Gray-brown, sandy SILT; moist; scattered debris; (Hf) ML.	0.5					
		Gray GRAVEL; moist; angular, lightly cemented; (Hf) GP.	1.2					
	1	Black, sandy SILT; moist; (Hf) ML.	1.6		0			
5		Brown to gray, slightly gravelly to gravelly, slightly silty to silty SAND; (Hf) SP-SM/SM.						5
	2	Medium dense, gray, gravelly SAND; wet; (Hf) SP.	7.5		0	▽ During Drilling		
10	3				0			10
	4	Very soft, gray, clayey SILT to silty CLAY; wet; trace to scattered organics, trace to scattered sell fragments, organic odor; (He) ML/CL.	12.0		0			
15	5				0			15
	6				0			
20	7				0			20
		Loose, medium dense, gray, slightly clayey, sandy, silty, fine GRAVEL; wet; scattered shell fragments; (Hb) GM.	23.0		0			
25	8							25
30	9							30
		Dense, gray, slightly silty, sandy, fine GRAVEL; wet; scattered shell fragments; (Hb) GP-GM.	32.5		0			
35	10							35
		Stiff, gray, sandy, silty, clayey GRAVEL; moist; scattered shell fragments; (Hb) GC.	37.5					
40	11							40
		Stiff to hard, gray to blue-gray, silty CLAY, trace of sand; moist; trace of organics, trace of slickensides; (Qvgl) CH/CL.	45.0					
45	12							45

CONTINUED NEXT PAGE

NOTES

1. In some cases where recovery was low in the upper part of the run, the soil sample may have slid down in the tube prior to removal from the ground.
2. Groundwater level, if indicated above, was estimated during probing and should be considered approximate.
3. Refer to KEY for definitions and explanation of symbols.
4. CT = corrosion test sample; TR = thermal resistivity sample; EN = environmental sample; GE = geotechnical sample; AR = archeological sample.

LEGEND

3 — 2" Plastic Tube - No Soil Recovery
2" Plastic Tube with Soil Recovery — Run No.
▽ Estimated Water Level

Magnolia CSO Control Project
Geotechnical Data Report
Seattle, Washington

LOG OF GEOPROBE MA-8

May 2012 21-1-21623-015

SHANNON & WILSON, INC.
Geotechnical and Environmental Consultants

FIG. A-26
Sheet 1 of 2

REV 2

GEOPROBE 21-21623.GPJ 21-16604.GPJ 5/11/12 Log: GBB Rev: EAS Typ: LKN

LOG OF GEOPROBE

Date Started *10/12/11*	Location N: 234,654 E: 1,257,456	Ground Elevation: *Approx. 113.2 feet*	
Date Completed *10/13/11*		Typical Run Length *feet*	
Total Depth (ft) *81.5*	Drilling Company: *Boart Longyear*	Hole Diameter: *6 inches*	

Depth (ft)	Probe Run	Soil Description	Depth, ft.	Symbol	PID, ppm	Ground Water	Sample Number, Description, and Results	Depth (ft)
		Refer to the report text for a proper understanding of the subsurface materials and probing methods. The stratification lines indicated below represent the approximate boundaries between soil types. Actual boundaries may be different if soil shifted inside sample tubes during extraction.						
55	13							55
	14							
60	15							60
65	16							65
70	17							70
75	18							75
80	19							80
		BOTTOM OF BORING COMPLETED 10/13/2011	81.5					
85								85
90								90
95								95

Typ: LKN Rev: EAS Log: GBB

GEOPROBE 21-21623.GPJ 21-16604.GPJ 5/11/12

NOTES

1. In some cases where recovery was low in the upper part of the run, the soil sample may have slid down in the tube prior to removal from the ground.
2. Groundwater level, if indicated above, was estimated during probing and should be considered approximate.
3. Refer to KEY for definitions and explanation of symbols.
4. CT = corrosion test sample; TR = thermal resistivity sample; EN = environmental sample; GE = geotechnical sample; AR = archeological sample.

LEGEND

3 — 2" Plastic Tube - No Soil Recovery
2" Plastic Tube with Soil Recovery
Run No.
▽ Estimated Water Level

Magnolia CSO Control Project
Geotechnical Data Report
Seattle, Washington

LOG OF GEOPROBE MA-8

May 2012 21-1-21623-015

SHANNON & WILSON, INC.
Geotechnical and Environmental Consultants

FIG. A-26
Sheet 2 of 2

REV 2

LOG OF GEOPROBE

Date Started *10/12/11*	**Location** N: 234,650 E: 1,257,619	**Ground Elevation:** *Approx. 112.6 feet*	
Date Completed *10/19/11*		**Typical Run Length** *feet*	
Total Depth (ft) *81.5*	**Drilling Company:** *Boart Longyear*	**Hole Diameter:** *6 inches*	

Depth (ft)	Probe Run	Soil Description	Depth, ft.	Symbol	PID, ppm	Ground Water	Sample Number, Description, and Results	Depth (ft)
5	1	Gray, slightly silty to gravelly SAND; moist to wet; slight fuel odor; (Fill) (Hf) SP-SM/SP.			0			5
	2		8.0		2	▽ During Drilling	MA-9:7	
10	3	Very soft, gray, silty CLAY; wet; scattered organics; (He) CH. - Driller noted slight sheen in cuttings/drill mud at about 9 feet.			0		MA-9:10	10
15	4	Very soft to medium dense, gray, sandy, silty GRAVEL, trace of clay; wet; scattered to abundant organics, trace to scattered shell fragments; (Hb) GM.	14.0		0			15
	5							
20	6				0			20
25	7				0			25
30	8							30
		Dense, gray, slightly silty to silty, gravelly SAND; wet; scattered shell fragments; (Hb) SP-SM/SM.	32.0					
35	9				0			35
40	10				0			40
45	11				0			45
		Medium stiff to very stiff, gray, silty CLAY, trace of sand locally;	48.0					

CONTINUED NEXT PAGE

NOTES

1. In some cases where recovery was low in the upper part of the run, the soil sample may have slid down in the tube prior to removal from the ground.
2. Groundwater level, if indicated above, was estimated during probing and should be considered approximate.
3. Refer to KEY for definitions and explanation of symbols.
4. CT = corrosion test sample; TR = thermal resistivity sample; EN = environmental sample; GE = geotechnical sample; AR = archeological sample.

LEGEND

3 — 2" Plastic Tube - No Soil Recovery
2" Plastic Tube with Soil Recovery
Run No.
▽ Estimated Water Level

Magnolia CSO Control Project
Geotechnical Data Report
Seattle, Washington

LOG OF GEOPROBE MA-9

May 2012 21-1-21623-015

SHANNON & WILSON, INC.
Geotechnical and Environmental Consultants

FIG. A-27
Sheet 1 of 2

REV 2

GEOPROBE 21-21623.GPJ 21-16604.GPJ 5/11/12 Log: GBB Rev: EAS Typ: LKN

LOG OF GEOPROBE

Date Started *10/12/11*	Location N: 234,650 E: 1,257,619	Ground Elevation: *Approx. 112.6 feet*	
Date Completed *10/19/11*		Typical Run Length *feet*	
Total Depth (ft) *81.5*	Drilling Company: *Boart Longyear*	Hole Diameter: *6 inches*	

Depth (ft)	Probe Run	Soil Description	Depth, ft.	Symbol	PID, ppm	Ground Water	Sample Number, Description, and Results	Depth (ft)
	12	moist; trace of light gray silt partings; (Qvgl) CL/CH.			0			
55	13				0			55
60	14							60
65	15							65
70	16							70
75	17							75
80	18							80
		BOTTOM OF BORING COMPLETED 10/19/2011	81.5					
85								85
90								90
95								95

Refer to the report text for a proper understanding of the subsurface materials and probing methods. The stratification lines indicated below represent the approximate boundaries between soil types. Actual boundaries may be different if soil shifted inside sample tubes during extraction.

Typ: LKN Rev: EAS Log: GBB

GEOPROBE 21-21623.GPJ 21-16604.GPJ 5/11/12

NOTES

1. In some cases where recovery was low in the upper part of the run, the soil sample may have slid down in the tube prior to removal from the ground.
2. Groundwater level, if indicated above, was estimated during probing and should be considered approximate.
3. Refer to KEY for definitions and explanation of symbols.
4. CT = corrosion test sample; TR = thermal resistivity sample; EN = environmental sample; GE = geotechnical sample; AR = archeological sample.

LEGEND

3 — Run No.

2" Plastic Tube - No Soil Recovery

2" Plastic Tube with Soil Recovery

▽ Estimated Water Level

Magnolia CSO Control Project
Geotechnical Data Report
Seattle, Washington

LOG OF GEOPROBE MA-9

May 2012 21-1-21623-015

SHANNON & WILSON, INC.
Geotechnical and Environmental Consultants

FIG. A-27
Sheet 2 of 2

REV 2

APPENDIX B

ANALYTICAL LABORATORY REPORTS

OnSite Environmental Inc.

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

October 21, 2011

David Randall
Shannon & Wilson, Inc.
400 N 34th Street, Suite 100
Seattle, WA 98103

Re: Analytical Data for Project 21-1-21623-016
Laboratory Reference No. 1110-105

Dear David:

Enclosed are the analytical results and associated quality control data for samples submitted on October 14, 2011.

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: October 21, 2011
Samples Submitted: October 14, 2011
Laboratory Reference: 1110-105
Project: 21-1-21623-016

Case Narrative

Samples were collected on October 13, 2011 and received by the laboratory on October 14, 2011. 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.

Volatiles (soil) EPA 8260B Analysis

Per EPA Method 5035A, samples were received by the laboratory in pre-weighed 40 mL VOA vials within 48 hours of sample collection. They were stored in a freezer at between -7°C and -20°C until extraction or analysis.

Any other QA/QC issues associated with this extraction and analysis will be indicated with a footnote reference and discussed in detail on the Data Qualifier page.

Date of Report: October 21, 2011
Samples Submitted: October 14, 2011
Laboratory Reference: 1110-105
Project: 21-1-21623-016

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

Matrix: Soil
Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**GP-1:8**					
Laboratory ID:	10-105-01					
Gasoline Range Organics	**ND**	25	NWTPH-HCID	10-17-11	10-18-11	
Diesel Range Organics	**ND**	61	NWTPH-HCID	10-17-11	10-18-11	
Lube Oil Range Organics	**ND**	120	NWTPH-HCID	10-17-11	10-18-11	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*111*	*50-150*				
Client ID:	**GP-2:16.5**					
Laboratory ID:	10-105-03					
Gasoline Range Organics	**ND**	23	NWTPH-HCID	10-17-11	10-18-11	
Diesel Range Organics	**ND**	57	NWTPH-HCID	10-17-11	10-18-11	
Lube Oil Range Organics	**ND**	110	NWTPH-HCID	10-17-11	10-18-11	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*107*	*50-150*				
Client ID:	**GP-3:8**					
Laboratory ID:	10-105-04					
Gasoline Range Organics	**ND**	22	NWTPH-HCID	10-17-11	10-18-11	
Diesel Range Organics	**ND**	56	NWTPH-HCID	10-17-11	10-18-11	
Lube Oil Range Organics	**ND**	110	NWTPH-HCID	10-17-11	10-18-11	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*111*	*50-150*				
Client ID:	**GP-4:8**					
Laboratory ID:	10-105-05					
Gasoline Range Organics	**ND**	23	NWTPH-HCID	10-17-11	10-18-11	
Diesel Range Organics	**ND**	56	NWTPH-HCID	10-17-11	10-18-11	
Lube Oil Range Organics	**ND**	110	NWTPH-HCID	10-17-11	10-18-11	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*111*	*50-150*				
Client ID:	**GP-5:8**					
Laboratory ID:	10-105-06					
Gasoline Range Organics	**ND**	22	NWTPH-HCID	10-17-11	10-18-11	
Diesel Range Organics	**ND**	56	NWTPH-HCID	10-17-11	10-18-11	
Lube Oil Range Organics	**ND**	110	NWTPH-HCID	10-17-11	10-18-11	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*111*	*50-150*				

Date of Report: October 21, 2011
Samples Submitted: October 14, 2011
Laboratory Reference: 1110-105
Project: 21-1-21623-016

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

Matrix: Soil
Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB1017S1					
Gasoline Range Organics	**ND**	20	NWTPH-HCID	10-17-11	10-18-11	
Diesel Range Organics	**ND**	50	NWTPH-HCID	10-17-11	10-18-11	
Lube Oil Range Organics	**ND**	100	NWTPH-HCID	10-17-11	10-18-11	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*112*	*50-150*				

Date of Report: October 21, 2011
Samples Submitted: October 14, 2011
Laboratory Reference: 1110-105
Project: 21-1-21623-016

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

Matrix: Water
Units: mg/L (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**GP-2:GW**					
Laboratory ID:	10-105-07					
Gasoline Range Organics	**ND**	0.11	NWTPH-HCID	10-17-11	10-17-11	
Diesel Range Organics	**ND**	0.28	NWTPH-HCID	10-17-11	10-17-11	
Lube Oil Range Organics	**ND**	0.45	NWTPH-HCID	10-17-11	10-17-11	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*88*	*50-150*				
Client ID:	**GP-5:GW**					
Laboratory ID:	10-105-08					
Gasoline Range Organics	**ND**	0.11	NWTPH-HCID	10-17-11	10-17-11	
Diesel Range Organics	**ND**	0.27	NWTPH-HCID	10-17-11	10-17-11	
Lube Oil Range Organics	**ND**	0.44	NWTPH-HCID	10-17-11	10-17-11	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*87*	*50-150*				

Date of Report: October 21, 2011
Samples Submitted: October 14, 2011
Laboratory Reference: 1110-105
Project: 21-1-21623-016

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

Matrix: Water
Units: mg/L (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB1017W1					
Gasoline Range Organics	**ND**	0.10	NWTPH-HCID	10-17-11	10-17-11	
Diesel Range Organics	**ND**	0.25	NWTPH-HCID	10-17-11	10-17-11	
Lube Oil Range Organics	**ND**	0.40	NWTPH-HCID	10-17-11	10-17-11	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*89*	*50-150*				

Date of Report: October 21, 2011
Samples Submitted: October 14, 2011
Laboratory Reference: 1110-105
Project: 21-1-21623-016

VOLATILES by EPA 8260B
page 1 of 2

Matrix: Soil
Units: mg/kg

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**GP-2:16.5**					
Laboratory ID:	10-105-03					
CFC-12	ND	0.0010	EPA 8260	10-17-11	10-17-11	
Chloromethane	ND	0.0052	EPA 8260	10-17-11	10-17-11	
Vinyl Chloride	ND	0.0010	EPA 8260	10-17-11	10-17-11	
Bromomethane	ND	0.0010	EPA 8260	10-17-11	10-17-11	
Chloroethane	ND	0.0052	EPA 8260	10-17-11	10-17-11	
CFC-11	ND	0.0010	EPA 8260	10-17-11	10-17-11	
1,1-Dichloroethene	ND	0.0010	EPA 8260	10-17-11	10-17-11	
Acetone	ND	0.0052	EPA 8260	10-17-11	10-17-11	
Methyl Iodide	ND	0.0052	EPA 8260	10-17-11	10-17-11	
Carbon Disulfide	0.013	0.0010	EPA 8260	10-17-11	10-17-11	
Methylene Chloride	ND	0.0052	EPA 8260	10-17-11	10-17-11	
Trans-1,2-Dichloroethene	ND	0.0010	EPA 8260	10-17-11	10-17-11	
Methyl t-Butyl Ether	ND	0.0010	EPA 8260	10-17-11	10-17-11	
1,1-Dichloroethane	ND	0.0010	EPA 8260	10-17-11	10-17-11	
Vinyl Acetate	ND	0.0052	EPA 8260	10-17-11	10-17-11	
2,2-Dichloropropane	ND	0.0010	EPA 8260	10-17-11	10-17-11	
Cis-1,2-Dichloroethene	ND	0.0010	EPA 8260	10-17-11	10-17-11	
2-Butanone	ND	0.0052	EPA 8260	10-17-11	10-17-11	
Bromochloromethane	ND	0.0010	EPA 8260	10-17-11	10-17-11	
Chloroform	ND	0.0010	EPA 8260	10-17-11	10-17-11	
1,1,1-Trichloroethane	ND	0.0010	EPA 8260	10-17-11	10-17-11	
Carbon Tetrachloride	ND	0.0010	EPA 8260	10-17-11	10-17-11	
1,1-Dichloropropene	ND	0.0010	EPA 8260	10-17-11	10-17-11	
Benzene	ND	0.0010	EPA 8260	10-17-11	10-17-11	
1,2-Dichloroethane	ND	0.0010	EPA 8260	10-17-11	10-17-11	
Trichloroethene	ND	0.0010	EPA 8260	10-17-11	10-17-11	
1,2-Dichloropropane	ND	0.0010	EPA 8260	10-17-11	10-17-11	
Dibromomethane	ND	0.0010	EPA 8260	10-17-11	10-17-11	
Dichlorobromomethane	ND	0.0010	EPA 8260	10-17-11	10-17-11	
2-Chloroethylvinylether	ND	0.0052	EPA 8260	10-17-11	10-17-11	
Cis-1,3-Dichloropropene	ND	0.0010	EPA 8260	10-17-11	10-17-11	
Methyl Isobutyl Ketone	ND	0.0052	EPA 8260	10-17-11	10-17-11	
Toluene	ND	0.0052	EPA 8260	10-17-11	10-17-11	
Trans-1,3-Dichloropropene	ND	0.0010	EPA 8260	10-17-11	10-17-11	

Date of Report: October 21, 2011
Samples Submitted: October 14, 2011
Laboratory Reference: 1110-105
Project: 21-1-21623-016

VOLATILES by EPA 8260B
page 2 of 2

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**GP-2:16.5**					
Laboratory ID:	10-105-03					
1,1,2-Trichloroethane	ND	0.0010	EPA 8260	10-17-11	10-17-11	
Tetrachloroethene	ND	0.0010	EPA 8260	10-17-11	10-17-11	
1,3-Dichloropropane	ND	0.0010	EPA 8260	10-17-11	10-17-11	
2-Hexanone	ND	0.0052	EPA 8260	10-17-11	10-17-11	
Dibromochloromethane	ND	0.0010	EPA 8260	10-17-11	10-17-11	
Ethylene dibromide	ND	0.0010	EPA 8260	10-17-11	10-17-11	
Chlorobenzene	ND	0.0010	EPA 8260	10-17-11	10-17-11	
1,1,1,2-Tetrachloroethane	ND	0.0010	EPA 8260	10-17-11	10-17-11	
Ethylbenzene	ND	0.0010	EPA 8260	10-17-11	10-17-11	
m,p-Xylene	ND	0.0021	EPA 8260	10-17-11	10-17-11	
o-Xylene	ND	0.0010	EPA 8260	10-17-11	10-17-11	
Styrene	ND	0.0010	EPA 8260	10-17-11	10-17-11	
Bromoform	ND	0.0010	EPA 8260	10-17-11	10-17-11	
Isopropylbenzene	ND	0.0010	EPA 8260	10-17-11	10-17-11	
Bromobenzene	ND	0.0010	EPA 8260	10-17-11	10-17-11	
1,1,2,2-Tetrachloroethane	ND	0.0010	EPA 8260	10-17-11	10-17-11	
1,2,3-Trichloropropane	ND	0.0010	EPA 8260	10-17-11	10-17-11	
n-Propylbenzene	ND	0.0010	EPA 8260	10-17-11	10-17-11	
2-Chlorotoluene	ND	0.0010	EPA 8260	10-17-11	10-17-11	
4-Chlorotoluene	ND	0.0010	EPA 8260	10-17-11	10-17-11	
1,3,5-Trimethylbenzene	ND	0.0010	EPA 8260	10-17-11	10-17-11	
tert-Butylbenzene	ND	0.0010	EPA 8260	10-17-11	10-17-11	
1,2,4-Trimethylbenzene	ND	0.0010	EPA 8260	10-17-11	10-17-11	
sec-Butylbenzene	ND	0.0010	EPA 8260	10-17-11	10-17-11	
1,3-Dichlorobenzene	ND	0.0010	EPA 8260	10-17-11	10-17-11	
p-Isopropyltoluene	ND	0.0010	EPA 8260	10-17-11	10-17-11	
1,4-Dichlorobenzene	ND	0.0010	EPA 8260	10-17-11	10-17-11	
1,2-Dichlorobenzene	ND	0.0010	EPA 8260	10-17-11	10-17-11	
n-Butylbenzene	ND	0.0010	EPA 8260	10-17-11	10-17-11	
1,2-Dibromo-3-chloropropane	ND	0.0052	EPA 8260	10-17-11	10-17-11	
1,2,4-Trichlorobenzene	ND	0.0010	EPA 8260	10-17-11	10-17-11	
Hexachlorobutadiene	ND	0.0052	EPA 8260	10-17-11	10-17-11	
Naphthalene	ND	0.0010	EPA 8260	10-17-11	10-17-11	
1,2,3-Trichlorobenzene	ND	0.0010	EPA 8260	10-17-11	10-17-11	
Surrogate:	*Percent Recovery*	*Control Limits*				
Dibromofluoromethane	*115*	*63-127*				
Toluene-d8	*109*	*65-129*				
Benzene, 1-bromo-4-fluoro-	*108*	*55-121*				

Date of Report: October 21, 2011
Samples Submitted: October 14, 2011
Laboratory Reference: 1110-105
Project: 21-1-21623-016

VOLATILES by EPA 8260B
METHOD BLANK QUALITY CONTROL
page 1 of 2

Matrix: Soil
Units: mg/kg

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Laboratory ID:	MB1017S1					
CFC-12	ND	0.0010	EPA 8260	10-17-11	10-17-11	
Chloromethane	ND	0.0050	EPA 8260	10-17-11	10-17-11	
Vinyl Chloride	ND	0.0010	EPA 8260	10-17-11	10-17-11	
Bromomethane	ND	0.0010	EPA 8260	10-17-11	10-17-11	
Chloroethane	ND	0.0050	EPA 8260	10-17-11	10-17-11	
CFC-11	ND	0.0010	EPA 8260	10-17-11	10-17-11	
1,1-Dichloroethene	ND	0.0010	EPA 8260	10-17-11	10-17-11	
Acetone	ND	0.0050	EPA 8260	10-17-11	10-17-11	
Methyl Iodide	ND	0.0050	EPA 8260	10-17-11	10-17-11	
Carbon Disulfide	ND	0.0010	EPA 8260	10-17-11	10-17-11	
Methylene Chloride	ND	0.0050	EPA 8260	10-17-11	10-17-11	
Trans-1,2-Dichloroethene	ND	0.0010	EPA 8260	10-17-11	10-17-11	
Methyl t-Butyl Ether	ND	0.0010	EPA 8260	10-17-11	10-17-11	
1,1-Dichloroethane	ND	0.0010	EPA 8260	10-17-11	10-17-11	
Vinyl Acetate	ND	0.0050	EPA 8260	10-17-11	10-17-11	
2,2-Dichloropropane	ND	0.0010	EPA 8260	10-17-11	10-17-11	
Cis-1,2-Dichloroethene	ND	0.0010	EPA 8260	10-17-11	10-17-11	
2-Butanone	ND	0.0050	EPA 8260	10-17-11	10-17-11	
Bromochloromethane	ND	0.0010	EPA 8260	10-17-11	10-17-11	
Chloroform	ND	0.0010	EPA 8260	10-17-11	10-17-11	
1,1,1-Trichloroethane	ND	0.0010	EPA 8260	10-17-11	10-17-11	
Carbon Tetrachloride	ND	0.0010	EPA 8260	10-17-11	10-17-11	
1,1-Dichloropropene	ND	0.0010	EPA 8260	10-17-11	10-17-11	
Benzene	ND	0.0010	EPA 8260	10-17-11	10-17-11	
1,2-Dichloroethane	ND	0.0010	EPA 8260	10-17-11	10-17-11	
Trichloroethene	ND	0.0010	EPA 8260	10-17-11	10-17-11	
1,2-Dichloropropane	ND	0.0010	EPA 8260	10-17-11	10-17-11	
Dibromomethane	ND	0.0010	EPA 8260	10-17-11	10-17-11	
Dichlorobromomethane	ND	0.0010	EPA 8260	10-17-11	10-17-11	
2-Chloroethylvinylether	ND	0.0050	EPA 8260	10-17-11	10-17-11	
Cis-1,3-Dichloropropene	ND	0.0010	EPA 8260	10-17-11	10-17-11	
Methyl Isobutyl Ketone	ND	0.0050	EPA 8260	10-17-11	10-17-11	
Toluene	ND	0.0050	EPA 8260	10-17-11	10-17-11	
Trans-1,3-Dichloropropene	ND	0.0010	EPA 8260	10-17-11	10-17-11	

Date of Report: October 21, 2011
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Laboratory Reference: 1110-105
Project: 21-1-21623-016

VOLATILES by EPA 8260B
METHOD BLANK QUALITY CONTROL
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Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Laboratory ID:	MB1017S1					
1,1,2-Trichloroethane	ND	0.0010	EPA 8260	10-17-11	10-17-11	
Tetrachloroethene	ND	0.0010	EPA 8260	10-17-11	10-17-11	
1,3-Dichloropropane	ND	0.0010	EPA 8260	10-17-11	10-17-11	
2-Hexanone	ND	0.0050	EPA 8260	10-17-11	10-17-11	
Dibromochloromethane	ND	0.0010	EPA 8260	10-17-11	10-17-11	
Ethylene dibromide	ND	0.0010	EPA 8260	10-17-11	10-17-11	
Chlorobenzene	ND	0.0010	EPA 8260	10-17-11	10-17-11	
1,1,1,2-Tetrachloroethane	ND	0.0010	EPA 8260	10-17-11	10-17-11	
Ethylbenzene	ND	0.0010	EPA 8260	10-17-11	10-17-11	
m,p-Xylene	ND	0.0020	EPA 8260	10-17-11	10-17-11	
o-Xylene	ND	0.0010	EPA 8260	10-17-11	10-17-11	
Styrene	ND	0.0010	EPA 8260	10-17-11	10-17-11	
Bromoform	ND	0.0010	EPA 8260	10-17-11	10-17-11	
Isopropylbenzene	ND	0.0010	EPA 8260	10-17-11	10-17-11	
Bromobenzene	ND	0.0010	EPA 8260	10-17-11	10-17-11	
1,1,2,2-Tetrachloroethane	ND	0.0010	EPA 8260	10-17-11	10-17-11	
1,2,3-Trichloropropane	ND	0.0010	EPA 8260	10-17-11	10-17-11	
n-Propylbenzene	ND	0.0010	EPA 8260	10-17-11	10-17-11	
2-Chlorotoluene	ND	0.0010	EPA 8260	10-17-11	10-17-11	
4-Chlorotoluene	ND	0.0010	EPA 8260	10-17-11	10-17-11	
1,3,5-Trimethylbenzene	ND	0.0010	EPA 8260	10-17-11	10-17-11	
tert-Butylbenzene	ND	0.0010	EPA 8260	10-17-11	10-17-11	
1,2,4-Trimethylbenzene	ND	0.0010	EPA 8260	10-17-11	10-17-11	
sec-Butylbenzene	ND	0.0010	EPA 8260	10-17-11	10-17-11	
1,3-Dichlorobenzene	ND	0.0010	EPA 8260	10-17-11	10-17-11	
p-Isopropyltoluene	ND	0.0010	EPA 8260	10-17-11	10-17-11	
1,4-Dichlorobenzene	ND	0.0010	EPA 8260	10-17-11	10-17-11	
1,2-Dichlorobenzene	ND	0.0010	EPA 8260	10-17-11	10-17-11	
n-Butylbenzene	ND	0.0010	EPA 8260	10-17-11	10-17-11	
1,2-Dibromo-3-chloropropane	ND	0.0050	EPA 8260	10-17-11	10-17-11	
1,2,4-Trichlorobenzene	ND	0.0010	EPA 8260	10-17-11	10-17-11	
Hexachlorobutadiene	ND	0.0050	EPA 8260	10-17-11	10-17-11	
Naphthalene	ND	0.0010	EPA 8260	10-17-11	10-17-11	
1,2,3-Trichlorobenzene	ND	0.0010	EPA 8260	10-17-11	10-17-11	
Surrogate:	*Percent Recovery*	*Control Limits*				
Dibromofluoromethane	*113*	*63-127*				
Toluene-d8	*109*	*65-129*				
Benzene, 1-bromo-4-fluoro-	*109*	*55-121*				

Date of Report: October 21, 2011
Samples Submitted: October 14, 2011
Laboratory Reference: 1110-105
Project: 21-1-21623-016

VOLATILES by EPA 8260B
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:	SB1017S1									
	SB	SBD	SB	SBD	SB	SBD				
1,1-Dichloroethene	**0.0640**	**0.0641**	0.0500	0.0500	128	128	70-130	0	19	
Benzene	**0.0572**	**0.0568**	0.0500	0.0500	114	114	70-125	1	15	
Trichloroethene	**0.0555**	**0.0558**	0.0500	0.0500	111	112	70-122	1	14	
Toluene	**0.0541**	**0.0541**	0.0500	0.0500	108	108	73-120	0	16	
Chlorobenzene	**0.0516**	**0.0523**	0.0500	0.0500	103	105	74-109	1	12	
Surrogate:										
Dibromofluoromethane					*112*	*109*	*63-127*			
Toluene-d8					*107*	*107*	*65-129*			
Benzene, 1-bromo-4-fluoro-					*108*	*109*	*55-121*			

Date of Report: October 21, 2011
Samples Submitted: October 14, 2011
Laboratory Reference: 1110-105
Project: 21-1-21623-016

VOLATILES by EPA 8260B
page 1 of 2

Matrix: Water
Units: ug/L

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**GP-2:GW**					
Laboratory ID:	10-105-07					
CFC-12	ND	0.20	EPA 8260	10-17-11	10-17-11	
Chloromethane	ND	1.0	EPA 8260	10-17-11	10-17-11	
Vinyl Chloride	ND	0.20	EPA 8260	10-17-11	10-17-11	
Bromomethane	ND	0.20	EPA 8260	10-17-11	10-17-11	
Chloroethane	ND	1.0	EPA 8260	10-17-11	10-17-11	
CFC-11	ND	0.20	EPA 8260	10-17-11	10-17-11	
1,1-Dichloroethene	ND	0.20	EPA 8260	10-17-11	10-17-11	
Acetone	ND	5.0	EPA 8260	10-17-11	10-17-11	
Methyl Iodide	ND	1.0	EPA 8260	10-17-11	10-17-11	
Carbon Disulfide	ND	0.20	EPA 8260	10-17-11	10-17-11	
Methylene Chloride	ND	1.0	EPA 8260	10-17-11	10-17-11	
Trans-1,2-Dichloroethene	ND	0.20	EPA 8260	10-17-11	10-17-11	
Methyl t-Butyl Ether	ND	0.20	EPA 8260	10-17-11	10-17-11	
1,1-Dichloroethane	ND	0.20	EPA 8260	10-17-11	10-17-11	
Vinyl Acetate	ND	2.0	EPA 8260	10-17-11	10-17-11	
2,2-Dichloropropane	ND	0.20	EPA 8260	10-17-11	10-17-11	
Cis-1,2-Dichloroethene	ND	0.20	EPA 8260	10-17-11	10-17-11	
2-Butanone	ND	5.0	EPA 8260	10-17-11	10-17-11	
Bromochloromethane	ND	0.20	EPA 8260	10-17-11	10-17-11	
Chloroform	ND	0.20	EPA 8260	10-17-11	10-17-11	
1,1,1-Trichloroethane	ND	0.20	EPA 8260	10-17-11	10-17-11	
Carbon Tetrachloride	ND	0.20	EPA 8260	10-17-11	10-17-11	
1,1-Dichloropropene	ND	0.20	EPA 8260	10-17-11	10-17-11	
Benzene	ND	0.20	EPA 8260	10-17-11	10-17-11	
1,2-Dichloroethane	ND	0.20	EPA 8260	10-17-11	10-17-11	
Trichloroethene	ND	0.20	EPA 8260	10-17-11	10-17-11	
1,2-Dichloropropane	ND	0.20	EPA 8260	10-17-11	10-17-11	
Dibromomethane	ND	0.20	EPA 8260	10-17-11	10-17-11	
Dichlorobromomethane	ND	0.20	EPA 8260	10-17-11	10-17-11	
2-Chloroethylvinylether	ND	1.0	EPA 8260	10-17-11	10-17-11	
Cis-1,3-Dichloropropene	ND	0.20	EPA 8260	10-17-11	10-17-11	
Methyl Isobutyl Ketone	ND	2.0	EPA 8260	10-17-11	10-17-11	
Toluene	ND	1.0	EPA 8260	10-17-11	10-17-11	
Trans-1,3-Dichloropropene	ND	0.20	EPA 8260	10-17-11	10-17-11	

Date of Report: October 21, 2011
Samples Submitted: October 14, 2011
Laboratory Reference: 1110-105
Project: 21-1-21623-016

VOLATILES by EPA 8260B
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Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**GP-2:GW**					
Laboratory ID:	10-105-07					
1,1,2-Trichloroethane	ND	0.20	EPA 8260	10-17-11	10-17-11	
Tetrachloroethene	ND	0.20	EPA 8260	10-17-11	10-17-11	
1,3-Dichloropropane	ND	0.20	EPA 8260	10-17-11	10-17-11	
2-Hexanone	ND	2.0	EPA 8260	10-17-11	10-17-11	
Dibromochloromethane	ND	0.20	EPA 8260	10-17-11	10-17-11	
Ethylene dibromide	ND	0.20	EPA 8260	10-17-11	10-17-11	
Chlorobenzene	ND	0.20	EPA 8260	10-17-11	10-17-11	
1,1,1,2-Tetrachloroethane	ND	0.20	EPA 8260	10-17-11	10-17-11	
Ethylbenzene	ND	0.20	EPA 8260	10-17-11	10-17-11	
m,p-Xylene	ND	0.40	EPA 8260	10-17-11	10-17-11	
o-Xylene	ND	0.20	EPA 8260	10-17-11	10-17-11	
Styrene	ND	0.20	EPA 8260	10-17-11	10-17-11	
Bromoform	ND	1.0	EPA 8260	10-17-11	10-17-11	
Isopropylbenzene	ND	0.20	EPA 8260	10-17-11	10-17-11	
Bromobenzene	ND	0.20	EPA 8260	10-17-11	10-17-11	
1,1,2,2-Tetrachloroethane	ND	0.20	EPA 8260	10-17-11	10-17-11	
1,2,3-Trichloropropane	ND	0.20	EPA 8260	10-17-11	10-17-11	
n-Propylbenzene	ND	0.20	EPA 8260	10-17-11	10-17-11	
2-Chlorotoluene	ND	0.20	EPA 8260	10-17-11	10-17-11	
4-Chlorotoluene	ND	0.20	EPA 8260	10-17-11	10-17-11	
1,3,5-Trimethylbenzene	ND	0.20	EPA 8260	10-17-11	10-17-11	
tert-Butylbenzene	ND	0.20	EPA 8260	10-17-11	10-17-11	
1,2,4-Trimethylbenzene	ND	0.20	EPA 8260	10-17-11	10-17-11	
sec-Butylbenzene	ND	0.20	EPA 8260	10-17-11	10-17-11	
1,3-Dichlorobenzene	ND	0.20	EPA 8260	10-17-11	10-17-11	
p-Isopropyltoluene	ND	0.20	EPA 8260	10-17-11	10-17-11	
1,4-Dichlorobenzene	ND	0.20	EPA 8260	10-17-11	10-17-11	
1,2-Dichlorobenzene	ND	0.20	EPA 8260	10-17-11	10-17-11	
n-Butylbenzene	ND	0.20	EPA 8260	10-17-11	10-17-11	
1,2-Dibromo-3-chloropropane	ND	1.0	EPA 8260	10-17-11	10-17-11	
1,2,4-Trichlorobenzene	ND	0.20	EPA 8260	10-17-11	10-17-11	
Hexachlorobutadiene	ND	0.20	EPA 8260	10-17-11	10-17-11	
Naphthalene	ND	1.0	EPA 8260	10-17-11	10-17-11	
1,2,3-Trichlorobenzene	ND	0.20	EPA 8260	10-17-11	10-17-11	
Surrogate:	*Percent Recovery*	*Control Limits*				
Dibromofluoromethane	*86*	*68-120*				
Toluene-d8	*87*	*73-120*				
Benzene, 1-bromo-4-fluoro-	*87*	*65-120*				

Date of Report: October 21, 2011
Samples Submitted: October 14, 2011
Laboratory Reference: 1110-105
Project: 21-1-21623-016

VOLATILES by EPA 8260B
METHOD BLANK QUALITY CONTROL
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Matrix: Water
Units: ug/L

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Laboratory ID:	MB1017W1					
CFC-12	ND	0.20	EPA 8260	10-17-11	10-17-11	
Chloromethane	ND	1.0	EPA 8260	10-17-11	10-17-11	
Vinyl Chloride	ND	0.20	EPA 8260	10-17-11	10-17-11	
Bromomethane	ND	0.20	EPA 8260	10-17-11	10-17-11	
Chloroethane	ND	1.0	EPA 8260	10-17-11	10-17-11	
CFC-11	ND	0.20	EPA 8260	10-17-11	10-17-11	
1,1-Dichloroethene	ND	0.20	EPA 8260	10-17-11	10-17-11	
Acetone	ND	5.0	EPA 8260	10-17-11	10-17-11	
Methyl Iodide	ND	1.0	EPA 8260	10-17-11	10-17-11	
Carbon Disulfide	ND	0.20	EPA 8260	10-17-11	10-17-11	
Methylene Chloride	ND	1.0	EPA 8260	10-17-11	10-17-11	
Trans-1,2-Dichloroethene	ND	0.20	EPA 8260	10-17-11	10-17-11	
Methyl t-Butyl Ether	ND	0.20	EPA 8260	10-17-11	10-17-11	
1,1-Dichloroethane	ND	0.20	EPA 8260	10-17-11	10-17-11	
Vinyl Acetate	ND	2.0	EPA 8260	10-17-11	10-17-11	
2,2-Dichloropropane	ND	0.20	EPA 8260	10-17-11	10-17-11	
Cis-1,2-Dichloroethene	ND	0.20	EPA 8260	10-17-11	10-17-11	
2-Butanone	ND	5.0	EPA 8260	10-17-11	10-17-11	
Bromochloromethane	ND	0.20	EPA 8260	10-17-11	10-17-11	
Chloroform	ND	0.20	EPA 8260	10-17-11	10-17-11	
1,1,1-Trichloroethane	ND	0.20	EPA 8260	10-17-11	10-17-11	
Carbon Tetrachloride	ND	0.20	EPA 8260	10-17-11	10-17-11	
1,1-Dichloropropene	ND	0.20	EPA 8260	10-17-11	10-17-11	
Benzene	ND	0.20	EPA 8260	10-17-11	10-17-11	
1,2-Dichloroethane	ND	0.20	EPA 8260	10-17-11	10-17-11	
Trichloroethene	ND	0.20	EPA 8260	10-17-11	10-17-11	
1,2-Dichloropropane	ND	0.20	EPA 8260	10-17-11	10-17-11	
Dibromomethane	ND	0.20	EPA 8260	10-17-11	10-17-11	
Dichlorobromomethane	ND	0.20	EPA 8260	10-17-11	10-17-11	
2-Chloroethylvinylether	ND	1.0	EPA 8260	10-17-11	10-17-11	
Cis-1,3-Dichloropropene	ND	0.20	EPA 8260	10-17-11	10-17-11	
Methyl Isobutyl Ketone	ND	2.0	EPA 8260	10-17-11	10-17-11	
Toluene	ND	1.0	EPA 8260	10-17-11	10-17-11	
Trans-1,3-Dichloropropene	ND	0.20	EPA 8260	10-17-11	10-17-11	

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Project: 21-1-21623-016

VOLATILES by EPA 8260B
METHOD BLANK QUALITY CONTROL
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Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Laboratory ID:	MB1017W1					
1,1,2-Trichloroethane	ND	0.20	EPA 8260	10-17-11	10-17-11	
Tetrachloroethene	ND	0.20	EPA 8260	10-17-11	10-17-11	
1,3-Dichloropropane	ND	0.20	EPA 8260	10-17-11	10-17-11	
2-Hexanone	ND	2.0	EPA 8260	10-17-11	10-17-11	
Dibromochloromethane	ND	0.20	EPA 8260	10-17-11	10-17-11	
Ethylene dibromide	ND	0.20	EPA 8260	10-17-11	10-17-11	
Chlorobenzene	ND	0.20	EPA 8260	10-17-11	10-17-11	
1,1,1,2-Tetrachloroethane	ND	0.20	EPA 8260	10-17-11	10-17-11	
Ethylbenzene	ND	0.20	EPA 8260	10-17-11	10-17-11	
m,p-Xylene	ND	0.40	EPA 8260	10-17-11	10-17-11	
o-Xylene	ND	0.20	EPA 8260	10-17-11	10-17-11	
Styrene	ND	0.20	EPA 8260	10-17-11	10-17-11	
Bromoform	ND	1.0	EPA 8260	10-17-11	10-17-11	
Isopropylbenzene	ND	0.20	EPA 8260	10-17-11	10-17-11	
Bromobenzene	ND	0.20	EPA 8260	10-17-11	10-17-11	
1,1,2,2-Tetrachloroethane	ND	0.20	EPA 8260	10-17-11	10-17-11	
1,2,3-Trichloropropane	ND	0.20	EPA 8260	10-17-11	10-17-11	
n-Propylbenzene	ND	0.20	EPA 8260	10-17-11	10-17-11	
2-Chlorotoluene	ND	0.20	EPA 8260	10-17-11	10-17-11	
4-Chlorotoluene	ND	0.20	EPA 8260	10-17-11	10-17-11	
1,3,5-Trimethylbenzene	ND	0.20	EPA 8260	10-17-11	10-17-11	
tert-Butylbenzene	ND	0.20	EPA 8260	10-17-11	10-17-11	
1,2,4-Trimethylbenzene	ND	0.20	EPA 8260	10-17-11	10-17-11	
sec-Butylbenzene	ND	0.20	EPA 8260	10-17-11	10-17-11	
1,3-Dichlorobenzene	ND	0.20	EPA 8260	10-17-11	10-17-11	
p-Isopropyltoluene	ND	0.20	EPA 8260	10-17-11	10-17-11	
1,4-Dichlorobenzene	ND	0.20	EPA 8260	10-17-11	10-17-11	
1,2-Dichlorobenzene	ND	0.20	EPA 8260	10-17-11	10-17-11	
n-Butylbenzene	ND	0.20	EPA 8260	10-17-11	10-17-11	
1,2-Dibromo-3-chloropropane	ND	1.0	EPA 8260	10-17-11	10-17-11	
1,2,4-Trichlorobenzene	ND	0.20	EPA 8260	10-17-11	10-17-11	
Hexachlorobutadiene	ND	0.20	EPA 8260	10-17-11	10-17-11	
Naphthalene	ND	1.0	EPA 8260	10-17-11	10-17-11	
1,2,3-Trichlorobenzene	ND	0.20	EPA 8260	10-17-11	10-17-11	
Surrogate:	*Percent Recovery*	*Control Limits*				
Dibromofluoromethane	*85*	*68-120*				
Toluene-d8	*85*	*73-120*				
Benzene, 1-bromo-4-fluoro-	*86*	*65-120*				

Date of Report: October 21, 2011
Samples Submitted: October 14, 2011
Laboratory Reference: 1110-105
Project: 21-1-21623-016

VOLATILES by EPA 8260B
MS/MSD QUALITY CONTROL

Matrix: Water
Units: ug/L

Analyte	Result		Spike Level		Source Result	Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
MATRIX SPIKES											
Laboratory ID:	10-105-07										
	MS	MSD	MS	MSD		MS	MSD				
1,1-Dichloroethene	**11.4**	**11.5**	10.0	10.0	ND	114	115	70-130	1	12	
Benzene	**10.4**	**10.5**	10.0	10.0	ND	104	105	75-123	1	11	
Trichloroethene	**9.71**	**9.90**	10.0	10.0	ND	97	99	80-117	2	14	
Toluene	**10.2**	**10.3**	10.0	10.0	ND	102	103	80-115	1	12	
Chlorobenzene	**10.2**	**10.2**	10.0	10.0	ND	102	102	80-117	0	13	
Surrogate:											
Dibromofluoromethane						*87*	*87*	*68-120*			
Toluene-d8						*88*	*86*	*73-120*			
Benzene, 1-bromo-4-fluoro-						*90*	*87*	*65-120*			

Date of Report: October 21, 2011
Samples Submitted: October 14, 2011
Laboratory Reference: 1110-105
Project: 21-1-21623-016

TOTAL METALS
EPA 6010B/7471A

Matrix: Soil
Units: mg/kg (ppm)

Analyte	Result	PQL	EPA Method	Date Prepared	Date Analyzed	Flags
Lab ID:	10-105-01					
Client ID:	**GP-1:8**					
Arsenic	**ND**	12	6010B	10-18-11	10-18-11	
Barium	**43**	3.1	6010B	10-18-11	10-18-11	
Cadmium	**ND**	0.61	6010B	10-18-11	10-18-11	
Chromium	**44**	0.61	6010B	10-18-11	10-18-11	
Lead	**ND**	6.1	6010B	10-18-11	10-18-11	
Mercury	**ND**	0.31	7471A	10-18-11	10-18-11	
Selenium	**ND**	12	6010B	10-18-11	10-18-11	
Silver	**ND**	0.61	6010B	10-18-11	10-18-11	
Lab ID:	10-105-03					
Client ID:	**GP-2:16.5**					
Arsenic	**ND**	11	6010B	10-18-11	10-18-11	
Barium	**16**	2.8	6010B	10-18-11	10-18-11	
Cadmium	**ND**	0.57	6010B	10-18-11	10-18-11	
Chromium	**17**	0.57	6010B	10-18-11	10-18-11	
Lead	**ND**	5.7	6010B	10-18-11	10-18-11	
Mercury	**ND**	0.28	7471A	10-18-11	10-18-11	
Selenium	**ND**	11	6010B	10-18-11	10-18-11	
Silver	**ND**	0.57	6010B	10-18-11	10-18-11	

Date of Report: October 21, 2011
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Project: 21-1-21623-016

TOTAL METALS
EPA 6010B/7471A

Matrix: Soil
Units: mg/kg (ppm)

Analyte	Result	PQL	EPA Method	Date Prepared	Date Analyzed	Flags
Lab ID:	10-105-04					
Client ID:	**GP-3:8**					
Arsenic	**ND**	11	6010B	10-18-11	10-18-11	
Barium	**35**	2.8	6010B	10-18-11	10-18-11	
Cadmium	**ND**	0.56	6010B	10-18-11	10-18-11	
Chromium	**56**	0.56	6010B	10-18-11	10-18-11	
Lead	**ND**	5.6	6010B	10-18-11	10-18-11	
Mercury	**ND**	0.28	7471A	10-18-11	10-18-11	
Selenium	**ND**	11	6010B	10-18-11	10-18-11	
Silver	**ND**	0.56	6010B	10-18-11	10-18-11	
Lab ID:	10-105-05					
Client ID:	**GP-4:8**					
Arsenic	**ND**	11	6010B	10-18-11	10-18-11	
Barium	**34**	2.8	6010B	10-18-11	10-18-11	
Cadmium	**ND**	0.56	6010B	10-18-11	10-18-11	
Chromium	**36**	0.56	6010B	10-18-11	10-18-11	
Lead	**ND**	5.6	6010B	10-18-11	10-18-11	
Mercury	**ND**	0.28	7471A	10-18-11	10-18-11	
Selenium	**ND**	11	6010B	10-18-11	10-18-11	
Silver	**ND**	0.56	6010B	10-18-11	10-18-11	

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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:	10-105-06					
Client ID:	**GP-5:8**					
Arsenic	**ND**	11	6010B	10-18-11	10-18-11	
Barium	**31**	2.8	6010B	10-18-11	10-18-11	
Cadmium	**ND**	0.56	6010B	10-18-11	10-18-11	
Chromium	**38**	0.56	6010B	10-18-11	10-18-11	
Lead	**ND**	5.6	6010B	10-18-11	10-18-11	
Mercury	**ND**	0.28	7471A	10-18-11	10-18-11	
Selenium	**ND**	11	6010B	10-18-11	10-18-11	
Silver	**ND**	0.56	6010B	10-18-11	10-18-11	

Date of Report: October 21, 2011
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Project: 21-1-21623-016

TOTAL METALS
EPA 6010B
METHOD BLANK QUALITY CONTROL

Date Extracted:	10-18-11
Date Analyzed:	10-18-11
Matrix:	Soil
Units:	mg/kg (ppm)
Lab ID:	MB1018S2

Analyte	Method	Result	PQL
Arsenic	6010B	**ND**	10
Barium	6010B	**ND**	2.5
Cadmium	6010B	**ND**	0.50
Chromium	6010B	**ND**	0.50
Lead	6010B	**ND**	5.0
Selenium	6010B	**ND**	10
Silver	6010B	**ND**	0.50

Date of Report: October 21, 2011
Samples Submitted: October 14, 2011
Laboratory Reference: 1110-105
Project: 21-1-21623-016

TOTAL MERCURY
EPA 7471A
METHOD BLANK QUALITY CONTROL

Date Extracted:	10-18-11
Date Analyzed:	10-18-11
Matrix:	Soil
Units:	mg/kg (ppm)
Lab ID:	MB1018S1

Analyte	Method	Result	PQL
Mercury	7471A	**ND**	0.25

Date of Report: October 21, 2011
Samples Submitted: October 14, 2011
Laboratory Reference: 1110-105
Project: 21-1-21623-016

TOTAL METALS
EPA 6010B
DUPLICATE QUALITY CONTROL

Date Extracted: 10-18-11
Date Analyzed: 10-18-11

Matrix: Soil
Units: mg/kg (ppm)

Lab ID: 10-115-01

Analyte	Sample Result	Duplicate Result	RPD	PQL	Flags
Arsenic	**ND**	**ND**	NA	10	
Barium	**46.7**	**52.6**	12	2.5	
Cadmium	**0.734**	**0.834**	13	0.50	
Chromium	**24.5**	**23.3**	5	0.50	
Lead	**162**	**158**	2	5.0	
Selenium	**ND**	**ND**	NA	10	
Silver	**ND**	**ND**	NA	0.50	

Date of Report: October 21, 2011
Samples Submitted: October 14, 2011
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Project: 21-1-21623-016

TOTAL MERCURY
EPA 7471A
DUPLICATE QUALITY CONTROL

Date Extracted: 10-18-11
Date Analyzed: 10-18-11

Matrix: Soil
Units: mg/kg (ppm)

Lab ID: 10-068-12

Analyte	Sample Result	Duplicate Result	RPD	PQL	Flags
Mercury	**ND**	**ND**	NA	0.25	

Date of Report: October 21, 2011
Samples Submitted: October 14, 2011
Laboratory Reference: 1110-105
Project: 21-1-21623-016

TOTAL METALS
EPA 6010B
MS/MSD QUALITY CONTROL

Date Extracted: 10-18-11
Date Analyzed: 10-18-11

Matrix: Soil
Units: mg/kg (ppm)

Lab ID: 10-115-01

Analyte	Spike Level	MS	Percent Recovery	MSD	Percent Recovery	RPD	Flags
Arsenic	100	**90.6**	91	**91.5**	92	1	
Barium	100	**145**	98	**144**	98	0	
Cadmium	50.0	**49.1**	97	**49.0**	96	0	
Chromium	100	**117**	93	**119**	94	1	
Lead	250	**393**	92	**395**	93	0	
Selenium	100	**88.8**	89	**89.0**	89	0	
Silver	25.0	**24.4**	98	**24.6**	98	1	

Date of Report: October 21, 2011
Samples Submitted: October 14, 2011
Laboratory Reference: 1110-105
Project: 21-1-21623-016

TOTAL MERCURY
EPA 7471A
MS/MSD QUALITY CONTROL

Date Extracted: 10-18-11
Date Analyzed: 10-18-11

Matrix: Soil
Units: mg/kg (ppm)

Lab ID: 10-068-12

Analyte	Spike Level	MS	Percent Recovery	MSD	Percent Recovery	RPD	Flags
Mercury	0.500	**0.532**	106	**0.520**	104	2	

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Samples Submitted: October 14, 2011
Laboratory Reference: 1110-105
Project: 21-1-21623-016

PRIORITY POLLUTANT METALS
EPA 200.8/7470A

Matrix: Water
Units: ug/L (ppb)

Analyte	Result	PQL	EPA Method	Date Prepared	Date Analyzed	Flags
Lab ID:	10-105-07					
Client ID:	**GP-2:GW**					
Antimony	**ND**	5.6	200.8	10-20-11	10-20-11	
Arsenic	**ND**	3.3	200.8	10-20-11	10-20-11	
Beryllium	**ND**	11	200.8	10-20-11	10-20-11	
Cadmium	**ND**	4.4	200.8	10-20-11	10-20-11	
Chromium	**17**	11	200.8	10-20-11	10-20-11	
Copper	**ND**	11	200.8	10-20-11	10-20-11	
Lead	**1.9**	1.1	200.8	10-20-11	10-20-11	
Mercury	**ND**	0.50	7470A	10-19-11	10-19-11	
Nickel	**33**	22	200.8	10-20-11	10-20-11	
Selenium	**ND**	5.6	200.8	10-20-11	10-20-11	
Silver	**ND**	11	200.8	10-20-11	10-20-11	
Thallium	**ND**	5.6	200.8	10-20-11	10-20-11	
Zinc	**ND**	28	200.8	10-20-11	10-20-11	

Date of Report: October 21, 2011
Samples Submitted: October 14, 2011
Laboratory Reference: 1110-105
Project: 21-1-21623-016

PRIORITY POLLUTANT METALS
EPA 200.8/7470A

Matrix: Water
Units: ug/L (ppb)

Analyte	Result	PQL	EPA Method	Date Prepared	Date Analyzed	Flags
Lab ID:	10-105-08					
Client ID:	**GP-5:GW**					
Antimony	**9.9**	5.6	200.8	10-20-11	10-20-11	
Arsenic	**ND**	3.3	200.8	10-20-11	10-20-11	
Beryllium	**ND**	11	200.8	10-20-11	10-20-11	
Cadmium	**ND**	4.4	200.8	10-20-11	10-20-11	
Chromium	**ND**	11	200.8	10-20-11	10-20-11	
Copper	**ND**	11	200.8	10-20-11	10-20-11	
Lead	**ND**	1.1	200.8	10-20-11	10-20-11	
Mercury	**ND**	0.50	7470A	10-19-11	10-19-11	
Nickel	**ND**	22	200.8	10-20-11	10-20-11	
Selenium	**ND**	5.6	200.8	10-20-11	10-20-11	
Silver	**ND**	11	200.8	10-20-11	10-20-11	
Thallium	**ND**	5.6	200.8	10-20-11	10-20-11	
Zinc	**ND**	28	200.8	10-20-11	10-20-11	

Date of Report: October 21, 2011
Samples Submitted: October 14, 2011
Laboratory Reference: 1110-105
Project: 21-1-21623-016

PRIORITY POLLUTANT METALS
EPA 200.8/7470A
METHOD BLANK QUALITY CONTROL

Date Extracted:	10-19&20-11
Date Analyzed:	10-19&20-11
Matrix:	Water
Units:	ug/L (ppb)
Lab ID:	MB1019W2&MB1020W2

Analyte	Method	Result	PQL
Antimony	200.8	**ND**	5.6
Arsenic	200.8	**ND**	3.3
Beryllium	200.8	**ND**	11
Cadmium	200.8	**ND**	4.4
Chromium	200.8	**ND**	11
Copper	200.8	**ND**	11
Lead	200.8	**ND**	1.1
Mercury	7470A	**ND**	0.50
Nickel	200.8	**ND**	22
Selenium	200.8	**ND**	5.6
Silver	200.8	**ND**	11
Thallium	200.8	**ND**	5.6
Zinc	200.8	**ND**	28

Date of Report: October 21, 2011
Samples Submitted: October 14, 2011
Laboratory Reference: 1110-105
Project: 21-1-21623-016

PRIORITY POLLUTANT METALS
EPA 200.8/7470A
DUPLICATE QUALITY CONTROL

Date Extracted: 10-19&20-11
Date Analyzed: 10-19&20-11

Matrix: Water
Units: ug/L (ppb)

Lab ID: 10-105-07

Analyte	Sample Result	Duplicate Result	RPD	PQL	Flags
Antimony	**ND**	**ND**	NA	5.6	
Arsenic	**ND**	**ND**	NA	3.3	
Beryllium	**ND**	**ND**	NA	11	
Cadmium	**ND**	**ND**	NA	4.4	
Chromium	**16.6**	**14.9**	11	11	
Copper	**ND**	**ND**	NA	11	
Lead	**1.94**	**1.95**	0	1.1	
Mercury	**ND**	**ND**	NA	0.50	
Nickel	**33.2**	**31.6**	5	22	
Selenium	**ND**	**ND**	NA	5.6	
Silver	**ND**	**ND**	NA	11	
Thallium	**ND**	**ND**	NA	5.6	
Zinc	**ND**	**ND**	NA	28	

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PRIORITY POLLUTANT METALS
EPA 200.8/7470A
MS/MSD QUALITY CONTROL

Date Extracted: 10-19&20-11
Date Analyzed: 10-19&20-11

Matrix: Water
Units: ug/L (ppb)

Lab ID: 10-105-07

Analyte	Spike Level	MS	Percent Recovery	MSD	Percent Recovery	RPD	Flags
Antimony	111	**108**	98	**110**	99	1	
Arsenic	111	**108**	98	**108**	97	0	
Beryllium	111	**104**	93	**104**	93	0	
Cadmium	111	**105**	95	**107**	96	2	
Chromium	111	**117**	90	**121**	94	4	
Copper	111	**110**	99	**111**	100	1	
Lead	111	**108**	95	**111**	98	3	
Mercury	12.5	**12.0**	96	**11.5**	92	4	
Nickel	111	**136**	93	**137**	94	1	
Selenium	111	**102**	92	**102**	92	0	
Silver	111	**104**	93	**104**	94	0	
Thallium	111	**106**	95	**110**	99	4	
Zinc	111	**115**	104	**120**	108	4	

Date of Report: October 21, 2011
Samples Submitted: October 14, 2011
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Project: 21-1-21623-016

DISSOLVED PRIORITY POLLUTANT METALS
EPA 200.8/7470A

Matrix: Water
Units: ug/L (ppb)

Analyte	Result	PQL	EPA Method	Date Prepared	Date Analyzed	Flags
Lab ID:	10-105-07					
Client ID:	**GP-2:GW**					
Antimony	**ND**	5.0	200.8	10-14-11	10-18-11	
Arsenic	**ND**	3.0	200.8	10-14-11	10-18-11	
Beryllium	**ND**	10	200.8	10-14-11	10-18-11	
Cadmium	**ND**	4.0	200.8	10-14-11	10-18-11	
Chromium	**ND**	10	200.8	10-14-11	10-18-11	
Copper	**ND**	10	200.8	10-14-11	10-18-11	
Lead	**ND**	1.0	200.8	10-14-11	10-18-11	
Mercury	**ND**	0.50	7470A	10-14-11	10-19-11	
Nickel	**ND**	20	200.8	10-14-11	10-18-11	
Selenium	**ND**	5.0	200.8	10-14-11	10-18-11	
Silver	**ND**	10	200.8	10-14-11	10-18-11	
Thallium	**ND**	5.0	200.8	10-14-11	10-18-11	
Zinc	**ND**	25	200.8	10-14-11	10-18-11	

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Samples Submitted: October 14, 2011
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DISSOLVED PRIORITY POLLUTANT METALS
EPA 200.8/7470A

Matrix: Water
Units: ug/L (ppb)

Analyte	Result	PQL	EPA Method	Date Prepared	Date Analyzed	Flags
Lab ID:	10-105-08					
Client ID:	**GP-5:GW**					
Antimony	**11**	5.0	200.8	10-14-11	10-18-11	
Arsenic	**ND**	3.0	200.8	10-14-11	10-18-11	
Beryllium	**ND**	10	200.8	10-14-11	10-18-11	
Cadmium	**ND**	4.0	200.8	10-14-11	10-18-11	
Chromium	**ND**	10	200.8	10-14-11	10-18-11	
Copper	**ND**	10	200.8	10-14-11	10-18-11	
Lead	**ND**	1.0	200.8	10-14-11	10-18-11	
Mercury	**ND**	0.50	7470A	10-14-11	10-19-11	
Nickel	**ND**	20	200.8	10-14-11	10-18-11	
Selenium	**ND**	5.0	200.8	10-14-11	10-18-11	
Silver	**ND**	10	200.8	10-14-11	10-18-11	
Thallium	**ND**	5.0	200.8	10-14-11	10-18-11	
Zinc	**ND**	25	200.8	10-14-11	10-18-11	

Date of Report: October 21, 2011
Samples Submitted: October 14, 2011
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Project: 21-1-21623-016

DISSOLVED PRIORITY POLLUTANT METALS
EPA 200.8/7470A
METHOD BLANK QUALITY CONTROL

Date Filtered:	10-14-11
Date Analyzed:	10-18&19-11
Matrix:	Water
Units:	ug/L (ppb)
Lab ID:	MB1014F1

Analyte	Method	Result	PQL
Antimony	200.8	**ND**	5.0
Arsenic	200.8	**ND**	3.0
Beryllium	200.8	**ND**	10
Cadmium	200.8	**ND**	4.0
Chromium	200.8	**ND**	10
Copper	200.8	**ND**	10
Lead	200.8	**ND**	1.0
Mercury	7470A	**ND**	0.50
Nickel	200.8	**ND**	20
Selenium	200.8	**ND**	5.0
Silver	200.8	**ND**	10
Thallium	200.8	**ND**	5.0
Zinc	200.8	**ND**	25

Date of Report: October 21, 2011
Samples Submitted: October 14, 2011
Laboratory Reference: 1110-105
Project: 21-1-21623-016

DISSOLVED PRIORITY POLLUTANT METALS
EPA 200.8/7470A
DUPLICATE QUALITY CONTROL

Date Filtered: 10-14-11
Date Analyzed: 10-18&19-11

Matrix: Water
Units: ug/L (ppb)

Lab ID: 10-105-07

Analyte	Sample Result	Duplicate Result	RPD	PQL	Flags
Antimony	**ND**	**ND**	NA	5.0	
Arsenic	**ND**	**ND**	NA	3.0	
Beryllium	**ND**	**ND**	NA	10	
Cadmium	**ND**	**ND**	NA	4.0	
Chromium	**ND**	**ND**	NA	10	
Copper	**ND**	**ND**	NA	10	
Lead	**ND**	**ND**	NA	1.0	
Mercury	**ND**	**ND**	NA	0.50	
Nickel	**ND**	**ND**	NA	20	
Selenium	**ND**	**ND**	NA	5.0	
Silver	**ND**	**ND**	NA	10	
Thallium	**ND**	**ND**	NA	5.0	
Zinc	**ND**	**ND**	NA	25	

Date of Report: October 21, 2011
Samples Submitted: October 14, 2011
Laboratory Reference: 1110-105
Project: 21-1-21623-016

DISSOLVED PRIORITY POLLUTANT METALS
EPA 200.8/7470A
MS/MSD QUALITY CONTROL

Date Filtered: 10-14-11
Date Analyzed: 10-18&19-11

Matrix: Water
Units: ug/L (ppb)

Lab ID: 10-105-07

Analyte	Spike Level	MS	Percent Recovery	MSD	Percent Recovery	RPD	Flags
Antimony	200	**200**	100	**201**	100	0	
Arsenic	200	**200**	100	**200**	100	0	
Beryllium	200	**195**	98	**189**	95	3	
Cadmium	200	**197**	98	**195**	98	1	
Chromium	200	**189**	94	**189**	95	0	
Copper	200	**189**	94	**189**	94	0	
Lead	200	**196**	98	**195**	98	0	
Mercury	12.5	**12.0**	96	**11.9**	95	1	
Nickel	200	**204**	102	**203**	102	0	
Selenium	200	**203**	101	**204**	102	1	
Silver	200	**187**	94	**185**	93	1	
Thallium	200	**198**	99	**197**	98	0	
Zinc	200	**198**	99	**197**	99	0	

Date of Report: October 21, 2011
Samples Submitted: October 14, 2011
Laboratory Reference: 1110-105
Project: 21-1-21623-016

% MOISTURE

Date Analyzed: 10-17-11

Client ID	Lab ID	% Moisture
GP-1:8	10-105-01	18
GP-2:16.5	10-105-03	12
GP-3:8	10-105-04	10
GP-4:8	10-105-05	11
GP-5:8	10-105-06	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

Chain of Custody

Page _____ of _____

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

Company: S+W
Project Number: 21-1-21623-016
Project Name: Magnolia CSO
Project Manager: David Riedel
Sampled by:

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: 10-105

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	Total PP Metals	Dissolved PP Metals*			% Moisture
1	GP-1:8	10/13/11	915	Soil	4 VOA 1 8oz	X												X								X
2	GP-2:8		1000																							
3	GP-2:16.5		1010			X				X								X								X
4	GP-3:8		1110			X												X								
5	GP-4:8		1145			X												X								
6	GP-5:8		1210			X												X								
7	GP-2:GW		1030	GW	5 VOA 2 1/2L 2 Poly 4 1L	X				X												X	X			
8	GP-5:GW		1230			X																X	X			

	Signature	Company	Date	Time
Relinquished		Cody Johnson	10/14/11	
Received		Speedy	10/14-11	1015
Relinquished		Speedy	10-14-11	1015
Received		OSE	10/14/11	1015
Relinquished				
Received				
Reviewed/Date		Reviewed/Date		

Comments/Special Instructions

*NEEDS FILTERING

Chromatograms with final report ☐

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

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

November 15, 2011

Paul Van Horne
Shannon & Wilson, Inc.
400 N 34th Street, Suite 100
Seattle, WA 98103

Re: Analytical Data for Project 21-1-21623-016
Laboratory Reference No. 1111-048

Dear Paul:

Enclosed are the analytical results and associated quality control data for samples submitted on November 7, 2011.

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: November 15, 2011
Samples Submitted: November 7, 2011
Laboratory Reference: 1111-048
Project: 21-1-21623-016

Case Narrative

Samples were collected on November 7, 2011 and received by the laboratory on November 7, 2011. 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: November 15, 2011
Samples Submitted: November 7, 2011
Laboratory Reference: 1111-048
Project: 21-1-21623-016

VOLATILES by EPA 8260B
page 1 of 2

Matrix: Water
Units: ug/L

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**MA-9:GW:1**					
Laboratory ID:	11-048-01					
CFC-12	ND	0.20	EPA 8260	11-8-11	11-8-11	
Chloromethane	ND	1.0	EPA 8260	11-8-11	11-8-11	
Vinyl Chloride	ND	0.20	EPA 8260	11-8-11	11-8-11	
Bromomethane	ND	0.20	EPA 8260	11-8-11	11-8-11	
Chloroethane	ND	1.0	EPA 8260	11-8-11	11-8-11	
CFC-11	ND	0.20	EPA 8260	11-8-11	11-8-11	
1,1-Dichloroethene	ND	0.20	EPA 8260	11-8-11	11-8-11	
Acetone	ND	5.0	EPA 8260	11-8-11	11-8-11	
Methyl Iodide	ND	1.0	EPA 8260	11-8-11	11-8-11	
Carbon Disulfide	ND	0.20	EPA 8260	11-8-11	11-8-11	
Methylene Chloride	ND	1.0	EPA 8260	11-8-11	11-8-11	
Trans-1,2-Dichloroethene	ND	0.20	EPA 8260	11-8-11	11-8-11	
Methyl t-Butyl Ether	ND	0.20	EPA 8260	11-8-11	11-8-11	
1,1-Dichloroethane	ND	0.20	EPA 8260	11-8-11	11-8-11	
Vinyl Acetate	ND	2.0	EPA 8260	11-8-11	11-8-11	
2,2-Dichloropropane	ND	0.20	EPA 8260	11-8-11	11-8-11	
Cis-1,2-Dichloroethene	ND	0.20	EPA 8260	11-8-11	11-8-11	
2-Butanone	ND	5.0	EPA 8260	11-8-11	11-8-11	
Bromochloromethane	ND	0.20	EPA 8260	11-8-11	11-8-11	
Chloroform	ND	0.20	EPA 8260	11-8-11	11-8-11	
1,1,1-Trichloroethane	ND	0.20	EPA 8260	11-8-11	11-8-11	
Carbon Tetrachloride	ND	0.20	EPA 8260	11-8-11	11-8-11	
1,1-Dichloropropene	ND	0.20	EPA 8260	11-8-11	11-8-11	
Benzene	0.22	0.20	EPA 8260	11-8-11	11-8-11	
1,2-Dichloroethane	ND	0.20	EPA 8260	11-8-11	11-8-11	
Trichloroethene	ND	0.20	EPA 8260	11-8-11	11-8-11	
1,2-Dichloropropane	ND	0.20	EPA 8260	11-8-11	11-8-11	
Dibromomethane	ND	0.20	EPA 8260	11-8-11	11-8-11	
Dichlorobromomethane	ND	0.20	EPA 8260	11-8-11	11-8-11	
2-Chloroethylvinylether	ND	1.0	EPA 8260	11-8-11	11-8-11	
Cis-1,3-Dichloropropene	ND	0.20	EPA 8260	11-8-11	11-8-11	
Methyl Isobutyl Ketone	ND	2.0	EPA 8260	11-8-11	11-8-11	
Toluene	ND	1.0	EPA 8260	11-8-11	11-8-11	
Trans-1,3-Dichloropropene	ND	0.20	EPA 8260	11-8-11	11-8-11	

Date of Report: November 15, 2011
Samples Submitted: November 7, 2011
Laboratory Reference: 1111-048
Project: 21-1-21623-016

VOLATILES by EPA 8260B
page 2 of 2

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**MA-9:GW:1**					
Laboratory ID:	11-048-01					
1,1,2-Trichloroethane	ND	0.20	EPA 8260	11-8-11	11-8-11	
Tetrachloroethene	ND	0.20	EPA 8260	11-8-11	11-8-11	
1,3-Dichloropropane	ND	0.20	EPA 8260	11-8-11	11-8-11	
2-Hexanone	ND	2.0	EPA 8260	11-8-11	11-8-11	
Dibromochloromethane	ND	0.20	EPA 8260	11-8-11	11-8-11	
Ethylene dibromide	ND	0.20	EPA 8260	11-8-11	11-8-11	
Chlorobenzene	ND	0.20	EPA 8260	11-8-11	11-8-11	
1,1,1,2-Tetrachloroethane	ND	0.20	EPA 8260	11-8-11	11-8-11	
Ethylbenzene	ND	0.20	EPA 8260	11-8-11	11-8-11	
m,p-Xylene	ND	0.40	EPA 8260	11-8-11	11-8-11	
o-Xylene	ND	0.20	EPA 8260	11-8-11	11-8-11	
Styrene	ND	0.20	EPA 8260	11-8-11	11-8-11	
Bromoform	ND	1.0	EPA 8260	11-8-11	11-8-11	
Isopropylbenzene	ND	0.20	EPA 8260	11-8-11	11-8-11	
Bromobenzene	ND	0.20	EPA 8260	11-8-11	11-8-11	
1,1,2,2-Tetrachloroethane	ND	0.20	EPA 8260	11-8-11	11-8-11	
1,2,3-Trichloropropane	ND	0.20	EPA 8260	11-8-11	11-8-11	
n-Propylbenzene	ND	0.20	EPA 8260	11-8-11	11-8-11	
2-Chlorotoluene	ND	0.20	EPA 8260	11-8-11	11-8-11	
4-Chlorotoluene	ND	0.20	EPA 8260	11-8-11	11-8-11	
1,3,5-Trimethylbenzene	ND	0.20	EPA 8260	11-8-11	11-8-11	
tert-Butylbenzene	ND	0.20	EPA 8260	11-8-11	11-8-11	
1,2,4-Trimethylbenzene	ND	0.20	EPA 8260	11-8-11	11-8-11	
sec-Butylbenzene	ND	0.20	EPA 8260	11-8-11	11-8-11	
1,3-Dichlorobenzene	ND	0.20	EPA 8260	11-8-11	11-8-11	
p-Isopropyltoluene	ND	0.20	EPA 8260	11-8-11	11-8-11	
1,4-Dichlorobenzene	ND	0.20	EPA 8260	11-8-11	11-8-11	
1,2-Dichlorobenzene	ND	0.20	EPA 8260	11-8-11	11-8-11	
n-Butylbenzene	ND	0.20	EPA 8260	11-8-11	11-8-11	
1,2-Dibromo-3-chloropropane	ND	1.0	EPA 8260	11-8-11	11-8-11	
1,2,4-Trichlorobenzene	ND	0.20	EPA 8260	11-8-11	11-8-11	
Hexachlorobutadiene	ND	0.20	EPA 8260	11-8-11	11-8-11	
Naphthalene	ND	1.0	EPA 8260	11-8-11	11-8-11	
1,2,3-Trichlorobenzene	ND	0.20	EPA 8260	11-8-11	11-8-11	
Surrogate:	*Percent Recovery*	*Control Limits*				
Dibromofluoromethane	*76*	*68-120*				
Toluene-d8	*81*	*73-120*				
Benzene, 1-bromo-4-fluoro-	*79*	*65-120*				

Date of Report: November 15, 2011
Samples Submitted: November 7, 2011
Laboratory Reference: 1111-048
Project: 21-1-21623-016

VOLATILES by EPA 8260B
METHOD BLANK QUALITY CONTROL
page 1 of 2

Matrix: Water
Units: ug/L

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Laboratory ID:	MB1108W1					
CFC-12	ND	0.20	EPA 8260	11-8-11	11-8-11	
Chloromethane	ND	1.0	EPA 8260	11-8-11	11-8-11	
Vinyl Chloride	ND	0.20	EPA 8260	11-8-11	11-8-11	
Bromomethane	ND	0.20	EPA 8260	11-8-11	11-8-11	
Chloroethane	ND	1.0	EPA 8260	11-8-11	11-8-11	
CFC-11	ND	0.20	EPA 8260	11-8-11	11-8-11	
1,1-Dichloroethene	ND	0.20	EPA 8260	11-8-11	11-8-11	
Acetone	ND	5.0	EPA 8260	11-8-11	11-8-11	
Methyl Iodide	ND	1.0	EPA 8260	11-8-11	11-8-11	
Carbon Disulfide	ND	0.20	EPA 8260	11-8-11	11-8-11	
Methylene Chloride	ND	1.0	EPA 8260	11-8-11	11-8-11	
Trans-1,2-Dichloroethene	ND	0.20	EPA 8260	11-8-11	11-8-11	
Methyl t-Butyl Ether	ND	0.20	EPA 8260	11-8-11	11-8-11	
1,1-Dichloroethane	ND	0.20	EPA 8260	11-8-11	11-8-11	
Vinyl Acetate	ND	2.0	EPA 8260	11-8-11	11-8-11	
2,2-Dichloropropane	ND	0.20	EPA 8260	11-8-11	11-8-11	
Cis-1,2-Dichloroethene	ND	0.20	EPA 8260	11-8-11	11-8-11	
2-Butanone	ND	5.0	EPA 8260	11-8-11	11-8-11	
Bromochloromethane	ND	0.20	EPA 8260	11-8-11	11-8-11	
Chloroform	ND	0.20	EPA 8260	11-8-11	11-8-11	
1,1,1-Trichloroethane	ND	0.20	EPA 8260	11-8-11	11-8-11	
Carbon Tetrachloride	ND	0.20	EPA 8260	11-8-11	11-8-11	
1,1-Dichloropropene	ND	0.20	EPA 8260	11-8-11	11-8-11	
Benzene	ND	0.20	EPA 8260	11-8-11	11-8-11	
1,2-Dichloroethane	ND	0.20	EPA 8260	11-8-11	11-8-11	
Trichloroethene	ND	0.20	EPA 8260	11-8-11	11-8-11	
1,2-Dichloropropane	ND	0.20	EPA 8260	11-8-11	11-8-11	
Dibromomethane	ND	0.20	EPA 8260	11-8-11	11-8-11	
Dichlorobromomethane	ND	0.20	EPA 8260	11-8-11	11-8-11	
2-Chloroethylvinylether	ND	1.0	EPA 8260	11-8-11	11-8-11	
Cis-1,3-Dichloropropene	ND	0.20	EPA 8260	11-8-11	11-8-11	
Methyl Isobutyl Ketone	ND	2.0	EPA 8260	11-8-11	11-8-11	
Toluene	ND	1.0	EPA 8260	11-8-11	11-8-11	
Trans-1,3-Dichloropropene	ND	0.20	EPA 8260	11-8-11	11-8-11	

Date of Report: November 15, 2011
Samples Submitted: November 7, 2011
Laboratory Reference: 1111-048
Project: 21-1-21623-016

VOLATILES by EPA 8260B
METHOD BLANK QUALITY CONTROL
page 2 of 2

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Laboratory ID:	MB1108W1					
1,1,2-Trichloroethane	ND	0.20	EPA 8260	11-8-11	11-8-11	
Tetrachloroethene	ND	0.20	EPA 8260	11-8-11	11-8-11	
1,3-Dichloropropane	ND	0.20	EPA 8260	11-8-11	11-8-11	
2-Hexanone	ND	2.0	EPA 8260	11-8-11	11-8-11	
Dibromochloromethane	ND	0.20	EPA 8260	11-8-11	11-8-11	
Ethylene dibromide	ND	0.20	EPA 8260	11-8-11	11-8-11	
Chlorobenzene	ND	0.20	EPA 8260	11-8-11	11-8-11	
1,1,1,2-Tetrachloroethane	ND	0.20	EPA 8260	11-8-11	11-8-11	
Ethylbenzene	ND	0.20	EPA 8260	11-8-11	11-8-11	
m,p-Xylene	ND	0.40	EPA 8260	11-8-11	11-8-11	
o-Xylene	ND	0.20	EPA 8260	11-8-11	11-8-11	
Styrene	ND	0.20	EPA 8260	11-8-11	11-8-11	
Bromoform	ND	1.0	EPA 8260	11-8-11	11-8-11	
Isopropylbenzene	ND	0.20	EPA 8260	11-8-11	11-8-11	
Bromobenzene	ND	0.20	EPA 8260	11-8-11	11-8-11	
1,1,2,2-Tetrachloroethane	ND	0.20	EPA 8260	11-8-11	11-8-11	
1,2,3-Trichloropropane	ND	0.20	EPA 8260	11-8-11	11-8-11	
n-Propylbenzene	ND	0.20	EPA 8260	11-8-11	11-8-11	
2-Chlorotoluene	ND	0.20	EPA 8260	11-8-11	11-8-11	
4-Chlorotoluene	ND	0.20	EPA 8260	11-8-11	11-8-11	
1,3,5-Trimethylbenzene	ND	0.20	EPA 8260	11-8-11	11-8-11	
tert-Butylbenzene	ND	0.20	EPA 8260	11-8-11	11-8-11	
1,2,4-Trimethylbenzene	ND	0.20	EPA 8260	11-8-11	11-8-11	
sec-Butylbenzene	ND	0.20	EPA 8260	11-8-11	11-8-11	
1,3-Dichlorobenzene	ND	0.20	EPA 8260	11-8-11	11-8-11	
p-Isopropyltoluene	ND	0.20	EPA 8260	11-8-11	11-8-11	
1,4-Dichlorobenzene	ND	0.20	EPA 8260	11-8-11	11-8-11	
1,2-Dichlorobenzene	ND	0.20	EPA 8260	11-8-11	11-8-11	
n-Butylbenzene	ND	0.20	EPA 8260	11-8-11	11-8-11	
1,2-Dibromo-3-chloropropane	ND	1.0	EPA 8260	11-8-11	11-8-11	
1,2,4-Trichlorobenzene	ND	0.20	EPA 8260	11-8-11	11-8-11	
Hexachlorobutadiene	ND	0.20	EPA 8260	11-8-11	11-8-11	
Naphthalene	ND	1.0	EPA 8260	11-8-11	11-8-11	
1,2,3-Trichlorobenzene	ND	0.20	EPA 8260	11-8-11	11-8-11	
Surrogate:	*Percent Recovery*	*Control Limits*				
Dibromofluoromethane	*81*	*68-120*				
Toluene-d8	*82*	*73-120*				
Benzene, 1-bromo-4-fluoro-	*79*	*65-120*				

Date of Report: November 15, 2011
Samples Submitted: November 7, 2011
Laboratory Reference: 1111-048
Project: 21-1-21623-016

VOLATILES by EPA 8260B
SB/SBD QUALITY CONTROL

Matrix: Water
Units: ug/L

Analyte	Result		Spike Level		Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
SPIKE BLANKS										
Laboratory ID:	SB1108W1									
	SB	SBD	SB	SBD	SB	SBD				
1,1-Dichloroethene	**7.43**	**7.12**	10.0	10.0	74	71	70-130	4	11	
Benzene	**8.52**	**8.55**	10.0	10.0	85	86	75-123	0	8	
Trichloroethene	**8.96**	**8.93**	10.0	10.0	90	89	80-113	0	9	
Toluene	**9.17**	**9.11**	10.0	10.0	92	91	80-113	1	8	
Chlorobenzene	**9.53**	**9.51**	10.0	10.0	95	95	80-111	0	8	
Surrogate:										
Dibromofluoromethane					*79*	*84*	*68-120*			
Toluene-d8					*82*	*82*	*73-120*			
Benzene, 1-bromo-4-fluoro-					*79*	*80*	*65-120*			

Date of Report: November 15, 2011
Samples Submitted: November 7, 2011
Laboratory Reference: 1111-048
Project: 21-1-21623-016

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

Matrix: Water
Units: mg/L (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**MA-9:GW:1**					
Laboratory ID:	11-048-01					
Gasoline Range Organics	**ND**	0.10	NWTPH-HCID	11-8-11	11-8-11	
Diesel Range Organics	**ND**	0.26	NWTPH-HCID	11-8-11	11-8-11	
Lube Oil Range Organics	**ND**	0.41	NWTPH-HCID	11-8-11	11-8-11	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*91*	*50-150*				

Date of Report: November 15, 2011
Samples Submitted: November 7, 2011
Laboratory Reference: 1111-048
Project: 21-1-21623-016

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

Matrix: Water
Units: mg/L (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB1108W1					
Gasoline Range Organics	**ND**	0.10	NWTPH-HCID	11-8-11	11-8-11	
Diesel Range Organics	**ND**	0.25	NWTPH-HCID	11-8-11	11-8-11	
Lube Oil Range Organics	**ND**	0.40	NWTPH-HCID	11-8-11	11-8-11	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*91*	*50-150*				

Date of Report: November 15, 2011
Samples Submitted: November 7, 2011
Laboratory Reference: 1111-048
Project: 21-1-21623-016

TOTAL METALS
EPA 200.8/7470A

Matrix: Water
Units: ug/L (ppb)

Analyte	Result	PQL	EPA Method	Date Prepared	Date Analyzed	Flags
Lab ID:	11-048-01					
Client ID:	**MA-9:GW:1**					
Antimony	**ND**	5.6	200.8	11-16-11	11-16-11	
Arsenic	**4.6**	3.0	200.8	11-16-11	11-17-11	
Beryllium	**ND**	10	200.8	11-16-11	11-17-11	
Cadmium	**ND**	4.4	200.8	11-16-11	11-16-11	
Chromium	**ND**	11	200.8	11-16-11	11-16-11	
Copper	**ND**	11	200.8	11-16-11	11-16-11	
Lead	**ND**	1.1	200.8	11-16-11	11-16-11	
Mercury	**ND**	0.025	7470A	11-16-11	11-16-11	
Nickel	**ND**	22	200.8	11-16-11	11-16-11	
Selenium	**ND**	5.0	200.8	11-16-11	11-17-11	
Silver	**ND**	11	200.8	11-16-11	11-16-11	
Thallium	**ND**	5.6	200.8	11-16-11	11-16-11	
Zinc	**ND**	28	200.8	11-16-11	11-16-11	

Date of Report: November 15, 2011
Samples Submitted: November 7, 2011
Laboratory Reference: 1111-048
Project: 21-1-21623-016

TOTAL METALS
EPA 200.8/7470A
METHOD BLANK QUALITY CONTROL

Date Extracted:	11-16-11
Date Analyzed:	11-16-11
Matrix:	Water
Units:	ug/L (ppb)
Lab ID:	MB1116WM1&MB1116W1

Analyte	Method	Result	PQL
Antimony	200.8	**ND**	5.6
Cadmium	200.8	**ND**	4.4
Chromium	200.8	**ND**	11
Copper	200.8	**ND**	11
Lead	200.8	**ND**	1.1
Mercury	7470A	**ND**	0.025
Nickel	200.8	**ND**	22
Silver	200.8	**ND**	11
Thallium	200.8	**ND**	5.6
Zinc	200.8	**ND**	28

Date of Report: November 15, 2011
Samples Submitted: November 7, 2011
Laboratory Reference: 1111-048
Project: 21-1-21623-016

TOTAL METALS
EPA 200.8
METHOD BLANK QUALITY CONTROL

Date Extracted:	11-16-11
Date Analyzed:	11-17-11
Matrix:	Water
Units:	ug/L (ppb)
Lab ID:	MB1116WH1

Analyte	Method	Result	PQL
Arsenic	200.8	**ND**	3.0
Beryllium	200.8	**ND**	10
Selenium	200.8	**ND**	5.0

Date of Report: November 15, 2011
Samples Submitted: November 7, 2011
Laboratory Reference: 1111-048
Project: 21-1-21623-016

TOTAL METALS
EPA 200.8/7470A
DUPLICATE QUALITY CONTROL

Date Extracted: 11-16-11
Date Analyzed: 11-16-11

Matrix: Water
Units: ug/L (ppb)

Lab ID: 11-048-01

Analyte	Sample Result	Duplicate Result	RPD	PQL	Flags
Antimony	**ND**	**ND**	NA	5.6	
Cadmium	**ND**	**ND**	NA	4.4	
Chromium	**ND**	**ND**	NA	11	
Copper	**ND**	**ND**	NA	11	
Lead	**ND**	**ND**	NA	1.1	
Mercury	**ND**	**ND**	NA	0.025	
Nickel	**ND**	**ND**	NA	22	
Silver	**ND**	**ND**	NA	11	
Thallium	**ND**	**ND**	NA	5.6	
Zinc	**ND**	**ND**	NA	28	

Date of Report: November 15, 2011
Samples Submitted: November 7, 2011
Laboratory Reference: 1111-048
Project: 21-1-21623-016

TOTAL METALS
EPA 200.8
DUPLICATE QUALITY CONTROL

Date Extracted: 11-16-11
Date Analyzed: 11-17-11

Matrix: Water
Units: ug/L (ppb)

Lab ID: 11-085-01

Analyte	Sample Result	Duplicate Result	RPD	PQL	Flags
Arsenic	**46.3**	**45.6**	2	3.0	
Beryllium	**ND**	**ND**	NA	10	
Selenium	**ND**	**ND**	NA	5.0	

Date of Report: November 15, 2011
Samples Submitted: November 7, 2011
Laboratory Reference: 1111-048
Project: 21-1-21623-016

TOTAL METALS
EPA 200.8/7470A
MS/MSD QUALITY CONTROL

Date Extracted: 11-16-11
Date Analyzed: 11-16-11

Matrix: Water
Units: ug/L (ppb)

Lab ID: 11-048-01

Analyte	Spike Level	MS	Percent Recovery	MSD	Percent Recovery	RPD	Flags
Antimony	111	**114**	103	**117**	105	2	
Cadmium	111	**104**	93	**105**	95	2	
Chromium	111	**110**	99	**106**	96	4	
Copper	111	**104**	94	**109**	98	5	
Lead	111	**105**	95	**107**	96	2	
Mercury	6.25	**4.89**	78	**4.92**	79	1	
Nickel	111	**104**	94	**109**	98	4	
Silver	111	**90.8**	82	**94.6**	85	4	
Thallium	111	**108**	97	**109**	98	1	
Zinc	111	**96.7**	87	**96.2**	87	1	

Date of Report: November 15, 2011
Samples Submitted: November 7, 2011
Laboratory Reference: 1111-048
Project: 21-1-21623-016

TOTAL METALS
EPA 200.8
MS/MSD QUALITY CONTROL

Date Extracted: 11-16-11
Date Analyzed: 11-17-11

Matrix: Water
Units: ug/L (ppb)

Lab ID: 11-085-01

Analyte	Spike Level	MS	Percent Recovery	MSD	Percent Recovery	RPD	Flags
Arsenic	100	**149**	103	**144**	98	3	
Beryllium	100	**101**	101	**97.5**	97	4	
Selenium	100	**98.8**	99	**93.6**	94	5	

Date of Report: November 15, 2011
Samples Submitted: November 7, 2011
Laboratory Reference: 1111-048
Project: 21-1-21623-016

DISSOLVED METALS
EPA 200.8/7470A

Matrix: Water
Units: ug/L (ppb)

Analyte	Result	PQL	EPA Method	Date Prepared	Date Analyzed	Flags
Lab ID:	11-048-01					
Client ID:	**MA-9:GW:1**					
Antimony	**ND**	5.0	200.8		11-16-11	
Arsenic	**4.3**	3.0	200.8		11-17-11	
Beryllium	**ND**	10	200.8		11-17-11	
Cadmium	**ND**	4.0	200.8		11-16-11	
Chromium	**ND**	10	200.8		11-16-11	
Copper	**ND**	10	200.8		11-16-11	
Lead	**ND**	1.0	200.8		11-16-11	
Mercury	**ND**	0.025	7470A		11-16-11	
Nickel	**ND**	20	200.8		11-16-11	
Selenium	**ND**	5.0	200.8		11-17-11	
Silver	**ND**	10	200.8		11-16-11	
Thallium	**ND**	5.0	200.8		11-16-11	
Zinc	**ND**	25	200.8		11-16-11	

Date of Report: November 15, 2011
Samples Submitted: November 7, 2011
Laboratory Reference: 1111-048
Project: 21-1-21623-016

DISSOLVED METALS
EPA 200.8/7470A
METHOD BLANK QUALITY CONTROL

Date Analyzed: 11-16&17-11

Matrix: Water
Units: ug/L (ppb)

Lab ID: MB1116D1,MB1116D2&MB1116D3

Analyte	Method	Result	PQL
Antimony	200.8	**ND**	5.0
Arsenic	200.8	**ND**	3.0
Beryllium	200.8	**ND**	10
Cadmium	200.8	**ND**	4.0
Chromium	200.8	**ND**	10
Copper	200.8	**ND**	10
Lead	200.8	**ND**	1.0
Mercury	7470A	**ND**	0.025
Nickel	200.8	**ND**	20
Selenium	200.8	**ND**	5.0
Silver	200.8	**ND**	10
Thallium	200.8	**ND**	5.0
Zinc	200.8	**ND**	25

Date of Report: November 15, 2011
Samples Submitted: November 7, 2011
Laboratory Reference: 1111-048
Project: 21-1-21623-016

DISSOLVED METALS
EPA 200.8/7470A
DUPLICATE QUALITY CONTROL

Date Analyzed: 11-16&17-11

Matrix: Water
Units: ug/L (ppb)

Lab ID: 11-048-01

Analyte	Sample Result	Duplicate Result	RPD	PQL	Flags
Antimony	**ND**	**ND**	NA	5.0	
Arsenic	**4.30**	**5.41**	23	3.0	**C**
Beryllium	**ND**	**ND**	NA	10	
Cadmium	**ND**	**ND**	NA	4.0	
Chromium	**ND**	**ND**	NA	10	
Copper	**ND**	**ND**	NA	10	
Lead	**ND**	**ND**	NA	1.0	
Mercury	**ND**	**ND**	NA	0.025	
Nickel	**ND**	**ND**	NA	20	
Selenium	**ND**	**ND**	NA	5.0	
Silver	**ND**	**ND**	NA	10	
Thallium	**ND**	**ND**	NA	5.0	
Zinc	**ND**	**ND**	NA	25	

Date of Report: November 15, 2011
Samples Submitted: November 7, 2011
Laboratory Reference: 1111-048
Project: 21-1-21623-016

DISSOLVED METALS
EPA 200.8/7470A
MS/MSD QUALITY CONTROL

Date Analyzed: 11-16&17-11

Matrix: Water
Units: ug/L (ppb)

Lab ID: 11-048-01

Analyte	Spike Level	MS	Percent Recovery	MSD	Percent Recovery	RPD	Flags
Antimony	200	**217**	109	**213**	106	2	
Arsenic	100	**109**	105	**107**	103	2	
Beryllium	100	**101**	101	**101**	101	0	
Cadmium	200	**198**	99	**193**	96	3	
Chromium	100	**109**	109	**110**	110	0	
Copper	200	**191**	95	**188**	94	2	
Lead	200	**196**	98	**193**	96	2	
Mercury	6.25	**5.26**	84	**5.43**	87	3	
Nickel	200	**188**	94	**184**	92	2	
Selenium	100	**101**	101	**102**	102	1	
Silver	200	**154**	77	**161**	80	5	
Thallium	200	**199**	100	**196**	98	2	
Zinc	200	**185**	92	**178**	89	4	

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

11-048

SHANNON & WILSON, INC.
Geotechnical and Environmental Consultants

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303 Wellsian Way
Richland, WA 99352
(509) 946-6309

CHAIN OF CUSTODY RECORD

Page 1 of 1
Laboratory Onsite
Attn: David Blair

Analysis Parameters/Sample Container Description
(include preservative if used)

Sample Identity	Lab No.	Time	Date Sampled	Comp.	Grab	VOC	NWTPH-HCID & Follow-up	Total PP Metals (w/ low level Mercury)	Dissolved PP Metals (w/ low level Mercury)			Total Number of Containers	Remarks/Matrix
MA-9:GW:1	1	1342	11/7/11		X	X	X	X	X			9	Iced/Water
									↑ Field Filtered				

Project Information	Sample Receipt
Project Number: 21-1-21623-~~089~~ 016	Total Number of Containers
Project Name: Magnolia CSO	COC Seals/Intact? Y/N/NA (NA)
Contact: Paul VanHorne	Received Good Cond./Cold
Ongoing Project? Yes ☐ No ☒	Delivery Method: Onsite Courier (attach shipping bill, if any)
Sampler: PVH	

Instructions
Requested Turn Around Time: Standard
Special Instructions:

Relinquished By: 1.	Relinquished By: 2.	Relinquished By: 3.
Signature: Paul VanHorne Time:	Signature: Robert Sedam Time:	Signature: Time:
Printed Name: Paul VanHorne Date: 11-7-11	Printed Name: Robert Sedam Date: 11-7-11	Printed Name: Date:
Company: STW	Company: Speedy Mess.	Company:
Received By: 1.	**Received By: 2.**	**Received By: 3.**
Signature: Robert Sedam Time:	Signature: Time: 1600	Signature: Time:
Printed Name: Robert Sedam Date: 11-7-11	Printed Name: M VOLN Date: 11/7/11	Printed Name: Date:
Company: Speedy Mess.	Company: OSE	Company:

Distribution: White - w/shipment - returned to Shannon & Wilson w/ Laboratory report
Yellow - w/shipment - for consignee files
Pink - Shannon & Wilson - Job File

F-19-91/UR

No. 25935

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

Shannon & Wilson
Paul Van Horne
400 N. 34th Street, Suite 100
Seattle, Washington 98103

RE: Magnolia CSO
Lab ID: 1110054

October 19, 2011

Attention Paul Van Horne:

Fremont Analytical, Inc. received 2 sample(s) on 10/14/2011 for the analyses presented in the following report.

Hydrocarbon Identification by NWTPH-HCID
Mercury by EPA Method 7471
pH by EPA Method 9045
Total Metals by EPA Method 6020

This report consists of the following:

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

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

Thank you for using Fremont Analytical.

Sincerely,

Michael Dee
Sr. Chemist / Principal

Date: *10/19/2011*

CLIENT: Shannon & Wilson
Project: Magnolia CSO
Lab Order: 1110054

Work Order Sample Summary

Lab Sample ID	Client Sample ID	Date/Time Collected	Date/Time Received
1110054-001	MA-3:190:PH	10/13/2011 10:45 AM	10/14/2011 11:24 AM
1110054-002	MA-8:0:C	10/13/2011 9:35 AM	10/14/2011 11:24 AM

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

Case Narrative

WO#: **1110054**
Date: **10/19/2011**

CLIENT: Shannon & Wilson
Project: Magnolia CSO

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

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

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

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

Analytical Report

WO#: **1110054**
Date Reported: **10/19/2011**

Client: Shannon & Wilson
Collection Date: 10/13/2011 10:45:00 A
Project: Magnolia CSO
Lab ID: 1110054-001
Matrix: Soil
Client Sample ID: MA-3:190:PH

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
pH by EPA Method 9045				Batch ID: R2121		Analyst: EM
Hydrogen Ion (pH)	8.35			pH	1	10/14/2011 11:30:00 AM

Qualifiers:

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

Analytical Report

WO#: **1110054**
Date Reported: **10/19/2011**

Client: Shannon & Wilson
Collection Date: 10/13/2011 9:35:00 AM
Project: Magnolia CSO
Lab ID: 1110054-002
Matrix: Soil
Client Sample ID: MA-8:0:C

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Hydrocarbon Identification by NWTPH-HCID				Batch ID: 1275		Analyst: EM
Gasoline	ND	37.7		mg/Kg-dry	1	10/15/2011 2:37:00 AM
Mineral Spirits	ND	56.5		mg/Kg-dry	1	10/15/2011 2:37:00 AM
Kerosene	ND	94.2		mg/Kg-dry	1	10/15/2011 2:37:00 AM
Diesel (Fuel Oil)	ND	94.2		mg/Kg-dry	1	10/15/2011 2:37:00 AM
Heavy Oil	ND	188		mg/Kg-dry	1	10/15/2011 2:37:00 AM
Mineral Oil	ND	188		mg/Kg-dry	1	10/15/2011 2:37:00 AM
Surr: 2-Fluorobiphenyl	91.0	70-130		%REC	1	10/15/2011 2:37:00 AM
Surr: o-Terphenyl	95.7	70-130		%REC	1	10/15/2011 2:37:00 AM
Total Metals by EPA Method 6020				Batch ID: 1286		Analyst: BR
Arsenic	3.84	0.112		mg/Kg-dry	1	10/18/2011 2:00:06 PM
Barium	62.7	0.560		mg/Kg-dry	1	10/18/2011 2:00:06 PM
Cadmium	ND	0.224		mg/Kg-dry	1	10/18/2011 2:00:06 PM
Chromium	19.4	0.112		mg/Kg-dry	1	10/18/2011 2:00:06 PM
Lead	5.27	0.224		mg/Kg-dry	1	10/18/2011 2:00:06 PM
Selenium	ND	0.560		mg/Kg-dry	1	10/18/2011 2:00:06 PM
Silver	ND	0.112		mg/Kg-dry	1	10/18/2011 2:00:06 PM
Mercury by EPA Method 7471				Batch ID: 1284		Analyst: BR
Mercury	ND	0.312		mg/Kg-dry	1	10/17/2011 3:14:06 PM

Qualifiers:

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

Fremont Analytical

Date: *10/19/2011*

Work Order: 1110054
CLIENT: Shannon & Wilson
Project: Magnolia CSO

QC SUMMARY REPORT

pH by EPA Method 9045

Sample ID: **MB-R2121**	SampType: **MBLK**	Units: **pH**	Prep Date:	RunNo: **2121**
Client ID: **MBLKS**	Batch ID: **R2121**		Analysis Date: **10/14/2011**	SeqNo: **37586**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hydrogen Ion (pH)	6.68										

Sample ID: **LCS-R2121**	SampType: **LCS**	Units: **pH**	Prep Date:	RunNo: **2121**
Client ID: **LCSS**	Batch ID: **R2121**		Analysis Date: **10/14/2011**	SeqNo: **37587**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hydrogen Ion (pH)	7.05		7.000	0	101	95	105				

Sample ID: **1110054-001ADUP**	SampType: **DUP**	Units: **pH**	Prep Date:	RunNo: **2121**
Client ID: **MA-3:190:PH**	Batch ID: **R2121**		Analysis Date: **10/14/2011**	SeqNo: **37589**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hydrogen Ion (pH)	8.55							8.350	2.37	30	

Qualifiers:

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

Fremont Analytical

Date: *10/19/2011*

Work Order: 1110054
CLIENT: Shannon & Wilson
Project: Magnolia CSO

QC SUMMARY REPORT

Total Metals by EPA Method 6020

Sample ID: **MB-1286**	SampType: **MBLK**	Units: **mg/Kg**	Prep Date: **10/18/2011**	RunNo: **2150**
Client ID: **MBLKS**	Batch ID: **1286**		Analysis Date: **10/18/2011**	SeqNo: **37850**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	ND	0.100									
Barium	ND	0.500									
Cadmium	ND	0.200									
Chromium	ND	0.100									
Lead	ND	0.200									
Selenium	ND	0.500									
Silver	ND	0.100									

Sample ID: **LCS-1286**	SampType: **LCS**	Units: **mg/Kg**	Prep Date: **10/18/2011**	RunNo: **2150**
Client ID: **LCSS**	Batch ID: **1286**		Analysis Date: **10/18/2011**	SeqNo: **37851**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	53.2	0.100	50.00	0	106	80	120				
Barium	50.2	0.500	50.00	0	100	80	120				
Cadmium	2.70	0.200	2.500	0	108	80	120				
Chromium	51.4	0.100	50.00	0	103	80	120				
Lead	24.1	0.200	25.00	0	96.3	80	120				
Selenium	5.64	0.500	5.000	0	113	80	120				
Silver	2.10	0.100	2.500	0	84.1	80	120				

Sample ID: **1110057-001ADUP**	SampType: **DUP**	Units: **mg/Kg-dry**	Prep Date: **10/18/2011**	RunNo: **2150**
Client ID: **BATCH**	Batch ID: **1286**		Analysis Date: **10/18/2011**	SeqNo: **37858**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	3.84	0.0901						3.650	5.08	30	
Barium	44.4	0.450						42.03	5.55	30	

Qualifiers:

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

Work Order: 1110054
CLIENT: Shannon & Wilson
Project: Magnolia CSO

QC SUMMARY REPORT

Total Metals by EPA Method 6020

Sample ID: **1110057-001ADUP** SampType: **DUP** Units: **mg/Kg-dry** Prep Date: **10/18/2011** RunNo: **2150**
Client ID: **BATCH** Batch ID: **1286** Analysis Date: **10/18/2011** SeqNo: **37858**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Cadmium	0.217	0.180						0.2741	23.4	30	
Chromium	21.5	0.0901						20.63	4.29	30	
Lead	12.2	0.180						11.67	4.37	30	
Selenium	ND	0.450						0	0	30	
Silver	ND	0.0901						0	0	30	

Sample ID: **1110057-001AMS** SampType: **MS** Units: **mg/Kg-dry** Prep Date: **10/18/2011** RunNo: **2150**
Client ID: **BATCH** Batch ID: **1286** Analysis Date: **10/18/2011** SeqNo: **37859**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	52.3	0.0854	42.68	3.650	114	75	125				
Barium	87.7	0.427	42.68	42.03	107	75	125				
Cadmium	2.42	0.171	2.134	0.2741	101	75	125				
Chromium	58.6	0.0854	42.68	20.63	89.0	75	125				
Lead	35.0	0.171	21.34	11.67	109	75	125				
Selenium	4.48	0.427	4.268	0	105	75	125				
Silver	1.79	0.0854	2.134	0.03810	82.1	75	125				

Sample ID: **1110057-001AMSD** SampType: **MSD** Units: **mg/Kg-dry** Prep Date: **10/18/2011** RunNo: **2150**
Client ID: **BATCH** Batch ID: **1286** Analysis Date: **10/18/2011** SeqNo: **37860**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	57.2	0.0898	44.89	3.650	119	75	125	52.35	8.87	30	
Barium	96.7	0.449	44.89	42.03	122	75	125	87.72	9.75	30	
Cadmium	2.59	0.180	2.245	0.2741	103	75	125	2.419	6.80	30	
Chromium	64.3	0.0898	44.89	20.63	97.2	75	125	58.62	9.17	30	

Qualifiers:

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

Date: *10/19/2011*

Work Order: 1110054
CLIENT: Shannon & Wilson
Project: Magnolia CSO

QC SUMMARY REPORT

Total Metals by EPA Method 6020

Sample ID: **1110057-001AMSD** SampType: **MSD** Units: **mg/Kg-dry** Prep Date: **10/18/2011** RunNo: **2150**
Client ID: **BATCH** Batch ID: **1286** Analysis Date: **10/18/2011** SeqNo: **37860**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	36.7	0.180	22.45	11.67	112	75	125	34.98	4.83	30	
Selenium	5.17	0.449	4.489	0	115	75	125	4.476	14.3	30	
Silver	2.02	0.0898	2.245	0.03810	88.1	75	125	1.791	11.8	30	

Qualifiers:

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

Fremont Analytical

Date: *10/19/2011*

Work Order: 1110054
CLIENT: Shannon & Wilson
Project: Magnolia CSO

QC SUMMARY REPORT

Mercury by EPA Method 7471

Sample ID: **MB-1284** SampType: **MBLK** Units: **mg/Kg** Prep Date: **10/17/2011** RunNo: **2129**
Client ID: **MBLKS** Batch ID: **1284** Analysis Date: **10/17/2011** SeqNo: **37654**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	ND	0.250									

Sample ID: **LCS-1284** SampType: **LCS** Units: **mg/Kg** Prep Date: **10/17/2011** RunNo: **2129**
Client ID: **LCSS** Batch ID: **1284** Analysis Date: **10/17/2011** SeqNo: **37655**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	0.510	0.250	0.5000	0	102	85	115				

Sample ID: **1110054-002ADUP** SampType: **DUP** Units: **mg/Kg-dry** Prep Date: **10/17/2011** RunNo: **2129**
Client ID: **MA-8:0:C** Batch ID: **1284** Analysis Date: **10/17/2011** SeqNo: **37657**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	ND	0.328						0	0	20	

Sample ID: **1110054-002AMS** SampType: **MS** Units: **mg/Kg-dry** Prep Date: **10/17/2011** RunNo: **2129**
Client ID: **MA-8:0:C** Batch ID: **1284** Analysis Date: **10/17/2011** SeqNo: **37658**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	0.773	0.337	0.6735	0	115	70	130				

Sample ID: **1110054-002AMSD** SampType: **MSD** Units: **mg/Kg-dry** Prep Date: **10/17/2011** RunNo: **2129**
Client ID: **MA-8:0:C** Batch ID: **1284** Analysis Date: **10/17/2011** SeqNo: **37659**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	0.650	0.309	0.6187	0	105	70	130	0.7731	17.4	20	

Qualifiers:

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

Fremont Analytical

Date: *10/19/2011*

Work Order: 1110054
CLIENT: Shannon & Wilson
Project: Magnolia CSO

QC SUMMARY REPORT

Hydrocarbon Identification by NWTPH-HCID

Sample ID: **1110054-002ADUP** SampType: **DUP** Units: **mg/Kg-dry** Prep Date: **10/14/2011** RunNo: **2133**
Client ID: **MA-8:0:C** Batch ID: **1275** Analysis Date: **10/15/2011** SeqNo: **37672**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Gasoline	ND	33.4		0	0			0	0	30	
Mineral Spirits	ND	50.2		0	0			0	0	30	
Kerosene	ND	83.6		0	0			0	0	30	
Diesel (Fuel Oil)	ND	83.6		0	0			0	0	30	
Heavy Oil	ND	167		0	0			0	0	30	
Mineral Oil	ND	167		0	0			0	0	30	
Surr: 2-Fluorobiphenyl	30.6		33.44		91.5	70	130		0		
Surr: o-Terphenyl	31.5		33.44		94.2	70	130		0		

Sample ID: **LCS-1275** SampType: **LCS** Units: **mg/Kg** Prep Date: **10/14/2011** RunNo: **2133**
Client ID: **LCSS** Batch ID: **1275** Analysis Date: **10/15/2011** SeqNo: **37675**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Diesel (Fuel Oil)	518	50.0	500.0	0	104	65	135				
Surr: 2-Fluorobiphenyl	20.4		20.00		102	70	130				
Surr: o-Terphenyl	21.0		20.00		105	70	130				

Sample ID: **MB-1275** SampType: **MBLK** Units: **mg/Kg** Prep Date: **10/14/2011** RunNo: **2133**
Client ID: **MBLKS** Batch ID: **1275** Analysis Date: **10/15/2011** SeqNo: **37676**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Gasoline	ND	20.0									
Mineral Spirits	ND	30.0									
Kerosene	ND	50.0									
Diesel (Fuel Oil)	ND	50.0									
Heavy Oil	ND	100									

Qualifiers:

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

Date: *10/19/2011*

Work Order: 1110054
CLIENT: Shannon & Wilson
Project: Magnolia CSO

QC SUMMARY REPORT

Hydrocarbon Identification by NWTPH-HCID

Sample ID: **MB-1275** SampType: **MBLK** Units: **mg/Kg** Prep Date: **10/14/2011** RunNo: **2133**
Client ID: **MBLKS** Batch ID: **1275** Analysis Date: **10/15/2011** SeqNo: **37676**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mineral Oil	ND	100									
Surr: 2-Fluorobiphenyl	17.8		20.00		89.1	70	130				
Surr: o-Terphenyl	18.7		20.00		93.4	70	130				

Qualifiers:

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

Sample Log-In Check List

Client Name: **SW**	Work Order Number: **1110054**
Logged by: **Troy Zehr**	Date Received: **10/14/2011 11:24:00 AM**

Chain of Custody

1.	Were custodial seals intact?	Yes	☐	No	☐	Not Present	☑
2.	Is Chain of Custody complete?	Yes	☑	No	☐	Not Present	☐
3.	How was the sample delivered?	Client					

Log In

4.	Coolers are present?	Yes	☑	No	☐	NA	☐
5.	Was an attempt made to cool the samples?	Yes	☑	No	☐	NA	☐
6.	Were all coolers received at a temperature of >0° C to 10.0°C	Yes	☑	No	☐	NA	☐
7.	Sample(s) in proper container(s)?	Yes	☑	No	☐		
8.	Sufficient sample volume for indicated test(s)?	Yes	☑	No	☐		
9.	Are samples properly preserved?	Yes	☑	No	☐		
10.	Was preservative added to bottles?	Yes	☐	No	☑	NA	☐
11.	Is there headspace present in VOA vials?	Yes	☐	No	☐	No VOA Vials	☑
12.	Did all sample containers arrive in good condition?(unbroken)	Yes	☑	No	☐		
13.	Does paperwork match bottle labels?	Yes	☑	No	☐		
14.	Are matrices correctly identified on Chain of Custody?	Yes	☑	No	☐		
15.	Is it clear what analyses were requested?	Yes	☑	No	☐		
16.	Were all holding times able to be met?	Yes	☑	No	☐		

Special Handling (if applicable)

17.	Was client notified of all discrepancies with this order?	Yes	☐	No	☐	NA	☑

Person Notified: _____ Date: _____

By Whom: _____ Via: ☐ eMail ☐ Phone ☐ Fax ☐ In Person

Regarding: _____

Client Instructions: _____

18. Additional remarks/Disrepancies

Item Information

Item #	Temp ºC	Condition
Cooler	5.5	Good

1110054

SHANNON & WILSON, INC.
GEOTECHNICAL AND ENVIRONMENTAL CONSULTANTS
CORPORATE HEADQUARTERS
400 N. 34th Street, Suite 100
Seattle, WA 98103
(206) 632-8020

CHAIN-OF-CUSTODY RECORD

Laboratory Fremont
Attn: Mike R

(include preservative if used)
Analysis Parameters/Sample Container Description

Sample Identity	Lab No.	Time	Date Sampled	Comp.	Grab	PH (EPA 9045D)	NWTPH-HCID + followup	RCRA 8 Metals				Total Number of Containers	Remarks/Matrix
MA-3:190:PH		1045	10/13/11		X	X						1	Iced/Soil
MA-8:0:C		0935	10/13/11	X			X	X				1	" "

Project Information	
Project No.	01-1-21623-009
Project Name:	Magnolia CSO
Contact:	PVH
Ongoing Project?	Yes ☒ No ☐
Sampler:	JMW, GBB

Sample Receipt	
Total No. of Containers:	
COC Seals/Intact?	Y/N/(NA)
Received Good Cond./Cold	
Delivery Method: (attach shipping bill, if any)	STW personnel

Instructions	
Requested Turnaround Time:	Standard
Special Instructions:	

Relinquished By: 1.	Relinquished By: 2.	Relinquished By: 3.
Signature: Paul Van Horne	Signature:	Signature:
Time: 1124	Time:	Time:
Printed Name: Paul Van Horne	Printed Name:	Printed Name:
Date: 10/14/11	Date:	Date:
Company: STW	Company:	Company:

Received By: 1.	Received By: 2.	Received By: 3.
Signature:	Signature:	Signature:
Time: 1124	Time:	Time:
Printed Name: Caitlyn Frazier	Printed Name:	Printed Name:
Date: 10/14/11	Date:	Date:
Company: FAI	Company:	Company:

Distribution: White - w/shipment - returned to Shannon & Wilson w/ laboratory report
Yellow - w/shipment - for consignee files
Pink - Shannon & Wilson - job file

No. 867

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

Shannon & Wilson
Paul Van Horne
400 N. 34th Street, Suite 100
Seattle, Washington 98103

RE: Magnolia CSO
Lab ID: 1110057

October 19, 2011

Attention Paul Van Horne:

Fremont Analytical, Inc. received 4 sample(s) on 10/14/2011 for the analyses presented in the following report.

Diesel and Heavy Oil by NWTPH-Dx/Dx Ext.
Gasoline by NWTPH-Gx
Hydrocarbon Identification by NWTPH-HCID
Mercury by EPA Method 7471
pH by EPA Method 9045
Polychlorinated Biphenyls (PCB) by EPA 8082
Total Metals by EPA Method 6020

This report consists of the following:

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

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

Thank you for using Fremont Analytical.

Sincerely,

Michael Dee
Sr. Chemist / Principal

Date: *10/19/2011*

CLIENT: Shannon & Wilson
Project: Magnolia CSO
Lab Order: 1110057

Work Order Sample Summary

Lab Sample ID	Client Sample ID	Date/Time Collected	Date/Time Received
1110057-001	MA-9:7	10/12/2011 12:15 PM	10/14/2011 6:10 PM
1110057-002	MA-9:10	10/14/2011 10:00 AM	10/14/2011 6:10 PM
1110057-003	MA-9:15:PH	10/14/2011 10:20 AM	10/14/2011 6:10 PM
1110057-004	MA-9:35:PH	10/14/2011 1:20 PM	10/14/2011 6:10 PM

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

Case Narrative

WO#: **1110057**
Date: **10/19/2011**

CLIENT: Shannon & Wilson
Project: Magnolia CSO

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

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

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

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

Analytical Comments for METHOD O-DXEX-S, SAMPLE 1110057-001A, Batch ID 1278: Received silica-gel treatment

Analytical Report

WO#: **1110057**
Date Reported: **10/19/2011**

Client: Shannon & Wilson
Collection Date: 10/12/2011 12:15:00 P
Project: Magnolia CSO
Lab ID: 1110057-001
Matrix: Soil
Client Sample ID: MA-9:7

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Diesel and Heavy Oil by NWTPH-Dx/Dx Ext.				Batch ID: 1278		Analyst: EM
Diesel (Fuel Oil)	ND	23.2		mg/Kg-dry	1	10/15/2011 3:32:00 AM
Heavy Oil	ND	58.0		mg/Kg-dry	1	10/15/2011 3:32:00 AM
Heavy Fuel Oil	101	58.0		mg/Kg-dry	1	10/15/2011 3:32:00 AM
Surr: 2-Fluorobiphenyl	90.0	70-130		%REC	1	10/15/2011 3:32:00 AM
Surr: o-Terphenyl	94.9	70-130		%REC	1	10/15/2011 3:32:00 AM
NOTES:						
Heavy Fuel Oil: Indicates the presence of unresolved compounds in both the diesel and lube oil+ ranges.						
Polychlorinated Biphenyls (PCB) by EPA 8082				Batch ID: 1294		Analyst: PH
Aroclor 1016	ND	0.101		mg/Kg-dry	1	10/18/2011 9:27:00 PM
Aroclor 1221	ND	0.101		mg/Kg-dry	1	10/18/2011 9:27:00 PM
Aroclor 1232	ND	0.101		mg/Kg-dry	1	10/18/2011 9:27:00 PM
Aroclor 1242	ND	0.101		mg/Kg-dry	1	10/18/2011 9:27:00 PM
Aroclor 1248	ND	0.101		mg/Kg-dry	1	10/18/2011 9:27:00 PM
Aroclor 1254	ND	0.101		mg/Kg-dry	1	10/18/2011 9:27:00 PM
Aroclor 1260	ND	0.101		mg/Kg-dry	1	10/18/2011 9:27:00 PM
Aroclor 1262	ND	0.101		mg/Kg-dry	1	10/18/2011 9:27:00 PM
Aroclor 1268	ND	0.101		mg/Kg-dry	1	10/18/2011 9:27:00 PM
Total PCBs	ND	0.101		mg/Kg-dry	1	10/18/2011 9:27:00 PM
Surr: Decachlorobiphenyl	106	65-135		%REC	1	10/18/2011 9:27:00 PM
Surr: Tetrachloro-m-xylene	106	65-135		%REC	1	10/18/2011 9:27:00 PM
Gasoline by NWTPH-Gx				Batch ID: 1282		Analyst: PH
Gasoline	ND	4.62		mg/Kg-dry	1	10/17/2011 3:05:00 AM
Gasoline Range Organics	2.64	4.62	J	mg/Kg-dry	1	10/17/2011 3:05:00 AM
Surr: 1,2-Dichloroethane-d4	75.5	65-135		%REC	1	10/17/2011 3:05:00 AM
Surr: Fluorobenzene	102	65-135		%REC	1	10/17/2011 3:05:00 AM
Total Metals by EPA Method 6020				Batch ID: 1286		Analyst: BR
Arsenic	3.65	0.0905		mg/Kg-dry	1	10/18/2011 2:15:35 PM
Barium	42.0	0.452		mg/Kg-dry	1	10/18/2011 2:15:35 PM
Cadmium	0.274	0.181		mg/Kg-dry	1	10/18/2011 2:15:35 PM

Qualifiers:

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

Analytical Report

WO#: **1110057**

Date Reported: **10/19/2011**

Client: Shannon & Wilson **Collection Date:** 10/12/2011 12:15:00 P

Project: Magnolia CSO

Lab ID: 1110057-001 **Matrix:** Soil

Client Sample ID: MA-9:7

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Total Metals by EPA Method 6020				Batch ID: 1286		Analyst: BR
Chromium	20.6	0.0905		mg/Kg-dry	1	10/18/2011 2:15:35 PM
Lead	11.7	0.181		mg/Kg-dry	1	10/18/2011 2:15:35 PM
Selenium	ND	0.452		mg/Kg-dry	1	10/18/2011 2:15:35 PM
Silver	0.0381	0.0905	J	mg/Kg-dry	1	10/18/2011 2:15:35 PM
Mercury by EPA Method 7471				Batch ID: 1284		Analyst: BR
Mercury	ND	0.218		mg/Kg-dry	1	10/17/2011 3:27:59 PM
pH by EPA Method 9045				Batch ID: R2121		Analyst: EM
Hydrogen Ion (pH)	8.32			pH	1	10/14/2011 11:30:00 AM

Qualifiers:

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

Analytical Report

WO#: **1110057**
Date Reported: **10/19/2011**

Client: Shannon & Wilson
Collection Date: 10/14/2011 10:00:00 A
Project: Magnolia CSO
Lab ID: 1110057-002
Matrix: Soil
Client Sample ID: MA-9:10

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Hydrocarbon Identification by NWTPH-HCID				Batch ID: 1279		Analyst: EM
Gasoline	ND	28.3		mg/Kg-dry	1	10/15/2011 4:27:00 AM
Mineral Spirits	ND	42.5		mg/Kg-dry	1	10/15/2011 4:27:00 AM
Kerosene	ND	70.8		mg/Kg-dry	1	10/15/2011 4:27:00 AM
Diesel (Fuel Oil)	ND	70.8		mg/Kg-dry	1	10/15/2011 4:27:00 AM
Heavy Oil	ND	142		mg/Kg-dry	1	10/15/2011 4:27:00 AM
Mineral Oil	ND	142		mg/Kg-dry	1	10/15/2011 4:27:00 AM
Surr: 2-Fluorobiphenyl	92.1	70-130		%REC	1	10/15/2011 4:27:00 AM
Surr: o-Terphenyl	97.4	70-130		%REC	1	10/15/2011 4:27:00 AM
pH by EPA Method 9045				Batch ID: R2121		Analyst: EM
Hydrogen Ion (pH)	8.14			pH	1	10/14/2011 11:30:00 AM

Qualifiers:

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

Analytical Report

WO#: **1110057**

Date Reported: **10/19/2011**

Client: Shannon & Wilson **Collection Date:** 10/14/2011 10:20:00 A

Project: Magnolia CSO

Lab ID: 1110057-003 **Matrix:** Soil

Client Sample ID: MA-9:15:PH

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
pH by EPA Method 9045				Batch ID: R2121		Analyst: EM
Hydrogen Ion (pH)	8.18			pH	1	10/14/2011 11:30:00 AM

Qualifiers:

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

Analytical Report

WO#: **1110057**
Date Reported: **10/19/2011**

Client: Shannon & Wilson
Project: Magnolia CSO
Lab ID: 1110057-004
Client Sample ID: **MA-9:35:PH**

Collection Date: 10/14/2011 1:20:00 PM
Matrix: Soil

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
pH by EPA Method 9045				Batch ID: R2121		Analyst: EM
Hydrogen Ion (pH)	9.15			pH	1	10/14/2011 11:30:00 AM

Qualifiers:

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

Fremont Analytical

Date: *10/19/2011*

Work Order: 1110057
CLIENT: Shannon & Wilson
Project: Magnolia CSO

QC SUMMARY REPORT

pH by EPA Method 9045

Sample ID: **MB-R2121**	SampType: **MBLK**	Units: **pH**	Prep Date:	RunNo: **2121**
Client ID: **MBLKS**	Batch ID: **R2121**		Analysis Date: **10/14/2011**	SeqNo: **37586**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hydrogen Ion (pH)	6.68										

Sample ID: **LCS-R2121**	SampType: **LCS**	Units: **pH**	Prep Date:	RunNo: **2121**
Client ID: **LCSS**	Batch ID: **R2121**		Analysis Date: **10/14/2011**	SeqNo: **37587**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hydrogen Ion (pH)	7.05		7.000	0	101	95	105				

Sample ID: **1110057-001ADUP**	SampType: **DUP**	Units: **pH**	Prep Date:	RunNo: **2121**
Client ID: **MA-9:7**	Batch ID: **R2121**		Analysis Date: **10/14/2011**	SeqNo: **37591**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Hydrogen Ion (pH)	8.31							8.320	0.120	30	

Qualifiers:

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

Work Order: 1110057
CLIENT: Shannon & Wilson
Project: Magnolia CSO

QC SUMMARY REPORT

Total Metals by EPA Method 6020

Sample ID: **MB-1286** SampType: **MBLK** Units: **mg/Kg** Prep Date: **10/18/2011** RunNo: **2150**
Client ID: **MBLKS** Batch ID: **1286** Analysis Date: **10/18/2011** SeqNo: **37850**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	ND	0.100									
Barium	ND	0.500									
Cadmium	ND	0.200									
Chromium	ND	0.100									
Lead	ND	0.200									
Selenium	ND	0.500									
Silver	ND	0.100									

Sample ID: **LCS-1286** SampType: **LCS** Units: **mg/Kg** Prep Date: **10/18/2011** RunNo: **2150**
Client ID: **LCSS** Batch ID: **1286** Analysis Date: **10/18/2011** SeqNo: **37851**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	53.2	0.100	50.00	0	106	80	120				
Barium	50.2	0.500	50.00	0	100	80	120				
Cadmium	2.70	0.200	2.500	0	108	80	120				
Chromium	51.4	0.100	50.00	0	103	80	120				
Lead	24.1	0.200	25.00	0	96.3	80	120				
Selenium	5.64	0.500	5.000	0	113	80	120				
Silver	2.10	0.100	2.500	0	84.1	80	120				

Sample ID: **1110057-001ADUP** SampType: **DUP** Units: **mg/Kg-dry** Prep Date: **10/18/2011** RunNo: **2150**
Client ID: **MA-9:7** Batch ID: **1286** Analysis Date: **10/18/2011** SeqNo: **37858**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	3.84	0.0901						3.650	5.08	30	
Barium	44.4	0.450						42.03	5.55	30	

Qualifiers:

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

Work Order: 1110057
CLIENT: Shannon & Wilson
Project: Magnolia CSO

QC SUMMARY REPORT

Total Metals by EPA Method 6020

Sample ID: **1110057-001ADUP** SampType: **DUP** Units: **mg/Kg-dry** Prep Date: **10/18/2011** RunNo: **2150**
Client ID: **MA-9:7** Batch ID: **1286** Analysis Date: **10/18/2011** SeqNo: **37858**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Cadmium	0.217	0.180						0.2741	23.4	30	
Chromium	21.5	0.0901						20.63	4.29	30	
Lead	12.2	0.180						11.67	4.37	30	
Selenium	ND	0.450						0	0	30	
Silver	0.0435	0.0901						0.03810	13.2	30	J

Sample ID: **1110057-001AMS** SampType: **MS** Units: **mg/Kg-dry** Prep Date: **10/18/2011** RunNo: **2150**
Client ID: **MA-9:7** Batch ID: **1286** Analysis Date: **10/18/2011** SeqNo: **37859**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	52.3	0.0854	42.68	3.650	114	75	125				
Barium	87.7	0.427	42.68	42.03	107	75	125				
Cadmium	2.42	0.171	2.134	0.2741	101	75	125				
Chromium	58.6	0.0854	42.68	20.63	89.0	75	125				
Lead	35.0	0.171	21.34	11.67	109	75	125				
Selenium	4.48	0.427	4.268	0	105	75	125				
Silver	1.79	0.0854	2.134	0.03810	82.1	75	125				

Sample ID: **1110057-001AMSD** SampType: **MSD** Units: **mg/Kg-dry** Prep Date: **10/18/2011** RunNo: **2150**
Client ID: **MA-9:7** Batch ID: **1286** Analysis Date: **10/18/2011** SeqNo: **37860**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Arsenic	57.2	0.0898	44.89	3.650	119	75	125	52.35	8.87	30	
Barium	96.7	0.449	44.89	42.03	122	75	125	87.72	9.75	30	
Cadmium	2.59	0.180	2.245	0.2741	103	75	125	2.419	6.80	30	
Chromium	64.3	0.0898	44.89	20.63	97.2	75	125	58.62	9.17	30	

Qualifiers:

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

Work Order: 1110057
CLIENT: Shannon & Wilson
Project: Magnolia CSO

QC SUMMARY REPORT

Total Metals by EPA Method 6020

Sample ID: **1110057-001AMSD** SampType: **MSD** Units: **mg/Kg-dry** Prep Date: **10/18/2011** RunNo: **2150**
Client ID: **MA-9:7** Batch ID: **1286** Analysis Date: **10/18/2011** SeqNo: **37860**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	36.7	0.180	22.45	11.67	112	75	125	34.98	4.83	30	
Selenium	5.17	0.449	4.489	0	115	75	125	4.476	14.3	30	
Silver	2.02	0.0898	2.245	0.03810	88.1	75	125	1.791	11.8	30	

Qualifiers:

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

Work Order: 1110057
CLIENT: Shannon & Wilson
Project: Magnolia CSO

QC SUMMARY REPORT

Mercury by EPA Method 7471

Sample ID: **MB-1284** SampType: **MBLK** Units: **mg/Kg** Prep Date: **10/17/2011** RunNo: **2129**
Client ID: **MBLKS** Batch ID: **1284** Analysis Date: **10/17/2011** SeqNo: **37654**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	ND	0.250									

Sample ID: **LCS-1284** SampType: **LCS** Units: **mg/Kg** Prep Date: **10/17/2011** RunNo: **2129**
Client ID: **LCSS** Batch ID: **1284** Analysis Date: **10/17/2011** SeqNo: **37655**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	0.510	0.250	0.5000	0	102	85	115				

Sample ID: **1110054-002AMS** SampType: **MS** Units: **mg/Kg-dry** Prep Date: **10/17/2011** RunNo: **2129**
Client ID: **BATCH** Batch ID: **1284** Analysis Date: **10/17/2011** SeqNo: **37658**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	0.773	0.337	0.6735	0	115	70	130				

Sample ID: **1110054-002AMSD** SampType: **MSD** Units: **mg/Kg-dry** Prep Date: **10/17/2011** RunNo: **2129**
Client ID: **BATCH** Batch ID: **1284** Analysis Date: **10/17/2011** SeqNo: **37659**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	0.650	0.309	0.6187	0	105	70	130	0.7731	17.4	20	

Sample ID: **1110057-001ADUP** SampType: **DUP** Units: **mg/Kg-dry** Prep Date: **10/17/2011** RunNo: **2129**
Client ID: **MA-9:7** Batch ID: **1284** Analysis Date: **10/17/2011** SeqNo: **37661**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mercury	ND	0.208						0	0	20	

Qualifiers:

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

Work Order: 1110057
CLIENT: Shannon & Wilson
Project: Magnolia CSO

QC SUMMARY REPORT

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

Sample ID: **1110057-001ADUP** SampType: **DUP** Units: **mg/Kg-dry** Prep Date: **10/17/2011** RunNo: **2123**
Client ID: **MA-9:7** Batch ID: **1278** Analysis Date: **10/15/2011** SeqNo: **37599**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Diesel (Fuel Oil)	ND	18.0						0	0	30	
Heavy Oil	ND	45.0						0	0	30	
Heavy Fuel Oil	76.2	45.0						100.5	27.5	30	
Surr: 2-Fluorobiphenyl	16.7		17.98		93.0	70	130		0		
Surr: o-Terphenyl	18.3		17.98		102	70	130		0		

Sample ID: **LCS-1278** SampType: **LCS** Units: **mg/Kg** Prep Date: **10/17/2011** RunNo: **2123**
Client ID: **LCSS** Batch ID: **1278** Analysis Date: **10/15/2011** SeqNo: **37602**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Diesel (Fuel Oil)	493	20.0	500.0	0	98.7	65	135				
Surr: 2-Fluorobiphenyl	17.7		20.00		88.5	70	130				
Surr: o-Terphenyl	20.8		20.00		104	70	130				

Sample ID: **MB-1278** SampType: **MBLK** Units: **mg/Kg** Prep Date: **10/17/2011** RunNo: **2123**
Client ID: **MBLKS** Batch ID: **1278** Analysis Date: **10/15/2011** SeqNo: **37603**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Diesel (Fuel Oil)	ND	20.0									
Heavy Oil	ND	50.0									
Heavy Fuel Oil	ND	50.0									
Surr: 2-Fluorobiphenyl	17.9		20.00		89.7	70	130				
Surr: o-Terphenyl	18.8		20.00		94.2	70	130				

NOTES:
Heavy Fuel Oil: Indicates the presence of unresolved compounds in both the diesel and lube oil+ ranges.

Qualifiers:

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

Work Order: 1110057
CLIENT: Shannon & Wilson
Project: Magnolia CSO

QC SUMMARY REPORT

Hydrocarbon Identification by NWTPH-HCID

Sample ID: **LCS-1279** SampType: **LCS** Units: **mg/Kg** Prep Date: **10/14/2011** RunNo: **2126**
Client ID: **LCSS** Batch ID: **1279** Analysis Date: **10/15/2011** SeqNo: **37613**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Diesel (Fuel Oil)	518	50.0	500.0	0	104	65	135				
Surr: 2-Fluorobiphenyl	20.4		20.00		102	70	130				
Surr: o-Terphenyl	21.0		20.00		105	70	130				

Sample ID: **MB-1279** SampType: **MBLK** Units: **mg/Kg** Prep Date: **10/14/2011** RunNo: **2126**
Client ID: **MBLKS** Batch ID: **1279** Analysis Date: **10/15/2011** SeqNo: **37616**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Gasoline	ND	20.0									
Mineral Spirits	ND	30.0									
Kerosene	ND	50.0									
Diesel (Fuel Oil)	ND	50.0									
Heavy Oil	ND	100									
Mineral Oil	ND	100									
Surr: 2-Fluorobiphenyl	17.8		20.00		89.1	70	130				
Surr: o-Terphenyl	18.7		20.00		93.4	70	130				

Sample ID: **1110057-002AREP** SampType: **REP** Units: **mg/Kg-dry** Prep Date: **10/17/2011** RunNo: **2126**
Client ID: **MA-9:10** Batch ID: **1279** Analysis Date: **10/17/2011** SeqNo: **37619**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Gasoline	ND	28.3						0	0	0	
Mineral Spirits	ND	42.5						0	0	0	
Kerosene	ND	70.8						0	0	0	
Diesel (Fuel Oil)	ND	70.8						0	0	0	
Heavy Oil	ND	142						0	0	0	

Qualifiers:

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

Fremont Analytical

Date: *10/19/2011*

Work Order: 1110057
CLIENT: Shannon & Wilson
Project: Magnolia CSO

QC SUMMARY REPORT

Hydrocarbon Identification by NWTPH-HCID

Sample ID: **1110057-002AREP** SampType: **REP** Units: **mg/Kg-dry** Prep Date: **10/17/2011** RunNo: **2126**
Client ID: **MA-9:10** Batch ID: **1279** Analysis Date: **10/17/2011** SeqNo: **37619**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Mineral Oil	ND	142						0	0	0	
Surr: 2-Fluorobiphenyl	26.5		28.34		93.5	70	130		0		
Surr: o-Terphenyl	28.2		28.34		99.4	70	130		0		

Qualifiers:

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

Work Order: 1110057
CLIENT: Shannon & Wilson
Project: Magnolia CSO

QC SUMMARY REPORT

Polychlorinated Biphenyls (PCB) by EPA 8082

Sample ID: **MB-1294**	SampType: **MBLK**	Units: **mg/Kg**	Prep Date: **10/18/2011**	RunNo: **2154**
Client ID: **MBLKS**	Batch ID: **1294**		Analysis Date: **10/18/2011**	SeqNo: **37903**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aroclor 1016	ND	0.100									
Aroclor 1221	ND	0.100									
Aroclor 1232	ND	0.100									
Aroclor 1242	ND	0.100									
Aroclor 1248	ND	0.100									
Aroclor 1254	ND	0.100									
Aroclor 1260	ND	0.100									
Aroclor 1262	ND	0.100									
Aroclor 1268	ND	0.100									
Total PCBs	ND	0.100									
Surr: Decachlorobiphenyl	56.5		50.00		113	65	135				
Surr: Tetrachloro-m-xylene	57.5		50.00		115	65	135				

Sample ID: **LCS-1294**	SampType: **LCS**	Units: **mg/Kg**	Prep Date: **10/18/2011**	RunNo: **2154**
Client ID: **LCSS**	Batch ID: **1294**		Analysis Date: **10/18/2011**	SeqNo: **37904**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aroclor 1254	0.895	0.100	1.000	0	89.5	65	135				
Surr: Decachlorobiphenyl	55.8		50.00		112	65	135				
Surr: Tetrachloro-m-xylene	56.7		50.00		113	65	135				

Sample ID: **1110062-006AMS**	SampType: **MS**	Units: **mg/Kg**	Prep Date: **10/18/2011**	RunNo: **2154**
Client ID: **BATCH**	Batch ID: **1294**		Analysis Date: **10/18/2011**	SeqNo: **37908**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aroclor 1254	0.840	0.0891	0.8913	0	94.2	65	135				

Qualifiers:

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

Work Order: 1110057
CLIENT: Shannon & Wilson
Project: Magnolia CSO

QC SUMMARY REPORT

Polychlorinated Biphenyls (PCB) by EPA 8082

Sample ID: **1110062-006AMS**	SampType: **MS**	Units: **mg/Kg**	Prep Date: **10/18/2011**	RunNo: **2154**
Client ID: **BATCH**	Batch ID: **1294**		Analysis Date: **10/18/2011**	SeqNo: **37908**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Surr: Decachlorobiphenyl	51.8		44.56		116	65	135				
Surr: Tetrachloro-m-xylene	50.5		44.56		113	65	135				

Sample ID: **1110062-006AMSD**	SampType: **MSD**	Units: **mg/Kg**	Prep Date: **10/18/2011**	RunNo: **2154**
Client ID: **BATCH**	Batch ID: **1294**		Analysis Date: **10/18/2011**	SeqNo: **37909**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aroclor 1254	0.825	0.0901	0.9009	0	91.5	65	135	0.8399	1.85	30	
Surr: Decachlorobiphenyl	52.9		45.05		117	65	135		0		
Surr: Tetrachloro-m-xylene	53.9		45.05		120	65	135		0		

Sample ID: **1110057-001ADUP**	SampType: **DUP**	Units: **mg/Kg-dry**	Prep Date: **10/18/2011**	RunNo: **2154**
Client ID: **MA-9:7**	Batch ID: **1294**		Analysis Date: **10/18/2011**	SeqNo: **37912**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Aroclor 1016	ND	0.0925						0	0	30	
Aroclor 1221	ND	0.0925						0	0	30	
Aroclor 1232	ND	0.0925						0	0	30	
Aroclor 1242	ND	0.0925						0	0	30	
Aroclor 1248	ND	0.0925						0	0	30	
Aroclor 1254	ND	0.0925						0	0	30	
Aroclor 1260	ND	0.0925						0	0	30	
Aroclor 1262	ND	0.0925						0	0	30	
Aroclor 1268	ND	0.0925						0	0	30	
Total PCBs	ND	0.0925						0	0	30	
Surr: Decachlorobiphenyl	48.9		46.26		106	65	135		0		

Qualifiers:

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

Date: *10/19/2011*

Work Order: 1110057
CLIENT: Shannon & Wilson
Project: Magnolia CSO

QC SUMMARY REPORT

Polychlorinated Biphenyls (PCB) by EPA 8082

Sample ID: **1110057-001ADUP** SampType: **DUP** Units: **mg/Kg-dry** Prep Date: **10/18/2011** RunNo: **2154**
Client ID: **MA-9:7** Batch ID: **1294** Analysis Date: **10/18/2011** SeqNo: **37912**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Surr: Tetrachloro-m-xylene	45.7		46.26		98.7	65	135		0		

Qualifiers:

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

Work Order: 1110057
CLIENT: Shannon & Wilson
Project: Magnolia CSO

QC SUMMARY REPORT

Gasoline by NWTPH-Gx

Sample ID: **MB-1282**	SampType: **MBLK**	Units: **mg/Kg**	Prep Date: **10/16/2011**	RunNo: **2124**
Client ID: **MBLKS**	Batch ID: **1282**		Analysis Date: **10/16/2011**	SeqNo: **37605**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Gasoline	ND	5.00									
Gasoline Range Organics	ND	5.00									
Surr: 1,2-Dichloroethane-d4	0.371		0.5000		74.2	65	135				
Surr: Fluorobenzene	0.470		0.5000		93.9	65	135				

Sample ID: **LCS-1282**	SampType: **LCS**	Units: **mg/Kg**	Prep Date: **10/16/2011**	RunNo: **2124**
Client ID: **LCSS**	Batch ID: **1282**		Analysis Date: **10/16/2011**	SeqNo: **37606**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Gasoline	27.3	5.00	25.00	0	109	65	135				
Surr: 1,2-Dichloroethane-d4	0.380		0.5000		76.0	65	135				
Surr: Fluorobenzene	0.487		0.5000		97.3	65	135				

Sample ID: **1110057-001BDUP**	SampType: **DUP**	Units: **mg/Kg-dry**	Prep Date: **10/16/2011**	RunNo: **2124**
Client ID: **MA-9:7**	Batch ID: **1282**		Analysis Date: **10/17/2011**	SeqNo: **37608**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Gasoline	ND	4.62						0	0	30	
Gasoline Range Organics	2.39	4.62						2.641	10.2	30	J
Surr: 1,2-Dichloroethane-d4	0.340		0.4619		73.7	65	135		0		
Surr: Fluorobenzene	0.449		0.4619		97.2	65	135		0		

Qualifiers:

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

Sample Log-In Check List

Client Name: **SW**		Work Order Number:	**1110057**
Logged by: **Emiko Mar**		Date Received:	**10/14/2011 6:22:41 PM**

Chain of Custody

1.	Were custodial seals intact?	Yes	☐	No	☐	Not Present	☑
2.	Is Chain of Custody complete?	Yes	☑	No	☐	Not Present	☐
3.	How was the sample delivered?	Client					

Log In

4.	Coolers are present?	Yes	☑	No	☐	NA	☐
5.	Was an attempt made to cool the samples?	Yes	☑	No	☐	NA	☐
6.	Were all coolers received at a temperature of >0° C to 10.0°C	Yes	☑	No	☐	NA	☐
7.	Sample(s) in proper container(s)?	Yes	☑	No	☐		
8.	Sufficient sample volume for indicated test(s)?	Yes	☑	No	☐		
9.	Are samples properly preserved?	Yes	☑	No	☐		
10.	Was preservative added to bottles?	Yes	☐	No	☑	NA	☐
11.	Is there headspace present in VOA vials?	Yes	☐	No	☑	No VOA Vials	☐
12.	Did all sample containers arrive in good condition?(unbroken)	Yes	☑	No	☐		
13.	Does paperwork match bottle labels?	Yes	☑	No	☐		
14.	Are matrices correctly identified on Chain of Custody?	Yes	☑	No	☐		
15.	Is it clear what analyses were requested?	Yes	☑	No	☐		
16.	Were all holding times able to be met?	Yes	☑	No	☐		

Special Handling (if applicable)

17.	Was client notified of all discrepancies with this order?	Yes	☐	No	☐	NA	☑

Person Notified: _____ Date: _____

By Whom: _____ Via: ☐ eMail ☐ Phone ☐ Fax ☐ In Person

Regarding: _____

Client Instructions: _____

18. Additional remarks/Disrepancies

Item Information

Item #	Temp ºC	Condition
Cooler	1.2	Good

Fremont Analytical

Chain of Custody Record

1131 N. 35th Street
Seattle, WA 98103
Tel: 206-352-3790
Fax: 206-352-7178

Laboratory Project No (internal): 1110057

Date: 10/14/11

Page: 1 of: 1

Client: S&W

Project Name: Magnolia CSO

Address:

Location: Seattle

City, State, Zip: Seattle Tel:

Collected by: GBB

Reports To (PM): PVH Fax: Email:

Project No: 21-1-21623-009

Sample Name	Sample Date	Sample Time	Sample Type (Matrix)	VOC (EPA 8260)	BTEX: EPA 8260 EPA 8021b	Gasoline Range Organics	Hydrocarbon Identification (HCID) & Followup	Diesel/Heavy Oil Range Organics	SEMI VOL (EPA 8270)	PAH (EPA 8270 - SIM)	PCBs (EPA 8082)	Cl Pesticides (EPA 8081)	Cl Herbicides (EPA 8151A)	Metals* (6020 / 200.8) RCRA8 Total (T)	Dissolved (D)	Anions (IC)**	PH (EPA 9045D)				Comments/Depth
1 MA-9:7	10/12/11	1215	Soil			X		X					X			X					
2 MA-9:10	10/14/11	1000	↓				X									X					
3 MA-9:15:PH	↓	1020														X					
4 MA-9:35:PH	↓	1320	↓													X					
5																					
6																					
7																					
8																					
9																					
10																					

*Metals Analysis (Circle): MTCA-5 (RCRA-8) Priority Pollutants TAL Individual: Ag Al As B Ba Be Ca Cd Co Cr Cu Fe Hg K Mg Mn Mo Na Ni Pb Sb Se Sr Sn Ti Tl U V Zn

**Anions (Circle): Nitrate Nitrite Chloride Sulfate Bromide O-Phosphate Fluoride Nitrate+Nitrite

Sample Disposal: ☐ Return to Client ☒ Disposal by Lab (A fee may be assessed if samples are retained after 30 days.)

Relinquished	Date/Time	Received	Date/Time
x Paul VanHaun	10/14/11 1810	x	
x	10/14/11 1810	x	

Special Remarks:
Rush Dx & Gx for MA-9:7, & HCID+Followup (if any) for MA-9:10.

TAT -> Next Day 2 Day 3 Day STD

(Try for Mon AM) Rest standard TAT.

Distribution: White - Lab, Yellow - File, Pink - Originator

www.fremontanalytical.com

OnSite Environmental Inc.

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

April 17, 2012

David Randall
Shannon & Wilson, Inc.
400 N 34th Street, Suite 100
Seattle, WA 98103

Re: Analytical Data for Project 21-1-21623-016
Laboratory Reference No. 1204-041

Dear David:

Enclosed are the analytical results and associated quality control data for samples submitted on April 7, 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: April 17, 2012
Samples Submitted: April 7, 2012
Laboratory Reference: 1204-041
Project: 21-1-21623-016

Case Narrative

Samples were collected on April 6 and 7, 2012 and received by the laboratory on April 7, 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.

Volatiles EPA 8260B (soil) Analysis

Per EPA Method 5035A, samples were received by the laboratory in pre-weighed 40 mL VOA vials within 48 hours of sample collection. They were stored in a freezer at between -7°C and -20°C until extraction or analysis.

Any other QA/QC issues associated with this extraction and analysis will be indicated with a footnote reference and discussed in detail on the Data Qualifier page.

Date of Report: April 17, 2012
Samples Submitted: April 7, 2012
Laboratory Reference: 1204-041
Project: 21-1-21623-016

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

Matrix: Soil
Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**GP-6:7**					
Laboratory ID:	04-041-02					
Gasoline Range Organics	**ND**	22	NWTPH-HCID	4-10-12	4-10-12	
Diesel Range Organics	**ND**	56	NWTPH-HCID	4-10-12	4-10-12	
Lube Oil Range Organics	**ND**	110	NWTPH-HCID	4-10-12	4-10-12	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*142*	*50-150*				
Client ID:	**GP-7:8**					
Laboratory ID:	04-041-04					
Gasoline Range Organics	**ND**	25	NWTPH-HCID	4-10-12	4-10-12	
Diesel Range Organics	**ND**	62	NWTPH-HCID	4-10-12	4-10-12	
Lube Oil Range Organics	**ND**	130	NWTPH-HCID	4-10-12	4-10-12	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*122*	*50-150*				
Client ID:	**GP-8:7**					
Laboratory ID:	04-041-06					
Gasoline Range Organics	**ND**	23	NWTPH-HCID	4-10-12	4-10-12	
Diesel Range Organics	**ND**	56	NWTPH-HCID	4-10-12	4-10-12	
Lube Oil Range Organics	**ND**	110	NWTPH-HCID	4-10-12	4-10-12	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*136*	*50-150*				
Client ID:	**GP-9:8**					
Laboratory ID:	04-041-08					
Gasoline Range Organics	**ND**	24	NWTPH-HCID	4-10-12	4-10-12	
Diesel Range Organics	**ND**	60	NWTPH-HCID	4-10-12	4-10-12	
Lube Oil Range Organics	**ND**	120	NWTPH-HCID	4-10-12	4-10-12	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*140*	*50-150*				
Client ID:	**GP-10:9**					
Laboratory ID:	04-041-10					
Gasoline Range Organics	**ND**	22	NWTPH-HCID	4-10-12	4-10-12	
Diesel Range Organics	**ND**	54	NWTPH-HCID	4-10-12	4-10-12	
Lube Oil Range Organics	**ND**	110	NWTPH-HCID	4-10-12	4-10-12	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*143*	*50-150*				

Date of Report: April 17, 2012
Samples Submitted: April 7, 2012
Laboratory Reference: 1204-041
Project: 21-1-21623-016

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

Matrix: Soil
Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**GP-11:8**					
Laboratory ID:	04-041-12					
Gasoline Range Organics	**ND**	23	NWTPH-HCID	4-10-12	4-10-12	
Diesel Range Organics	**ND**	58	NWTPH-HCID	4-10-12	4-10-12	
Lube Oil Range Organics	**ND**	120	NWTPH-HCID	4-10-12	4-10-12	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*135*	*50-150*				
Client ID:	**GP-12:8**					
Laboratory ID:	04-041-14					
Gasoline Range Organics	**ND**	27	NWTPH-HCID	4-10-12	4-10-12	
Diesel Range Organics	**ND**	66	NWTPH-HCID	4-10-12	4-10-12	
Lube Oil Range Organics	**ND**	130	NWTPH-HCID	4-10-12	4-10-12	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*125*	*50-150*				
Client ID:	**GP-13:6**					
Laboratory ID:	04-041-16					
Gasoline Range Organics	**ND**	22	NWTPH-HCID	4-10-12	4-10-12	
Diesel Range Organics	**ND**	56	NWTPH-HCID	4-10-12	4-10-12	
Lube Oil Range Organics	**ND**	110	NWTPH-HCID	4-10-12	4-10-12	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*142*	*50-150*				
Client ID:	**GP-14:7**					
Laboratory ID:	04-041-18					
Gasoline Range Organics	**ND**	23	NWTPH-HCID	4-10-12	4-10-12	
Diesel Range Organics	**ND**	58	NWTPH-HCID	4-10-12	4-10-12	
Lube Oil Range Organics	**ND**	120	NWTPH-HCID	4-10-12	4-10-12	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*140*	*50-150*				
Client ID:	**GP-15:8**					
Laboratory ID:	04-041-20					
Gasoline Range Organics	**ND**	22	NWTPH-HCID	4-10-12	4-10-12	
Diesel Range Organics	**ND**	56	NWTPH-HCID	4-10-12	4-10-12	
Lube Oil Range Organics	**ND**	110	NWTPH-HCID	4-10-12	4-10-12	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*136*	*50-150*				

Date of Report: April 17, 2012
Samples Submitted: April 7, 2012
Laboratory Reference: 1204-041
Project: 21-1-21623-016

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

Matrix: Soil
Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**GP-16:7**					
Laboratory ID:	04-041-22					
Gasoline Range Organics	**ND**	23	NWTPH-HCID	4-10-12	4-10-12	
Diesel Range Organics	**ND**	57	NWTPH-HCID	4-10-12	4-10-12	
Lube Oil	**Detected**	110	NWTPH-HCID	4-10-12	4-10-12	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*147*	*50-150*				
Client ID:	**GP-17:8**					
Laboratory ID:	04-041-24					
Gasoline Range Organics	**ND**	25	NWTPH-HCID	4-10-12	4-10-12	
Diesel Range Organics	**ND**	62	NWTPH-HCID	4-10-12	4-10-12	
Lube Oil	**Detected**	120	NWTPH-HCID	4-10-12	4-10-12	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*140*	*50-150*				

Date of Report: April 17, 2012
Samples Submitted: April 7, 2012
Laboratory Reference: 1204-041
Project: 21-1-21623-016

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

Matrix: Soil
Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0410S1					
Gasoline Range Organics	**ND**	20	NWTPH-HCID	4-10-12	4-10-12	
Diesel Range Organics	**ND**	50	NWTPH-HCID	4-10-12	4-10-12	
Lube Oil Range Organics	**ND**	100	NWTPH-HCID	4-10-12	4-10-12	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*139*	*50-150*				

Date of Report: April 17, 2012
Samples Submitted: April 7, 2012
Laboratory Reference: 1204-041
Project: 21-1-21623-016

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

Matrix: Water
Units: mg/L (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**GP-6:GW**					
Laboratory ID:	04-041-25					
Gasoline Range Organics	**ND**	0.10	NWTPH-HCID	4-10-12	4-10-12	
Diesel Range Organics	**ND**	0.26	NWTPH-HCID	4-10-12	4-10-12	
Lube Oil Range Organics	**ND**	0.41	NWTPH-HCID	4-10-12	4-10-12	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*95*	*50-150*				
Client ID:	**GP-8:GW**					
Laboratory ID:	04-041-26					
Gasoline Range Organics	**ND**	0.10	NWTPH-HCID	4-10-12	4-10-12	
Diesel Range Organics	**ND**	0.26	NWTPH-HCID	4-10-12	4-10-12	
Lube Oil Range Organics	**ND**	0.41	NWTPH-HCID	4-10-12	4-10-12	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*100*	*50-150*				
Client ID:	**GP-11:GW**					
Laboratory ID:	04-041-27					
Gasoline Range Organics	**ND**	0.10	NWTPH-HCID	4-10-12	4-10-12	
Diesel Range Organics	**ND**	0.25	NWTPH-HCID	4-10-12	4-10-12	
Lube Oil	**Detected**	0.40	NWTPH-HCID	4-10-12	4-10-12	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*105*	*50-150*				
Client ID:	**GP-13:GW**					
Laboratory ID:	04-041-28					
Gasoline Range Organics	**ND**	0.10	NWTPH-HCID	4-10-12	4-10-12	
Diesel Range Organics	**ND**	0.26	NWTPH-HCID	4-10-12	4-10-12	
Lube Oil Range Organics	**ND**	0.41	NWTPH-HCID	4-10-12	4-10-12	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*95*	*50-150*				
Client ID:	**GP-16:GW**					
Laboratory ID:	04-041-29					
Gasoline Range Organics	**ND**	0.10	NWTPH-HCID	4-10-12	4-10-12	
Diesel Range Organics	**ND**	0.26	NWTPH-HCID	4-10-12	4-10-12	
Lube Oil Range Organics	**ND**	0.42	NWTPH-HCID	4-10-12	4-10-12	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*97*	*50-150*				
Client ID:	**GP-14:GW**					
Laboratory ID:	04-041-30					
Gasoline Range Organics	**ND**	0.10	NWTPH-HCID	4-10-12	4-10-12	
Diesel Range Organics	**ND**	0.26	NWTPH-HCID	4-10-12	4-10-12	
Lube Oil Range Organics	**ND**	0.41	NWTPH-HCID	4-10-12	4-10-12	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*95*	*50-150*				

Date of Report: April 17, 2012
Samples Submitted: April 7, 2012
Laboratory Reference: 1204-041
Project: 21-1-21623-016

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

Matrix: Water
Units: mg/L (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0410W1					
Gasoline Range Organics	**ND**	0.10	NWTPH-HCID	4-10-12	4-10-12	
Diesel Range Organics	**ND**	0.25	NWTPH-HCID	4-10-12	4-10-12	
Lube Oil Range Organics	**ND**	0.40	NWTPH-HCID	4-10-12	4-10-12	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*93*	*50-150*				

Date of Report: April 17, 2012
Samples Submitted: April 7, 2012
Laboratory Reference: 1204-041
Project: 21-1-21623-016

VOLATILES by EPA 8260B
page 1 of 2

Matrix: Soil
Units: mg/kg

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**GP-14:7**					
Laboratory ID:	04-041-18					
CFC-12	ND	0.00082	EPA 8260	4-9-12	4-9-12	
Chloromethane	ND	0.0041	EPA 8260	4-9-12	4-9-12	
Vinyl Chloride	ND	0.00082	EPA 8260	4-9-12	4-9-12	
Bromomethane	ND	0.00082	EPA 8260	4-9-12	4-9-12	
Chloroethane	ND	0.0041	EPA 8260	4-9-12	4-9-12	
CFC-11	ND	0.00082	EPA 8260	4-9-12	4-9-12	
1,1-Dichloroethene	ND	0.00082	EPA 8260	4-9-12	4-9-12	
Acetone	0.022	0.0041	EPA 8260	4-9-12	4-9-12	
Methyl Iodide	ND	0.0041	EPA 8260	4-9-12	4-9-12	
Carbon Disulfide	0.0022	0.00082	EPA 8260	4-9-12	4-9-12	
Methylene Chloride	ND	0.0041	EPA 8260	4-9-12	4-9-12	
Trans-1,2-Dichloroethene	ND	0.00082	EPA 8260	4-9-12	4-9-12	
Methyl t-Butyl Ether	ND	0.00082	EPA 8260	4-9-12	4-9-12	
1,1-Dichloroethane	ND	0.00082	EPA 8260	4-9-12	4-9-12	
Vinyl Acetate	ND	0.0041	EPA 8260	4-9-12	4-9-12	
2,2-Dichloropropane	ND	0.00082	EPA 8260	4-9-12	4-9-12	
Cis-1,2-Dichloroethene	ND	0.00082	EPA 8260	4-9-12	4-9-12	
2-Butanone	0.0046	0.0041	EPA 8260	4-9-12	4-9-12	
Bromochloromethane	ND	0.00082	EPA 8260	4-9-12	4-9-12	
Chloroform	ND	0.00082	EPA 8260	4-9-12	4-9-12	
1,1,1-Trichloroethane	ND	0.00082	EPA 8260	4-9-12	4-9-12	
Carbon Tetrachloride	ND	0.00082	EPA 8260	4-9-12	4-9-12	
1,1-Dichloropropene	ND	0.00082	EPA 8260	4-9-12	4-9-12	
Benzene	ND	0.00082	EPA 8260	4-9-12	4-9-12	
1,2-Dichloroethane	ND	0.00082	EPA 8260	4-9-12	4-9-12	
Trichloroethene	ND	0.00082	EPA 8260	4-9-12	4-9-12	
1,2-Dichloropropane	ND	0.00082	EPA 8260	4-9-12	4-9-12	
Dibromomethane	ND	0.00082	EPA 8260	4-9-12	4-9-12	
Dichlorobromomethane	ND	0.00082	EPA 8260	4-9-12	4-9-12	
2-Chloroethylvinylether	ND	0.0041	EPA 8260	4-9-12	4-9-12	
Cis-1,3-Dichloropropene	ND	0.00082	EPA 8260	4-9-12	4-9-12	
Methyl Isobutyl Ketone	ND	0.0041	EPA 8260	4-9-12	4-9-12	
Toluene	ND	0.0041	EPA 8260	4-9-12	4-9-12	
Trans-1,3-Dichloropropene	ND	0.00082	EPA 8260	4-9-12	4-9-12	

Date of Report: April 17, 2012
Samples Submitted: April 7, 2012
Laboratory Reference: 1204-041
Project: 21-1-21623-016

VOLATILES by EPA 8260B
page 2 of 2

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**GP-14:7**					
Laboratory ID:	04-041-18					
1,1,2-Trichloroethane	ND	0.00082	EPA 8260	4-9-12	4-9-12	
Tetrachloroethene	ND	0.00082	EPA 8260	4-9-12	4-9-12	
1,3-Dichloropropane	ND	0.00082	EPA 8260	4-9-12	4-9-12	
2-Hexanone	ND	0.0041	EPA 8260	4-9-12	4-9-12	
Dibromochloromethane	ND	0.00082	EPA 8260	4-9-12	4-9-12	
Ethylene dibromide	ND	0.00082	EPA 8260	4-9-12	4-9-12	
Chlorobenzene	ND	0.00082	EPA 8260	4-9-12	4-9-12	
1,1,1,2-Tetrachloroethane	ND	0.00082	EPA 8260	4-9-12	4-9-12	
Ethylbenzene	ND	0.00082	EPA 8260	4-9-12	4-9-12	
m,p-Xylene	ND	0.0016	EPA 8260	4-9-12	4-9-12	
o-Xylene	ND	0.00082	EPA 8260	4-9-12	4-9-12	
Styrene	ND	0.00082	EPA 8260	4-9-12	4-9-12	
Bromoform	ND	0.00082	EPA 8260	4-9-12	4-9-12	
Isopropylbenzene	ND	0.00082	EPA 8260	4-9-12	4-9-12	
Bromobenzene	ND	0.00082	EPA 8260	4-9-12	4-9-12	
1,1,2,2-Tetrachloroethane	ND	0.00082	EPA 8260	4-9-12	4-9-12	
1,2,3-Trichloropropane	ND	0.00082	EPA 8260	4-9-12	4-9-12	
n-Propylbenzene	ND	0.00082	EPA 8260	4-9-12	4-9-12	
2-Chlorotoluene	ND	0.00082	EPA 8260	4-9-12	4-9-12	
4-Chlorotoluene	ND	0.00082	EPA 8260	4-9-12	4-9-12	
1,3,5-Trimethylbenzene	ND	0.00082	EPA 8260	4-9-12	4-9-12	
tert-Butylbenzene	ND	0.00082	EPA 8260	4-9-12	4-9-12	
1,2,4-Trimethylbenzene	ND	0.00082	EPA 8260	4-9-12	4-9-12	
sec-Butylbenzene	ND	0.00082	EPA 8260	4-9-12	4-9-12	
1,3-Dichlorobenzene	ND	0.00082	EPA 8260	4-9-12	4-9-12	
p-Isopropyltoluene	ND	0.00082	EPA 8260	4-9-12	4-9-12	
1,4-Dichlorobenzene	ND	0.00082	EPA 8260	4-9-12	4-9-12	
1,2-Dichlorobenzene	ND	0.00082	EPA 8260	4-9-12	4-9-12	
n-Butylbenzene	ND	0.00082	EPA 8260	4-9-12	4-9-12	
1,2-Dibromo-3-chloropropane	ND	0.0041	EPA 8260	4-9-12	4-9-12	
1,2,4-Trichlorobenzene	ND	0.00082	EPA 8260	4-9-12	4-9-12	
Hexachlorobutadiene	ND	0.0041	EPA 8260	4-9-12	4-9-12	
Naphthalene	ND	0.00082	EPA 8260	4-9-12	4-9-12	
1,2,3-Trichlorobenzene	ND	0.00082	EPA 8260	4-9-12	4-9-12	
Surrogate:	*Percent Recovery*	*Control Limits*				
Dibromofluoromethane	*101*	*63-127*				
Toluene-d8	*103*	*65-129*				
Benzene, 1-bromo-4-fluoro-	*117*	*55-121*				

Date of Report: April 17, 2012
Samples Submitted: April 7, 2012
Laboratory Reference: 1204-041
Project: 21-1-21623-016

VOLATILES by EPA 8260B
METHOD BLANK QUALITY CONTROL
page 1 of 2

Matrix: Soil
Units: mg/kg

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Laboratory ID:	MB0409S1					
CFC-12	ND	0.0010	EPA 8260	4-9-12	4-9-12	
Chloromethane	ND	0.0050	EPA 8260	4-9-12	4-9-12	
Vinyl Chloride	ND	0.0010	EPA 8260	4-9-12	4-9-12	
Bromomethane	ND	0.0010	EPA 8260	4-9-12	4-9-12	
Chloroethane	ND	0.0050	EPA 8260	4-9-12	4-9-12	
CFC-11	ND	0.0010	EPA 8260	4-9-12	4-9-12	
1,1-Dichloroethene	ND	0.0010	EPA 8260	4-9-12	4-9-12	
Acetone	ND	0.0050	EPA 8260	4-9-12	4-9-12	
Methyl Iodide	ND	0.0050	EPA 8260	4-9-12	4-9-12	
Carbon Disulfide	ND	0.0010	EPA 8260	4-9-12	4-9-12	
Methylene Chloride	ND	0.0050	EPA 8260	4-9-12	4-9-12	
Trans-1,2-Dichloroethene	ND	0.0010	EPA 8260	4-9-12	4-9-12	
Methyl t-Butyl Ether	ND	0.0010	EPA 8260	4-9-12	4-9-12	
1,1-Dichloroethane	ND	0.0010	EPA 8260	4-9-12	4-9-12	
Vinyl Acetate	ND	0.0050	EPA 8260	4-9-12	4-9-12	
2,2-Dichloropropane	ND	0.0010	EPA 8260	4-9-12	4-9-12	
Cis-1,2-Dichloroethene	ND	0.0010	EPA 8260	4-9-12	4-9-12	
2-Butanone	ND	0.0050	EPA 8260	4-9-12	4-9-12	
Bromochloromethane	ND	0.0010	EPA 8260	4-9-12	4-9-12	
Chloroform	ND	0.0010	EPA 8260	4-9-12	4-9-12	
1,1,1-Trichloroethane	ND	0.0010	EPA 8260	4-9-12	4-9-12	
Carbon Tetrachloride	ND	0.0010	EPA 8260	4-9-12	4-9-12	
1,1-Dichloropropene	ND	0.0010	EPA 8260	4-9-12	4-9-12	
Benzene	ND	0.0010	EPA 8260	4-9-12	4-9-12	
1,2-Dichloroethane	ND	0.0010	EPA 8260	4-9-12	4-9-12	
Trichloroethene	ND	0.0010	EPA 8260	4-9-12	4-9-12	
1,2-Dichloropropane	ND	0.0010	EPA 8260	4-9-12	4-9-12	
Dibromomethane	ND	0.0010	EPA 8260	4-9-12	4-9-12	
Dichlorobromomethane	ND	0.0010	EPA 8260	4-9-12	4-9-12	
2-Chloroethylvinylether	ND	0.0050	EPA 8260	4-9-12	4-9-12	
Cis-1,3-Dichloropropene	ND	0.0010	EPA 8260	4-9-12	4-9-12	
Methyl Isobutyl Ketone	ND	0.0050	EPA 8260	4-9-12	4-9-12	
Toluene	ND	0.0050	EPA 8260	4-9-12	4-9-12	
Trans-1,3-Dichloropropene	ND	0.0010	EPA 8260	4-9-12	4-9-12	

Date of Report: April 17, 2012
Samples Submitted: April 7, 2012
Laboratory Reference: 1204-041
Project: 21-1-21623-016

VOLATILES by EPA 8260B
METHOD BLANK QUALITY CONTROL
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Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Laboratory ID:	MB0409S1					
1,1,2-Trichloroethane	ND	0.0010	EPA 8260	4-9-12	4-9-12	
Tetrachloroethene	ND	0.0010	EPA 8260	4-9-12	4-9-12	
1,3-Dichloropropane	ND	0.0010	EPA 8260	4-9-12	4-9-12	
2-Hexanone	ND	0.0050	EPA 8260	4-9-12	4-9-12	
Dibromochloromethane	ND	0.0010	EPA 8260	4-9-12	4-9-12	
Ethylene dibromide	ND	0.0010	EPA 8260	4-9-12	4-9-12	
Chlorobenzene	ND	0.0010	EPA 8260	4-9-12	4-9-12	
1,1,1,2-Tetrachloroethane	ND	0.0010	EPA 8260	4-9-12	4-9-12	
Ethylbenzene	ND	0.0010	EPA 8260	4-9-12	4-9-12	
m,p-Xylene	ND	0.0020	EPA 8260	4-9-12	4-9-12	
o-Xylene	ND	0.0010	EPA 8260	4-9-12	4-9-12	
Styrene	ND	0.0010	EPA 8260	4-9-12	4-9-12	
Bromoform	ND	0.0010	EPA 8260	4-9-12	4-9-12	
Isopropylbenzene	ND	0.0010	EPA 8260	4-9-12	4-9-12	
Bromobenzene	ND	0.0010	EPA 8260	4-9-12	4-9-12	
1,1,2,2-Tetrachloroethane	ND	0.0010	EPA 8260	4-9-12	4-9-12	
1,2,3-Trichloropropane	ND	0.0010	EPA 8260	4-9-12	4-9-12	
n-Propylbenzene	ND	0.0010	EPA 8260	4-9-12	4-9-12	
2-Chlorotoluene	ND	0.0010	EPA 8260	4-9-12	4-9-12	
4-Chlorotoluene	ND	0.0010	EPA 8260	4-9-12	4-9-12	
1,3,5-Trimethylbenzene	ND	0.0010	EPA 8260	4-9-12	4-9-12	
tert-Butylbenzene	ND	0.0010	EPA 8260	4-9-12	4-9-12	
1,2,4-Trimethylbenzene	ND	0.0010	EPA 8260	4-9-12	4-9-12	
sec-Butylbenzene	ND	0.0010	EPA 8260	4-9-12	4-9-12	
1,3-Dichlorobenzene	ND	0.0010	EPA 8260	4-9-12	4-9-12	
p-Isopropyltoluene	ND	0.0010	EPA 8260	4-9-12	4-9-12	
1,4-Dichlorobenzene	ND	0.0010	EPA 8260	4-9-12	4-9-12	
1,2-Dichlorobenzene	ND	0.0010	EPA 8260	4-9-12	4-9-12	
n-Butylbenzene	ND	0.0010	EPA 8260	4-9-12	4-9-12	
1,2-Dibromo-3-chloropropane	ND	0.0050	EPA 8260	4-9-12	4-9-12	
1,2,4-Trichlorobenzene	ND	0.0010	EPA 8260	4-9-12	4-9-12	
Hexachlorobutadiene	ND	0.0050	EPA 8260	4-9-12	4-9-12	
Naphthalene	ND	0.0010	EPA 8260	4-9-12	4-9-12	
1,2,3-Trichlorobenzene	ND	0.0010	EPA 8260	4-9-12	4-9-12	
Surrogate:	*Percent Recovery*	*Control Limits*				
Dibromofluoromethane	*98*	*63-127*				
Toluene-d8	*99*	*65-129*				
Benzene, 1-bromo-4-fluoro-	*102*	*55-121*				

Date of Report: April 17, 2012
Samples Submitted: April 7, 2012
Laboratory Reference: 1204-041
Project: 21-1-21623-016

VOLATILES by EPA 8260B
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:	SB0409S1									
	SB	SBD	SB	SBD	SB	SBD				
1,1-Dichloroethene	**0.0406**	**0.0385**	0.0500	0.0500	81	77	70-130	5	19	
Benzene	**0.0440**	**0.0421**	0.0500	0.0500	88	84	70-125	4	15	
Trichloroethene	**0.0480**	**0.0458**	0.0500	0.0500	96	92	70-122	5	14	
Toluene	**0.0481**	**0.0462**	0.0500	0.0500	96	92	73-120	4	16	
Chlorobenzene	**0.0524**	**0.0498**	0.0500	0.0500	105	100	74-109	5	12	
Surrogate:										
Dibromofluoromethane					*96*	*92*	*63-127*			
Toluene-d8					*99*	*96*	*65-129*			
Benzene, 1-bromo-4-fluoro-					*104*	*99*	*55-121*			

Date of Report: April 17, 2012
Samples Submitted: April 7, 2012
Laboratory Reference: 1204-041
Project: 21-1-21623-016

VOLATILES by EPA 8260B
page 1 of 2

Matrix: Water
Units: ug/L

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**GP-6:GW**					
Laboratory ID:	04-041-25					
CFC-12	ND	0.20	EPA 8260	4-10-12	4-10-12	
Chloromethane	ND	1.0	EPA 8260	4-10-12	4-10-12	
Vinyl Chloride	ND	0.20	EPA 8260	4-10-12	4-10-12	
Bromomethane	ND	0.20	EPA 8260	4-10-12	4-10-12	
Chloroethane	ND	1.0	EPA 8260	4-10-12	4-10-12	
CFC-11	ND	0.20	EPA 8260	4-10-12	4-10-12	
1,1-Dichloroethene	ND	0.20	EPA 8260	4-10-12	4-10-12	
Acetone	ND	5.0	EPA 8260	4-10-12	4-10-12	
Methyl Iodide	ND	1.0	EPA 8260	4-10-12	4-10-12	
Carbon Disulfide	ND	0.20	EPA 8260	4-10-12	4-10-12	
Methylene Chloride	ND	1.0	EPA 8260	4-10-12	4-10-12	
Trans-1,2-Dichloroethene	ND	0.20	EPA 8260	4-10-12	4-10-12	
Methyl t-Butyl Ether	ND	0.20	EPA 8260	4-10-12	4-10-12	
1,1-Dichloroethane	ND	0.20	EPA 8260	4-10-12	4-10-12	
Vinyl Acetate	ND	2.0	EPA 8260	4-10-12	4-10-12	
2,2-Dichloropropane	ND	0.20	EPA 8260	4-10-12	4-10-12	
Cis-1,2-Dichloroethene	ND	0.20	EPA 8260	4-10-12	4-10-12	
2-Butanone	ND	5.0	EPA 8260	4-10-12	4-10-12	
Bromochloromethane	ND	0.20	EPA 8260	4-10-12	4-10-12	
Chloroform	ND	0.20	EPA 8260	4-10-12	4-10-12	
1,1,1-Trichloroethane	ND	0.20	EPA 8260	4-10-12	4-10-12	
Carbon Tetrachloride	ND	0.20	EPA 8260	4-10-12	4-10-12	
1,1-Dichloropropene	ND	0.20	EPA 8260	4-10-12	4-10-12	
Benzene	ND	0.20	EPA 8260	4-10-12	4-10-12	
1,2-Dichloroethane	ND	0.20	EPA 8260	4-10-12	4-10-12	
Trichloroethene	ND	0.20	EPA 8260	4-10-12	4-10-12	
1,2-Dichloropropane	ND	0.20	EPA 8260	4-10-12	4-10-12	
Dibromomethane	ND	0.20	EPA 8260	4-10-12	4-10-12	
Dichlorobromomethane	ND	0.20	EPA 8260	4-10-12	4-10-12	
2-Chloroethylvinylether	ND	1.0	EPA 8260	4-10-12	4-10-12	
Cis-1,3-Dichloropropene	ND	0.20	EPA 8260	4-10-12	4-10-12	
Methyl Isobutyl Ketone	ND	2.0	EPA 8260	4-10-12	4-10-12	
Toluene	ND	1.0	EPA 8260	4-10-12	4-10-12	
Trans-1,3-Dichloropropene	ND	0.20	EPA 8260	4-10-12	4-10-12	

Date of Report: April 17, 2012
Samples Submitted: April 7, 2012
Laboratory Reference: 1204-041
Project: 21-1-21623-016

VOLATILES by EPA 8260B
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Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**GP-6:GW**					
Laboratory ID:	04-041-25					
1,1,2-Trichloroethane	ND	0.20	EPA 8260	4-10-12	4-10-12	
Tetrachloroethene	ND	0.20	EPA 8260	4-10-12	4-10-12	
1,3-Dichloropropane	ND	0.20	EPA 8260	4-10-12	4-10-12	
2-Hexanone	ND	2.0	EPA 8260	4-10-12	4-10-12	
Dibromochloromethane	ND	0.20	EPA 8260	4-10-12	4-10-12	
Ethylene dibromide	ND	0.20	EPA 8260	4-10-12	4-10-12	
Chlorobenzene	ND	0.20	EPA 8260	4-10-12	4-10-12	
1,1,1,2-Tetrachloroethane	ND	0.20	EPA 8260	4-10-12	4-10-12	
Ethylbenzene	ND	0.20	EPA 8260	4-10-12	4-10-12	
m,p-Xylene	ND	0.40	EPA 8260	4-10-12	4-10-12	
o-Xylene	ND	0.20	EPA 8260	4-10-12	4-10-12	
Styrene	ND	0.20	EPA 8260	4-10-12	4-10-12	
Bromoform	ND	1.0	EPA 8260	4-10-12	4-10-12	
Isopropylbenzene	ND	0.20	EPA 8260	4-10-12	4-10-12	
Bromobenzene	ND	0.20	EPA 8260	4-10-12	4-10-12	
1,1,2,2-Tetrachloroethane	ND	0.20	EPA 8260	4-10-12	4-10-12	
1,2,3-Trichloropropane	ND	0.20	EPA 8260	4-10-12	4-10-12	
n-Propylbenzene	ND	0.20	EPA 8260	4-10-12	4-10-12	
2-Chlorotoluene	ND	0.20	EPA 8260	4-10-12	4-10-12	
4-Chlorotoluene	ND	0.20	EPA 8260	4-10-12	4-10-12	
1,3,5-Trimethylbenzene	ND	0.20	EPA 8260	4-10-12	4-10-12	
tert-Butylbenzene	ND	0.20	EPA 8260	4-10-12	4-10-12	
1,2,4-Trimethylbenzene	ND	0.20	EPA 8260	4-10-12	4-10-12	
sec-Butylbenzene	ND	0.20	EPA 8260	4-10-12	4-10-12	
1,3-Dichlorobenzene	ND	0.20	EPA 8260	4-10-12	4-10-12	
p-Isopropyltoluene	ND	0.20	EPA 8260	4-10-12	4-10-12	
1,4-Dichlorobenzene	ND	0.20	EPA 8260	4-10-12	4-10-12	
1,2-Dichlorobenzene	ND	0.20	EPA 8260	4-10-12	4-10-12	
n-Butylbenzene	ND	0.20	EPA 8260	4-10-12	4-10-12	
1,2-Dibromo-3-chloropropane	ND	1.0	EPA 8260	4-10-12	4-10-12	
1,2,4-Trichlorobenzene	ND	0.20	EPA 8260	4-10-12	4-10-12	
Hexachlorobutadiene	ND	0.20	EPA 8260	4-10-12	4-10-12	
Naphthalene	ND	1.0	EPA 8260	4-10-12	4-10-12	
1,2,3-Trichlorobenzene	ND	0.20	EPA 8260	4-10-12	4-10-12	
Surrogate:	*Percent Recovery*	*Control Limits*				
Dibromofluoromethane	*85*	*68-120*				
Toluene-d8	*85*	*73-120*				
Benzene, 1-bromo-4-fluoro-	*86*	*65-120*				

Date of Report: April 17, 2012
Samples Submitted: April 7, 2012
Laboratory Reference: 1204-041
Project: 21-1-21623-016

VOLATILES by EPA 8260B
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Matrix: Water
Units: ug/L

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**GP-8:GW**					
Laboratory ID:	04-041-26					
CFC-12	ND	0.20	EPA 8260	4-10-12	4-10-12	
Chloromethane	ND	1.0	EPA 8260	4-10-12	4-10-12	
Vinyl Chloride	ND	0.20	EPA 8260	4-10-12	4-10-12	
Bromomethane	ND	0.20	EPA 8260	4-10-12	4-10-12	
Chloroethane	ND	1.0	EPA 8260	4-10-12	4-10-12	
CFC-11	ND	0.20	EPA 8260	4-10-12	4-10-12	
1,1-Dichloroethene	ND	0.20	EPA 8260	4-10-12	4-10-12	
Acetone	ND	5.0	EPA 8260	4-10-12	4-10-12	
Methyl Iodide	ND	1.0	EPA 8260	4-10-12	4-10-12	
Carbon Disulfide	ND	0.20	EPA 8260	4-10-12	4-10-12	
Methylene Chloride	ND	1.0	EPA 8260	4-10-12	4-10-12	
Trans-1,2-Dichloroethene	ND	0.20	EPA 8260	4-10-12	4-10-12	
Methyl t-Butyl Ether	ND	0.20	EPA 8260	4-10-12	4-10-12	
1,1-Dichloroethane	ND	0.20	EPA 8260	4-10-12	4-10-12	
Vinyl Acetate	ND	2.0	EPA 8260	4-10-12	4-10-12	
2,2-Dichloropropane	ND	0.20	EPA 8260	4-10-12	4-10-12	
Cis-1,2-Dichloroethene	ND	0.20	EPA 8260	4-10-12	4-10-12	
2-Butanone	ND	5.0	EPA 8260	4-10-12	4-10-12	
Bromochloromethane	ND	0.20	EPA 8260	4-10-12	4-10-12	
Chloroform	ND	0.20	EPA 8260	4-10-12	4-10-12	
1,1,1-Trichloroethane	ND	0.20	EPA 8260	4-10-12	4-10-12	
Carbon Tetrachloride	ND	0.20	EPA 8260	4-10-12	4-10-12	
1,1-Dichloropropene	ND	0.20	EPA 8260	4-10-12	4-10-12	
Benzene	ND	0.20	EPA 8260	4-10-12	4-10-12	
1,2-Dichloroethane	ND	0.20	EPA 8260	4-10-12	4-10-12	
Trichloroethene	ND	0.20	EPA 8260	4-10-12	4-10-12	
1,2-Dichloropropane	ND	0.20	EPA 8260	4-10-12	4-10-12	
Dibromomethane	ND	0.20	EPA 8260	4-10-12	4-10-12	
Dichlorobromomethane	ND	0.20	EPA 8260	4-10-12	4-10-12	
2-Chloroethylvinylether	ND	1.0	EPA 8260	4-10-12	4-10-12	
Cis-1,3-Dichloropropene	ND	0.20	EPA 8260	4-10-12	4-10-12	
Methyl Isobutyl Ketone	ND	2.0	EPA 8260	4-10-12	4-10-12	
Toluene	ND	1.0	EPA 8260	4-10-12	4-10-12	
Trans-1,3-Dichloropropene	ND	0.20	EPA 8260	4-10-12	4-10-12	

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Samples Submitted: April 7, 2012
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Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**GP-8:GW**					
Laboratory ID:	04-041-26					
1,1,2-Trichloroethane	ND	0.20	EPA 8260	4-10-12	4-10-12	
Tetrachloroethene	ND	0.20	EPA 8260	4-10-12	4-10-12	
1,3-Dichloropropane	ND	0.20	EPA 8260	4-10-12	4-10-12	
2-Hexanone	ND	2.0	EPA 8260	4-10-12	4-10-12	
Dibromochloromethane	ND	0.20	EPA 8260	4-10-12	4-10-12	
Ethylene dibromide	ND	0.20	EPA 8260	4-10-12	4-10-12	
Chlorobenzene	ND	0.20	EPA 8260	4-10-12	4-10-12	
1,1,1,2-Tetrachloroethane	ND	0.20	EPA 8260	4-10-12	4-10-12	
Ethylbenzene	ND	0.20	EPA 8260	4-10-12	4-10-12	
m,p-Xylene	ND	0.40	EPA 8260	4-10-12	4-10-12	
o-Xylene	ND	0.20	EPA 8260	4-10-12	4-10-12	
Styrene	ND	0.20	EPA 8260	4-10-12	4-10-12	
Bromoform	ND	1.0	EPA 8260	4-10-12	4-10-12	
Isopropylbenzene	ND	0.20	EPA 8260	4-10-12	4-10-12	
Bromobenzene	ND	0.20	EPA 8260	4-10-12	4-10-12	
1,1,2,2-Tetrachloroethane	ND	0.20	EPA 8260	4-10-12	4-10-12	
1,2,3-Trichloropropane	ND	0.20	EPA 8260	4-10-12	4-10-12	
n-Propylbenzene	ND	0.20	EPA 8260	4-10-12	4-10-12	
2-Chlorotoluene	ND	0.20	EPA 8260	4-10-12	4-10-12	
4-Chlorotoluene	ND	0.20	EPA 8260	4-10-12	4-10-12	
1,3,5-Trimethylbenzene	ND	0.20	EPA 8260	4-10-12	4-10-12	
tert-Butylbenzene	ND	0.20	EPA 8260	4-10-12	4-10-12	
1,2,4-Trimethylbenzene	ND	0.20	EPA 8260	4-10-12	4-10-12	
sec-Butylbenzene	ND	0.20	EPA 8260	4-10-12	4-10-12	
1,3-Dichlorobenzene	ND	0.20	EPA 8260	4-10-12	4-10-12	
p-Isopropyltoluene	ND	0.20	EPA 8260	4-10-12	4-10-12	
1,4-Dichlorobenzene	ND	0.20	EPA 8260	4-10-12	4-10-12	
1,2-Dichlorobenzene	ND	0.20	EPA 8260	4-10-12	4-10-12	
n-Butylbenzene	ND	0.20	EPA 8260	4-10-12	4-10-12	
1,2-Dibromo-3-chloropropane	ND	1.0	EPA 8260	4-10-12	4-10-12	
1,2,4-Trichlorobenzene	ND	0.20	EPA 8260	4-10-12	4-10-12	
Hexachlorobutadiene	ND	0.20	EPA 8260	4-10-12	4-10-12	
Naphthalene	ND	1.0	EPA 8260	4-10-12	4-10-12	
1,2,3-Trichlorobenzene	ND	0.20	EPA 8260	4-10-12	4-10-12	
Surrogate:	*Percent Recovery*	*Control Limits*				
Dibromofluoromethane	*85*	*68-120*				
Toluene-d8	*86*	*73-120*				
Benzene, 1-bromo-4-fluoro-	*88*	*65-120*				

Date of Report: April 17, 2012
Samples Submitted: April 7, 2012
Laboratory Reference: 1204-041
Project: 21-1-21623-016

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Matrix: Water
Units: ug/L

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**GP-11:GW**					
Laboratory ID:	04-041-27					
CFC-12	ND	0.20	EPA 8260	4-10-12	4-10-12	
Chloromethane	ND	1.0	EPA 8260	4-10-12	4-10-12	
Vinyl Chloride	ND	0.20	EPA 8260	4-10-12	4-10-12	
Bromomethane	ND	0.20	EPA 8260	4-10-12	4-10-12	
Chloroethane	ND	1.0	EPA 8260	4-10-12	4-10-12	
CFC-11	ND	0.20	EPA 8260	4-10-12	4-10-12	
1,1-Dichloroethene	ND	0.20	EPA 8260	4-10-12	4-10-12	
Acetone	ND	5.0	EPA 8260	4-10-12	4-10-12	
Methyl Iodide	ND	1.0	EPA 8260	4-10-12	4-10-12	
Carbon Disulfide	ND	0.20	EPA 8260	4-10-12	4-10-12	
Methylene Chloride	ND	1.0	EPA 8260	4-10-12	4-10-12	
Trans-1,2-Dichloroethene	ND	0.20	EPA 8260	4-10-12	4-10-12	
Methyl t-Butyl Ether	ND	0.20	EPA 8260	4-10-12	4-10-12	
1,1-Dichloroethane	ND	0.20	EPA 8260	4-10-12	4-10-12	
Vinyl Acetate	ND	2.0	EPA 8260	4-10-12	4-10-12	
2,2-Dichloropropane	ND	0.20	EPA 8260	4-10-12	4-10-12	
Cis-1,2-Dichloroethene	ND	0.20	EPA 8260	4-10-12	4-10-12	
2-Butanone	ND	5.0	EPA 8260	4-10-12	4-10-12	
Bromochloromethane	ND	0.20	EPA 8260	4-10-12	4-10-12	
Chloroform	ND	0.20	EPA 8260	4-10-12	4-10-12	
1,1,1-Trichloroethane	ND	0.20	EPA 8260	4-10-12	4-10-12	
Carbon Tetrachloride	ND	0.20	EPA 8260	4-10-12	4-10-12	
1,1-Dichloropropene	ND	0.20	EPA 8260	4-10-12	4-10-12	
Benzene	ND	0.20	EPA 8260	4-10-12	4-10-12	
1,2-Dichloroethane	ND	0.20	EPA 8260	4-10-12	4-10-12	
Trichloroethene	ND	0.20	EPA 8260	4-10-12	4-10-12	
1,2-Dichloropropane	ND	0.20	EPA 8260	4-10-12	4-10-12	
Dibromomethane	ND	0.20	EPA 8260	4-10-12	4-10-12	
Dichlorobromomethane	ND	0.20	EPA 8260	4-10-12	4-10-12	
2-Chloroethylvinylether	ND	1.0	EPA 8260	4-10-12	4-10-12	
Cis-1,3-Dichloropropene	ND	0.20	EPA 8260	4-10-12	4-10-12	
Methyl Isobutyl Ketone	ND	2.0	EPA 8260	4-10-12	4-10-12	
Toluene	ND	1.0	EPA 8260	4-10-12	4-10-12	
Trans-1,3-Dichloropropene	ND	0.20	EPA 8260	4-10-12	4-10-12	

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Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**GP-11:GW**					
Laboratory ID:	04-041-27					
1,1,2-Trichloroethane	ND	0.20	EPA 8260	4-10-12	4-10-12	
Tetrachloroethene	ND	0.20	EPA 8260	4-10-12	4-10-12	
1,3-Dichloropropane	ND	0.20	EPA 8260	4-10-12	4-10-12	
2-Hexanone	ND	2.0	EPA 8260	4-10-12	4-10-12	
Dibromochloromethane	ND	0.20	EPA 8260	4-10-12	4-10-12	
Ethylene dibromide	ND	0.20	EPA 8260	4-10-12	4-10-12	
Chlorobenzene	ND	0.20	EPA 8260	4-10-12	4-10-12	
1,1,1,2-Tetrachloroethane	ND	0.20	EPA 8260	4-10-12	4-10-12	
Ethylbenzene	ND	0.20	EPA 8260	4-10-12	4-10-12	
m,p-Xylene	ND	0.40	EPA 8260	4-10-12	4-10-12	
o-Xylene	ND	0.20	EPA 8260	4-10-12	4-10-12	
Styrene	ND	0.20	EPA 8260	4-10-12	4-10-12	
Bromoform	ND	1.0	EPA 8260	4-10-12	4-10-12	
Isopropylbenzene	ND	0.20	EPA 8260	4-10-12	4-10-12	
Bromobenzene	ND	0.20	EPA 8260	4-10-12	4-10-12	
1,1,2,2-Tetrachloroethane	ND	0.20	EPA 8260	4-10-12	4-10-12	
1,2,3-Trichloropropane	ND	0.20	EPA 8260	4-10-12	4-10-12	
n-Propylbenzene	ND	0.20	EPA 8260	4-10-12	4-10-12	
2-Chlorotoluene	ND	0.20	EPA 8260	4-10-12	4-10-12	
4-Chlorotoluene	ND	0.20	EPA 8260	4-10-12	4-10-12	
1,3,5-Trimethylbenzene	ND	0.20	EPA 8260	4-10-12	4-10-12	
tert-Butylbenzene	ND	0.20	EPA 8260	4-10-12	4-10-12	
1,2,4-Trimethylbenzene	ND	0.20	EPA 8260	4-10-12	4-10-12	
sec-Butylbenzene	ND	0.20	EPA 8260	4-10-12	4-10-12	
1,3-Dichlorobenzene	ND	0.20	EPA 8260	4-10-12	4-10-12	
p-Isopropyltoluene	ND	0.20	EPA 8260	4-10-12	4-10-12	
1,4-Dichlorobenzene	ND	0.20	EPA 8260	4-10-12	4-10-12	
1,2-Dichlorobenzene	ND	0.20	EPA 8260	4-10-12	4-10-12	
n-Butylbenzene	ND	0.20	EPA 8260	4-10-12	4-10-12	
1,2-Dibromo-3-chloropropane	ND	1.0	EPA 8260	4-10-12	4-10-12	
1,2,4-Trichlorobenzene	ND	0.20	EPA 8260	4-10-12	4-10-12	
Hexachlorobutadiene	ND	0.20	EPA 8260	4-10-12	4-10-12	
Naphthalene	ND	1.0	EPA 8260	4-10-12	4-10-12	
1,2,3-Trichlorobenzene	ND	0.20	EPA 8260	4-10-12	4-10-12	
Surrogate:	*Percent Recovery*	*Control Limits*				
Dibromofluoromethane	*88*	*68-120*				
Toluene-d8	*85*	*73-120*				
Benzene, 1-bromo-4-fluoro-	*88*	*65-120*				

Date of Report: April 17, 2012
Samples Submitted: April 7, 2012
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Matrix: Water
Units: ug/L

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**GP-13:GW**					
Laboratory ID:	04-041-28					
CFC-12	ND	0.20	EPA 8260	4-10-12	4-10-12	
Chloromethane	ND	1.0	EPA 8260	4-10-12	4-10-12	
Vinyl Chloride	ND	0.20	EPA 8260	4-10-12	4-10-12	
Bromomethane	ND	0.20	EPA 8260	4-10-12	4-10-12	
Chloroethane	ND	1.0	EPA 8260	4-10-12	4-10-12	
CFC-11	ND	0.20	EPA 8260	4-10-12	4-10-12	
1,1-Dichloroethene	ND	0.20	EPA 8260	4-10-12	4-10-12	
Acetone	ND	5.0	EPA 8260	4-10-12	4-10-12	
Methyl Iodide	ND	1.0	EPA 8260	4-10-12	4-10-12	
Carbon Disulfide	ND	0.20	EPA 8260	4-10-12	4-10-12	
Methylene Chloride	ND	1.0	EPA 8260	4-10-12	4-10-12	
Trans-1,2-Dichloroethene	ND	0.20	EPA 8260	4-10-12	4-10-12	
Methyl t-Butyl Ether	ND	0.20	EPA 8260	4-10-12	4-10-12	
1,1-Dichloroethane	ND	0.20	EPA 8260	4-10-12	4-10-12	
Vinyl Acetate	ND	2.0	EPA 8260	4-10-12	4-10-12	
2,2-Dichloropropane	ND	0.20	EPA 8260	4-10-12	4-10-12	
Cis-1,2-Dichloroethene	ND	0.20	EPA 8260	4-10-12	4-10-12	
2-Butanone	ND	5.0	EPA 8260	4-10-12	4-10-12	
Bromochloromethane	ND	0.20	EPA 8260	4-10-12	4-10-12	
Chloroform	ND	0.20	EPA 8260	4-10-12	4-10-12	
1,1,1-Trichloroethane	ND	0.20	EPA 8260	4-10-12	4-10-12	
Carbon Tetrachloride	ND	0.20	EPA 8260	4-10-12	4-10-12	
1,1-Dichloropropene	ND	0.20	EPA 8260	4-10-12	4-10-12	
Benzene	ND	0.20	EPA 8260	4-10-12	4-10-12	
1,2-Dichloroethane	ND	0.20	EPA 8260	4-10-12	4-10-12	
Trichloroethene	ND	0.20	EPA 8260	4-10-12	4-10-12	
1,2-Dichloropropane	ND	0.20	EPA 8260	4-10-12	4-10-12	
Dibromomethane	ND	0.20	EPA 8260	4-10-12	4-10-12	
Dichlorobromomethane	ND	0.20	EPA 8260	4-10-12	4-10-12	
2-Chloroethylvinylether	ND	1.0	EPA 8260	4-10-12	4-10-12	
Cis-1,3-Dichloropropene	ND	0.20	EPA 8260	4-10-12	4-10-12	
Methyl Isobutyl Ketone	ND	2.0	EPA 8260	4-10-12	4-10-12	
Toluene	ND	1.0	EPA 8260	4-10-12	4-10-12	
Trans-1,3-Dichloropropene	ND	0.20	EPA 8260	4-10-12	4-10-12	

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Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**GP-13:GW**					
Laboratory ID:	04-041-28					
1,1,2-Trichloroethane	ND	0.20	EPA 8260	4-10-12	4-10-12	
Tetrachloroethene	ND	0.20	EPA 8260	4-10-12	4-10-12	
1,3-Dichloropropane	ND	0.20	EPA 8260	4-10-12	4-10-12	
2-Hexanone	ND	2.0	EPA 8260	4-10-12	4-10-12	
Dibromochloromethane	ND	0.20	EPA 8260	4-10-12	4-10-12	
Ethylene dibromide	ND	0.20	EPA 8260	4-10-12	4-10-12	
Chlorobenzene	ND	0.20	EPA 8260	4-10-12	4-10-12	
1,1,1,2-Tetrachloroethane	ND	0.20	EPA 8260	4-10-12	4-10-12	
Ethylbenzene	ND	0.20	EPA 8260	4-10-12	4-10-12	
m,p-Xylene	ND	0.40	EPA 8260	4-10-12	4-10-12	
o-Xylene	ND	0.20	EPA 8260	4-10-12	4-10-12	
Styrene	ND	0.20	EPA 8260	4-10-12	4-10-12	
Bromoform	ND	1.0	EPA 8260	4-10-12	4-10-12	
Isopropylbenzene	ND	0.20	EPA 8260	4-10-12	4-10-12	
Bromobenzene	ND	0.20	EPA 8260	4-10-12	4-10-12	
1,1,2,2-Tetrachloroethane	ND	0.20	EPA 8260	4-10-12	4-10-12	
1,2,3-Trichloropropane	ND	0.20	EPA 8260	4-10-12	4-10-12	
n-Propylbenzene	ND	0.20	EPA 8260	4-10-12	4-10-12	
2-Chlorotoluene	ND	0.20	EPA 8260	4-10-12	4-10-12	
4-Chlorotoluene	ND	0.20	EPA 8260	4-10-12	4-10-12	
1,3,5-Trimethylbenzene	ND	0.20	EPA 8260	4-10-12	4-10-12	
tert-Butylbenzene	ND	0.20	EPA 8260	4-10-12	4-10-12	
1,2,4-Trimethylbenzene	ND	0.20	EPA 8260	4-10-12	4-10-12	
sec-Butylbenzene	ND	0.20	EPA 8260	4-10-12	4-10-12	
1,3-Dichlorobenzene	ND	0.20	EPA 8260	4-10-12	4-10-12	
p-Isopropyltoluene	ND	0.20	EPA 8260	4-10-12	4-10-12	
1,4-Dichlorobenzene	ND	0.20	EPA 8260	4-10-12	4-10-12	
1,2-Dichlorobenzene	ND	0.20	EPA 8260	4-10-12	4-10-12	
n-Butylbenzene	ND	0.20	EPA 8260	4-10-12	4-10-12	
1,2-Dibromo-3-chloropropane	ND	1.0	EPA 8260	4-10-12	4-10-12	
1,2,4-Trichlorobenzene	ND	0.20	EPA 8260	4-10-12	4-10-12	
Hexachlorobutadiene	ND	0.20	EPA 8260	4-10-12	4-10-12	
Naphthalene	ND	1.0	EPA 8260	4-10-12	4-10-12	
1,2,3-Trichlorobenzene	ND	0.20	EPA 8260	4-10-12	4-10-12	
Surrogate:	*Percent Recovery*	*Control Limits*				
Dibromofluoromethane	*91*	*68-120*				
Toluene-d8	*88*	*73-120*				
Benzene, 1-bromo-4-fluoro-	*91*	*65-120*				

Date of Report: April 17, 2012
Samples Submitted: April 7, 2012
Laboratory Reference: 1204-041
Project: 21-1-21623-016

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Matrix: Water
Units: ug/L

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**GP-16:GW**					
Laboratory ID:	04-041-29					
CFC-12	ND	0.20	EPA 8260	4-10-12	4-10-12	
Chloromethane	ND	1.0	EPA 8260	4-10-12	4-10-12	
Vinyl Chloride	ND	0.20	EPA 8260	4-10-12	4-10-12	
Bromomethane	ND	0.20	EPA 8260	4-10-12	4-10-12	
Chloroethane	ND	1.0	EPA 8260	4-10-12	4-10-12	
CFC-11	ND	0.20	EPA 8260	4-10-12	4-10-12	
1,1-Dichloroethene	ND	0.20	EPA 8260	4-10-12	4-10-12	
Acetone	ND	5.0	EPA 8260	4-10-12	4-10-12	
Methyl Iodide	ND	1.0	EPA 8260	4-10-12	4-10-12	
Carbon Disulfide	0.24	0.20	EPA 8260	4-10-12	4-10-12	
Methylene Chloride	ND	1.0	EPA 8260	4-10-12	4-10-12	
Trans-1,2-Dichloroethene	ND	0.20	EPA 8260	4-10-12	4-10-12	
Methyl t-Butyl Ether	ND	0.20	EPA 8260	4-10-12	4-10-12	
1,1-Dichloroethane	ND	0.20	EPA 8260	4-10-12	4-10-12	
Vinyl Acetate	ND	2.0	EPA 8260	4-10-12	4-10-12	
2,2-Dichloropropane	ND	0.20	EPA 8260	4-10-12	4-10-12	
Cis-1,2-Dichloroethene	ND	0.20	EPA 8260	4-10-12	4-10-12	
2-Butanone	ND	5.0	EPA 8260	4-10-12	4-10-12	
Bromochloromethane	ND	0.20	EPA 8260	4-10-12	4-10-12	
Chloroform	ND	0.20	EPA 8260	4-10-12	4-10-12	
1,1,1-Trichloroethane	ND	0.20	EPA 8260	4-10-12	4-10-12	
Carbon Tetrachloride	ND	0.20	EPA 8260	4-10-12	4-10-12	
1,1-Dichloropropene	ND	0.20	EPA 8260	4-10-12	4-10-12	
Benzene	ND	0.20	EPA 8260	4-10-12	4-10-12	
1,2-Dichloroethane	ND	0.20	EPA 8260	4-10-12	4-10-12	
Trichloroethene	ND	0.20	EPA 8260	4-10-12	4-10-12	
1,2-Dichloropropane	ND	0.20	EPA 8260	4-10-12	4-10-12	
Dibromomethane	ND	0.20	EPA 8260	4-10-12	4-10-12	
Dichlorobromomethane	ND	0.20	EPA 8260	4-10-12	4-10-12	
2-Chloroethylvinylether	ND	1.0	EPA 8260	4-10-12	4-10-12	
Cis-1,3-Dichloropropene	ND	0.20	EPA 8260	4-10-12	4-10-12	
Methyl Isobutyl Ketone	ND	2.0	EPA 8260	4-10-12	4-10-12	
Toluene	ND	1.0	EPA 8260	4-10-12	4-10-12	
Trans-1,3-Dichloropropene	ND	0.20	EPA 8260	4-10-12	4-10-12	

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Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**GP-16:GW**					
Laboratory ID:	04-041-29					
1,1,2-Trichloroethane	ND	0.20	EPA 8260	4-10-12	4-10-12	
Tetrachloroethene	ND	0.20	EPA 8260	4-10-12	4-10-12	
1,3-Dichloropropane	ND	0.20	EPA 8260	4-10-12	4-10-12	
2-Hexanone	ND	2.0	EPA 8260	4-10-12	4-10-12	
Dibromochloromethane	ND	0.20	EPA 8260	4-10-12	4-10-12	
Ethylene dibromide	ND	0.20	EPA 8260	4-10-12	4-10-12	
Chlorobenzene	ND	0.20	EPA 8260	4-10-12	4-10-12	
1,1,1,2-Tetrachloroethane	ND	0.20	EPA 8260	4-10-12	4-10-12	
Ethylbenzene	ND	0.20	EPA 8260	4-10-12	4-10-12	
m,p-Xylene	ND	0.40	EPA 8260	4-10-12	4-10-12	
o-Xylene	ND	0.20	EPA 8260	4-10-12	4-10-12	
Styrene	ND	0.20	EPA 8260	4-10-12	4-10-12	
Bromoform	ND	1.0	EPA 8260	4-10-12	4-10-12	
Isopropylbenzene	ND	0.20	EPA 8260	4-10-12	4-10-12	
Bromobenzene	ND	0.20	EPA 8260	4-10-12	4-10-12	
1,1,2,2-Tetrachloroethane	ND	0.20	EPA 8260	4-10-12	4-10-12	
1,2,3-Trichloropropane	ND	0.20	EPA 8260	4-10-12	4-10-12	
n-Propylbenzene	ND	0.20	EPA 8260	4-10-12	4-10-12	
2-Chlorotoluene	ND	0.20	EPA 8260	4-10-12	4-10-12	
4-Chlorotoluene	ND	0.20	EPA 8260	4-10-12	4-10-12	
1,3,5-Trimethylbenzene	ND	0.20	EPA 8260	4-10-12	4-10-12	
tert-Butylbenzene	ND	0.20	EPA 8260	4-10-12	4-10-12	
1,2,4-Trimethylbenzene	ND	0.20	EPA 8260	4-10-12	4-10-12	
sec-Butylbenzene	ND	0.20	EPA 8260	4-10-12	4-10-12	
1,3-Dichlorobenzene	ND	0.20	EPA 8260	4-10-12	4-10-12	
p-Isopropyltoluene	ND	0.20	EPA 8260	4-10-12	4-10-12	
1,4-Dichlorobenzene	ND	0.20	EPA 8260	4-10-12	4-10-12	
1,2-Dichlorobenzene	ND	0.20	EPA 8260	4-10-12	4-10-12	
n-Butylbenzene	ND	0.20	EPA 8260	4-10-12	4-10-12	
1,2-Dibromo-3-chloropropane	ND	1.0	EPA 8260	4-10-12	4-10-12	
1,2,4-Trichlorobenzene	ND	0.20	EPA 8260	4-10-12	4-10-12	
Hexachlorobutadiene	ND	0.20	EPA 8260	4-10-12	4-10-12	
Naphthalene	2.5	1.0	EPA 8260	4-10-12	4-10-12	
1,2,3-Trichlorobenzene	ND	0.20	EPA 8260	4-10-12	4-10-12	
Surrogate:	*Percent Recovery*	*Control Limits*				
Dibromofluoromethane	*95*	*68-120*				
Toluene-d8	*93*	*73-120*				
Benzene, 1-bromo-4-fluoro-	*92*	*65-120*				

Date of Report: April 17, 2012
Samples Submitted: April 7, 2012
Laboratory Reference: 1204-041
Project: 21-1-21623-016

VOLATILES by EPA 8260B
page 1 of 2

Matrix: Water
Units: ug/L

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**GP-14:GW**					
Laboratory ID:	04-041-30					
CFC-12	ND	0.20	EPA 8260	4-10-12	4-10-12	
Chloromethane	ND	1.0	EPA 8260	4-10-12	4-10-12	
Vinyl Chloride	ND	0.20	EPA 8260	4-10-12	4-10-12	
Bromomethane	ND	0.20	EPA 8260	4-10-12	4-10-12	
Chloroethane	ND	1.0	EPA 8260	4-10-12	4-10-12	
CFC-11	ND	0.20	EPA 8260	4-10-12	4-10-12	
1,1-Dichloroethene	ND	0.20	EPA 8260	4-10-12	4-10-12	
Acetone	ND	5.0	EPA 8260	4-10-12	4-10-12	
Methyl Iodide	ND	1.0	EPA 8260	4-10-12	4-10-12	
Carbon Disulfide	0.31	0.20	EPA 8260	4-10-12	4-10-12	
Methylene Chloride	ND	1.0	EPA 8260	4-10-12	4-10-12	
Trans-1,2-Dichloroethene	ND	0.20	EPA 8260	4-10-12	4-10-12	
Methyl t-Butyl Ether	ND	0.20	EPA 8260	4-10-12	4-10-12	
1,1-Dichloroethane	ND	0.20	EPA 8260	4-10-12	4-10-12	
Vinyl Acetate	ND	2.0	EPA 8260	4-10-12	4-10-12	
2,2-Dichloropropane	ND	0.20	EPA 8260	4-10-12	4-10-12	
Cis-1,2-Dichloroethene	ND	0.20	EPA 8260	4-10-12	4-10-12	
2-Butanone	ND	5.0	EPA 8260	4-10-12	4-10-12	
Bromochloromethane	ND	0.20	EPA 8260	4-10-12	4-10-12	
Chloroform	ND	0.20	EPA 8260	4-10-12	4-10-12	
1,1,1-Trichloroethane	ND	0.20	EPA 8260	4-10-12	4-10-12	
Carbon Tetrachloride	ND	0.20	EPA 8260	4-10-12	4-10-12	
1,1-Dichloropropene	ND	0.20	EPA 8260	4-10-12	4-10-12	
Benzene	ND	0.20	EPA 8260	4-10-12	4-10-12	
1,2-Dichloroethane	ND	0.20	EPA 8260	4-10-12	4-10-12	
Trichloroethene	ND	0.20	EPA 8260	4-10-12	4-10-12	
1,2-Dichloropropane	ND	0.20	EPA 8260	4-10-12	4-10-12	
Dibromomethane	ND	0.20	EPA 8260	4-10-12	4-10-12	
Dichlorobromomethane	ND	0.20	EPA 8260	4-10-12	4-10-12	
2-Chloroethylvinylether	ND	1.0	EPA 8260	4-10-12	4-10-12	
Cis-1,3-Dichloropropene	ND	0.20	EPA 8260	4-10-12	4-10-12	
Methyl Isobutyl Ketone	ND	2.0	EPA 8260	4-10-12	4-10-12	
Toluene	ND	1.0	EPA 8260	4-10-12	4-10-12	
Trans-1,3-Dichloropropene	ND	0.20	EPA 8260	4-10-12	4-10-12	

Date of Report: April 17, 2012
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VOLATILES by EPA 8260B
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Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**GP-14:GW**					
Laboratory ID:	04-041-30					
1,1,2-Trichloroethane	ND	0.20	EPA 8260	4-10-12	4-10-12	
Tetrachloroethene	ND	0.20	EPA 8260	4-10-12	4-10-12	
1,3-Dichloropropane	ND	0.20	EPA 8260	4-10-12	4-10-12	
2-Hexanone	ND	2.0	EPA 8260	4-10-12	4-10-12	
Dibromochloromethane	ND	0.20	EPA 8260	4-10-12	4-10-12	
Ethylene dibromide	ND	0.20	EPA 8260	4-10-12	4-10-12	
Chlorobenzene	ND	0.20	EPA 8260	4-10-12	4-10-12	
1,1,1,2-Tetrachloroethane	ND	0.20	EPA 8260	4-10-12	4-10-12	
Ethylbenzene	ND	0.20	EPA 8260	4-10-12	4-10-12	
m,p-Xylene	ND	0.40	EPA 8260	4-10-12	4-10-12	
o-Xylene	ND	0.20	EPA 8260	4-10-12	4-10-12	
Styrene	ND	0.20	EPA 8260	4-10-12	4-10-12	
Bromoform	ND	1.0	EPA 8260	4-10-12	4-10-12	
Isopropylbenzene	ND	0.20	EPA 8260	4-10-12	4-10-12	
Bromobenzene	ND	0.20	EPA 8260	4-10-12	4-10-12	
1,1,2,2-Tetrachloroethane	ND	0.20	EPA 8260	4-10-12	4-10-12	
1,2,3-Trichloropropane	ND	0.20	EPA 8260	4-10-12	4-10-12	
n-Propylbenzene	ND	0.20	EPA 8260	4-10-12	4-10-12	
2-Chlorotoluene	ND	0.20	EPA 8260	4-10-12	4-10-12	
4-Chlorotoluene	ND	0.20	EPA 8260	4-10-12	4-10-12	
1,3,5-Trimethylbenzene	ND	0.20	EPA 8260	4-10-12	4-10-12	
tert-Butylbenzene	ND	0.20	EPA 8260	4-10-12	4-10-12	
1,2,4-Trimethylbenzene	ND	0.20	EPA 8260	4-10-12	4-10-12	
sec-Butylbenzene	ND	0.20	EPA 8260	4-10-12	4-10-12	
1,3-Dichlorobenzene	ND	0.20	EPA 8260	4-10-12	4-10-12	
p-Isopropyltoluene	ND	0.20	EPA 8260	4-10-12	4-10-12	
1,4-Dichlorobenzene	ND	0.20	EPA 8260	4-10-12	4-10-12	
1,2-Dichlorobenzene	ND	0.20	EPA 8260	4-10-12	4-10-12	
n-Butylbenzene	ND	0.20	EPA 8260	4-10-12	4-10-12	
1,2-Dibromo-3-chloropropane	ND	1.0	EPA 8260	4-10-12	4-10-12	
1,2,4-Trichlorobenzene	ND	0.20	EPA 8260	4-10-12	4-10-12	
Hexachlorobutadiene	ND	0.20	EPA 8260	4-10-12	4-10-12	
Naphthalene	ND	1.0	EPA 8260	4-10-12	4-10-12	
1,2,3-Trichlorobenzene	ND	0.20	EPA 8260	4-10-12	4-10-12	
Surrogate:	*Percent Recovery*	*Control Limits*				
Dibromofluoromethane	*97*	*68-120*				
Toluene-d8	*94*	*73-120*				
Benzene, 1-bromo-4-fluoro-	*93*	*65-120*				

Date of Report: April 17, 2012
Samples Submitted: April 7, 2012
Laboratory Reference: 1204-041
Project: 21-1-21623-016

VOLATILES by EPA 8260B
METHOD BLANK QUALITY CONTROL
page 1 of 2

Matrix: Water
Units: ug/L

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Laboratory ID:	MB0410W1					
CFC-12	ND	0.20	EPA 8260	4-10-12	4-10-12	
Chloromethane	ND	1.0	EPA 8260	4-10-12	4-10-12	
Vinyl Chloride	ND	0.20	EPA 8260	4-10-12	4-10-12	
Bromomethane	ND	0.20	EPA 8260	4-10-12	4-10-12	
Chloroethane	ND	1.0	EPA 8260	4-10-12	4-10-12	
CFC-11	ND	0.20	EPA 8260	4-10-12	4-10-12	
1,1-Dichloroethene	ND	0.20	EPA 8260	4-10-12	4-10-12	
Acetone	ND	5.0	EPA 8260	4-10-12	4-10-12	
Methyl Iodide	ND	1.0	EPA 8260	4-10-12	4-10-12	
Carbon Disulfide	ND	0.20	EPA 8260	4-10-12	4-10-12	
Methylene Chloride	ND	1.0	EPA 8260	4-10-12	4-10-12	
Trans-1,2-Dichloroethene	ND	0.20	EPA 8260	4-10-12	4-10-12	
Methyl t-Butyl Ether	ND	0.20	EPA 8260	4-10-12	4-10-12	
1,1-Dichloroethane	ND	0.20	EPA 8260	4-10-12	4-10-12	
Vinyl Acetate	ND	2.0	EPA 8260	4-10-12	4-10-12	
2,2-Dichloropropane	ND	0.20	EPA 8260	4-10-12	4-10-12	
Cis-1,2-Dichloroethene	ND	0.20	EPA 8260	4-10-12	4-10-12	
2-Butanone	ND	5.0	EPA 8260	4-10-12	4-10-12	
Bromochloromethane	ND	0.20	EPA 8260	4-10-12	4-10-12	
Chloroform	ND	0.20	EPA 8260	4-10-12	4-10-12	
1,1,1-Trichloroethane	ND	0.20	EPA 8260	4-10-12	4-10-12	
Carbon Tetrachloride	ND	0.20	EPA 8260	4-10-12	4-10-12	
1,1-Dichloropropene	ND	0.20	EPA 8260	4-10-12	4-10-12	
Benzene	ND	0.20	EPA 8260	4-10-12	4-10-12	
1,2-Dichloroethane	ND	0.20	EPA 8260	4-10-12	4-10-12	
Trichloroethene	ND	0.20	EPA 8260	4-10-12	4-10-12	
1,2-Dichloropropane	ND	0.20	EPA 8260	4-10-12	4-10-12	
Dibromomethane	ND	0.20	EPA 8260	4-10-12	4-10-12	
Dichlorobromomethane	ND	0.20	EPA 8260	4-10-12	4-10-12	
2-Chloroethylvinylether	ND	1.0	EPA 8260	4-10-12	4-10-12	
Cis-1,3-Dichloropropene	ND	0.20	EPA 8260	4-10-12	4-10-12	
Methyl Isobutyl Ketone	ND	2.0	EPA 8260	4-10-12	4-10-12	
Toluene	ND	1.0	EPA 8260	4-10-12	4-10-12	
Trans-1,3-Dichloropropene	ND	0.20	EPA 8260	4-10-12	4-10-12	

Date of Report: April 17, 2012
Samples Submitted: April 7, 2012
Laboratory Reference: 1204-041
Project: 21-1-21623-016

VOLATILES by EPA 8260B
METHOD BLANK QUALITY CONTROL
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Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Laboratory ID:	MB0410W1					
1,1,2-Trichloroethane	ND	0.20	EPA 8260	4-10-12	4-10-12	
Tetrachloroethene	ND	0.20	EPA 8260	4-10-12	4-10-12	
1,3-Dichloropropane	ND	0.20	EPA 8260	4-10-12	4-10-12	
2-Hexanone	ND	2.0	EPA 8260	4-10-12	4-10-12	
Dibromochloromethane	ND	0.20	EPA 8260	4-10-12	4-10-12	
Ethylene dibromide	ND	0.20	EPA 8260	4-10-12	4-10-12	
Chlorobenzene	ND	0.20	EPA 8260	4-10-12	4-10-12	
1,1,1,2-Tetrachloroethane	ND	0.20	EPA 8260	4-10-12	4-10-12	
Ethylbenzene	ND	0.20	EPA 8260	4-10-12	4-10-12	
m,p-Xylene	ND	0.40	EPA 8260	4-10-12	4-10-12	
o-Xylene	ND	0.20	EPA 8260	4-10-12	4-10-12	
Styrene	ND	0.20	EPA 8260	4-10-12	4-10-12	
Bromoform	ND	1.0	EPA 8260	4-10-12	4-10-12	
Isopropylbenzene	ND	0.20	EPA 8260	4-10-12	4-10-12	
Bromobenzene	ND	0.20	EPA 8260	4-10-12	4-10-12	
1,1,2,2-Tetrachloroethane	ND	0.20	EPA 8260	4-10-12	4-10-12	
1,2,3-Trichloropropane	ND	0.20	EPA 8260	4-10-12	4-10-12	
n-Propylbenzene	ND	0.20	EPA 8260	4-10-12	4-10-12	
2-Chlorotoluene	ND	0.20	EPA 8260	4-10-12	4-10-12	
4-Chlorotoluene	ND	0.20	EPA 8260	4-10-12	4-10-12	
1,3,5-Trimethylbenzene	ND	0.20	EPA 8260	4-10-12	4-10-12	
tert-Butylbenzene	ND	0.20	EPA 8260	4-10-12	4-10-12	
1,2,4-Trimethylbenzene	ND	0.20	EPA 8260	4-10-12	4-10-12	
sec-Butylbenzene	ND	0.20	EPA 8260	4-10-12	4-10-12	
1,3-Dichlorobenzene	ND	0.20	EPA 8260	4-10-12	4-10-12	
p-Isopropyltoluene	ND	0.20	EPA 8260	4-10-12	4-10-12	
1,4-Dichlorobenzene	ND	0.20	EPA 8260	4-10-12	4-10-12	
1,2-Dichlorobenzene	ND	0.20	EPA 8260	4-10-12	4-10-12	
n-Butylbenzene	ND	0.20	EPA 8260	4-10-12	4-10-12	
1,2-Dibromo-3-chloropropane	ND	1.0	EPA 8260	4-10-12	4-10-12	
1,2,4-Trichlorobenzene	ND	0.20	EPA 8260	4-10-12	4-10-12	
Hexachlorobutadiene	ND	0.20	EPA 8260	4-10-12	4-10-12	
Naphthalene	ND	1.0	EPA 8260	4-10-12	4-10-12	
1,2,3-Trichlorobenzene	ND	0.20	EPA 8260	4-10-12	4-10-12	
Surrogate:	*Percent Recovery*	*Control Limits*				
Dibromofluoromethane	*84*	*68-120*				
Toluene-d8	*84*	*73-120*				
Benzene, 1-bromo-4-fluoro-	*86*	*65-120*				

Date of Report: April 17, 2012
Samples Submitted: April 7, 2012
Laboratory Reference: 1204-041
Project: 21-1-21623-016

VOLATILES by EPA 8260B
SB/SBD QUALITY CONTROL

Matrix: Water
Units: ug/L

Analyte	Result		Spike Level		Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
SPIKE BLANKS										
Laboratory ID:	SB0410W1									
	SB	SBD	SB	SBD	SB	SBD				
1,1-Dichloroethene	**7.53**	**7.55**	10.0	10.0	75	76	70-130	0	11	
Benzene	**9.02**	**9.10**	10.0	10.0	90	91	75-123	1	8	
Trichloroethene	**9.31**	**9.11**	10.0	10.0	93	91	80-113	2	9	
Toluene	**9.64**	**9.48**	10.0	10.0	96	95	80-113	2	8	
Chlorobenzene	**10.9**	**10.7**	10.0	10.0	109	107	80-115	2	8	
Surrogate:										
Dibromofluoromethane					*82*	*85*	*68-120*			
Toluene-d8					*86*	*87*	*73-120*			
Benzene, 1-bromo-4-fluoro-					*88*	*90*	*65-120*			

Date of Report: April 17, 2012
Samples Submitted: April 7, 2012
Laboratory Reference: 1204-041
Project: 21-1-21623-016

PAHs by EPA 8270D/SIM
(with silica gel clean-up)

Matrix: Soil
Units: mg/Kg

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**GP-14:7**					
Laboratory ID:	04-041-18					
Naphthalene	**0.015**	0.0077	EPA 8270/SIM	4-10-12	4-10-12	
2-Methylnaphthalene	**ND**	0.0077	EPA 8270/SIM	4-10-12	4-10-12	
1-Methylnaphthalene	**ND**	0.0077	EPA 8270/SIM	4-10-12	4-10-12	
Acenaphthylene	**ND**	0.0077	EPA 8270/SIM	4-10-12	4-10-12	
Acenaphthene	**ND**	0.0077	EPA 8270/SIM	4-10-12	4-10-12	
Fluorene	**0.0078**	0.0077	EPA 8270/SIM	4-10-12	4-10-12	
Phenanthrene	**0.015**	0.0077	EPA 8270/SIM	4-10-12	4-10-12	
Anthracene	**0.090**	0.0077	EPA 8270/SIM	4-10-12	4-10-12	
Fluoranthene	**0.10**	0.0077	EPA 8270/SIM	4-10-12	4-10-12	
Pyrene	**0.065**	0.0077	EPA 8270/SIM	4-10-12	4-10-12	
Benz[a]anthracene	**0.028**	0.0077	EPA 8270/SIM	4-10-12	4-10-12	
Chrysene	**0.031**	0.0077	EPA 8270/SIM	4-10-12	4-10-12	
Benzo(b)fluoranthene	**0.013**	0.0077	EPA 8270/SIM	4-10-12	4-10-12	
Benzo(j,k)fluoranthene	**ND**	0.0077	EPA 8270/SIM	4-10-12	4-10-12	
Benzo(a)pyrene	**ND**	0.0077	EPA 8270/SIM	4-10-12	4-10-12	
Indeno(1,2,3-cd)pyrene	**ND**	0.0077	EPA 8270/SIM	4-10-12	4-10-12	
Dibenzo(a,h)anthracene	**ND**	0.0077	EPA 8270/SIM	4-10-12	4-10-12	
Benzo(ghi)perylene	**ND**	0.0077	EPA 8270/SIM	4-10-12	4-10-12	
Surrogate:	*Percent Recovery*	*Control Limits*				
2-Fluorobiphenyl	*50*	*43 - 109*				
Pyrene-d10	*47*	*38 - 128*				
D14-Terphenyl	*44*	*33 - 119*				

Date of Report: April 17, 2012
Samples Submitted: April 7, 2012
Laboratory Reference: 1204-041
Project: 21-1-21623-016

PAHs by EPA 8270D/SIM
METHOD BLANK QUALITY CONTROL
(with silica gel clean-up)

Matrix: Soil
Units: mg/Kg

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Laboratory ID:	MB0410S1					
Naphthalene	**ND**	0.0067	EPA 8270/SIM	4-10-12	4-10-12	
2-Methylnaphthalene	**ND**	0.0067	EPA 8270/SIM	4-10-12	4-10-12	
1-Methylnaphthalene	**ND**	0.0067	EPA 8270/SIM	4-10-12	4-10-12	
Acenaphthylene	**ND**	0.0067	EPA 8270/SIM	4-10-12	4-10-12	
Acenaphthene	**ND**	0.0067	EPA 8270/SIM	4-10-12	4-10-12	
Fluorene	**ND**	0.0067	EPA 8270/SIM	4-10-12	4-10-12	
Phenanthrene	**ND**	0.0067	EPA 8270/SIM	4-10-12	4-10-12	
Anthracene	**ND**	0.0067	EPA 8270/SIM	4-10-12	4-10-12	
Fluoranthene	**ND**	0.0067	EPA 8270/SIM	4-10-12	4-10-12	
Pyrene	**ND**	0.0067	EPA 8270/SIM	4-10-12	4-10-12	
Benz[a]anthracene	**ND**	0.0067	EPA 8270/SIM	4-10-12	4-10-12	
Chrysene	**ND**	0.0067	EPA 8270/SIM	4-10-12	4-10-12	
Benzo(b)fluoranthene	**ND**	0.0067	EPA 8270/SIM	4-10-12	4-10-12	
Benzo(j,k)fluoranthene	**ND**	0.0067	EPA 8270/SIM	4-10-12	4-10-12	
Benzo(a)pyrene	**ND**	0.0067	EPA 8270/SIM	4-10-12	4-10-12	
Indeno(1,2,3-cd)pyrene	**ND**	0.0067	EPA 8270/SIM	4-10-12	4-10-12	
Dibenzo(a,h)anthracene	**ND**	0.0067	EPA 8270/SIM	4-10-12	4-10-12	
Benzo(ghi)perylene	**ND**	0.0067	EPA 8270/SIM	4-10-12	4-10-12	
Surrogate:	*Percent Recovery*	*Control Limits*				
2-Fluorobiphenyl	*70*	*43 - 109*				
Pyrene-d10	*84*	*38 - 128*				
D14-Terphenyl	*81*	*33 - 119*				

Date of Report: April 17, 2012
Samples Submitted: April 7, 2012
Laboratory Reference: 1204-041
Project: 21-1-21623-016

PAHs by EPA 8270D/SIM
SB/SBD QUALITY CONTROL
(with silica gel clean-up)

Matrix: Soil
Units: mg/Kg

Analyte	Result		Spike Level		Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
SPIKE BLANKS										
Laboratory ID:	SB0410S1									
	SB	SBD	SB	SBD	SB	SBD				
Naphthalene	**0.0597**	**0.0611**	0.0833	0.0833	72	73	43 - 108	2	27	
Acenaphthylene	**0.0592**	**0.0570**	0.0833	0.0833	71	68	52 - 120	4	21	
Acenaphthene	**0.0581**	**0.0579**	0.0833	0.0833	70	70	59 - 113	0	17	
Fluorene	**0.0645**	**0.0645**	0.0833	0.0833	77	77	64 - 117	0	14	
Phenanthrene	**0.0642**	**0.0655**	0.0833	0.0833	77	79	67 - 112	2	12	
Anthracene	**0.0624**	**0.0635**	0.0833	0.0833	75	76	59 - 110	2	16	
Fluoranthene	**0.0658**	**0.0672**	0.0833	0.0833	79	81	68 - 120	2	15	
Pyrene	**0.0669**	**0.0680**	0.0833	0.0833	80	82	66 - 121	2	17	
Benz[a]anthracene	**0.0645**	**0.0659**	0.0833	0.0833	77	79	63 - 114	2	12	
Chrysene	**0.0649**	**0.0661**	0.0833	0.0833	78	79	67 - 118	2	12	
Benzo(b)fluoranthene	**0.0642**	**0.0651**	0.0833	0.0833	77	78	58 - 127	1	20	
Benzo(j,k)fluoranthene	**0.0657**	**0.0676**	0.0833	0.0833	79	81	42 - 134	3	26	
Benzo(a)pyrene	**0.0640**	**0.0648**	0.0833	0.0833	77	78	55 - 111	1	19	
Indeno(1,2,3-cd)pyrene	**0.0673**	**0.0668**	0.0833	0.0833	81	80	60 - 125	1	20	
Dibenzo(a,h)anthracene	**0.0690**	**0.0698**	0.0833	0.0833	83	84	62 - 125	1	19	
Benzo(ghi)perylene	**0.0659**	**0.0664**	0.0833	0.0833	79	80	61 - 124	1	19	
Surrogate:										
2-Fluorobiphenyl					*70*	*69*	*43 - 109*			
Pyrene-d10					*81*	*81*	*38 - 128*			
D14-Terphenyl					*76*	*77*	*33 - 119*			

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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:	04-041-02					
Client ID:	**GP-6:7**					
Arsenic	**ND**	11	6010B	4-10-12	4-10-12	
Cadmium	**ND**	0.56	6010B	4-10-12	4-10-12	
Chromium	**32**	0.56	6010B	4-10-12	4-10-12	
Lead	**ND**	5.6	6010B	4-10-12	4-10-12	
Mercury	**ND**	0.28	7471A	4-10-12	4-10-12	
Lab ID:	04-041-04					
Client ID:	**GP-7:8**					
Arsenic	**ND**	12	6010B	4-10-12	4-10-12	
Cadmium	**ND**	0.62	6010B	4-10-12	4-10-12	
Chromium	**69**	0.62	6010B	4-10-12	4-10-12	
Lead	**ND**	6.2	6010B	4-10-12	4-10-12	
Mercury	**ND**	0.31	7471A	4-10-12	4-10-12	
Lab ID:	04-041-06					
Client ID:	**GP-8:7**					
Arsenic	**ND**	11	6010B	4-10-12	4-10-12	
Cadmium	**ND**	0.56	6010B	4-10-12	4-10-12	
Chromium	**29**	0.56	6010B	4-10-12	4-10-12	
Lead	**ND**	5.6	6010B	4-10-12	4-10-12	
Mercury	**ND**	0.28	7471A	4-10-12	4-10-12	

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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:	04-041-08					
Client ID:	**GP-9:8**					
Arsenic	**ND**	12	6010B	4-10-12	4-10-12	
Cadmium	**ND**	0.60	6010B	4-10-12	4-10-12	
Chromium	**23**	0.60	6010B	4-10-12	4-10-12	
Lead	**38**	6.0	6010B	4-10-12	4-10-12	
Mercury	**ND**	0.30	7471A	4-10-12	4-10-12	
Lab ID:	04-041-10					
Client ID:	**GP-10:9**					
Arsenic	**ND**	11	6010B	4-10-12	4-10-12	
Cadmium	**ND**	0.54	6010B	4-10-12	4-10-12	
Chromium	**24**	0.54	6010B	4-10-12	4-10-12	
Lead	**11**	5.4	6010B	4-10-12	4-10-12	
Mercury	**ND**	0.27	7471A	4-10-12	4-10-12	
Lab ID:	04-041-12					
Client ID:	**GP-11:8**					
Arsenic	**ND**	12	6010B	4-10-12	4-10-12	
Cadmium	**ND**	0.58	6010B	4-10-12	4-10-12	
Chromium	**22**	0.58	6010B	4-10-12	4-10-12	
Lead	**77**	5.8	6010B	4-10-12	4-10-12	
Mercury	**ND**	0.29	7471A	4-10-12	4-10-12	

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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:	04-041-14					
Client ID:	**GP-12:8**					
Arsenic	**ND**	13	6010B	4-10-12	4-10-12	
Cadmium	**ND**	0.66	6010B	4-10-12	4-10-12	
Chromium	**42**	0.66	6010B	4-10-12	4-10-12	
Lead	**ND**	6.6	6010B	4-10-12	4-10-12	
Mercury	**ND**	0.33	7471A	4-10-12	4-10-12	
Lab ID:	04-041-16					
Client ID:	**GP-13:6**					
Arsenic	**ND**	11	6010B	4-10-12	4-10-12	
Cadmium	**ND**	0.56	6010B	4-10-12	4-10-12	
Chromium	**26**	0.56	6010B	4-10-12	4-10-12	
Lead	**ND**	5.6	6010B	4-10-12	4-10-12	
Mercury	**ND**	0.28	7471A	4-10-12	4-10-12	
Lab ID:	04-041-18					
Client ID:	**GP-14:7**					
Arsenic	**ND**	12	6010B	4-10-12	4-10-12	
Cadmium	**ND**	0.58	6010B	4-10-12	4-10-12	
Chromium	**32**	0.58	6010B	4-10-12	4-10-12	
Lead	**ND**	5.8	6010B	4-10-12	4-10-12	
Mercury	**ND**	0.29	7471A	4-10-12	4-10-12	

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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:	04-041-20					
Client ID:	**GP-15:8**					
Arsenic	**ND**	11	6010B	4-10-12	4-10-12	
Cadmium	**ND**	0.56	6010B	4-10-12	4-10-12	
Chromium	**21**	0.56	6010B	4-10-12	4-10-12	
Lead	**ND**	5.6	6010B	4-10-12	4-10-12	
Mercury	**ND**	0.28	7471A	4-10-12	4-10-12	
Lab ID:	04-041-22					
Client ID:	**GP-16:7**					
Arsenic	**ND**	11	6010B	4-10-12	4-10-12	
Cadmium	**ND**	0.57	6010B	4-10-12	4-10-12	
Chromium	**48**	0.57	6010B	4-10-12	4-10-12	
Lead	**6.0**	5.7	6010B	4-10-12	4-10-12	
Mercury	**ND**	0.28	7471A	4-10-12	4-10-12	
Lab ID:	04-041-24					
Client ID:	**GP-17:8**					
Arsenic	**ND**	12	6010B	4-10-12	4-10-12	
Cadmium	**ND**	0.62	6010B	4-10-12	4-10-12	
Chromium	**43**	0.62	6010B	4-10-12	4-10-12	
Lead	**6.4**	6.2	6010B	4-10-12	4-10-12	
Mercury	**ND**	0.31	7471A	4-10-12	4-10-12	

Date of Report: April 17, 2012
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TOTAL METALS
EPA 6010B/7471A
METHOD BLANK QUALITY CONTROL

Date Extracted: 4-10-12
Date Analyzed: 4-10-12

Matrix: Soil
Units: mg/kg (ppm)

Lab ID: MB0410S1&MB0410SM2

Analyte	Method	Result	PQL
Arsenic	6010B	**ND**	10
Cadmium	6010B	**ND**	0.50
Chromium	6010B	**ND**	0.50
Lead	6010B	**ND**	5.0
Mercury	7471A	**ND**	0.25

Date of Report: April 17, 2012
Samples Submitted: April 7, 2012
Laboratory Reference: 1204-041
Project: 21-1-21623-016

TOTAL METALS
EPA 6010B/7471A
DUPLICATE QUALITY CONTROL

Date Extracted: 4-10-12
Date Analyzed: 4-10-12

Matrix: Soil
Units: mg/kg (ppm)

Lab ID: 04-041-16

Analyte	Sample Result	Duplicate Result	RPD	PQL	Flags
Arsenic	**ND**	**ND**	NA	10	
Cadmium	**ND**	**ND**	NA	0.50	
Chromium	**23.7**	**24.4**	3	0.50	
Lead	**ND**	**ND**	NA	5.0	
Mercury	**ND**	**ND**	NA	0.25	

Date of Report: April 17, 2012
Samples Submitted: April 7, 2012
Laboratory Reference: 1204-041
Project: 21-1-21623-016

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

Date Extracted: 4-10-12
Date Analyzed: 4-10-12

Matrix: Soil
Units: mg/kg (ppm)

Lab ID: 04-041-16

Analyte	Spike Level	MS	Percent Recovery	MSD	Percent Recovery	RPD	Flags
Arsenic	100	**81.8**	82	**90.3**	90	10	
Cadmium	50.0	**42.1**	84	**46.5**	93	10	
Chromium	100	**107**	83	**118**	94	10	
Lead	250	**216**	86	**238**	95	10	
Mercury	0.500	**0.505**	101	**0.506**	101	0	

Date of Report: April 17, 2012
Samples Submitted: April 7, 2012
Laboratory Reference: 1204-041
Project: 21-1-21623-016

TOTAL LEAD
EPA 6010B

Matrix: Soil
Units: mg/kg (ppm)

Analyte	Result	PQL	EPA Method	Date Prepared	Date Analyzed	Flags
Lab ID:	04-041-01					
Client ID:	**GP-6:0.5**					
Lead	**15**	5.2	6010B	4-11-12	4-11-12	
Lab ID:	04-041-03					
Client ID:	**GP-7:0.5**					
Lead	**ND**	5.5	6010B	4-11-12	4-11-12	
Lab ID:	04-041-05					
Client ID:	**GP-8:0.5**					
Lead	**ND**	5.5	6010B	4-11-12	4-11-12	
Lab ID:	04-041-07					
Client ID:	**GP-9:0.5**					
Lead	**ND**	5.4	6010B	4-11-12	4-11-12	
Lab ID:	04-041-09					
Client ID:	**GP-10:0.5**					
Lead	**14**	5.5	6010B	4-11-12	4-11-12	
Lab ID:	04-041-11					
Client ID:	**GP-11:0.5**					
Lead	**50**	6.2	6010B	4-11-12	4-11-12	
Lab ID:	04-041-13					
Client ID:	**GP-12:0.5**					
Lead	**11**	5.6	6010B	4-11-12	4-11-12	

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TOTAL LEAD
EPA 6010B

Matrix: Soil
Units: mg/kg (ppm)

Analyte	Result	PQL	EPA Method	Date Prepared	Date Analyzed	Flags
Lab ID:	04-041-15					
Client ID:	**GP-13:0.5**					
Lead	**8.8**	5.5	6010B	4-11-12	4-11-12	
Lab ID:	04-041-17					
Client ID:	**GP-14:0.5**					
Lead	**6.3**	5.6	6010B	4-11-12	4-11-12	
Lab ID:	04-041-19					
Client ID:	**GP-15:0.5**					
Lead	**14**	6.2	6010B	4-11-12	4-11-12	
Lab ID:	04-041-21					
Client ID:	**GP-16:0.5**					
Lead	**ND**	6.3	6010B	4-11-12	4-11-12	
Lab ID:	04-041-23					
Client ID:	**GP-17:0.5**					
Lead	**ND**	5.6	6010B	4-11-12	4-11-12	

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TOTAL LEAD
EPA 6010B
METHOD BLANK QUALITY CONTROL

Date Extracted:	4-11-12
Date Analyzed:	4-11-12
Matrix:	Soil
Units:	mg/kg (ppm)
Lab ID:	MB0411SM1

Analyte	Method	Result	PQL
Lead	6010B	**ND**	5.0

Date of Report: April 17, 2012
Samples Submitted: April 7, 2012
Laboratory Reference: 1204-041
Project: 21-1-21623-016

TOTAL LEAD
EPA 6010B
DUPLICATE QUALITY CONTROL

Date Extracted: 4-11-12
Date Analyzed: 4-11-12

Matrix: Soil
Units: mg/kg (ppm)

Lab ID: 04-041-01

Analyte	Sample Result	Duplicate Result	RPD	PQL	Flags
Lead	**14.4**	**17.5**	19	5.0	

Date of Report: April 17, 2012
Samples Submitted: April 7, 2012
Laboratory Reference: 1204-041
Project: 21-1-21623-016

TOTAL LEAD
EPA 6010B
MS/MSD QUALITY CONTROL

Date Extracted: 4-11-12
Date Analyzed: 4-11-12

Matrix: Soil
Units: mg/kg (ppm)

Lab ID: 04-041-01

Analyte	Sample Result	Duplicate Result	RPD	PQL	Flags
Lead	**14.4**	**17.5**	19	5.0	

Date of Report: April 17, 2012
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Project: 21-1-21623-016

TOTAL METALS
EPA 200.8/7470A

Matrix: Water
Units: ug/L (ppb)

Analyte	Result	PQL	EPA Method	Date Prepared	Date Analyzed	Flags
Lab ID:	04-041-25					
Client ID:	**GP-6:GW**					
Antimony	**ND**	5.0	200.8	4-10-12	4-11-12	
Arsenic	**6.1**	3.0	200.8	4-10-12	4-11-12	
Beryllium	**ND**	10	200.8	4-10-12	4-11-12	
Cadmium	**ND**	4.0	200.8	4-10-12	4-11-12	
Chromium	**36**	10	200.8	4-10-12	4-11-12	
Copper	**22**	10	200.8	4-10-12	4-11-12	
Lead	**17**	1.0	200.8	4-10-12	4-11-12	
Mercury	**ND**	0.50	7470A	4-10-12	4-10-12	
Nickel	**60**	20	200.8	4-10-12	4-11-12	
Selenium	**ND**	5.0	200.8	4-10-12	4-11-12	
Silver	**ND**	10	200.8	4-10-12	4-11-12	
Thallium	**ND**	5.0	200.8	4-10-12	4-11-12	
Zinc	**43**	25	200.8	4-10-12	4-11-12	

Date of Report: April 17, 2012
Samples Submitted: April 7, 2012
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TOTAL METALS
EPA 200.8/7470A

Matrix: Water
Units: ug/L (ppb)

Analyte	Result	PQL	EPA Method	Date Prepared	Date Analyzed	Flags
Lab ID:	04-041-26					
Client ID:	**GP-8:GW**					
Antimony	**ND**	5.0	200.8	4-10-12	4-11-12	
Arsenic	**22**	3.0	200.8	4-10-12	4-11-12	
Beryllium	**ND**	10	200.8	4-10-12	4-11-12	
Cadmium	**ND**	4.0	200.8	4-10-12	4-11-12	
Chromium	**320**	10	200.8	4-10-12	4-11-12	
Copper	**140**	10	200.8	4-10-12	4-11-12	
Lead	**80**	1.0	200.8	4-10-12	4-11-12	
Mercury	**ND**	0.50	7470A	4-10-12	4-10-12	
Nickel	**340**	20	200.8	4-10-12	4-11-12	
Selenium	**ND**	5.0	200.8	4-10-12	4-11-12	
Silver	**ND**	10	200.8	4-10-12	4-11-12	
Thallium	**ND**	5.0	200.8	4-10-12	4-11-12	
Zinc	**270**	25	200.8	4-10-12	4-11-12	

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TOTAL METALS
EPA 200.8/7470A

Matrix: Water
Units: ug/L (ppb)

Analyte	Result	PQL	EPA Method	Date Prepared	Date Analyzed	Flags
Lab ID:	04-041-27					
Client ID:	**GP-11:GW**					
Antimony	**11**	5.6	200.8	4-12-12	4-12-12	
Arsenic	**170**	3.0	200.8	4-10-12	4-11-12	
Beryllium	**ND**	10	200.8	4-10-12	4-11-12	
Cadmium	**ND**	4.0	200.8	4-10-12	4-11-12	
Chromium	**170**	10	200.8	4-10-12	4-11-12	
Copper	**760**	10	200.8	4-10-12	4-11-12	
Lead	**2000**	1.0	200.8	4-10-12	4-11-12	
Mercury	**5.2**	0.50	7470A	4-10-12	4-10-12	
Nickel	**170**	20	200.8	4-10-12	4-11-12	
Selenium	**ND**	5.0	200.8	4-10-12	4-11-12	
Silver	**ND**	10	200.8	4-10-12	4-11-12	
Thallium	**ND**	5.0	200.8	4-10-12	4-11-12	
Zinc	**1300**	25	200.8	4-10-12	4-11-12	

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TOTAL METALS
EPA 200.8/7470A

Matrix: Water
Units: ug/L (ppb)

Analyte	Result	PQL	EPA Method	Date Prepared	Date Analyzed	Flags
Lab ID:	04-041-28					
Client ID:	**GP-13:GW**					
Antimony	**ND**	5.0	200.8	4-10-12	4-11-12	
Arsenic	**18**	3.0	200.8	4-10-12	4-11-12	
Beryllium	**ND**	10	200.8	4-10-12	4-11-12	
Cadmium	**ND**	4.0	200.8	4-10-12	4-11-12	
Chromium	**180**	10	200.8	4-10-12	4-11-12	
Copper	**91**	10	200.8	4-10-12	4-11-12	
Lead	**25**	1.0	200.8	4-10-12	4-11-12	
Mercury	**ND**	0.50	7470A	4-10-12	4-10-12	
Nickel	**220**	20	200.8	4-10-12	4-11-12	
Selenium	**ND**	5.0	200.8	4-10-12	4-11-12	
Silver	**ND**	10	200.8	4-10-12	4-11-12	
Thallium	**ND**	5.0	200.8	4-10-12	4-11-12	
Zinc	**150**	25	200.8	4-10-12	4-11-12	

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TOTAL METALS
EPA 200.8/7470A

Matrix: Water
Units: ug/L (ppb)

Analyte	Result	PQL	EPA Method	Date Prepared	Date Analyzed	Flags
Lab ID:	04-041-29					
Client ID:	**GP-16:GW**					
Antimony	**13**	5.6	200.8	4-12-12	4-12-12	
Arsenic	**50**	3.0	200.8	4-10-12	4-11-12	
Beryllium	**ND**	10	200.8	4-10-12	4-11-12	
Cadmium	**ND**	4.0	200.8	4-10-12	4-11-12	
Chromium	**350**	10	200.8	4-10-12	4-11-12	
Copper	**240**	10	200.8	4-10-12	4-11-12	
Lead	**130**	1.0	200.8	4-10-12	4-11-12	
Mercury	**ND**	0.50	7470A	4-10-12	4-10-12	
Nickel	**380**	20	200.8	4-10-12	4-11-12	
Selenium	**ND**	5.0	200.8	4-10-12	4-11-12	
Silver	**ND**	10	200.8	4-10-12	4-11-12	
Thallium	**ND**	5.0	200.8	4-10-12	4-11-12	
Zinc	**510**	25	200.8	4-10-12	4-11-12	

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TOTAL METALS
EPA 200.8/7470A

Matrix: Water
Units: ug/L (ppb)

Analyte	Result	PQL	EPA Method	Date Prepared	Date Analyzed	Flags
Lab ID:	04-041-30					
Client ID:	**GP-14:GW**					
Antimony	**ND**	5.0	200.8	4-10-12	4-11-12	
Arsenic	**5.8**	3.0	200.8	4-10-12	4-11-12	
Beryllium	**ND**	10	200.8	4-10-12	4-11-12	
Cadmium	**ND**	4.0	200.8	4-10-12	4-11-12	
Chromium	**12**	10	200.8	4-10-12	4-11-12	
Copper	**20**	10	200.8	4-10-12	4-11-12	
Lead	**62**	1.0	200.8	4-10-12	4-11-12	
Mercury	**ND**	0.50	7470A	4-10-12	4-10-12	
Nickel	**17**	20	200.8	4-10-12	4-11-12	
Selenium	**ND**	5.0	200.8	4-10-12	4-11-12	
Silver	**ND**	10	200.8	4-10-12	4-11-12	
Thallium	**ND**	5.0	200.8	4-10-12	4-11-12	
Zinc	**28**	25	200.8	4-10-12	4-11-12	

Date of Report: April 17, 2012
Samples Submitted: April 7, 2012
Laboratory Reference: 1204-041
Project: 21-1-21623-016

TOTAL METALS
EPA 200.8/7470A
METHOD BLANK QUALITY CONTROL

Date Extracted:	4-10-12
Date Analyzed:	4-10&11-12
Matrix:	Water
Units:	ug/L (ppb)
Lab ID:	MB0410WH2&MB0410W1

Analyte	Method	Result	PQL
Antimony	200.8	**ND**	5.0
Arsenic	200.8	**ND**	3.0
Beryllium	200.8	**ND**	10
Cadmium	200.8	**ND**	4.0
Chromium	200.8	**ND**	10
Copper	200.8	**ND**	10
Lead	200.8	**ND**	1.0
Mercury	7470A	**ND**	0.50
Nickel	200.8	**ND**	20
Selenium	200.8	**ND**	5.0
Silver	200.8	**ND**	10
Thallium	200.8	**ND**	5.0
Zinc	200.8	**ND**	25

Date of Report: April 17, 2012
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TOTAL METALS
EPA 200.8
METHOD BLANK QUALITY CONTROL

Date Extracted:	4-12-12
Date Analyzed:	4-12-12
Matrix:	Water
Units:	ug/L (ppb)
Lab ID:	MB0412WM1

Analyte	Method	Result	PQL
Antimony	200.8	**ND**	5.6

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TOTAL METALS
EPA 200.8/7470A
DUPLICATE QUALITY CONTROL

Date Extracted: 4-10-12
Date Analyzed: 4-10&11-12

Matrix: Water
Units: ug/L (ppb)

Lab ID: 04-041-30

Analyte	Sample Result	Duplicate Result	RPD	PQL	Flags
Antimony	**ND**	**ND**	NA	5.0	
Arsenic	**5.76**	**6.04**	5	3.0	
Beryllium	**ND**	**ND**	NA	10	
Cadmium	**ND**	**ND**	NA	4.0	
Chromium	**11.7**	**11.9**	1	10	
Copper	**19.8**	**20.0**	1	10	
Lead	**62.1**	**62.6**	1	1.0	
Mercury	**ND**	**ND**	NA	0.50	
Nickel	**16.9**	**16.9**	0	20	
Selenium	**ND**	**ND**	NA	5.0	
Silver	**ND**	**ND**	NA	10	
Thallium	**ND**	**ND**	NA	5.0	
Zinc	**27.6**	**27.9**	1	25	

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TOTAL METALS
EPA 200.8
DUPLICATE QUALITY CONTROL

Date Extracted: 4-12-12
Date Analyzed: 4-12-12

Matrix: Water
Units: ug/L (ppb)

Lab ID: 04-065-03

Analyte	Sample Result	Duplicate Result	RPD	PQL	Flags
Antimony	**ND**	**ND**	NA	5.6	

Date of Report: April 17, 2012
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TOTAL METALS
EPA 200.8/7470A
MS/MSD QUALITY CONTROL

Date Extracted: 4-10-12
Date Analyzed: 4-10&11-12

Matrix: Water
Units: ug/L (ppb)

Lab ID: 04-041-30

Analyte	Spike Level	MS	Percent Recovery	MSD	Percent Recovery	RPD	Flags
Antimony	100	**87.7**	88	**89.7**	90	2	
Arsenic	100	**105**	99	**102**	96	3	
Beryllium	100	**93.2**	93	**93.3**	93	0	
Cadmium	100	**95.6**	96	**98.1**	98	3	
Chromium	100	**113**	101	**116**	104	3	
Copper	100	**118**	99	**117**	97	1	
Lead	100	**161**	99	**166**	104	3	
Mercury	12.5	**12.2**	98	**11.8**	95	3	
Nickel	100	**119**	102	**118**	101	1	
Selenium	100	**90.2**	90	**89.6**	90	1	
Silver	100	**89.3**	89	**101**	101	12	
Thallium	100	**98.7**	99	**101**	101	3	
Zinc	100	**121**	94	**119**	92	1	

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TOTAL METALS
EPA 200.8
MS/MSD QUALITY CONTROL

Date Extracted: 4-12-12
Date Analyzed: 4-12-12

Matrix: Water
Units: ug/L (ppb)

Lab ID: 04-065-03

Analyte	Spike Level	MS	Percent Recovery	MSD	Percent Recovery	RPD	Flags
Antimony	444	**435**	98	**443**	100	2	

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DISSOLVED METALS
EPA 200.8/7470A

Matrix: Water
Units: ug/L (ppb)

Analyte	Result	PQL	EPA Method	Date Prepared	Date Analyzed	Flags
Lab ID:	04-041-25					
Client ID:	**GP-6:GW**					
Antimony	**ND**	5.0	200.8	4-9-12	4-11-12	
Arsenic	**ND**	3.0	200.8	4-9-12	4-11-12	
Beryllium	**ND**	10	200.8	4-9-12	4-11-12	
Cadmium	**ND**	4.0	200.8	4-9-12	4-11-12	
Chromium	**ND**	10	200.8	4-9-12	4-11-12	
Copper	**ND**	10	200.8	4-9-12	4-11-12	
Lead	**ND**	1.0	200.8	4-9-12	4-11-12	
Mercury	**ND**	0.50	7470A	4-9-12	4-11-12	
Nickel	**ND**	20	200.8	4-9-12	4-11-12	
Selenium	**ND**	5.0	200.8	4-9-12	4-11-12	
Silver	**ND**	10	200.8	4-9-12	4-11-12	
Thallium	**ND**	5.0	200.8	4-9-12	4-11-12	
Zinc	**ND**	25	200.8	4-9-12	4-11-12	

Date of Report: April 17, 2012
Samples Submitted: April 7, 2012
Laboratory Reference: 1204-041
Project: 21-1-21623-016

DISSOLVED METALS
EPA 200.8/7470A

Matrix: Water
Units: ug/L (ppb)

Analyte	Result	PQL	EPA Method	Date Prepared	Date Analyzed	Flags
Lab ID:	04-041-26					
Client ID:	**GP-8:GW**					
Antimony	**ND**	5.0	200.8	4-9-12	4-11-12	
Arsenic	**ND**	3.0	200.8	4-9-12	4-11-12	
Beryllium	**ND**	10	200.8	4-9-12	4-11-12	
Cadmium	**ND**	4.0	200.8	4-9-12	4-11-12	
Chromium	**ND**	10	200.8	4-9-12	4-11-12	
Copper	**ND**	10	200.8	4-9-12	4-11-12	
Lead	**ND**	1.0	200.8	4-9-12	4-11-12	
Mercury	**ND**	0.50	7470A	4-9-12	4-11-12	
Nickel	**ND**	20	200.8	4-9-12	4-11-12	
Selenium	**ND**	5.0	200.8	4-9-12	4-11-12	
Silver	**ND**	10	200.8	4-9-12	4-11-12	
Thallium	**ND**	5.0	200.8	4-9-12	4-11-12	
Zinc	**ND**	25	200.8	4-9-12	4-11-12	

Date of Report: April 17, 2012
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DISSOLVED METALS
EPA 200.8/7470A

Matrix: Water
Units: ug/L (ppb)

Analyte	Result	PQL	EPA Method	Date Prepared	Date Analyzed	Flags
Lab ID:	04-041-27					
Client ID:	**GP-11:GW**					
Antimony	**ND**	5.0	200.8	4-9-12	4-11-12	
Arsenic	**ND**	3.0	200.8	4-9-12	4-11-12	
Beryllium	**ND**	10	200.8	4-9-12	4-11-12	
Cadmium	**ND**	4.0	200.8	4-9-12	4-11-12	
Chromium	**ND**	10	200.8	4-9-12	4-11-12	
Copper	**ND**	10	200.8	4-9-12	4-11-12	
Lead	**ND**	1.0	200.8	4-9-12	4-11-12	
Mercury	**ND**	0.50	7470A	4-9-12	4-11-12	
Nickel	**ND**	20	200.8	4-9-12	4-11-12	
Selenium	**ND**	5.0	200.8	4-9-12	4-11-12	
Silver	**ND**	10	200.8	4-9-12	4-11-12	
Thallium	**ND**	5.0	200.8	4-9-12	4-11-12	
Zinc	**ND**	25	200.8	4-9-12	4-11-12	

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DISSOLVED METALS
EPA 200.8/7470A

Matrix: Water
Units: ug/L (ppb)

Analyte	Result	PQL	EPA Method	Date Prepared	Date Analyzed	Flags
Lab ID:	04-041-28					
Client ID:	**GP-13:GW**					
Antimony	**ND**	5.0	200.8	4-9-12	4-11-12	
Arsenic	**ND**	3.0	200.8	4-9-12	4-11-12	
Beryllium	**ND**	10	200.8	4-9-12	4-11-12	
Cadmium	**ND**	4.0	200.8	4-9-12	4-11-12	
Chromium	**ND**	10	200.8	4-9-12	4-11-12	
Copper	**ND**	10	200.8	4-9-12	4-11-12	
Lead	**ND**	1.0	200.8	4-9-12	4-11-12	
Mercury	**ND**	0.50	7470A	4-9-12	4-11-12	
Nickel	**ND**	20	200.8	4-9-12	4-11-12	
Selenium	**ND**	5.0	200.8	4-9-12	4-11-12	
Silver	**ND**	10	200.8	4-9-12	4-11-12	
Thallium	**ND**	1.0	200.8	4-9-12	4-11-12	
Zinc	**ND**	25	200.8	4-9-12	4-11-12	

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DISSOLVED METALS
EPA 200.8/7470A

Matrix: Water
Units: ug/L (ppb)

Analyte	Result	PQL	EPA Method	Date Prepared	Date Analyzed	Flags
Lab ID:	04-041-29					
Client ID:	**GP-16:GW**					
Antimony	**9.7**	5.0	200.8	4-9-12	4-11-12	
Arsenic	**3.5**	3.0	200.8	4-9-12	4-11-12	
Beryllium	**ND**	10	200.8	4-9-12	4-11-12	
Cadmium	**ND**	4.0	200.8	4-9-12	4-11-12	
Chromium	**ND**	10	200.8	4-9-12	4-11-12	
Copper	**ND**	10	200.8	4-9-12	4-11-12	
Lead	**ND**	1.0	200.8	4-9-12	4-11-12	
Mercury	**ND**	0.50	7470A	4-9-12	4-11-12	
Nickel	**ND**	20	200.8	4-9-12	4-11-12	
Selenium	**ND**	5.0	200.8	4-9-12	4-11-12	
Silver	**ND**	10	200.8	4-9-12	4-11-12	
Thallium	**ND**	1.0	200.8	4-9-12	4-11-12	
Zinc	**ND**	25	200.8	4-9-12	4-11-12	

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DISSOLVED METALS
EPA 200.8/7470A

Matrix: Water
Units: ug/L (ppb)

Analyte	Result	PQL	EPA Method	Date Prepared	Date Analyzed	Flags
Lab ID:	04-041-30					
Client ID:	**GP-14:GW**					
Antimony	**ND**	5.0	200.8	4-9-12	4-11-12	
Arsenic	**4.0**	3.0	200.8	4-9-12	4-11-12	
Beryllium	**ND**	10	200.8	4-9-12	4-11-12	
Cadmium	**ND**	4.0	200.8	4-9-12	4-11-12	
Chromium	**ND**	10	200.8	4-9-12	4-11-12	
Copper	**ND**	10	200.8	4-9-12	4-11-12	
Lead	**7.7**	1.0	200.8	4-9-12	4-11-12	
Mercury	**ND**	0.50	7470A	4-9-12	4-11-12	
Nickel	**ND**	20	200.8	4-9-12	4-11-12	
Selenium	**ND**	5.0	200.8	4-9-12	4-11-12	
Silver	**ND**	10	200.8	4-9-12	4-11-12	
Thallium	**ND**	1.0	200.8	4-9-12	4-11-12	
Zinc	**ND**	25	200.8	4-9-12	4-11-12	

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Samples Submitted: April 7, 2012
Laboratory Reference: 1204-041
Project: 21-1-21623-016

DISSOLVED METALS
EPA 200.8/7470A
METHOD BLANK QUALITY CONTROL

Date Filtered:	4-9-12
Date Analyzed:	4-10&11-12
Matrix:	Water
Units:	ug/L (ppb)
Lab ID:	MB0409F1

Analyte	Method	Result	PQL
Antimony	200.8	**ND**	5.0
Arsenic	200.8	**ND**	3.0
Beryllium	200.8	**ND**	10
Cadmium	200.8	**ND**	4.0
Chromium	200.8	**ND**	10
Copper	200.8	**ND**	10
Lead	200.8	**ND**	1.0
Mercury	7470A	**ND**	0.50
Nickel	200.8	**ND**	20
Selenium	200.8	**ND**	5.0
Silver	200.8	**ND**	10
Thallium	200.8	**ND**	5.0
Zinc	200.8	**ND**	25

Date of Report: April 17, 2012
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DISSOLVED METALS
EPA 200.8/7470A
DUPLICATE QUALITY CONTROL

Date Filtered: 4-9-12
Date Analyzed: 4-10&11-12

Matrix: Water
Units: ug/L (ppb)

Lab ID: 04-041-30

Analyte	Sample Result	Duplicate Result	RPD	PQL	Flags
Antimony	**ND**	**ND**	NA	5.0	
Arsenic	**4.00**	**3.62**	10	3.0	
Beryllium	**ND**	**ND**	NA	10	
Cadmium	**ND**	**ND**	NA	4.0	
Chromium	**ND**	**ND**	NA	10	
Copper	**ND**	**ND**	NA	10	
Lead	**7.74**	**7.78**	1	1.0	
Mercury	**ND**	**ND**	NA	0.5	
Nickel	**ND**	**ND**	NA	20	
Selenium	**ND**	**ND**	NA	5.0	
Silver	**ND**	**ND**	NA	10	
Thallium	**ND**	**ND**	NA	5.0	
Zinc	**ND**	**ND**	NA	25	

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DISSOLVED METALS
EPA 200.8/7470A
MS/MSD QUALITY CONTROL

Date Filtered: 4-9-12
Date Analyzed: 4-10&11-12

Matrix: Water
Units: ug/L (ppb)

Lab ID: 04-041-30

Analyte	Spike Level	MS	Percent Recovery	MSD	Percent Recovery	RPD	Flags
Antimony	100	**95.8**	96	**95.5**	96	0	
Arsenic	100	**99.3**	95	**99.8**	96	0	
Beryllium	100	**93.8**	94	**95.2**	95	1	
Cadmium	100	**96.2**	96	**97.4**	97	1	
Chromium	100	**102**	102	**105**	105	3	
Copper	100	**99.5**	99	**99**	99	1	
Lead	100	**106**	99	**109**	101	2	
Mercury	12.5	**11.8**	94	**12.1**	97	3	
Nickel	100	**105**	105	**108**	108	3	
Selenium	100	**90.2**	90	**91.9**	92	2	
Silver	100	**95.1**	95	**102**	102	7	
Thallium	100	**99.7**	100	**101**	101	2	
Zinc	100	**92.9**	93	**96.8**	97	4	

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Samples Submitted: April 7, 2012
Laboratory Reference: 1204-041
Project: 21-1-21623-016

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

Matrix: Water
Units: mg/L (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**GP-11:GW**					
Laboratory ID:	04-041-27					
Diesel Range Organics	**ND**	0.25	NWTPH-Dx	4-10-12	4-10-12	
Lube Oil	**1.3**	0.40	NWTPH-Dx	4-10-12	4-10-12	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*105*	*50-150*				

Date of Report: April 17, 2012
Samples Submitted: April 7, 2012
Laboratory Reference: 1204-041
Project: 21-1-21623-016

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

Matrix: Water
Units: mg/L (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0410W1					
Diesel Range Organics	**ND**	0.25	NWTPH-Dx	4-10-12	4-10-12	
Lube Oil Range Organics	**ND**	0.40	NWTPH-Dx	4-10-12	4-10-12	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*93*	*50-150*				

Analyte	Result		Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE								
Laboratory ID:	04-041-25							
	ORIG	DUP						
Diesel Range Organics	**ND**	**ND**				NA	NA	
Lube Oil Range Organics	**ND**	**ND**				NA	NA	
Surrogate:								
o-Terphenyl			*95*	*96*	*50-150*			

Date of Report: April 17, 2012
Samples Submitted: April 7, 2012
Laboratory Reference: 1204-041
Project: 21-1-21623-016

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:	**GP-16:7**					
Laboratory ID:	04-041-22					
Diesel Range Organics	**ND**	28	NWTPH-Dx	4-12-12	4-12-12	
Lube Oil	**63**	57	NWTPH-Dx	4-12-12	4-12-12	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*91*	*50-150*				
Client ID:	**GP-17:8**					
Laboratory ID:	04-041-24					
Diesel Range Organics	**ND**	160	NWTPH-Dx	4-12-12	4-12-12	
Lube Oil	**780**	310	NWTPH-Dx	4-12-12	4-12-12	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*102*	*50-150*				

Date of Report: April 17, 2012
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Laboratory Reference: 1204-041
Project: 21-1-21623-016

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

Matrix: Soil
Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0412S1					
Diesel Range Organics	**ND**	25	NWTPH-Dx	4-12-12	4-12-12	
Lube Oil Range Organics	**ND**	50	NWTPH-Dx	4-12-12	4-12-12	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*108*	*50-150*				

Analyte	Result		Percent Recovery	Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE							
Laboratory ID:	04-066-02						
	ORIG	DUP					
Diesel Range Organics	**ND**	**ND**			NA	NA	
Lube Oil Range Organics	**ND**	**ND**			NA	NA	
Surrogate:							
o-Terphenyl			*86* *90*	*50-150*			

Date of Report: April 17, 2012
Samples Submitted: April 7, 2012
Laboratory Reference: 1204-041
Project: 21-1-21623-016

PCBs by EPA 8082

Matrix: Soil
Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**GP-17:8**					
Laboratory ID:	04-041-24					
PCB-aroclor 1016	**ND**	0.062	EPA 8082	4-16-12	4-16-12	
PCB-aroclor 1221	**ND**	0.062	EPA 8082	4-16-12	4-16-12	
PCB-aroclor 1232	**ND**	0.062	EPA 8082	4-16-12	4-16-12	
PCB-aroclor 1242	**ND**	0.062	EPA 8082	4-16-12	4-16-12	
PCB-aroclor 1248	**ND**	0.062	EPA 8082	4-16-12	4-16-12	
PCB-aroclor 1254	**ND**	0.062	EPA 8082	4-16-12	4-16-12	
PCB-aroclor 1260	**ND**	0.062	EPA 8082	4-16-12	4-16-12	
Surrogate:	*Percent Recovery*	*Control Limits*				
DCB	*85*	*42-123*				

Date of Report: April 17, 2012
Samples Submitted: April 7, 2012
Laboratory Reference: 1204-041
Project: 21-1-21623-016

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:	MB0416S1					
PCB-aroclor 1016	**ND**	0.050	EPA 8082	4-16-12	4-16-12	
PCB-aroclor 1221	**ND**	0.050	EPA 8082	4-16-12	4-16-12	
PCB-aroclor 1232	**ND**	0.050	EPA 8082	4-16-12	4-16-12	
PCB-aroclor 1242	**ND**	0.050	EPA 8082	4-16-12	4-16-12	
PCB-aroclor 1248	**ND**	0.050	EPA 8082	4-16-12	4-16-12	
PCB-aroclor 1254	**ND**	0.050	EPA 8082	4-16-12	4-16-12	
PCB-aroclor 1260	**ND**	0.050	EPA 8082	4-16-12	4-16-12	
Surrogate:	*Percent Recovery*	*Control Limits*				
DCB	*108*	*42-123*				

Analyte	Result		Spike Level		Source Result	Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
MATRIX SPIKES											
Laboratory ID:	04-076-06										
	MS	MSD	MS	MSD		MS	MSD				
PCB-aroclor 1260	**0.440**	**0.402**	0.500	0.500	ND	**88**	**80**	44-125	9	15	
Surrogate:											
DCB						*99*	*84*	*42-123*			

Date of Report: April 17, 2012
Samples Submitted: April 7, 2012
Laboratory Reference: 1204-041
Project: 21-1-21623-016

PAHs by EPA 8270D/SIM
(with silica gel clean-up)

Matrix: Soil
Units: mg/Kg

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**GP-16:7**					
Laboratory ID:	04-041-22					
Naphthalene	**0.57**	0.0076	EPA 8270/SIM	4-16-12	4-16-12	
2-Methylnaphthalene	**0.24**	0.0076	EPA 8270/SIM	4-16-12	4-16-12	
1-Methylnaphthalene	**0.16**	0.0076	EPA 8270/SIM	4-16-12	4-16-12	
Acenaphthylene	**ND**	0.0076	EPA 8270/SIM	4-16-12	4-16-12	
Acenaphthene	**0.28**	0.0076	EPA 8270/SIM	4-16-12	4-16-12	
Fluorene	**0.23**	0.0076	EPA 8270/SIM	4-16-12	4-16-12	
Phenanthrene	**0.21**	0.0076	EPA 8270/SIM	4-16-12	4-16-12	
Anthracene	**0.027**	0.0076	EPA 8270/SIM	4-16-12	4-16-12	
Fluoranthene	**0.056**	0.0076	EPA 8270/SIM	4-16-12	4-16-12	
Pyrene	**0.039**	0.0076	EPA 8270/SIM	4-16-12	4-16-12	
Benz[a]anthracene	**0.010**	0.0076	EPA 8270/SIM	4-16-12	4-16-12	
Chrysene	**0.013**	0.0076	EPA 8270/SIM	4-16-12	4-16-12	
Benzo(b)fluoranthene	**0.013**	0.0076	EPA 8270/SIM	4-16-12	4-16-12	
Benzo(j,k)fluoranthene	**ND**	0.0076	EPA 8270/SIM	4-16-12	4-16-12	
Benzo(a)pyrene	**ND**	0.0076	EPA 8270/SIM	4-16-12	4-16-12	
Indeno(1,2,3-cd)pyrene	**ND**	0.0076	EPA 8270/SIM	4-16-12	4-16-12	
Dibenzo(a,h)anthracene	**ND**	0.0076	EPA 8270/SIM	4-16-12	4-16-12	
Benzo(ghi)perylene	**ND**	0.0076	EPA 8270/SIM	4-16-12	4-16-12	
Surrogate:	*Percent Recovery*	*Control Limits*				
2-Fluorobiphenyl	*58*	*43 - 109*				
Pyrene-d10	*68*	*38 - 128*				
D14-Terphenyl	*62*	*33 - 119*				

Date of Report: April 17, 2012
Samples Submitted: April 7, 2012
Laboratory Reference: 1204-041
Project: 21-1-21623-016

PAHs by EPA 8270D/SIM
(with silica gel clean-up)

Matrix: Soil
Units: mg/Kg

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**GP-17:8**					
Laboratory ID:	04-041-24					
Naphthalene	**ND**	0.0083	EPA 8270/SIM	4-16-12	4-16-12	
2-Methylnaphthalene	**ND**	0.0083	EPA 8270/SIM	4-16-12	4-16-12	
1-Methylnaphthalene	**ND**	0.0083	EPA 8270/SIM	4-16-12	4-16-12	
Acenaphthylene	**ND**	0.0083	EPA 8270/SIM	4-16-12	4-16-12	
Acenaphthene	**ND**	0.0083	EPA 8270/SIM	4-16-12	4-16-12	
Fluorene	**ND**	0.0083	EPA 8270/SIM	4-16-12	4-16-12	
Phenanthrene	**ND**	0.0083	EPA 8270/SIM	4-16-12	4-16-12	
Anthracene	**ND**	0.0083	EPA 8270/SIM	4-16-12	4-16-12	
Fluoranthene	**ND**	0.0083	EPA 8270/SIM	4-16-12	4-16-12	
Pyrene	**ND**	0.0083	EPA 8270/SIM	4-16-12	4-16-12	
Benz[a]anthracene	**ND**	0.0083	EPA 8270/SIM	4-16-12	4-16-12	
Chrysene	**ND**	0.0083	EPA 8270/SIM	4-16-12	4-16-12	
Benzo(b)fluoranthene	**ND**	0.0083	EPA 8270/SIM	4-16-12	4-16-12	
Benzo(j,k)fluoranthene	**ND**	0.0083	EPA 8270/SIM	4-16-12	4-16-12	
Benzo(a)pyrene	**ND**	0.0083	EPA 8270/SIM	4-16-12	4-16-12	
Indeno(1,2,3-cd)pyrene	**ND**	0.0083	EPA 8270/SIM	4-16-12	4-16-12	
Dibenzo(a,h)anthracene	**ND**	0.0083	EPA 8270/SIM	4-16-12	4-16-12	
Benzo(ghi)perylene	**ND**	0.0083	EPA 8270/SIM	4-16-12	4-16-12	
Surrogate:	*Percent Recovery*	*Control Limits*				
2-Fluorobiphenyl	*68*	*43 - 109*				
Pyrene-d10	*79*	*38 - 128*				
D14-Terphenyl	*72*	*33 - 119*				

Date of Report: April 17, 2012
Samples Submitted: April 7, 2012
Laboratory Reference: 1204-041
Project: 21-1-21623-016

PAHs by EPA 8270D/SIM
METHOD BLANK QUALITY CONTROL
(with silica gel clean-up)

Matrix: Soil
Units: mg/Kg

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Laboratory ID:	MB0416S1					
Naphthalene	**ND**	0.0067	EPA 8270/SIM	4-16-12	4-16-12	
2-Methylnaphthalene	**ND**	0.0067	EPA 8270/SIM	4-16-12	4-16-12	
1-Methylnaphthalene	**ND**	0.0067	EPA 8270/SIM	4-16-12	4-16-12	
Acenaphthylene	**ND**	0.0067	EPA 8270/SIM	4-16-12	4-16-12	
Acenaphthene	**ND**	0.0067	EPA 8270/SIM	4-16-12	4-16-12	
Fluorene	**ND**	0.0067	EPA 8270/SIM	4-16-12	4-16-12	
Phenanthrene	**ND**	0.0067	EPA 8270/SIM	4-16-12	4-16-12	
Anthracene	**ND**	0.0067	EPA 8270/SIM	4-16-12	4-16-12	
Fluoranthene	**ND**	0.0067	EPA 8270/SIM	4-16-12	4-16-12	
Pyrene	**ND**	0.0067	EPA 8270/SIM	4-16-12	4-16-12	
Benz[a]anthracene	**ND**	0.0067	EPA 8270/SIM	4-16-12	4-16-12	
Chrysene	**ND**	0.0067	EPA 8270/SIM	4-16-12	4-16-12	
Benzo(b)fluoranthene	**ND**	0.0067	EPA 8270/SIM	4-16-12	4-16-12	
Benzo(j,k)fluoranthene	**ND**	0.0067	EPA 8270/SIM	4-16-12	4-16-12	
Benzo(a)pyrene	**ND**	0.0067	EPA 8270/SIM	4-16-12	4-16-12	
Indeno(1,2,3-cd)pyrene	**ND**	0.0067	EPA 8270/SIM	4-16-12	4-16-12	
Dibenzo(a,h)anthracene	**ND**	0.0067	EPA 8270/SIM	4-16-12	4-16-12	
Benzo(ghi)perylene	**ND**	0.0067	EPA 8270/SIM	4-16-12	4-16-12	
Surrogate:	*Percent Recovery*	*Control Limits*				
2-Fluorobiphenyl	*78*	*43 - 109*				
Pyrene-d10	*94*	*38 - 128*				
D14-Terphenyl	*90*	*33 - 119*				

Date of Report: April 17, 2012
Samples Submitted: April 7, 2012
Laboratory Reference: 1204-041
Project: 21-1-21623-016

PAHs by EPA 8270D/SIM
MS/MSD QUALITY CONTROL
(with silica gel clean-up)

Matrix: Soil
Units: mg/Kg

Analyte	Result		Spike Level		Source Result	Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
MATRIX SPIKES											
Laboratory ID:	04-041-24										
	MS	MSD	MS	MSD		MS	MSD				
Naphthalene	**0.0627**	**0.0614**	0.0833	0.0833	ND	75	74	39 - 110	2	21	
Acenaphthylene	**0.0804**	**0.0819**	0.0833	0.0833	ND	97	98	47 - 124	2	21	
Acenaphthene	**0.0669**	**0.0673**	0.0833	0.0833	ND	80	81	50 - 120	1	20	
Fluorene	**0.0656**	**0.0636**	0.0833	0.0833	ND	79	76	52 - 126	3	21	
Phenanthrene	**0.0635**	**0.0604**	0.0833	0.0833	ND	76	73	41 - 130	5	22	
Anthracene	**0.0691**	**0.0671**	0.0833	0.0833	ND	83	81	48 - 124	3	23	
Fluoranthene	**0.0727**	**0.0702**	0.0833	0.0833	ND	87	84	40 - 137	3	23	
Pyrene	**0.0713**	**0.0688**	0.0833	0.0833	ND	86	83	36 - 139	4	23	
Benz[a]anthracene	**0.0722**	**0.0683**	0.0833	0.0833	ND	87	82	43 - 127	6	21	
Chrysene	**0.0586**	**0.0552**	0.0833	0.0833	ND	70	66	41 - 133	6	19	
Benzo(b)fluoranthene	**0.0749**	**0.0713**	0.0833	0.0833	ND	90	86	40 - 132	5	25	
Benzo(j,k)fluoranthene	**0.0645**	**0.0620**	0.0833	0.0833	ND	77	74	35 - 132	4	25	
Benzo(a)pyrene	**0.0625**	**0.0600**	0.0833	0.0833	ND	75	72	37 - 131	4	26	
Indeno(1,2,3-cd)pyrene	**0.0633**	**0.0601**	0.0833	0.0833	ND	76	72	39 - 134	5	23	
Dibenzo(a,h)anthracene	**0.0699**	**0.0655**	0.0833	0.0833	ND	84	79	40 - 137	6	21	
Benzo(ghi)perylene	**0.0685**	**0.0647**	0.0833	0.0833	ND	82	78	35 - 135	6	22	
Surrogate:											
2-Fluorobiphenyl						*69*	*69*	*43 - 109*			
Pyrene-d10						*78*	*74*	*38 - 128*			
D14-Terphenyl						*71*	*67*	*33 - 119*			

Date of Report: April 17, 2012
Samples Submitted: April 7, 2012
Laboratory Reference: 1204-041
Project: 21-1-21623-016

% MOISTURE

Date Analyzed: 4-9-12

Client ID	Lab ID	% Moisture
GP-6:0.5	04-041-01	4
GP-6:7	04-041-02	11
GP-7:0.5	04-041-03	8
GP-7:8	04-041-04	20
GP-8:0.5	04-041-05	10
GP-8:7	04-041-06	11
GP-9:0.5	04-041-07	7
GP-9:8	04-041-08	16
GP-10:0.5	04-041-09	9
GP-10:9	04-041-10	7
GP-11:0.5	04-041-11	20
GP-11:8	04-041-12	14
GP-12:0.5	04-041-13	10
GP-12:8	04-041-14	24
GP-13:0.5	04-041-15	8
GP-13:6	04-041-16	10
GP-14:0.5	04-041-17	11
GP-14:7	04-041-18	14
GP-15:0.5	04-041-19	19
GP-15:8	04-041-20	11
GP-16:0.5	04-041-21	21
GP-16:7	04-041-22	12
GP-17:0.5	04-041-23	11
GP-17:8	04-041-24	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

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

Company: STW
Project Number: 21-1-21623-016
Project Name: MAGNOLIA - PIER 91
Project Manager: SWG / Dave Randall
Sampled by: JML

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: 04-041

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	LEAD (TOTAL) *				% Moisture
1	GP6:0.5	4/6/12	08:36	Soil	1	X	X ND DB												X	X ND DB		X				X
2	GP6:7		08:45		6	X													X							X
3	GP7:0.5		09:30		1	X	X ND												X	X ND		X				X
4	GP7:8		09:45		6	X													X							X
5	GP-8:0.5		09:50		1	X	X ND												X	X ND		X				X
6	GP-8:7		10:00		6	X													X							X
7	GP-9:0.5		10:30		1	X	X ND												X	X ND		X				X
8	GP-9:8		10:45		6	X													X							X
9	GP-10:0.5		10:55		1	X	X ND												X	X ND		X				X
10	GP-10:9		11:35		6	X													X							X

	Signature	Company	Date	Time
Relinquished		STW	4/7/12	12:00
Received		GeoTech	4/7/12	1200
Relinquished				
Received				
Relinquished				
Received				
Reviewed/Date		Reviewed/Date		

Comments/Special Instructions

(X) Added 4/11/12. DB
○ Added 4/12/12. DB (3 day TAT)
● Added 4/13/12 DB (3 day TAT
Ø Added 4/13/12. DB (3 day TAT)

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: STW
Project Number: 21-1-21623-016
Project Name: Magnolia - Pier 91
Project Manager: SWG
Sampled by: JML

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: 04-041

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	Lead (total)				% Moisture
11	GP-11:0.5	4/6/12	11:40	Soil	1	X													X	NO		X				X
12	GP-11:8		11:55		6													YES								X
13	GP-12:0.5		12:25		1															NO		X				X
14	GP-12:8		12:30		6													YES								X
15	GP-13:0.5		12:40		1															NO		X				X
16	GP-13:6		12:50		6													YES								X
17	GP-14:0.5		13:20		1															NO		X				X
18	GP-14:7		13:30		7					X			X					YES								X
19	GP-15:0.5		13:55		1															NO		X				X
20	GP-15:8		14:00		6																					X

	Signature	Company	Date	Time
Relinquished		STW	4/7/12	12:00
Received			4/7/12	1200
Relinquished				
Received				
Relinquished				
Received				
Reviewed/Date		Reviewed/Date		

Comments/Special Instructions

Chromatograms with final report ☐

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

Chain of Custody

OnSite Environmental Inc.
Phone: (425) 883-3881 • Fax: (425) 885-4603

Company: STW
Project Number: 21-1-21623-016
Project Name: Magnolia - Pier 91
Project Manager: SWG
Sampled by: JML

Turnaround Request (in working days)

(Check One)

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

Laboratory Number: 04-041

Requested Analysis

Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	# of Cont.	NWTPH-HCID	NWTPH-Gx/BTEX	NWTPH-Dx	Volatiles by 8260B	Halogenated Volatiles by 8260B	Semivolatiles by 8270D	PAHs by 8270D / SIM	PCBs by 8082	Pesticides by 8081A	Herbicides by 8151A	Total RCRA Metals (8)	TCLP Metals	HEM by 1664	Total MCTA metals	LEAD (total)	% Moisture
21	GP-16 @ 0.5	4/6/12	14:10	Soil	1	~~X~~												~~X~~	X	X	X
22	GP-16 @ 7	↓	14:20	↓	6	X		⊗				⊘	⊘		cancelled DB				X		X
23	GP-17 @ 0.5		14:50		1	~~X~~												~~X~~	X		X
24	GP-17 @ 8		15:00		6	X		⊗				⊘	●						X		X

	Signature	Company	Date	Time
Relinquished by		STW	4/7/12	12:00
Received by			4/7/12	1200
Relinquished by				
Received by				
Relinquished by				
Received by				
Reviewed by/Date		Reviewed by/Date		

Comments/Special Instructions:

⊗ Added 4/11/12. DB (STA)
○ Added 4/12/12. DB (3 day TAT) Cancelled. DB
● Added 4/13/12. DB (3 day TAT)
⊘ Added 4/13/12. DB (3 day TAT)

Chromatograms with final report ☐

DISTRIBUTION LEGEND: White - OnSite Copy Yellow - Report Copy Pink - Client Copy

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: STW
Project Number: 21-1-21623-016
Project Name: MAGNOLIA - PIER 91
Project Manager: SWG
Sampled by: JML

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: 04-041

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	Total PP Metals *	Dissolved PP Metals *			% Moisture
25	GP-6:GW	4/7/12	09:01	Water	9	X				X												X	X			X DB
26	GP-8:GW		10:10																							
27	GP-11:GW		12:00						⊗																	
28	GP-13:GW		13:00																							
29	GP-16:GW		14:30																							
30	GP-14:GW		15:25																							

	Signature	Company	Date	Time
Relinquished		STW	4/7/12	12:00
Received		OnSite	4/7/12	1200
Relinquished				
Received				
Relinquished				
Received				
Reviewed/Date		Reviewed/Date		

Comments/Special Instructions

LAB TO FILTER WATER SAMPLES,

PP METALS = PRIORITY POLLUTANT METALS

⊗ Added 4/11/12. DB (STA)

Chromatograms with final report ☐

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

OnSite Environmental Inc.

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

April 30, 2012

David Randall
Shannon & Wilson, Inc.
400 N 34th Street, Suite 100
Seattle, WA 98103

Re: Analytical Data for Project 21-1-21623-016
Laboratory Reference No. 1204-041B

Dear David:

Enclosed are the analytical results and associated quality control data for samples submitted on April 7, 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: April 30, 2012
Samples Submitted: April 7, 2012
Laboratory Reference: 1204-041B
Project: 21-1-21623-016

Case Narrative

Samples were collected on April 6, 2012 and received by the laboratory on April 7, 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: April 30, 2012
Samples Submitted: April 7, 2012
Laboratory Reference: 1204-041B
Project: 21-1-21623-016

TOTAL METALS
EPA 6010B

Matrix: Soil
Units: mg/kg (ppm)

Analyte	Result	PQL	EPA Method	Date Prepared	Date Analyzed	Flags
Lab ID:	04-041-08					
Client ID:	**GP-9:8**					
Antimony	**ND**	6.0	6010B	4-30-12	4-30-12	
Selenium	**ND**	12	6010B	4-30-12	4-30-12	
Lab ID:	04-041-12					
Client ID:	**GP-11:8**					
Antimony	**ND**	5.8	6010B	4-30-12	4-30-12	
Selenium	**ND**	12	6010B	4-30-12	4-30-12	

Date of Report: April 30, 2012
Samples Submitted: April 7, 2012
Laboratory Reference: 1204-041B
Project: 21-1-21623-016

TOTAL METALS
EPA 6010B
METHOD BLANK QUALITY CONTROL

Date Extracted:	4-30-12
Date Analyzed:	4-30-12
Matrix:	Soil
Units:	mg/kg (ppm)
Lab ID:	MB0430SH1

Analyte	Method	Result	PQL
Antimony	6010B	**ND**	5.0
Selenium	6010B	**ND**	10

Date of Report: April 30, 2012
Samples Submitted: April 7, 2012
Laboratory Reference: 1204-041B
Project: 21-1-21623-016

TOTAL METALS
EPA 6010B
DUPLICATE QUALITY CONTROL

Date Extracted: 4-30-12
Date Analyzed: 4-30-12

Matrix: Soil
Units: mg/kg (ppm)

Lab ID: 04-041-08

Analyte	Sample Result	Duplicate Result	RPD	PQL	Flags
Antimony	**ND**	**ND**	NA	5.0	
Selenium	**ND**	**ND**	NA	10	

Date of Report: April 30, 2012
Samples Submitted: April 7, 2012
Laboratory Reference: 1204-041B
Project: 21-1-21623-016

TOTAL METALS
EPA 6010B
MS/MSD QUALITY CONTROL

Date Extracted: 4-30-12
Date Analyzed: 4-30-12

Matrix: Soil
Units: mg/kg (ppm)

Lab ID: 04-041-08

Analyte	Spike Level	MS	Percent Recovery	MSD	Percent Recovery	RPD	Flags
Antimony	100	**90.0**	90	**87.2**	87	3	
Selenium	100	**99.2**	99	**101**	101	2	

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

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

Laboratory Number: 04-041

Company: STW
Project Number: 21-1-21623-016
Project Name: MAGNOLIA - PIER 91
Project Manager: SWG / Dave Randall
Sampled by: JML

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	LEAD (TOTAL) *		Se, Sb		% Moisture
1	GP6:0.5	4/6/12	08:36	Soil	1	X													X			X				X
2	GP6:7		08:45		6	X													X							X
3	GP7:0.5		09:30		1	X													X			X				X
4	GP7:8		09:45		6	X													X							X
5	GP-8:0.5		09:50		1	X													X			X				X
6	GP-8:7		10:00		6	X													X							X
7	GP-9:0.5		10:30		1	X													X			X				X
8	GP-9:8		10:45		6	X													X					Δ		X
9	GP-10:0.5		10:55		1	X													X			X				X
10	GP-10:9		11:35		6	X													X							X

	Signature	Company	Date	Time
Relinquished		STW	4/7/12	12:00
Received		GeoEngineers	4/7/12	1200
Relinquished				
Received				
Relinquished				
Received				
Reviewed/Date		Reviewed/Date		

Comments/Special Instructions

(X) Added 4/11/12. DB
○ Added 4/12/12. DB (3 day TAT)
● Added 4/13/12 DB (3 day TAT
Ø Added 4/13/12. DB (3 day TAT)
Δ Added 4/26/12. DB (3 day TAT)

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: STW
Project Number: 21-1-21623-016
Project Name: Magnolia - Pier 91
Project Manager: SWG
Sampled by: JML

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: 04-041

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	Lead (total)		Se, Sb		% Moisture
11	GP-11:0.5	4/6/12	11:40	Soil	1	X													X			X				X
12	GP-11:8	↓	11:55	↓	6	↓												YES	↓					Δ		X
13	GP-12:0.5		12:25		1																	X				X
14	GP-12:8		12:30		6													YES								X
15	GP-13:0.5		12:40		1																	X				X
16	GP-13:6		12:50		6													YES								X
17	GP-14:0.5		13:20		1																	X				X
18	GP-14:7		13:30		7					X			X					YES								X
19	GP-15:0.5		13:55		1																	X				X
20	GP-15:8	↓	14:00	↓	6	↓													↓							X

	Signature	Company	Date	Time
Relinquished		STW	4/7/12	12:00
Received		OnSite Env.	4/7/12	1200
Relinquished				
Received				
Relinquished				
Received				
Reviewed/Date		Reviewed/Date		

Comments/Special Instructions

Δ - Added 4/26/12. DB (3 day TAT)

Chromatograms with final report ☐

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

Chain of Custody

OnSite Environmental Inc.
Phone: (425) 883-3881 • Fax: (425) 885-4603

Company: STW
Project Number: 21-1-21623-016
Project Name: Magnolia - Pier 91
Project Manager: SWG
Sampled by: JML

Turnaround Request (in working days)

(Check One)

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

Laboratory Number: 04-041

Requested Analysis

Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	# of Cont.	NWTPH-HCID *	NWTPH-Gx/BTEX	NWTPH-Dx	Volatiles by 8260B	Halogenated Volatiles by 8260B	Semivolatiles by 8270D	PAHs by 8270D / SIM	PCBs by 8082	Pesticides by 8081A	Herbicides by 8151A	Total RCRA Metals (8)	TCLP Metals	HEM by 1664	Total MCTA metals *	LEAD (total) *					% Moisture
21	GP-16:0.5	4/6/12	14:10	Soil	1	~~X~~													~~X~~	X					X
22	GP-16:7		14:20		6	X		⊗				⊘	~~⊘~~ cancelled DB						X						X
23	GP-17:0.5		14:50		1	~~X~~													~~X~~	X					X
24	GP-17:8		15:00		6	X		⊗				⊘	●						X						X

	Signature	Company	Date	Time
Relinquished by		STW	4/7/12	12:00
Received by			4/7/12	1200
Relinquished by				
Received by				
Relinquished by				
Received by				
Reviewed by/Date		Reviewed by/Date		

Comments/Special Instructions:

⊗ Added 4/11/12. DB (STA)
⊘ Added 4/12/12. DB (3 day TAT) Cancelled. DB
● Added 4/13/12. DB (3 day TAT)
⊘ Added 4/13/12. DB (3 day TAT)

Chromatograms with final report ☐

DISTRIBUTION LEGEND: White - OnSite Copy Yellow - Report Copy Pink - Client Copy

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: STW
Project Number: 21-1-21623-016
Project Name: MAGNOLIA - PIER 91
Project Manager: SWG
Sampled by: JML

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: 04-041

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	Total PP Metals *	Dissolved PP Metals *			% Moisture
25	GP-6:GW	4/7/12	09:01	Water	9	X				X												X	X			~~X~~ DB
26	GP-8:GW	↓	10:10	↓	↓	↓				↓												↓	↓			
27	GP-11:GW		12:00						⊗																	
28	GP-13:GW		13:00																							
29	GP-16:GW		14:30																							
30	GP-14:GW		15:25	↓	↓	↓				↓												↓	↓			

	Signature	Company	Date	Time
Relinquished		STW	4/7/12	12:00
Received		OSE	4/7/12	1200
Relinquished				
Received				
Relinquished				
Received				

Comments/Special Instructions

LAB TO FILTER WATER SAMPLE,

PP METALS = PRIORITY POLLUTANT METALS

⊗ Added 4/11/12. DB (STA)

Reviewed/Date

Reviewed/Date

Chromatograms with final report ☐

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

OnSite Environmental Inc.

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

April 19, 2012

David Randall
Shannon & Wilson, Inc.
400 N 34th Street, Suite 100
Seattle, WA 98103

Re: Analytical Data for Project 21-1-21623-016
Laboratory Reference No. 1204-055

Dear David:

Enclosed are the analytical results and associated quality control data for samples submitted on April 9, 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: April 19, 2012
Samples Submitted: April 9, 2012
Laboratory Reference: 1204-055
Project: 21-1-21623-016

Case Narrative

Samples were collected on April 9, 2012 and received by the laboratory on April 9, 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.

NWTPH Gx/BTEX Analysis

Any other QA/QC issues associated with this extraction and analysis will be indicated with a footnote reference and discussed in detail on the Data Qualifier page.

Date of Report: April 19, 2012
Samples Submitted: April 9, 2012
Laboratory Reference: 1204-055
Project: 21-1-21623-016

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

Matrix: Soil
Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**Soil Stockpile Comp**					
Laboratory ID:	04-055-16					
Gasoline Range Organics	**ND**	22	NWTPH-HCID	4-13-12	4-16-12	
Diesel Range Organics	**ND**	55	NWTPH-HCID	4-13-12	4-16-12	
Lube Oil	**Detected**	110	NWTPH-HCID	4-13-12	4-16-12	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*125*	*50-150*				

Date of Report: April 19, 2012
Samples Submitted: April 9, 2012
Laboratory Reference: 1204-055
Project: 21-1-21623-016

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

Matrix: Soil
Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0413S1					
Gasoline Range Organics	**ND**	20	NWTPH-HCID	4-13-12	4-16-12	
Diesel Range Organics	**ND**	50	NWTPH-HCID	4-13-12	4-16-12	
Lube Oil Range Organics	**ND**	100	NWTPH-HCID	4-13-12	4-16-12	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*118*	*50-150*				

Date of Report: April 19, 2012
Samples Submitted: April 9, 2012
Laboratory Reference: 1204-055
Project: 21-1-21623-016

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:	**GP-14:S02:7**					
Laboratory ID:	04-055-04					
Diesel Range Organics	**46**	29	NWTPH-Dx	4-13-12	4-16-12	
Lube Oil Range Organics	**ND**	57	NWTPH-Dx	4-13-12	4-16-12	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*96*	*50-150*				

Date of Report: April 19, 2012
Samples Submitted: April 9, 2012
Laboratory Reference: 1204-055
Project: 21-1-21623-016

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

Matrix: Soil
Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0413S1					
Diesel Range Organics	**ND**	25	NWTPH-Dx	4-13-12	4-13-12	
Lube Oil Range Organics	**ND**	50	NWTPH-Dx	4-13-12	4-13-12	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*110*	*50-150*				

Analyte	Result		Percent Recovery	Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE							
Laboratory ID:	04-069-01						
	ORIG	DUP					
Diesel Range Organics	**ND**	**ND**			NA	NA	
Lube Oil Range Organics	**ND**	**ND**			NA	NA	
Surrogate:							
o-Terphenyl			*87* *84*	*50-150*			

Date of Report: April 19, 2012
Samples Submitted: April 9, 2012
Laboratory Reference: 1204-055
Project: 21-1-21623-016

PAHs by EPA 8270D/SIM
(with silica gel clean-up)

Matrix: Soil
Units: mg/Kg

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**GP-14:S02:7**					
Laboratory ID:	04-055-04					
Naphthalene	**0.054**	0.0076	EPA 8270/SIM	4-16-12	4-16-12	
2-Methylnaphthalene	**0.028**	0.0076	EPA 8270/SIM	4-16-12	4-16-12	
1-Methylnaphthalene	**0.028**	0.0076	EPA 8270/SIM	4-16-12	4-16-12	
Acenaphthylene	**ND**	0.0076	EPA 8270/SIM	4-16-12	4-16-12	
Acenaphthene	**ND**	0.0076	EPA 8270/SIM	4-16-12	4-16-12	
Fluorene	**0.0093**	0.0076	EPA 8270/SIM	4-16-12	4-16-12	
Phenanthrene	**0.029**	0.0076	EPA 8270/SIM	4-16-12	4-16-12	
Anthracene	**0.010**	0.0076	EPA 8270/SIM	4-16-12	4-16-12	
Fluoranthene	**0.046**	0.0076	EPA 8270/SIM	4-16-12	4-16-12	
Pyrene	**0.051**	0.0076	EPA 8270/SIM	4-16-12	4-16-12	
Benz[a]anthracene	**0.020**	0.0076	EPA 8270/SIM	4-16-12	4-16-12	
Chrysene	**0.019**	0.0076	EPA 8270/SIM	4-16-12	4-16-12	
Benzo(b)fluoranthene	**0.027**	0.0076	EPA 8270/SIM	4-16-12	4-16-12	
Benzo(j,k)fluoranthene	**ND**	0.0076	EPA 8270/SIM	4-16-12	4-16-12	
Benzo(a)pyrene	**0.016**	0.0076	EPA 8270/SIM	4-16-12	4-16-12	
Indeno(1,2,3-cd)pyrene	**0.012**	0.0076	EPA 8270/SIM	4-16-12	4-16-12	
Dibenzo(a,h)anthracene	**ND**	0.0076	EPA 8270/SIM	4-16-12	4-16-12	
Benzo(ghi)perylene	**0.013**	0.0076	EPA 8270/SIM	4-16-12	4-16-12	
Surrogate:	*Percent Recovery*	*Control Limits*				
2-Fluorobiphenyl	*80*	*43 - 109*				
Pyrene-d10	*88*	*38 - 128*				
D14-Terphenyl	*81*	*33 - 119*				

Date of Report: April 19, 2012
Samples Submitted: April 9, 2012
Laboratory Reference: 1204-055
Project: 21-1-21623-016

PAHs by EPA 8270D/SIM
METHOD BLANK QUALITY CONTROL
(with silica gel clean-up)

Matrix: Soil
Units: mg/Kg

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Laboratory ID:	MB0416S1					
Naphthalene	**ND**	0.0067	EPA 8270/SIM	4-16-12	4-16-12	
2-Methylnaphthalene	**ND**	0.0067	EPA 8270/SIM	4-16-12	4-16-12	
1-Methylnaphthalene	**ND**	0.0067	EPA 8270/SIM	4-16-12	4-16-12	
Acenaphthylene	**ND**	0.0067	EPA 8270/SIM	4-16-12	4-16-12	
Acenaphthene	**ND**	0.0067	EPA 8270/SIM	4-16-12	4-16-12	
Fluorene	**ND**	0.0067	EPA 8270/SIM	4-16-12	4-16-12	
Phenanthrene	**ND**	0.0067	EPA 8270/SIM	4-16-12	4-16-12	
Anthracene	**ND**	0.0067	EPA 8270/SIM	4-16-12	4-16-12	
Fluoranthene	**ND**	0.0067	EPA 8270/SIM	4-16-12	4-16-12	
Pyrene	**ND**	0.0067	EPA 8270/SIM	4-16-12	4-16-12	
Benz[a]anthracene	**ND**	0.0067	EPA 8270/SIM	4-16-12	4-16-12	
Chrysene	**ND**	0.0067	EPA 8270/SIM	4-16-12	4-16-12	
Benzo(b)fluoranthene	**ND**	0.0067	EPA 8270/SIM	4-16-12	4-16-12	
Benzo(j,k)fluoranthene	**ND**	0.0067	EPA 8270/SIM	4-16-12	4-16-12	
Benzo(a)pyrene	**ND**	0.0067	EPA 8270/SIM	4-16-12	4-16-12	
Indeno(1,2,3-cd)pyrene	**ND**	0.0067	EPA 8270/SIM	4-16-12	4-16-12	
Dibenzo(a,h)anthracene	**ND**	0.0067	EPA 8270/SIM	4-16-12	4-16-12	
Benzo(ghi)perylene	**ND**	0.0067	EPA 8270/SIM	4-16-12	4-16-12	
Surrogate:	*Percent Recovery*	*Control Limits*				
2-Fluorobiphenyl	*78*	*43 - 109*				
Pyrene-d10	*94*	*38 - 128*				
D14-Terphenyl	*90*	*33 - 119*				

Date of Report: April 19, 2012
Samples Submitted: April 9, 2012
Laboratory Reference: 1204-055
Project: 21-1-21623-016

PAHs by EPA 8270D/SIM
MS/MSD QUALITY CONTROL
(with silica gel clean-up)

Matrix: Soil
Units: mg/Kg

Analyte	Result		Spike Level		Source Result	Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
MATRIX SPIKES											
Laboratory ID:	04-041-24										
	MS	MSD	MS	MSD		MS	MSD				
Naphthalene	**0.0627**	**0.0614**	0.0833	0.0833	ND	75	74	39 - 110	2	21	
Acenaphthylene	**0.0804**	**0.0819**	0.0833	0.0833	ND	97	98	47 - 124	2	21	
Acenaphthene	**0.0669**	**0.0673**	0.0833	0.0833	ND	80	81	50 - 120	1	20	
Fluorene	**0.0656**	**0.0636**	0.0833	0.0833	ND	79	76	52 - 126	3	21	
Phenanthrene	**0.0635**	**0.0604**	0.0833	0.0833	ND	76	73	41 - 130	5	22	
Anthracene	**0.0691**	**0.0671**	0.0833	0.0833	ND	83	81	48 - 124	3	23	
Fluoranthene	**0.0727**	**0.0702**	0.0833	0.0833	ND	87	84	40 - 137	3	23	
Pyrene	**0.0713**	**0.0688**	0.0833	0.0833	ND	86	83	36 - 139	4	23	
Benz[a]anthracene	**0.0722**	**0.0683**	0.0833	0.0833	ND	87	82	43 - 127	6	21	
Chrysene	**0.0586**	**0.0552**	0.0833	0.0833	ND	70	66	41 - 133	6	19	
Benzo(b)fluoranthene	**0.0749**	**0.0713**	0.0833	0.0833	ND	90	86	40 - 132	5	25	
Benzo(j,k)fluoranthene	**0.0645**	**0.0620**	0.0833	0.0833	ND	77	74	35 - 132	4	25	
Benzo(a)pyrene	**0.0625**	**0.0600**	0.0833	0.0833	ND	75	72	37 - 131	4	26	
Indeno(1,2,3-cd)pyrene	**0.0633**	**0.0601**	0.0833	0.0833	ND	76	72	39 - 134	5	23	
Dibenzo(a,h)anthracene	**0.0699**	**0.0655**	0.0833	0.0833	ND	84	79	40 - 137	6	21	
Benzo(ghi)perylene	**0.0685**	**0.0647**	0.0833	0.0833	ND	82	78	35 - 135	6	22	
Surrogate:											
2-Fluorobiphenyl						*69*	*69*	*43 - 109*			
Pyrene-d10						*78*	*74*	*38 - 128*			
D14-Terphenyl						*71*	*67*	*33 - 119*			

Date of Report: April 19, 2012
Samples Submitted: April 9, 2012
Laboratory Reference: 1204-055
Project: 21-1-21623-016

TOTAL METALS
EPA 6010B/7471A

Matrix: Soil
Units: mg/kg (ppm)

Analyte	Result	PQL	EPA Method	Date Prepared	Date Analyzed	Flags
Lab ID:	04-055-16					
Client ID:	**Soil Stockpile Comp**					
Arsenic	**ND**	11	6010B	4-13-12	4-13-12	
Cadmium	**ND**	0.55	6010B	4-13-12	4-16-12	
Chromium	**37**	0.55	6010B	4-13-12	4-16-12	
Lead	**33**	5.5	6010B	4-13-12	4-16-12	
Mercury	**ND**	0.27	7471A	4-18-12	4-18-12	

Date of Report: April 19, 2012
Samples Submitted: April 9, 2012
Laboratory Reference: 1204-055
Project: 21-1-21623-016

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

Date Extracted:	4-13&18-12
Date Analyzed:	4-13&18-12
Matrix:	Soil
Units:	mg/kg (ppm)
Lab ID:	MB0413SM1&MB0418S1

Analyte	Method	Result	PQL
Arsenic	6010B	**ND**	10
Cadmium	6010B	**ND**	0.50
Chromium	6010B	**ND**	0.50
Lead	6010B	**ND**	5.0
Mercury	7471A	**ND**	0.25

Date of Report: April 19, 2012
Samples Submitted: April 9, 2012
Laboratory Reference: 1204-055
Project: 21-1-21623-016

TOTAL METALS
EPA 6010B/7471A
DUPLICATE QUALITY CONTROL

Date Extracted: 4-13&18-12
Date Analyzed: 4-13&18-12

Matrix: Soil
Units: mg/kg (ppm)

Lab ID: 04-076-09

Analyte	Sample Result	Duplicate Result	RPD	PQL	Flags
Arsenic	**ND**	**ND**	NA	10	
Cadmium	**ND**	**ND**	NA	0.50	
Chromium	**35.9**	**42.7**	17	0.50	
Lead	**ND**	**ND**	NA	5.0	
Mercury	**ND**	**ND**	NA	0.25	

Date of Report: April 19, 2012
Samples Submitted: April 9, 2012
Laboratory Reference: 1204-055
Project: 21-1-21623-016

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

Date Extracted: 4-13&18-12
Date Analyzed: 4-13&18-12

Matrix: Soil
Units: mg/kg (ppm)

Lab ID: 04-076-09

Analyte	Spike Level	MS	Percent Recovery	MSD	Percent Recovery	RPD	Flags
Arsenic	100	**88.6**	89	**85.9**	86	3	
Cadmium	50.0	**46.5**	93	**46.0**	92	1	
Chromium	100	**126**	90	**128**	92	2	
Lead	250	**241**	96	**241**	96	0	
Mercury	0.500	**0.475**	95	**0.475**	95	0	

Date of Report: April 19, 2012
Samples Submitted: April 9, 2012
Laboratory Reference: 1204-055
Project: 21-1-21623-016

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:	**Soil Stockpile Comp**					
Laboratory ID:	04-055-16					
Diesel Range Organics	**ND**	27	NWTPH-Dx	4-18-12	4-18-12	
Lube Oil	**160**	55	NWTPH-Dx	4-18-12	4-18-12	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*115*	*50-150*				

Date of Report: April 19, 2012
Samples Submitted: April 9, 2012
Laboratory Reference: 1204-055
Project: 21-1-21623-016

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

Matrix: Soil
Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0418S1					
Diesel Range Organics	**ND**	25	NWTPH-Dx	4-18-12	4-18-12	
Lube Oil Range Organics	**ND**	50	NWTPH-Dx	4-18-12	4-18-12	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*106*	*50-150*				

Analyte	Result		Percent Recovery	Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE							
Laboratory ID:	04-055-16						
	ORIG	DUP					
Diesel Range Organics	**ND**	**ND**			NA	NA	
Lube Oil	**150**	**106**			34	NA	
Surrogate:							
o-Terphenyl			*115* *108*	*50-150*			

Date of Report: April 19, 2012
Samples Submitted: April 9, 2012
Laboratory Reference: 1204-055
Project: 21-1-21623-016

PCBs by EPA 8082

Matrix: Soil
Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**Soil Stockpile Comp**					
Laboratory ID:	04-055-16					
PCB-aroclor 1016	**ND**	0.055	EPA 8082	4-18-12	4-18-12	
PCB-aroclor 1221	**ND**	0.055	EPA 8082	4-18-12	4-18-12	
PCB-aroclor 1232	**ND**	0.055	EPA 8082	4-18-12	4-18-12	
PCB-aroclor 1242	**ND**	0.055	EPA 8082	4-18-12	4-18-12	
PCB-aroclor 1248	**ND**	0.055	EPA 8082	4-18-12	4-18-12	
PCB-aroclor 1254	**ND**	0.055	EPA 8082	4-18-12	4-18-12	
PCB-aroclor 1260	**ND**	0.055	EPA 8082	4-18-12	4-18-12	
Surrogate:	*Percent Recovery*	*Control Limits*				
DCB	*88*	*42-123*				

Date of Report: April 19, 2012
Samples Submitted: April 9, 2012
Laboratory Reference: 1204-055
Project: 21-1-21623-016

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:	MB0418S1					
PCB-aroclor 1016	**ND**	0.050	EPA 8082	4-18-12	4-18-12	
PCB-aroclor 1221	**ND**	0.050	EPA 8082	4-18-12	4-18-12	
PCB-aroclor 1232	**ND**	0.050	EPA 8082	4-18-12	4-18-12	
PCB-aroclor 1242	**ND**	0.050	EPA 8082	4-18-12	4-18-12	
PCB-aroclor 1248	**ND**	0.050	EPA 8082	4-18-12	4-18-12	
PCB-aroclor 1254	**ND**	0.050	EPA 8082	4-18-12	4-18-12	
PCB-aroclor 1260	**ND**	0.050	EPA 8082	4-18-12	4-18-12	
Surrogate:	*Percent Recovery*	*Control Limits*				
DCB	*86*	*42-123*				

Analyte	Result		Spike Level		Source Result	Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
MATRIX SPIKES											
Laboratory ID:	04-055-16										
	MS	MSD	MS	MSD		MS	MSD				
PCB-aroclor 1260	**0.427**	**0.397**	0.500	0.500	ND	**85**	**79**	44-125	7	15	
Surrogate:											
DCB						*91*	*87*	*42-123*			

Date of Report: April 19, 2012
Samples Submitted: April 9, 2012
Laboratory Reference: 1204-055
Project: 21-1-21623-016

% MOISTURE

Date Analyzed: 4-13-12

Client ID	Lab ID	% Moisture
GP-14:S02:7	04-055-04	12
Soil Stockpile Comp	04-055-16	9

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

OnSite Environmental Inc.
Phone: (425) 883-3881 • Fax: (425) 885-4603

Company: STW
Project Number: 21-1-21623-016
Project Name: Magnolia - Pier 91
Project Manager: SWG
Sampled by: JML

Turnaround Request (in working days)

(Check One)

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

Laboratory Number: 04-055

Requested Analysis

Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	# of Cont.	NWTPH-HCID	NWTPH-Gx/BTEX	NWTPH-Dx	Volatiles by 8260B	Halogenated Volatiles by 8260B	Semivolatiles by 8270D	PAHs by 8270D / SIM	PCBs by 8082	Pesticides by 8081A	Herbicides by 8151A	Total RCRA Metals (8)	TCLP Metals	HEM by 1664	Total MCTA 5 metals Lead (Total)			HOLD			% Moisture
1	GP-14:S01:0.5	4/9/12	09:45	Soil	1															X			X			
2	GP-14:S01:7		09:55		6	X													X				X			
3	GP-14:S02:0.5		10:00		1															X			X			
4	GP-14:S02:7		10:10		6	~~X~~ NO		⊗				⊗							X							⊗
5	GP-14:S03:0.5		10:30		1															X			X			
6	GP-14:S03:8		10:40		6	X													X				X			
7	GP-14:S04:0.5		10:45		1															X			X			
8	GP-14:S04:7		10:55		6	X													X				X			
9	GP-14:S05:0.5		11:00		1															X			X			
10	GP-14:S05:8	↓	11:10	↓	6	X													X				X			

	Signature	Company	Date	Time
Relinquished by		STW	4/9/12	15:00
Received by		Spdy	4/9/12	15:15
Relinquished by		Spdy	4/9/12	16:10
Received by		OnSite Env	4/9/12	16:10
Relinquished by				
Received by				
Reviewed by/Date		Reviewed by/Date		

Comments/Special Instructions:

Hold All Samples Pending Analysis

⊗ Added 4/3/12 DB (3 day TAT)
○ Added 4/10/12 DB (2 day TAT)

Chromatograms with final report ☐

DISTRIBUTION LEGEND: White - OnSite Copy Yellow - Report Copy Pink - Client Copy

Chain of Custody

OnSite Environmental Inc.
Phone: (425) 883-3881 • Fax: (425) 885-4603

Company: STW
Project Number: 21-1-21623-016
Project Name: Magnolia - Pier 91
Project Manager: SWG
Sampled by: JML

Turnaround Request (in working days)

(Check One)

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

Laboratory Number: 04-055

Requested Analysis

Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	# of Cont.	NWTPH-HCID	NWTPH-Gx/BTEX	NWTPH-Dx	Volatiles by 8260B	Halogenated Volatiles by 8260B	Semivolatiles by 8270D	PAHs by 8270D / SIM	PCBs by 8082	Pesticides by 8081A	Herbicides by 8151A	Total RCRA Metals (8)	TCLP Metals	HEM by 1664	Total PP metals	Dissolved PP metals	Total, MCTA 5 metals	Lead (Total)		HOLD	% Moisture
11	GP-14:S06:0.5	4/9/12	11:25	Soil	1																	X		X	
12	GP-14:S06:7.5	↓	11:30	↓	6	X															X			X	
13	GP-14:S07:0.5		12:05		1																	X		X	
14	GP-14:S07:7	↓	12:10	↓	6	X															X			X	
																								X	
15	GP-14:S06:GW	4/9/12	11:45	GW	9	X			X										X	X				X	
16	Soil Stockpile Comp	4/9/12	13:30	Soil	6	⊗		○					○								⊗				X

	Signature	Company	Date	Time
Relinquished by	[signature]	STW	4/9/12	15:00
Received by	[signature]	Spdy	4/9/12	15:15
Relinquished by	[signature]	Spdy	4/9/12	16:10
Received by	[signature]	GeoTech	4/9/12	1600
Relinquished by				
Received by				
Reviewed by/Date		Reviewed by/Date		

Comments/Special Instructions:

Lab to filter water sample
PP metals = priority pollutant metals
~~Hold All Samples Pending Analysis~~ DTB
HCID with follow-up ⊗ Added 4/13/12. JB (3 day TAT)
○ Added 4/12/12. DB (2 day)

Chromatograms with final report ☐

DISTRIBUTION LEGEND: White - OnSite Copy Yellow - Report Copy Pink - Client Copy

OnSite Environmental Inc.

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

April 26, 2012

David Randall
Shannon & Wilson, Inc.
400 N 34th Street, Suite 100
Seattle, WA 98103

Re: Analytical Data for Project 21-1-21623-016
Laboratory Reference No. 1204-123

Dear David:

Enclosed are the analytical results and associated quality control data for samples submitted on April 19, 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: April 26, 2012
Samples Submitted: April 19, 2012
Laboratory Reference: 1204-123
Project: 21-1-21623-016

Case Narrative

Samples were collected on April 19, 2012 and received by the laboratory on April 19, 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.

NWTPH Gx (water) Analysis

The gasoline result for sample GP-21:GW is mainly attributed to a single peak (Naphthalene).

Volatiles EPA 8260B (water) Analysis

Some MTCA Method A cleanup levels are non-achievable for sample GP-21:GW due to the necessary dilution of the sample.

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: April 26, 2012
Samples Submitted: April 19, 2012
Laboratory Reference: 1204-123
Project: 21-1-21623-016

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

Matrix: Soil
Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**GP-22:10**					
Laboratory ID:	04-123-02					
Gasoline Range Organics	**ND**	24	NWTPH-HCID	4-25-12	4-25-12	
Diesel Range Organics	**ND**	61	NWTPH-HCID	4-25-12	4-25-12	
Lube Oil Range Organics	**ND**	120	NWTPH-HCID	4-25-12	4-25-12	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*99*	*50-150*				
Client ID:	**GP-21:10**					
Laboratory ID:	04-123-04					
Gasoline Range Organics	**ND**	25	NWTPH-HCID	4-25-12	4-25-12	
Diesel Range Organics	**ND**	62	NWTPH-HCID	4-25-12	4-25-12	
Lube Oil Range Organics	**ND**	120	NWTPH-HCID	4-25-12	4-25-12	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*102*	*50-150*				
Client ID:	**GP-20:10**					
Laboratory ID:	04-123-06					
Gasoline Range Organics	**ND**	25	NWTPH-HCID	4-25-12	4-25-12	
Diesel Range Organics	**ND**	62	NWTPH-HCID	4-25-12	4-25-12	
Lube Oil Range Organics	**ND**	120	NWTPH-HCID	4-25-12	4-25-12	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*116*	*50-150*				
Client ID:	**GP-19:3**					
Laboratory ID:	04-123-08					
Gasoline Range Organics	**ND**	27	NWTPH-HCID	4-25-12	4-25-12	
Diesel Range Organics	**ND**	67	NWTPH-HCID	4-25-12	4-25-12	
Lube Oil Range Organics	**ND**	130	NWTPH-HCID	4-25-12	4-25-12	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*109*	*50-150*				
Client ID:	**GP-18:5.5**					
Laboratory ID:	04-123-10					
Gasoline Range Organics	**ND**	23	NWTPH-HCID	4-25-12	4-25-12	
Diesel Range Organics	**ND**	58	NWTPH-HCID	4-25-12	4-25-12	
Lube Oil Range Organics	**ND**	120	NWTPH-HCID	4-25-12	4-25-12	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*114*	*50-150*				

Date of Report: April 26, 2012
Samples Submitted: April 19, 2012
Laboratory Reference: 1204-123
Project: 21-1-21623-016

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

Matrix: Soil
Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0425S1					
Gasoline Range Organics	**ND**	20	NWTPH-HCID	4-25-12	4-25-12	
Diesel Range Organics	**ND**	50	NWTPH-HCID	4-25-12	4-25-12	
Lube Oil Range Organics	**ND**	100	NWTPH-HCID	4-25-12	4-25-12	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*125*	*50-150*				

Date of Report: April 26, 2012
Samples Submitted: April 19, 2012
Laboratory Reference: 1204-123
Project: 21-1-21623-016

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

Matrix: Water
Units: mg/L (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**GP-21:GW**					
Laboratory ID:	04-123-11					
Gasoline Range Organics	**Detected**	0.12	NWTPH-HCID	4-20-12	4-20-12	
Diesel Range Organics	**Detected**	0.29	NWTPH-HCID	4-20-12	4-20-12	
Lube Oil Range Organics	**ND**	0.46	NWTPH-HCID	4-20-12	4-20-12	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*92*	*50-150*				
Client ID:	**GP-18:GW**					
Laboratory ID:	04-123-12					
Gasoline Range Organics	**ND**	0.11	NWTPH-HCID	4-20-12	4-20-12	
Diesel Range Organics	**ND**	0.28	NWTPH-HCID	4-20-12	4-20-12	
Lube Oil Range Organics	**ND**	0.45	NWTPH-HCID	4-20-12	4-20-12	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*88*	*50-150*				

Date of Report: April 26, 2012
Samples Submitted: April 19, 2012
Laboratory Reference: 1204-123
Project: 21-1-21623-016

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

Matrix: Water
Units: mg/L (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0420W1					
Gasoline Range Organics	**ND**	0.10	NWTPH-HCID	4-20-12	4-20-12	
Diesel Range Organics	**ND**	0.25	NWTPH-HCID	4-20-12	4-20-12	
Lube Oil Range Organics	**ND**	0.40	NWTPH-HCID	4-20-12	4-20-12	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*104*	*50-150*				

Date of Report: April 26, 2012
Samples Submitted: April 19, 2012
Laboratory Reference: 1204-123
Project: 21-1-21623-016

VOLATILES by EPA 8260B
page 1 of 2

Matrix: Water
Units: ug/L

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**GP-21:GW**					
Laboratory ID:	04-123-11					
CFC-12	ND	4.0	EPA 8260	4-20-12	4-20-12	
Chloromethane	ND	20	EPA 8260	4-20-12	4-20-12	
Vinyl Chloride	ND	4.0	EPA 8260	4-20-12	4-20-12	
Bromomethane	ND	4.0	EPA 8260	4-20-12	4-20-12	
Chloroethane	ND	20	EPA 8260	4-20-12	4-20-12	
CFC-11	ND	4.0	EPA 8260	4-20-12	4-20-12	
1,1-Dichloroethene	ND	4.0	EPA 8260	4-20-12	4-20-12	
Acetone	ND	100	EPA 8260	4-20-12	4-20-12	
Methyl Iodide	ND	20	EPA 8260	4-20-12	4-20-12	
Carbon Disulfide	ND	4.0	EPA 8260	4-20-12	4-20-12	
Methylene Chloride	ND	20	EPA 8260	4-20-12	4-20-12	
Trans-1,2-Dichloroethene	ND	4.0	EPA 8260	4-20-12	4-20-12	
Methyl t-Butyl Ether	ND	4.0	EPA 8260	4-20-12	4-20-12	
1,1-Dichloroethane	ND	4.0	EPA 8260	4-20-12	4-20-12	
Vinyl Acetate	ND	40	EPA 8260	4-20-12	4-20-12	
2,2-Dichloropropane	ND	4.0	EPA 8260	4-20-12	4-20-12	
Cis-1,2-Dichloroethene	ND	4.0	EPA 8260	4-20-12	4-20-12	
2-Butanone	ND	100	EPA 8260	4-20-12	4-20-12	
Bromochloromethane	ND	4.0	EPA 8260	4-20-12	4-20-12	
Chloroform	ND	4.0	EPA 8260	4-20-12	4-20-12	
1,1,1-Trichloroethane	ND	4.0	EPA 8260	4-20-12	4-20-12	
Carbon Tetrachloride	ND	4.0	EPA 8260	4-20-12	4-20-12	
1,1-Dichloropropene	ND	4.0	EPA 8260	4-20-12	4-20-12	
Benzene	ND	4.0	EPA 8260	4-20-12	4-20-12	
1,2-Dichloroethane	ND	4.0	EPA 8260	4-20-12	4-20-12	
Trichloroethene	ND	4.0	EPA 8260	4-20-12	4-20-12	
1,2-Dichloropropane	ND	4.0	EPA 8260	4-20-12	4-20-12	
Dibromomethane	ND	4.0	EPA 8260	4-20-12	4-20-12	
Dichlorobromomethane	ND	4.0	EPA 8260	4-20-12	4-20-12	
2-Chloroethylvinylether	ND	20	EPA 8260	4-20-12	4-20-12	
Cis-1,3-Dichloropropene	ND	4.0	EPA 8260	4-20-12	4-20-12	
Methyl Isobutyl Ketone	ND	40	EPA 8260	4-20-12	4-20-12	
Toluene	ND	20	EPA 8260	4-20-12	4-20-12	
Trans-1,3-Dichloropropene	ND	4.0	EPA 8260	4-20-12	4-20-12	

Date of Report: April 26, 2012
Samples Submitted: April 19, 2012
Laboratory Reference: 1204-123
Project: 21-1-21623-016

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Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**GP-21:GW**					
Laboratory ID:	04-123-11					
1,1,2-Trichloroethane	ND	4.0	EPA 8260	4-20-12	4-20-12	
Tetrachloroethene	ND	4.0	EPA 8260	4-20-12	4-20-12	
1,3-Dichloropropane	ND	4.0	EPA 8260	4-20-12	4-20-12	
2-Hexanone	ND	40	EPA 8260	4-20-12	4-20-12	
Dibromochloromethane	ND	4.0	EPA 8260	4-20-12	4-20-12	
Ethylene dibromide	ND	4.0	EPA 8260	4-20-12	4-20-12	
Chlorobenzene	ND	4.0	EPA 8260	4-20-12	4-20-12	
1,1,1,2-Tetrachloroethane	ND	4.0	EPA 8260	4-20-12	4-20-12	
Ethylbenzene	ND	4.0	EPA 8260	4-20-12	4-20-12	
m,p-Xylene	ND	8.0	EPA 8260	4-20-12	4-20-12	
o-Xylene	4.6	4.0	EPA 8260	4-20-12	4-20-12	
Styrene	ND	4.0	EPA 8260	4-20-12	4-20-12	
Bromoform	ND	20	EPA 8260	4-20-12	4-20-12	
Isopropylbenzene	ND	4.0	EPA 8260	4-20-12	4-20-12	
Bromobenzene	ND	4.0	EPA 8260	4-20-12	4-20-12	
1,1,2,2-Tetrachloroethane	ND	4.0	EPA 8260	4-20-12	4-20-12	
1,2,3-Trichloropropane	ND	4.0	EPA 8260	4-20-12	4-20-12	
n-Propylbenzene	ND	4.0	EPA 8260	4-20-12	4-20-12	
2-Chlorotoluene	ND	4.0	EPA 8260	4-20-12	4-20-12	
4-Chlorotoluene	ND	4.0	EPA 8260	4-20-12	4-20-12	
1,3,5-Trimethylbenzene	ND	4.0	EPA 8260	4-20-12	4-20-12	
tert-Butylbenzene	ND	4.0	EPA 8260	4-20-12	4-20-12	
1,2,4-Trimethylbenzene	7.1	4.0	EPA 8260	4-20-12	4-20-12	
sec-Butylbenzene	ND	4.0	EPA 8260	4-20-12	4-20-12	
1,3-Dichlorobenzene	ND	4.0	EPA 8260	4-20-12	4-20-12	
p-Isopropyltoluene	ND	4.0	EPA 8260	4-20-12	4-20-12	
1,4-Dichlorobenzene	ND	4.0	EPA 8260	4-20-12	4-20-12	
1,2-Dichlorobenzene	ND	4.0	EPA 8260	4-20-12	4-20-12	
n-Butylbenzene	ND	4.0	EPA 8260	4-20-12	4-20-12	
1,2-Dibromo-3-chloropropane	ND	20	EPA 8260	4-20-12	4-20-12	
1,2,4-Trichlorobenzene	ND	4.0	EPA 8260	4-20-12	4-20-12	
Hexachlorobutadiene	ND	4.0	EPA 8260	4-20-12	4-20-12	
Naphthalene	1000	100	EPA 8260	4-20-12	4-20-12	
1,2,3-Trichlorobenzene	ND	4.0	EPA 8260	4-20-12	4-20-12	
Surrogate:	*Percent Recovery*	*Control Limits*				
Dibromofluoromethane	*93*	*68-120*				
Toluene-d8	*88*	*73-120*				
Benzene, 1-bromo-4-fluoro-	*88*	*65-120*				

Date of Report: April 26, 2012
Samples Submitted: April 19, 2012
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Project: 21-1-21623-016

VOLATILES by EPA 8260B
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Matrix: Water
Units: ug/L

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**GP-18:GW**					
Laboratory ID:	04-123-12					
CFC-12	ND	0.20	EPA 8260	4-20-12	4-20-12	
Chloromethane	ND	1.0	EPA 8260	4-20-12	4-20-12	
Vinyl Chloride	ND	0.20	EPA 8260	4-20-12	4-20-12	
Bromomethane	ND	0.20	EPA 8260	4-20-12	4-20-12	
Chloroethane	ND	1.0	EPA 8260	4-20-12	4-20-12	
CFC-11	ND	0.20	EPA 8260	4-20-12	4-20-12	
1,1-Dichloroethene	ND	0.20	EPA 8260	4-20-12	4-20-12	
Acetone	ND	5.0	EPA 8260	4-20-12	4-20-12	
Methyl Iodide	ND	1.0	EPA 8260	4-20-12	4-20-12	
Carbon Disulfide	ND	0.20	EPA 8260	4-20-12	4-20-12	
Methylene Chloride	ND	1.0	EPA 8260	4-20-12	4-20-12	
Trans-1,2-Dichloroethene	ND	0.20	EPA 8260	4-20-12	4-20-12	
Methyl t-Butyl Ether	ND	0.20	EPA 8260	4-20-12	4-20-12	
1,1-Dichloroethane	ND	0.20	EPA 8260	4-20-12	4-20-12	
Vinyl Acetate	ND	2.0	EPA 8260	4-20-12	4-20-12	
2,2-Dichloropropane	ND	0.20	EPA 8260	4-20-12	4-20-12	
Cis-1,2-Dichloroethene	ND	0.20	EPA 8260	4-20-12	4-20-12	
2-Butanone	ND	5.0	EPA 8260	4-20-12	4-20-12	
Bromochloromethane	ND	0.20	EPA 8260	4-20-12	4-20-12	
Chloroform	ND	0.20	EPA 8260	4-20-12	4-20-12	
1,1,1-Trichloroethane	ND	0.20	EPA 8260	4-20-12	4-20-12	
Carbon Tetrachloride	ND	0.20	EPA 8260	4-20-12	4-20-12	
1,1-Dichloropropene	ND	0.20	EPA 8260	4-20-12	4-20-12	
Benzene	ND	0.20	EPA 8260	4-20-12	4-20-12	
1,2-Dichloroethane	ND	0.20	EPA 8260	4-20-12	4-20-12	
Trichloroethene	ND	0.20	EPA 8260	4-20-12	4-20-12	
1,2-Dichloropropane	ND	0.20	EPA 8260	4-20-12	4-20-12	
Dibromomethane	ND	0.20	EPA 8260	4-20-12	4-20-12	
Dichlorobromomethane	ND	0.20	EPA 8260	4-20-12	4-20-12	
2-Chloroethylvinylether	ND	1.0	EPA 8260	4-20-12	4-20-12	
Cis-1,3-Dichloropropene	ND	0.20	EPA 8260	4-20-12	4-20-12	
Methyl Isobutyl Ketone	ND	2.0	EPA 8260	4-20-12	4-20-12	
Toluene	ND	1.0	EPA 8260	4-20-12	4-20-12	
Trans-1,3-Dichloropropene	ND	0.20	EPA 8260	4-20-12	4-20-12	

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Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**GP-18:GW**					
Laboratory ID:	04-123-12					
1,1,2-Trichloroethane	ND	0.20	EPA 8260	4-20-12	4-20-12	
Tetrachloroethene	ND	0.20	EPA 8260	4-20-12	4-20-12	
1,3-Dichloropropane	ND	0.20	EPA 8260	4-20-12	4-20-12	
2-Hexanone	ND	2.0	EPA 8260	4-20-12	4-20-12	
Dibromochloromethane	ND	0.20	EPA 8260	4-20-12	4-20-12	
Ethylene dibromide	ND	0.20	EPA 8260	4-20-12	4-20-12	
Chlorobenzene	ND	0.20	EPA 8260	4-20-12	4-20-12	
1,1,1,2-Tetrachloroethane	ND	0.20	EPA 8260	4-20-12	4-20-12	
Ethylbenzene	ND	0.20	EPA 8260	4-20-12	4-20-12	
m,p-Xylene	ND	0.40	EPA 8260	4-20-12	4-20-12	
o-Xylene	ND	0.20	EPA 8260	4-20-12	4-20-12	
Styrene	ND	0.20	EPA 8260	4-20-12	4-20-12	
Bromoform	ND	1.0	EPA 8260	4-20-12	4-20-12	
Isopropylbenzene	ND	0.20	EPA 8260	4-20-12	4-20-12	
Bromobenzene	ND	0.20	EPA 8260	4-20-12	4-20-12	
1,1,2,2-Tetrachloroethane	ND	0.20	EPA 8260	4-20-12	4-20-12	
1,2,3-Trichloropropane	ND	0.20	EPA 8260	4-20-12	4-20-12	
n-Propylbenzene	ND	0.20	EPA 8260	4-20-12	4-20-12	
2-Chlorotoluene	ND	0.20	EPA 8260	4-20-12	4-20-12	
4-Chlorotoluene	ND	0.20	EPA 8260	4-20-12	4-20-12	
1,3,5-Trimethylbenzene	ND	0.20	EPA 8260	4-20-12	4-20-12	
tert-Butylbenzene	ND	0.20	EPA 8260	4-20-12	4-20-12	
1,2,4-Trimethylbenzene	ND	0.20	EPA 8260	4-20-12	4-20-12	
sec-Butylbenzene	ND	0.20	EPA 8260	4-20-12	4-20-12	
1,3-Dichlorobenzene	ND	0.20	EPA 8260	4-20-12	4-20-12	
p-Isopropyltoluene	ND	0.20	EPA 8260	4-20-12	4-20-12	
1,4-Dichlorobenzene	ND	0.20	EPA 8260	4-20-12	4-20-12	
1,2-Dichlorobenzene	ND	0.20	EPA 8260	4-20-12	4-20-12	
n-Butylbenzene	ND	0.20	EPA 8260	4-20-12	4-20-12	
1,2-Dibromo-3-chloropropane	ND	1.0	EPA 8260	4-20-12	4-20-12	
1,2,4-Trichlorobenzene	ND	0.20	EPA 8260	4-20-12	4-20-12	
Hexachlorobutadiene	ND	0.20	EPA 8260	4-20-12	4-20-12	
Naphthalene	ND	1.0	EPA 8260	4-20-12	4-20-12	
1,2,3-Trichlorobenzene	ND	0.20	EPA 8260	4-20-12	4-20-12	
Surrogate:	*Percent Recovery*	*Control Limits*				
Dibromofluoromethane	*85*	*68-120*				
Toluene-d8	*87*	*73-120*				
Benzene, 1-bromo-4-fluoro-	*87*	*65-120*				

Date of Report: April 26, 2012
Samples Submitted: April 19, 2012
Laboratory Reference: 1204-123
Project: 21-1-21623-016

VOLATILES by EPA 8260B
METHOD BLANK QUALITY CONTROL
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Matrix: Water
Units: ug/L

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Laboratory ID:	MB0420W1					
CFC-12	ND	0.20	EPA 8260	4-20-12	4-20-12	
Chloromethane	ND	1.0	EPA 8260	4-20-12	4-20-12	
Vinyl Chloride	ND	0.20	EPA 8260	4-20-12	4-20-12	
Bromomethane	ND	0.20	EPA 8260	4-20-12	4-20-12	
Chloroethane	ND	1.0	EPA 8260	4-20-12	4-20-12	
CFC-11	ND	0.20	EPA 8260	4-20-12	4-20-12	
1,1-Dichloroethene	ND	0.20	EPA 8260	4-20-12	4-20-12	
Acetone	ND	5.0	EPA 8260	4-20-12	4-20-12	
Methyl Iodide	ND	1.0	EPA 8260	4-20-12	4-20-12	
Carbon Disulfide	ND	0.20	EPA 8260	4-20-12	4-20-12	
Methylene Chloride	ND	1.0	EPA 8260	4-20-12	4-20-12	
Trans-1,2-Dichloroethene	ND	0.20	EPA 8260	4-20-12	4-20-12	
Methyl t-Butyl Ether	ND	0.20	EPA 8260	4-20-12	4-20-12	
1,1-Dichloroethane	ND	0.20	EPA 8260	4-20-12	4-20-12	
Vinyl Acetate	ND	2.0	EPA 8260	4-20-12	4-20-12	
2,2-Dichloropropane	ND	0.20	EPA 8260	4-20-12	4-20-12	
Cis-1,2-Dichloroethene	ND	0.20	EPA 8260	4-20-12	4-20-12	
2-Butanone	ND	5.0	EPA 8260	4-20-12	4-20-12	
Bromochloromethane	ND	0.20	EPA 8260	4-20-12	4-20-12	
Chloroform	ND	0.20	EPA 8260	4-20-12	4-20-12	
1,1,1-Trichloroethane	ND	0.20	EPA 8260	4-20-12	4-20-12	
Carbon Tetrachloride	ND	0.20	EPA 8260	4-20-12	4-20-12	
1,1-Dichloropropene	ND	0.20	EPA 8260	4-20-12	4-20-12	
Benzene	ND	0.20	EPA 8260	4-20-12	4-20-12	
1,2-Dichloroethane	ND	0.20	EPA 8260	4-20-12	4-20-12	
Trichloroethene	ND	0.20	EPA 8260	4-20-12	4-20-12	
1,2-Dichloropropane	ND	0.20	EPA 8260	4-20-12	4-20-12	
Dibromomethane	ND	0.20	EPA 8260	4-20-12	4-20-12	
Dichlorobromomethane	ND	0.20	EPA 8260	4-20-12	4-20-12	
2-Chloroethylvinylether	ND	1.0	EPA 8260	4-20-12	4-20-12	
Cis-1,3-Dichloropropene	ND	0.20	EPA 8260	4-20-12	4-20-12	
Methyl Isobutyl Ketone	ND	2.0	EPA 8260	4-20-12	4-20-12	
Toluene	ND	1.0	EPA 8260	4-20-12	4-20-12	
Trans-1,3-Dichloropropene	ND	0.20	EPA 8260	4-20-12	4-20-12	

Date of Report: April 26, 2012
Samples Submitted: April 19, 2012
Laboratory Reference: 1204-123
Project: 21-1-21623-016

VOLATILES by EPA 8260B
METHOD BLANK QUALITY CONTROL
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Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Laboratory ID:	MB0420W1					
1,1,2-Trichloroethane	ND	0.20	EPA 8260	4-20-12	4-20-12	
Tetrachloroethene	ND	0.20	EPA 8260	4-20-12	4-20-12	
1,3-Dichloropropane	ND	0.20	EPA 8260	4-20-12	4-20-12	
2-Hexanone	ND	2.0	EPA 8260	4-20-12	4-20-12	
Dibromochloromethane	ND	0.20	EPA 8260	4-20-12	4-20-12	
Ethylene dibromide	ND	0.20	EPA 8260	4-20-12	4-20-12	
Chlorobenzene	ND	0.20	EPA 8260	4-20-12	4-20-12	
1,1,1,2-Tetrachloroethane	ND	0.20	EPA 8260	4-20-12	4-20-12	
Ethylbenzene	ND	0.20	EPA 8260	4-20-12	4-20-12	
m,p-Xylene	ND	0.40	EPA 8260	4-20-12	4-20-12	
o-Xylene	ND	0.20	EPA 8260	4-20-12	4-20-12	
Styrene	ND	0.20	EPA 8260	4-20-12	4-20-12	
Bromoform	ND	1.0	EPA 8260	4-20-12	4-20-12	
Isopropylbenzene	ND	0.20	EPA 8260	4-20-12	4-20-12	
Bromobenzene	ND	0.20	EPA 8260	4-20-12	4-20-12	
1,1,2,2-Tetrachloroethane	ND	0.20	EPA 8260	4-20-12	4-20-12	
1,2,3-Trichloropropane	ND	0.20	EPA 8260	4-20-12	4-20-12	
n-Propylbenzene	ND	0.20	EPA 8260	4-20-12	4-20-12	
2-Chlorotoluene	ND	0.20	EPA 8260	4-20-12	4-20-12	
4-Chlorotoluene	ND	0.20	EPA 8260	4-20-12	4-20-12	
1,3,5-Trimethylbenzene	ND	0.20	EPA 8260	4-20-12	4-20-12	
tert-Butylbenzene	ND	0.20	EPA 8260	4-20-12	4-20-12	
1,2,4-Trimethylbenzene	ND	0.20	EPA 8260	4-20-12	4-20-12	
sec-Butylbenzene	ND	0.20	EPA 8260	4-20-12	4-20-12	
1,3-Dichlorobenzene	ND	0.20	EPA 8260	4-20-12	4-20-12	
p-Isopropyltoluene	ND	0.20	EPA 8260	4-20-12	4-20-12	
1,4-Dichlorobenzene	ND	0.20	EPA 8260	4-20-12	4-20-12	
1,2-Dichlorobenzene	ND	0.20	EPA 8260	4-20-12	4-20-12	
n-Butylbenzene	ND	0.20	EPA 8260	4-20-12	4-20-12	
1,2-Dibromo-3-chloropropane	ND	1.0	EPA 8260	4-20-12	4-20-12	
1,2,4-Trichlorobenzene	ND	0.20	EPA 8260	4-20-12	4-20-12	
Hexachlorobutadiene	ND	0.20	EPA 8260	4-20-12	4-20-12	
Naphthalene	ND	1.0	EPA 8260	4-20-12	4-20-12	
1,2,3-Trichlorobenzene	ND	0.20	EPA 8260	4-20-12	4-20-12	
Surrogate:	*Percent Recovery*	*Control Limits*				
Dibromofluoromethane	*91*	*68-120*				
Toluene-d8	*90*	*73-120*				
Benzene, 1-bromo-4-fluoro-	*90*	*65-120*				

Date of Report: April 26, 2012
Samples Submitted: April 19, 2012
Laboratory Reference: 1204-123
Project: 21-1-21623-016

VOLATILES by EPA 8260B
SB/SBD QUALITY CONTROL

Matrix: Water
Units: ug/L

Analyte	Result		Spike Level		Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
SPIKE BLANKS										
Laboratory ID:	SB0420W1									
	SB	SBD	SB	SBD	SB	SBD				
1,1-Dichloroethene	**11.7**	**11.0**	10.0	10.0	117	110	70-130	6	11	
Benzene	**10.8**	**10.7**	10.0	10.0	108	107	75-123	1	8	
Trichloroethene	**10.7**	**10.4**	10.0	10.0	107	104	80-113	3	9	
Toluene	**10.6**	**10.5**	10.0	10.0	106	105	80-113	1	8	
Chlorobenzene	**11.3**	**11.3**	10.0	10.0	113	113	80-115	0	8	
Surrogate:										
Dibromofluoromethane					*88*	*94*	*68-120*			
Toluene-d8					*87*	*92*	*73-120*			
Benzene, 1-bromo-4-fluoro-					*85*	*95*	*65-120*			

Date of Report: April 26, 2012
Samples Submitted: April 19, 2012
Laboratory Reference: 1204-123
Project: 21-1-21623-016

TOTAL METALS
EPA 6010B/7471A

Matrix: Soil
Units: mg/kg (ppm)

Analyte	Result	PQL	EPA Method	Date Prepared	Date Analyzed	Flags
Lab ID:	04-123-01					
Client ID:	**GP-22:0.5**					
Lead	**29**	5.7	6010B	4-19-12	4-19-12	
Lab ID:	04-123-02					
Client ID:	**GP-22:10**					
Arsenic	**ND**	12	6010B	4-19-12	4-19-12	
Cadmium	**ND**	0.61	6010B	4-19-12	4-19-12	
Chromium	**34**	0.61	6010B	4-19-12	4-19-12	
Lead	**ND**	6.1	6010B	4-19-12	4-19-12	
Mercury	**ND**	0.31	7471A	4-20-12	4-20-12	
Lab ID:	04-123-03					
Client ID:	**GP-21:0.5**					
Lead	**34**	5.8	6010B	4-19-12	4-19-12	

Date of Report: April 26, 2012
Samples Submitted: April 19, 2012
Laboratory Reference: 1204-123
Project: 21-1-21623-016

TOTAL METALS
EPA 6010B/7471A

Matrix: Soil
Units: mg/kg (ppm)

Analyte	Result	PQL	EPA Method	Date Prepared	Date Analyzed	Flags
Lab ID:	04-123-04					
Client ID:	**GP-21:10**					
Arsenic	**ND**	12	6010B	4-19-12	4-19-12	
Cadmium	**ND**	0.62	6010B	4-19-12	4-19-12	
Chromium	**31**	0.62	6010B	4-19-12	4-19-12	
Lead	**ND**	6.2	6010B	4-19-12	4-19-12	
Mercury	**ND**	0.31	7471A	4-20-12	4-20-12	
Lab ID:	04-123-05					
Client ID:	**GP-20:0.5**					
Lead	**25**	5.8	6010B	4-19-12	4-19-12	
Lab ID:	04-123-06					
Client ID:	**GP-20:10**					
Arsenic	**ND**	12	6010B	4-19-12	4-19-12	
Cadmium	**ND**	0.62	6010B	4-19-12	4-19-12	
Chromium	**35**	0.62	6010B	4-19-12	4-19-12	
Lead	**6.6**	6.2	6010B	4-19-12	4-19-12	
Mercury	**ND**	0.31	7471A	4-20-12	4-20-12	

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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:	04-123-07					
Client ID:	**GP-19:0.5**					
Lead	**13**	6.1	6010B	4-19-12	4-19-12	
Lab ID:	04-123-08					
Client ID:	**GP-19:3**					
Arsenic	**ND**	13	6010B	4-19-12	4-19-12	
Cadmium	**ND**	0.67	6010B	4-19-12	4-19-12	
Chromium	**61**	0.67	6010B	4-19-12	4-19-12	
Lead	**35**	6.7	6010B	4-19-12	4-19-12	
Mercury	**0.59**	0.33	7471A	4-20-12	4-20-12	
Lab ID:	04-123-09					
Client ID:	**GP-18:0.5**					
Lead	**ND**	5.6	6010B	4-19-12	4-19-12	

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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:	04-123-10					
Client ID:	**GP-18:5.5**					
Arsenic	**ND**	12	6010B	4-19-12	4-19-12	
Cadmium	**ND**	0.58	6010B	4-19-12	4-19-12	
Chromium	**27**	0.58	6010B	4-19-12	4-19-12	
Lead	**ND**	5.8	6010B	4-19-12	4-19-12	
Mercury	**ND**	0.29	7471A	4-20-12	4-20-12	

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

Date Extracted:	4-19&20-12
Date Analyzed:	4-19&20-12
Matrix:	Soil
Units:	mg/kg (ppm)
Lab ID:	MB0419SM1&MB0420S1

Analyte	Method	Result	PQL
Arsenic	6010B	**ND**	10
Cadmium	6010B	**ND**	0.50
Chromium	6010B	**ND**	0.50
Lead	6010B	**ND**	5.0
Mercury	7471A	**ND**	0.25

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Project: 21-1-21623-016

TOTAL METALS
EPA 6010B/7471A
DUPLICATE QUALITY CONTROL

Date Extracted: 4-19&20-12
Date Analyzed: 4-19&20-12

Matrix: Soil
Units: mg/kg (ppm)

Lab ID: 04-101-01

Analyte	Sample Result	Duplicate Result	RPD	PQL	Flags
Arsenic	**ND**	**ND**	NA	10	
Cadmium	**ND**	**ND**	NA	0.50	
Chromium	**43.0**	**44.8**	4	0.50	
Lead	**ND**	**ND**	NA	5.0	
Mercury	**ND**	**ND**	NA	0.25	

Date of Report: April 26, 2012
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Project: 21-1-21623-016

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

Date Extracted: 4-19&20-12
Date Analyzed: 4-19&20-12

Matrix: Soil
Units: mg/kg (ppm)

Lab ID: 04-101-01

Analyte	Spike Level	MS	Percent Recovery	MSD	Percent Recovery	RPD	Flags
Arsenic	100	**95.3**	95	**95.3**	95	0	
Cadmium	50.0	**48.0**	96	**47.3**	95	1	
Chromium	100	**119**	77	**120**	77	1	
Lead	250	**229**	92	**226**	90	1	
Mercury	0.500	**0.466**	93	**0.475**	95	2	

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TOTAL METALS
EPA 200.8/7470A

Matrix: Water
Units: ug/L (ppb)

Analyte	Result	PQL	EPA Method	Date Prepared	Date Analyzed	Flags
Lab ID:	04-123-11					
Client ID:	**GP-21:GW**					
Antimony	**ND**	5.6	200.8	4-23-12	4-24-12	
Arsenic	**52**	3.0	200.8	4-23-12	4-23-12	
Beryllium	**ND**	10	200.8	4-23-12	4-23-12	
Cadmium	**ND**	4.0	200.8	4-23-12	4-23-12	
Chromium	**460**	10	200.8	4-23-12	4-23-12	
Copper	**330**	10	200.8	4-23-12	4-23-12	
Lead	**300**	1.0	200.8	4-23-12	4-23-12	
Mercury	**ND**	0.50	7470A	4-24-12	4-24-12	
Nickel	**550**	20	200.8	4-23-12	4-23-12	
Selenium	**8.3**	5.0	200.8	4-23-12	4-23-12	
Silver	**ND**	10	200.8	4-23-12	4-23-12	
Thallium	**ND**	5.0	200.8	4-23-12	4-23-12	
Zinc	**750**	25	200.8	4-23-12	4-23-12	

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TOTAL METALS
EPA 200.8/7470A

Matrix: Water
Units: ug/L (ppb)

Analyte	Result	PQL	EPA Method	Date Prepared	Date Analyzed	Flags
Lab ID:	04-123-12					
Client ID:	**GP-18:GW**					
Antimony	**ND**	5.6	200.8	4-23-12	4-24-12	
Arsenic	**19**	3.0	200.8	4-23-12	4-23-12	
Beryllium	**ND**	10	200.8	4-23-12	4-23-12	
Cadmium	**ND**	4.0	200.8	4-23-12	4-23-12	
Chromium	**280**	10	200.8	4-23-12	4-23-12	
Copper	**240**	10	200.8	4-23-12	4-23-12	
Lead	**39**	1.0	200.8	4-23-12	4-23-12	
Mercury	**ND**	0.50	7470A	4-24-12	4-24-12	
Nickel	**350**	20	200.8	4-23-12	4-23-12	
Selenium	**ND**	5.0	200.8	4-23-12	4-23-12	
Silver	**ND**	10	200.8	4-23-12	4-23-12	
Thallium	**ND**	5.0	200.8	4-23-12	4-23-12	
Zinc	**300**	25	200.8	4-23-12	4-23-12	

Date of Report: April 26, 2012
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TOTAL METALS
EPA 200.8
METHOD BLANK QUALITY CONTROL

Date Extracted:	4-23-12
Date Analyzed:	4-23-12
Matrix:	Water
Units:	ug/L (ppb)
Lab ID:	MB0423WH1

Analyte	Method	Result	PQL
Arsenic	200.8	**ND**	3.0
Beryllium	200.8	**ND**	10
Cadmium	200.8	**ND**	4.0
Chromium	200.8	**ND**	10
Copper	200.8	**ND**	10
Lead	200.8	**ND**	1.0
Nickel	200.8	**ND**	20
Selenium	200.8	**ND**	5.0
Silver	200.8	**ND**	10
Thallium	200.8	**ND**	5.0
Zinc	200.8	**ND**	25

Date of Report: April 26, 2012
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TOTAL ANTIMONY
EPA 200.8
METHOD BLANK QUALITY CONTROL

Date Extracted:	4-23&24-12
Date Analyzed:	4-23-12
Matrix:	Water
Units:	ug/L (ppb)
Lab ID:	MB0423WM1

Analyte	Method	Result	PQL
Antimony	200.8	**ND**	5.6

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Project: 21-1-21623-016

TOTAL MERCURY
EPA 7470A
METHOD BLANK QUALITY CONTROL

Date Extracted:	4-24-12
Date Analyzed:	4-24-12
Matrix:	Water
Units:	ug/L (ppb)
Lab ID:	MB0424W1

Analyte	Method	Result	PQL
Mercury	7470A	**ND**	0.50

Date of Report: April 26, 2012
Samples Submitted: April 19, 2012
Laboratory Reference: 1204-123
Project: 21-1-21623-016

TOTAL METALS
EPA 200.8
DUPLICATE QUALITY CONTROL

Date Extracted: 4-23-12
Date Analyzed: 4-23-12

Matrix: Water
Units: ug/L (ppb)

Lab ID: 04-123-12

Analyte	Sample Result	Duplicate Result	RPD	PQL	Flags
Arsenic	**18.9**	**18.7**	1	3.0	
Beryllium	**ND**	**ND**	NA	10	
Cadmium	**ND**	**ND**	NA	4.0	
Chromium	**285.0**	**279**	2	10	
Copper	**238.0**	**236**	1	10	
Lead	**39.0**	**38.7**	1	1.0	
Nickel	**350.0**	**356**	2	20	
Selenium	**ND**	**ND**	NA	5.0	
Silver	**ND**	**ND**	NA	10	
Thallium	**ND**	**ND**	NA	5.0	
Zinc	**300.0**	**294**	2	25	

Date of Report: April 26, 2012
Samples Submitted: April 19, 2012
Laboratory Reference: 1204-123
Project: 21-1-21623-016

TOTAL ANTIMONY
EPA 200.8
DUPLICATE QUALITY CONTROL

Date Extracted: 4-23&24-12
Date Analyzed: 4-23-12

Matrix: Water
Units: ug/L (ppb)

Lab ID: 04-131-02

Analyte	Sample Result	Duplicate Result	RPD	PQL	Flags
Antimony	**ND**	**ND**	NA	5.6	

Date of Report: April 26, 2012
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Laboratory Reference: 1204-123
Project: 21-1-21623-016

TOTAL MERCURY
EPA 7470A
DUPLICATE QUALITY CONTROL

Date Extracted: 4-24-12
Date Analyzed: 4-24-12

Matrix: Water
Units: ug/L (ppb)

Lab ID: 04-123-11

Analyte	Sample Result	Duplicate Result	RPD	PQL	Flags
Mercury	**ND**	**ND**	NA	0.50	

Date of Report: April 26, 2012
Samples Submitted: April 19, 2012
Laboratory Reference: 1204-123
Project: 21-1-21623-016

TOTAL METALS
EPA 200.8
MS/MSD QUALITY CONTROL

Date Extracted: 4-23-12
Date Analyzed: 4-23-12

Matrix: Water
Units: ug/L (ppb)

Lab ID: 04-123-12

Analyte	Spike Level	MS	Percent Recovery	MSD	Percent Recovery	RPD	Flags
Arsenic	100	**113**	94	**114**	95	1	
Beryllium	100	**93.7**	94	**94.9**	95	1	
Cadmium	100	**95.7**	96	**98.3**	98	3	
Chromium	100	**366**	81	**374**	89	2	
Copper	100	**328**	90	**332**	94	1	
Lead	100	**135**	96	**137**	98	1	
Nickel	100	**441**	91	**449**	99	2	
Selenium	100	**92.5**	93	**94.5**	95	2	
Silver	100	**91.7**	92	**94.2**	94	3	
Thallium	100	**98.3**	98	**99.4**	99	1	
Zinc	100	**377**	77	**389**	89	3	

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TOTAL ANTIMONY
EPA 200.8
MS/MSD QUALITY CONTROL

Date Extracted: 4-23&24-12
Date Analyzed: 4-23-12

Matrix: Water
Units: ug/L (ppb)

Lab ID: 04-131-02

Analyte	Spike Level	MS	Percent Recovery	MSD	Percent Recovery	RPD	Flags
Antimony	111	**96.7**	87	**99.5**	90	3	

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Samples Submitted: April 19, 2012
Laboratory Reference: 1204-123
Project: 21-1-21623-016

TOTAL MERCURY
EPA 7470A
MS/MSD QUALITY CONTROL

Date Extracted: 4-24-12
Date Analyzed: 4-24-12

Matrix: Water
Units: ug/L (ppb)

Lab ID: 04-123-11

Analyte	Spike Level	MS	Percent Recovery	MSD	Percent Recovery	RPD	Flags
Mercury	12.5	**10.9**	87	**10.6**	84	3	

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DISSOLVED METALS
EPA 200.8/7470A

Matrix: Water
Units: ug/L (ppb)

Analyte	Result	PQL	EPA Method	Date Prepared	Date Analyzed	Flags
Lab ID:	04-123-11					
Client ID:	**GP-21:GW**					
Antimony	**ND**	5.0	200.8	4-20-12	4-23-12	
Arsenic	**3.8**	3.0	200.8	4-20-12	4-23-12	
Beryllium	**ND**	10	200.8	4-20-12	4-23-12	
Cadmium	**ND**	4.0	200.8	4-20-12	4-23-12	
Chromium	**ND**	10	200.8	4-20-12	4-23-12	
Copper	**ND**	10	200.8	4-20-12	4-23-12	
Lead	**ND**	1.0	200.8	4-20-12	4-23-12	
Mercury	**ND**	0.50	7470A	4-20-12	4-24-12	
Nickel	**ND**	20	200.8	4-20-12	4-23-12	
Selenium	**ND**	5.0	200.8	4-20-12	4-23-12	
Silver	**ND**	10	200.8	4-20-12	4-23-12	
Thallium	**ND**	5.0	200.8	4-20-12	4-23-12	
Zinc	**ND**	25	200.8	4-20-12	4-23-12	

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DISSOLVED METALS
EPA 200.8/7470A

Matrix: Water
Units: ug/L (ppb)

Analyte	Result	PQL	EPA Method	Date Prepared	Date Analyzed	Flags
Lab ID:	04-123-12					
Client ID:	**GP-18:GW**					
Antimony	**ND**	5.0	200.8	4-20-12	4-23-12	
Arsenic	**ND**	3.0	200.8	4-20-12	4-23-12	
Beryllium	**ND**	10	200.8	4-20-12	4-23-12	
Cadmium	**ND**	4.0	200.8	4-20-12	4-23-12	
Chromium	**ND**	10	200.8	4-20-12	4-23-12	
Copper	**ND**	10	200.8	4-20-12	4-23-12	
Lead	**ND**	1.0	200.8	4-20-12	4-23-12	
Mercury	**ND**	0.50	7470A	4-20-12	4-24-12	
Nickel	**ND**	20	200.8	4-20-12	4-23-12	
Selenium	**ND**	5.0	200.8	4-20-12	4-23-12	
Silver	**ND**	10	200.8	4-20-12	4-23-12	
Thallium	**ND**	5.0	200.8	4-20-12	4-23-12	
Zinc	**ND**	25	200.8	4-20-12	4-23-12	

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DISSOLVED METALS
EPA 200.8
METHOD BLANK QUALITY CONTROL

Date Filtered:	4-20-12
Date Analyzed:	4-23-12
Matrix:	Water
Units:	ug/L (ppb)
Lab ID:	MB0420F1

Analyte	Method	Result	PQL
Antimony	200.8	**ND**	5.0
Arsenic	200.8	**ND**	3.0
Beryllium	200.8	**ND**	10
Cadmium	200.8	**ND**	4.0
Chromium	200.8	**ND**	10
Copper	200.8	**ND**	10
Lead	200.8	**ND**	1.0
Nickel	200.8	**ND**	20
Selenium	200.8	**ND**	5.0
Silver	200.8	**ND**	10
Thallium	200.8	**ND**	5.0
Zinc	200.8	**ND**	25

Date of Report: April 26, 2012
Samples Submitted: April 19, 2012
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DISSOLVED MERCURY
EPA 7470A
METHOD BLANK QUALITY CONTROL

Date Filtered:	4-20-12
Date Analyzed:	4-24-12
Matrix:	Water
Units:	ug/L (ppb)
Lab ID:	MB0420F1

Analyte	Method	Result	PQL
Mercury	7470A	**ND**	0.50

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Project: 21-1-21623-016

DISSOLVED METALS
EPA 200.8
DUPLICATE QUALITY CONTROL

Date Filtered: 4-20-12
Date Analyzed: 4-23-12

Matrix: Water
Units: ug/L (ppb)

Lab ID: 04-123-12

Analyte	Sample Result	Duplicate Result	RPD	PQL	Flags
Antimony	**ND**	**ND**	NA	5.0	
Arsenic	**ND**	**ND**	NA	3.0	
Beryllium	**ND**	**ND**	NA	10	
Cadmium	**ND**	**ND**	NA	4.0	
Chromium	**ND**	**ND**	NA	10	
Copper	**ND**	**ND**	NA	10	
Lead	**ND**	**ND**	NA	1.0	
Nickel	**ND**	**ND**	NA	20	
Selenium	**ND**	**ND**	NA	5.0	
Silver	**ND**	**ND**	NA	10	
Thallium	**ND**	**ND**	NA	5.0	
Zinc	**ND**	**ND**	NA	25	

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DISSOLVED MERCURY
EPA 7470A
DUPLICATE QUALITY CONTROL

Date Filtered: 4-20-12
Date Analyzed: 4-24-12

Matrix: Water
Units: ug/L (ppb)

Lab ID: 04-123-12

Analyte	Sample Result	Duplicate Result	RPD	PQL	Flags
Mercury	**ND**	**ND**	NA	0.50	

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DISSOLVED METALS
EPA 200.8
MS/MSD QUALITY CONTROL

Date Filtered: 4-20-12
Date Analyzed: 4-23-12

Matrix: Water
Units: ug/L (ppb)

Lab ID: 04-123-12

Analyte	Spike Level	MS	Percent Recovery	MSD	Percent Recovery	RPD	Flags
Antimony	100	**99.0**	99	**102**	102	3	
Arsenic	100	**104**	104	**104**	104	0	
Beryllium	100	**98.1**	98	**99.4**	99	1	
Cadmium	100	**97.9**	98	**102**	102	4	
Chromium	100	**105**	105	**104**	104	1	
Copper	100	**102**	102	**104**	104	2	
Lead	100	**105**	105	**107**	107	2	
Nickel	100	**108**	108	**109**	109	1	
Selenium	100	**101**	101	**99.4**	99	1	
Silver	100	**95.8**	96	**102**	102	7	
Thallium	100	**105**	105	**107**	107	2	
Zinc	100	**105**	105	**105**	105	0	

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DISSOLVED MERCURY
EPA 7470A
MS/MSD QUALITY CONTROL

Date Filtered: 4-20-12
Date Analyzed: 4-24-12

Matrix: Water
Units: ug/L (ppb)

Lab ID: 04-123-12

Analyte	Spike Level	MS	Percent Recovery	MSD	Percent Recovery	RPD	Flags
Mercury	12.5	**10.1**	80	**9.73**	78	3	

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NWTPH-Gx

Matrix: Water
Units: ug/L (ppb)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**GP-21:GW**					
Laboratory ID:	04-123-11					
Gasoline	**4500**	1000	NWTPH-Gx	4-23-12	4-23-12	Z
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*78*	*73-121*				

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Project: 21-1-21623-016

NWTPH-Gx
QUALITY CONTROL

Matrix: Water
Units: ug/L (ppb)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0423W1					
Gasoline	**ND**	100	NWTPH-Gx	4-23-12	4-23-12	
Surrogate:	*Percent Recovery*	*Control Limits*				
Fluorobenzene	*79*	*73-121*				

Analyte	Result		Spike Level		Source Result	Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE											
Laboratory ID:	04-129-03										
	ORIG	DUP									
Gasoline	**ND**	**ND**	NA	NA		NA		NA	NA	30	
Surrogate:											
Fluorobenzene						*79*	*77*	*73-121*			

Date of Report: April 26, 2012
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Laboratory Reference: 1204-123
Project: 21-1-21623-016

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

Matrix: Water
Units: mg/L (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**GP-21:GW**					
Laboratory ID:	04-123-11					
Diesel Range Organics	**2.9**	0.29	NWTPH-Dx	4-20-12	4-20-12	M
Lube Oil Range Organics	**ND**	0.46	NWTPH-Dx	4-20-12	4-20-12	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*92*	*50-150*				

Date of Report: April 26, 2012
Samples Submitted: April 19, 2012
Laboratory Reference: 1204-123
Project: 21-1-21623-016

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

Matrix: Water
Units: mg/L (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0420W1					
Diesel Range Organics	**ND**	0.25	NWTPH-Dx	4-20-12	4-20-12	
Lube Oil Range Organics	**ND**	0.40	NWTPH-Dx	4-20-12	4-20-12	
Surrogate:	*Percent Recovery*	*Control Limits*				
o-Terphenyl	*104*	*50-150*				

Analyte	Result		Percent Recovery	Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE							
Laboratory ID:	04-115-03						
	ORIG	DUP					
Diesel Range Organics	**ND**	**ND**			NA	NA	
Lube Oil Range Organics	**ND**	**ND**			NA	NA	
Surrogate:							
o-Terphenyl			*112* *107*	*50-150*			

Date of Report: April 26, 2012
Samples Submitted: April 19, 2012
Laboratory Reference: 1204-123
Project: 21-1-21623-016

% MOISTURE

Date Analyzed: 4-19-12

Client ID	Lab ID	% Moisture
GP-22:0.5	04-123-01	13
GP-22:10	04-123-02	18
GP-21:0.5	04-123-03	14
GP-21:10	04-123-04	19
GP-20:0.5	04-123-05	14
GP-20:10	04-123-06	19
GP-19:0.5	04-123-07	18
GP-19:3	04-123-08	25
GP-18:0.5	04-123-09	11
GP-18:5.5	04-123-10	14

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 - The gasoline result is mainly attributed to a single peak (Naphthalene).

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

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: STW
Project Number: 21-1-21623-016
Project Name: Magnolia - Pier 91
Project Manager: SWG
Sampled by: JML

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: 04-123

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 Total MTCA 5 Metals	TCLP Metals	HEM (oil and grease) 1664	Leach (Total)				% Moisture
1	GP-22:0.5	4/19/12	08:45	Soil	1																	X				⊗
2	GP-22:10		09:00		6	X													X							
3	GP-21:0.5		09:20		1																	X				
4	GP-21:10		09:30		6	X													X							
5	GP-20:0.5		11:05		1																	X				
6	GP-20:10		11:15		6	X													X							
7	GP-19:0.5		11:30		1																	X				
8	GP-19:3		11:35		6	X													X							
9	GP-18:0.5		11:45		1																	X				
10	GP-18:5.5	↓	11:50	↓	6	X													X							↓

	Signature	Company	Date	Time
Relinquished	[signature]	STW	4/19/12	1604
Received	[signature]	Speedy	4/19/12	1604
Relinquished	[signature]	Speedy	4/19/12	1715
Received	[signature]	[illegible]	4/19/12	1715
Relinquished				
Received				
Reviewed/Date		Reviewed/Date		

Comments/Special Instructions

⊗ Added 4/23/12. 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: STW
Project Number: 21-1-21623-016
Project Name: Magnolia - Pier 91
Project Manager: SWG
Sampled by: JML

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: 04-123

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	Total PP Metals	Dissolved PP Metals			% Moisture
11	GP-21:GW	4/19/12	9:45	Soil/W	9	X		(X)	(X)	X												X	X			
12	GP-18:GW	↓	12:00	↓	↓	X				X												X	X			

	Signature	Company	Date	Time
Relinquished		STW	4/19/12	1604
Received		Speedy	4/19/12	1604
Relinquished		Speedy	4/19/12	1715
Received		OSHE	4/19/12	1715
Relinquished				
Received				
Reviewed/Date		Reviewed/Date		

Comments/Special Instructions

LAB to FILTER WATER SAMPLE

PP Metals = Priority Pollutant Metals

(X Added 4/23/12. DB (STA))

Chromatograms with final report ☐

Data Package: Level III ☐ Level IV ☐

Electronic Data Deliverables (EDDs) ☐ _____

APPENDIX C

INVESTIGATION-DERIVED WASTE DOCUMENTATION

CleanHarbors ENVIRONMENTAL SERVICES®

Site Services Multi-Task Worksheet

Day & Date: THURSDAY 12/1/11

Sales Order #: G 7389566

Job Complete: Yes / No (Circle One)

Job Description / Comments: REMOVE & DISPOSE OF DRILLING MUD FROM DRUMS → TRANSPORT WASTES TO AWD FOR DISPOSAL

Customer: BOEING EMPLOYEES

Billing Address: 3820 FREEMAN RD FIFE, WA

ATTN: DEREK WATSON

Contact: DEREK WATSON

Job Location: 3820 FREEMAN RD FIFE, WA

PO # / COD Amount: 120111

Per Diem: Yes / No (Circle one) If yes, how many?:

Change Order Initiated: Yes / No (Circle One)

Component Type	Name	Title	ID #	Task # / Description: RID OF WASTES FROM DRUMS. Task Complete: Yes / No (Circle One) ST	OT	DT	Task # / Description Task Complete: Yes / No (Circle One) ST	OT	DT	Task # / Description Task Complete: Yes / No (Circle One) ST	OT	DT
	D. HADDOCK	E.O.	027234									
	E. PARRISH	TECH	068612									
LIQUID: Bulk / Drum				C.Y. / HRS			C.Y. / HRS			C.Y. / HRS		
SOLID: Bulk / Drum												
Pickup / Van / Car / Crew Cab (Circle One)				1	8818							
Vacuum Trailer												
Tractor												
Vacuum Truck, Straight												
Box Truck												
Cusoo / Guzzler / Vactor (Circle One)				1	551433							
Air Compressor 175 CFM												
Backhoe Loader 1 Yd bucket												
Bobcat Loader--Mini Excavator												
Rack Truck												
Rolloff Truck, Straight												
Pressure Washer (PSI: ____) Hot / Cold (Circle One)												
Meter Type: HAND HELD				1								
Drum Type:												
Drum Type:												
Rope Type:												
Degreaser Type:												
Speedi Dry												
Polycoated Rain Gear, 22mil												
Poly Sheet, 6mil, 20ft x 100ft												
Poly Bags, 6mil, per roll												
Absorbent Pad (101 Grade) 100/bale												
Absorbent Boom Each												
Absorbent Boom Bale												
Duct Tape/Roll												
Safety Plan												
Rolloff Poly Liner												
5 Gal / 20 Litre Poly Drum 1H2												
Rolloff / Intermodal / Frac Tank / Tanker (circle one)												
Rolloff / Intermodal / Frac Tank / Tanker (circle one)												
# of Complete Sets of PPE Used: 2 SETS				PPED1 2	PPEB2		PPED1	PPEB2		PPED1	PPEB2	
# of People in PPE: 2 PPL				PPEC2	PPEB3		PPEC2	PPEB3		PPEC2	PPEB3	
PPED1=Level D w/(Tyvek, boots, gloves) PPEC2=Level C w/(CPF1,2 or Poly Tyvek suit)				PPEC3	PPEB4		PPEC3	PPEB4		PPEC3	PPEB4	
PPEC3=Level C w/(CPF3 or Saranex suit) PPEC4=Level C w/(CPF4 or Barricade suit)				PPEC4	PPEA5		PPEC4	PPEA5		PPEC4	PPEA5	
PPEB2=Level B w/(CPF2 or Poly Tyvek suit) PPEB3=Level B w/(CPF3 or Saranex suit)												
PPEB4=Level B w/(CPF4 or Barricade suit) PPEA5=Level A w/(Responder suit)												
Cartridge												
Respirator												
Suit												
Inner Gloves												
Outer Gloves												
Breathing Air Bottle												

CHES Rep (Print): Edgar Parrish

CHES Rep (Sign): [signature]

Date: 12-1-11

Customer (Print): Christina Kuehn

Customer (Sign): [signature]

Date: 12-1-11

CHI 225-SS (9/07)

IMPORTANT - PAYMENT TERMS ON BACK

CUSTOMER COPY

WORK ORDER NO. 73695366

DOCUMENT NO. 311956

STRAIGHT BILL OF LADING

TRANSPORTER 1 Clean Harbors — VEHICLE ID # 554433

EPA ID # WAH 000031084 — TRANS. 1 PHONE (206) 421-9100

TRANSPORTER 2 — — VEHICLE ID # —

EPA ID # — — TRANS. 2 PHONE —

DESIGNATED FACILITY	SHIPPER
AWD	Boart Longyear
FACILITY EPA ID # WAH 000031093	SHIPPER EPA ID # N/A
ADDRESS 2117 River Road	ADDRESS 3820 Freeman Rd.
CITY Tacoma STATE WA ZIP 98421	CITY Fife, STATE WA. ZIP

CONTAINERS NO. & SIZE	TYPE	HM	DESCRIPTION OF MATERIALS	TOTAL QUANTITY	UNIT WT/VOL
1	TT		A. Material Not Regulated By D.O.T. (Non-Haz Drilling Mud)	5	Tons
			B.		
			C.		
			D.		
			E.		
			F.		
			G.		
			H.		

SPECIAL HANDLING INSTRUCTIONS

Dispose P.O.# W110234755 — Waste Profile CH001

SHIPPERS CERTIFICATION: This is to certify that the above named materials are properly classified, described, packaged, marked and labeled and are in proper condition for transportation according to the applicable regulations of the Department of Transportation.

	PRINT	SIGN	DATE
SHIPPER	Christina Kuehn		12-6-11
TRANSPORTER 1	DAREN HARDAWAY		12-6-11
TRANSPORTER 2			
RECEIVED BY			

2

CHI 107

WORK ORDER NO. 473895366

DOCUMENT NO. 311960

STRAIGHT BILL OF LADING

TRANSPORTER 1 Clean Harbors VEHICLE ID # 35493

EPA ID # WAH 000031684 TRANS. 1 PHONE

TRANSPORTER 2 VEHICLE ID #

EPA ID # TRANS. 2 PHONE

DESIGNATED FACILITY AWS	SHIPPER Boart Longyear
FACILITY EPA ID # WAH 600031693	SHIPPER EPA ID # N/A
ADDRESS 2117 River Rd	ADDRESS 3620 Freeman Rd
CITY Tacoma STATE WA ZIP 98421	CITY Enk STATE WA ZIP

CONTAINERS NO. & SIZE	TYPE	HM	DESCRIPTION OF MATERIALS	TOTAL QUANTITY	UNIT WT/VOL
1	TT		A. Materials not regulated by DOT drill slurry non hazardous	5	Tns
			B.		
			C.		
			D.		
			E.		
			F.		
			G.		
			H.		

SPECIAL HANDLING INSTRUCTIONS Disposal PO# W11023475 Waste Profile 60601

SHIPPERS CERTIFICATION: This is to certify that the above named materials are properly classified, described, packaged, marked and labeled and are in proper condition for transportation according to the applicable regulations of the Department of Transportation.

	PRINT	SIGN	DATE
SHIPPER	Christina Kuehn	Christina Kuehn	12-6-11
TRANSPORTER 1	DAREN HARDAWAY	[signature]	12-6-11
TRANSPORTER 2			
RECEIVED BY			

2

CHI 107

CleanHarbors
ENVIRONMENTAL SERVICES®

Site Services Multi-Task Worksheet

Day & Date: MONDAY 12/5/11
Sales Order #: 738945366

Job Complete: Yes / No (Circle One)

Job Description / Comments: REMOVE & DISPOSE OF WASTES FROM DRUMS
DISPOSE OF WASTES @ AWS

Customer: BOARD GOODYEAR
Billing Address: 3820 FREEMAN RD
FIFE, WA.
PETER LAMSON
Contact: PETER LAMSON
Job Location: 3820 FREEMAN RD
FIFE, WA

PO # / COD Amount: 103111
Per Diem: Yes / No (Circle one) If yes, how many?:
Change Order Initiated: Yes / No (Circle One)

Task # / Description	Task # / Description	Task # / Description
R&D OF WASTES FROM DRUMS		
Task Complete: Yes / No (Circle One)	Task Complete: Yes / No (Circle One)	Task Complete: Yes / No (Circle One)

Component Type			ST	OT	DT	ST	OT	DT	ST	OT	DT
Name	Title	ID #									
ROGER	E.D.										
ELLYN PARRISH	E.T.										
LIQUID: Bulk / Drum											
SOLID: Bulk / Drum											
Pickup / Van / Car / Crew Cab (Circle One)			1								
Vacuum Trailer											
Tractor											
Vacuum Truck, Straight											
Box Truck											
Cusco / Guzzler / Vactor (Circle One)			1	5.5 HRS							
Air Compressor, 175 CFM											
Backhoe Loader 1 Yd bucket											
Bobcat Loader–Mini Excavator											
Rack Truck											
Rolloff Truck, Straight											
Pressure Washer (PSI: _____) Hot / Cold (Circle One)											
Meter Type:											
HAND HELD			1		1 DAY						

Drum Type:											
Drum Type:											
Rope Type:											
Degreaser Type:											
Speedi Dry											
Polycoated Rain Gear, 22mil											
Poly Sheet, 6mil, 20ft x 100ft											
Poly Bags, 6mil, per roll											
Absorbent Pad (101 Grade) 100/bale											
Absorbent Boom Each											
Absorbent Boom Bale											
Duct Tape/Roll											
Safety Plan											
Rolloff Poly Liner											
5 Gal / 20 Litre Poly Drum 1H2											
Rolloff / Intermodal / Frac Tank / Tanker (circle one)											
Rolloff / Intermodal / Frac Tank / Tanker (circle one)											

# of Complete Sets of PPE Used:											
# of People in PPE:	2										
PPED1	2	PPEB2		PPED1		PPEB2		PPED1		PPEB2	
PPEC2		PPEB3		PPEC2		PPEB3		PPEC2		PPEB3	
PPEC3		PPEB4		PPEC3		PPEB4		PPEC3		PPEB4	
PPEC4		PPEA5		PPEC4		PPEA5		PPEC4		PPEA5	

PPED1=Level D w/(Tyvek, boots, gloves) PPEC2=Level C w/(CPF1,2 or Poly Tyvek suit)
PPEC3=Level C w/(CPF3 or Saranex suit) PPEC4=Level C w/(CPF4 or Barricade suit)
PPEB2=Level B w/(CPF2 or Poly Tyvek suit) PPEB3=Level B w/(CPF3 or Saranex suit)
PPEB4=Level B w/(CPF4 or Barricade suit) PPEA5=Level A w/(Responder suit)

Cartridge											
Respirator											
Suit											
Inner Gloves											
Outer Gloves											
Breathing Air Bottle											

CHES Rep (Print)
Customer (Print) CHRISTINA KUHN

CHES Rep (Sign)
Customer (Sign)

Date:
Date: 12-6-11

CHI 225-SS (9/07)

IMPORTANT - PAYMENT TERMS ON BACK

CUSTOMER COPY

WORK ORDER NO. GT38953

DOCUMENT NO. 311959

STRAIGHT BILL OF LADING

TRANSPORTER 1 Clean Harbors VEHICLE ID # 55HH83

EPA ID # WAH1000031084 TRANS. 1 PHONE

TRANSPORTER 2 VEHICLE ID #

EPA ID # TRANS. 2 PHONE

DESIGNATED FACILITY AWS	SHIPPER Boart Longyear
FACILITY EPA ID # WAH000023093	SHIPPER EPA ID # N/A
ADDRESS 2117 River Rd	ADDRESS 3620 Fremont Rd E.
CITY Tacoma STATE WA ZIP 98424-21	CITY Ft Ft STATE WA ZIP 904.

CONTAINERS NO. & SIZE	TYPE	HM	DESCRIPTION OF MATERIALS	TOTAL QUANTITY	UNIT WT/VOL
1	TITI	X	A. Materials not regulated by DOT: Drill slurry / mud - NA 2	5	tons
			B.		
			C.		
			D.		
			E.		
			F.		
			G.		
			H.		

SPECIAL HANDLING INSTRUCTIONS

Disposal # WAD 023 444 55 Waste Profile # [illegible]

SHIPPERS CERTIFICATION: This is to certify that the above named materials are properly classified, described, packaged, marked and labeled and are in proper condition for transportation according to the applicable regulations of the Department of Transportation.

SHIPPER	PRINT Christina Kuehn	SIGN [signature]	DATE 12-8-11
TRANSPORTER 1	PRINT DAREN HARDAWAY	SIGN [signature]	DATE 12-8-11
TRANSPORTER 2	PRINT	SIGN	DATE
RECEIVED BY	PRINT	SIGN	DATE

2

CHI 107

WORK ORDER NO. 473895366

DOCUMENT NO. 311958

STRAIGHT BILL OF LADING

TRANSPORTER 1 Clea. Harbors VEHICLE ID # 354433

EPA ID # WAH000031084 TRANS. 1 PHONE

TRANSPORTER 2 VEHICLE ID #

EPA ID # TRANS. 2 PHONE

DESIGNATED FACILITY AWS	SHIPPER Port Longview
FACILITY EPA ID #	SHIPPER EPA ID # N/A
ADDRESS 4th River RD E	ADDRESS 3620 Freeman Rd
CITY Tacoma STATE WA ZIP 98424	CITY Enle STATE WA ZIP

CONTAINERS NO. & SIZE	TYPE	HM	DESCRIPTION OF MATERIALS	TOTAL QUANTITY	UNIT WT/VOL
1	TT		A. Materials not regulated by DOT drill slurry non haz mat	5	tons
			B.		
			C.		
			D.		
			E.		
			F.		
			G.		
			H.		

SPECIAL HANDLING INSTRUCTIONS Disposal # W10234755 Waste profile #4001

SHIPPERS CERTIFICATION: This is to certify that the above named materials are properly classified, described, packaged, marked and labeled and are in proper condition for transportation according to the applicable regulations of the Department of Transportation.

	PRINT	SIGN	DATE
SHIPPER			
TRANSPORTER 1	PRINT DAREN HARDAWAY	SIGN	DATE 12-8-11
TRANSPORTER 2	PRINT	SIGN	DATE
RECEIVED BY	PRINT	SIGN	DATE

2

CHI 107

APPENDIX D

IMPORTANT INFORMATION ABOUT YOUR GEOTECHNICAL/ENVIRONMENTAL REPORT

SHANNON & WILSON, INC.
Geotechnical and Environmental Consultants

Attachment to and part of Report 21-1-21623-016

Date: May 11, 2012
To: Mr. Jeff Lykken
Tetra Tech

IMPORTANT INFORMATION ABOUT YOUR GEOTECHNICAL/ENVIRONMENTAL REPORT

CONSULTING SERVICES ARE PERFORMED FOR SPECIFIC PURPOSES AND FOR SPECIFIC CLIENTS.

Consultants prepare reports to meet the specific needs of specific individuals. A report prepared for a civil engineer may not be adequate for a construction contractor or even another civil engineer. Unless indicated otherwise, your consultant prepared your report expressly for you and expressly for the purposes you indicated. No one other than you should apply this report for its intended purpose without first conferring with the consultant. No party should apply this report for any purpose other than that originally contemplated without first conferring with the consultant.

THE CONSULTANT'S REPORT IS BASED ON PROJECT-SPECIFIC FACTORS.

A geotechnical/environmental report is based on a subsurface exploration plan designed to consider a unique set of project-specific factors. Depending on the project, these may include: the general nature of the structure and property involved; its size and configuration; its historical use and practice; the location of the structure on the site and its orientation; other improvements such as access roads, parking lots, and underground utilities; and the additional risk created by scope-of-service limitations imposed by the client. To help avoid costly problems, ask the consultant to evaluate how any factors that change subsequent to the date of the report may affect the recommendations. Unless your consultant indicates otherwise, your report should not be used: (1) when the nature of the proposed project is changed (for example, if an office building will be erected instead of a parking garage, or if a refrigerated warehouse will be built instead of an unrefrigerated one, or chemicals are discovered on or near the site); (2) when the size, elevation, or configuration of the proposed project is altered; (3) when the location or orientation of the proposed project is modified; (4) when there is a change of ownership; or (5) for application to an adjacent site. Consultants cannot accept responsibility for problems that may occur if they are not consulted after factors which were considered in the development of the report have changed.

SUBSURFACE CONDITIONS CAN CHANGE.

Subsurface conditions may be affected as a result of natural processes or human activity. Because a geotechnical/environmental report is based on conditions that existed at the time of subsurface exploration, construction decisions should not be based on a report whose adequacy may have been affected by time. Ask the consultant to advise if additional tests are desirable before construction starts; for example, groundwater conditions commonly vary seasonally.

Construction operations at or adjacent to the site and natural events such as floods, earthquakes, or groundwater fluctuations may also affect subsurface conditions and, thus, the continuing adequacy of a geotechnical/environmental report. The consultant should be kept apprised of any such events, and should be consulted to determine if additional tests are necessary.

MOST RECOMMENDATIONS ARE PROFESSIONAL JUDGMENTS.

Site exploration and testing identifies actual surface and subsurface conditions only at those points where samples are taken. The data were extrapolated by your consultant, who then applied judgment to render an opinion about overall subsurface conditions. The actual interface between materials may be far more gradual or abrupt than your report indicates. Actual conditions in areas not sampled may differ from those predicted in your report. While nothing can be done to prevent such situations, you and your consultant can work together to help reduce their impacts. Retaining your consultant to observe subsurface construction operations can be particularly beneficial in this respect.

A REPORT'S CONCLUSIONS ARE PRELIMINARY.

The conclusions contained in your consultant's report are preliminary because they must be based on the assumption that conditions revealed through selective exploratory sampling are indicative of actual conditions throughout a site. Actual subsurface conditions can be discerned only during earthwork; therefore, you should retain your consultant to observe actual conditions and to provide conclusions. Only the consultant who prepared the report is fully familiar with the background information needed to determine whether or not the report's recommendations based on those conclusions are valid and whether or not the contractor is abiding by applicable recommendations. The consultant who developed your report cannot assume responsibility or liability for the adequacy of the report's recommendations if another party is retained to observe construction.

THE CONSULTANT'S REPORT IS SUBJECT TO MISINTERPRETATION.

Costly problems can occur when other design professionals develop their plans based on misinterpretation of a geotechnical/environmental report. To help avoid these problems, the consultant should be retained to work with other project design professionals to explain relevant geotechnical, geological, hydrogeological, and environmental findings, and to review the adequacy of their plans and specifications relative to these issues.

BORING LOGS AND/OR MONITORING WELL DATA SHOULD NOT BE SEPARATED FROM THE REPORT.

Final boring logs developed by the consultant are based upon interpretation of field logs (assembled by site personnel), field test results, and laboratory and/or office evaluation of field samples and data. Only final boring logs and data are customarily included in geotechnical/environmental reports. These final logs should not, under any circumstances, be redrawn for inclusion in architectural or other design drawings, because drafters may commit errors or omissions in the transfer process.

To reduce the likelihood of boring log or monitoring well misinterpretation, contractors should be given ready access to the complete geotechnical engineering/environmental report prepared or authorized for their use. If access is provided only to the report prepared for you, you should advise contractors of the report's limitations, assuming that a contractor was not one of the specific persons for whom the report was prepared, and that developing construction cost estimates was not one of the specific purposes for which it was prepared. While a contractor may gain important knowledge from a report prepared for another party, the contractor should discuss the report with your consultant and perform the additional or alternative work believed necessary to obtain the data specifically appropriate for construction cost estimating purposes. Some clients hold the mistaken impression that simply disclaiming responsibility for the accuracy of subsurface information always insulates them from attendant liability. Providing the best available information to contractors helps prevent costly construction problems and the adversarial attitudes that aggravate them to a disproportionate scale.

READ RESPONSIBILITY CLAUSES CLOSELY.

Because geotechnical/environmental engineering is based extensively on judgment and opinion, it is far less exact than other design disciplines. This situation has resulted in wholly unwarranted claims being lodged against consultants. To help prevent this problem, consultants have developed a number of clauses for use in their contracts, reports and other documents. These responsibility clauses are not exculpatory clauses designed to transfer the consultant's liabilities to other parties; rather, they are definitive clauses that identify where the consultant's responsibilities begin and end. Their use helps all parties involved recognize their individual responsibilities and take appropriate action. Some of these definitive clauses are likely to appear in your report, and you are encouraged to read them closely. Your consultant will be pleased to give full and frank answers to your questions.

The preceding paragraphs are based on information provided by the
ASFE/Association of Engineering Firms Practicing in the Geosciences, Silver Spring, Maryland